

## **Anhang 7.2: Retentions- und Ausscheidungsdaten bei chronischer Zufuhr**

## H-3 HTO

**Aktivitätskonzentration im Urin bei chronischer Zufuhr**  
in Bq/L pro 1 Bq täglich zugeführter Aktivität (Bq·L<sup>-1</sup>/Bq·d<sup>-1</sup>)

| Zeit (d) | Inhalation | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|-----------|---------------------------|
|          | HTO        |           |                           |
| 1        | 7,3E-03    | 7,3E-03   | 7,3E-03                   |
| 2        | 3,3E-02    | 3,3E-02   | 3,3E-02                   |
| 3        | 6,2E-02    | 6,2E-02   | 6,2E-02                   |
| 4        | 8,8E-02    | 8,8E-02   | 8,8E-02                   |
| 5        | 1,1E-01    | 1,1E-01   | 1,1E-01                   |
| 6        | 1,4E-01    | 1,4E-01   | 1,4E-01                   |
| 7        | 1,6E-01    | 1,6E-01   | 1,6E-01                   |
| 8        | 1,8E-01    | 1,8E-01   | 1,8E-01                   |
| 9        | 2,0E-01    | 2,0E-01   | 2,0E-01                   |
| 10       | 2,1E-01    | 2,1E-01   | 2,1E-01                   |
| 14       | 2,7E-01    | 2,7E-01   | 2,7E-01                   |
| 15       | 2,9E-01    | 2,9E-01   | 2,9E-01                   |
| 20       | 3,4E-01    | 3,4E-01   | 3,4E-01                   |
| 30       | 4,0E-01    | 4,0E-01   | 4,0E-01                   |
| 40       | 4,3E-01    | 4,3E-01   | 4,3E-01                   |
| 45       | 4,4E-01    | 4,4E-01   | 4,4E-01                   |
| 50       | 4,5E-01    | 4,5E-01   | 4,5E-01                   |
| 60       | 4,6E-01    | 4,6E-01   | 4,6E-01                   |
| 70       | 4,6E-01    | 4,6E-01   | 4,6E-01                   |
| 80       | 4,7E-01    | 4,7E-01   | 4,7E-01                   |
| 90       | 4,7E-01    | 4,7E-01   | 4,7E-01                   |
| 100      | 4,7E-01    | 4,7E-01   | 4,7E-01                   |
| 120      | 4,7E-01    | 4,7E-01   | 4,7E-01                   |
| 180      | 4,8E-01    | 4,8E-01   | 4,8E-01                   |
| 200      | 4,8E-01    | 4,8E-01   | 4,8E-01                   |
| 300      |            |           |                           |
| 360      |            |           |                           |
| 400      |            |           |                           |
| 500      |            |           |                           |
| 600      |            |           |                           |
| 700      |            |           |                           |
| 800      |            |           |                           |
| 900      |            |           |                           |
| 1000     |            |           |                           |
| 2000     |            |           |                           |
| 3000     |            |           |                           |
| 4000     |            |           |                           |
| 5000     |            |           |                           |
| 6000     |            |           |                           |
| 8000     |            |           |                           |
| 10000    |            |           |                           |

## H-3 OBT

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation<br><br>OBT | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|-----------------------|-----------|---------------------------------|
| 1        | 1,1E-02               | 9,9E-03   | 1,1E-02                         |
| 2        | 4,8E-02               | 4,6E-02   | 4,8E-02                         |
| 3        | 8,7E-02               | 8,4E-02   | 8,7E-02                         |
| 4        | 1,2E-01               | 1,2E-01   | 1,2E-01                         |
| 5        | 1,6E-01               | 1,6E-01   | 1,6E-01                         |
| 6        | 1,9E-01               | 1,9E-01   | 1,9E-01                         |
| 7        | 2,2E-01               | 2,2E-01   | 2,2E-01                         |
| 8        | 2,5E-01               | 2,5E-01   | 2,5E-01                         |
| 9        | 2,8E-01               | 2,8E-01   | 2,8E-01                         |
| 10       | 3,1E-01               | 3,0E-01   | 3,1E-01                         |
| 14       | 4,0E-01               | 4,0E-01   | 4,0E-01                         |
| 15       | 4,2E-01               | 4,2E-01   | 4,2E-01                         |
| 20       | 5,1E-01               | 5,0E-01   | 5,1E-01                         |
| 30       | 6,3E-01               | 6,2E-01   | 6,3E-01                         |
| 40       | 7,1E-01               | 7,0E-01   | 7,1E-01                         |
| 45       | 7,4E-01               | 7,3E-01   | 7,4E-01                         |
| 50       | 7,7E-01               | 7,6E-01   | 7,7E-01                         |
| 60       | 8,1E-01               | 8,0E-01   | 8,1E-01                         |
| 70       | 8,4E-01               | 8,3E-01   | 8,4E-01                         |
| 80       | 8,7E-01               | 8,6E-01   | 8,7E-01                         |
| 90       | 8,9E-01               | 8,8E-01   | 8,9E-01                         |
| 100      | 9,1E-01               | 9,0E-01   | 9,1E-01                         |
| 120      | 9,3E-01               | 9,2E-01   | 9,3E-01                         |
| 180      | 9,7E-01               | 9,6E-01   | 9,7E-01                         |
| 200      | 9,8E-01               | 9,7E-01   | 9,8E-01                         |
| 300      | 9,9E-01               | 9,8E-01   | 9,9E-01                         |
| 360      | 9,9E-01               | 9,8E-01   | 9,9E-01                         |
| 400      |                       |           |                                 |
| 500      |                       |           |                                 |
| 600      |                       |           |                                 |
| 700      |                       |           |                                 |
| 800      |                       |           |                                 |
| 900      |                       |           |                                 |
| 1000     |                       |           |                                 |
| 2000     |                       |           |                                 |
| 3000     |                       |           |                                 |
| 4000     |                       |           |                                 |
| 5000     |                       |           |                                 |
| 6000     |                       |           |                                 |
| 8000     |                       |           |                                 |
| 10000    |                       |           |                                 |

## H-3 Gase

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/L pro 1 Bq täglich zugeführter Aktivität ( $\text{Bq}\cdot\text{L}^{-1}/\text{Bq}\cdot\text{d}^{-1}$ )

| Zeit (d) | Inhalation  |         | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|-------------|---------|-----------|---------------------------------|
|          | Tritium-Gas | Methan  |           |                                 |
| 1        | 3,5E-06     | 3,5E-04 |           |                                 |
| 2        | 6,3E-06     | 6,3E-04 |           |                                 |
| 3        | 9,0E-06     | 9,0E-04 |           |                                 |
| 4        | 1,1E-05     | 1,1E-03 |           |                                 |
| 5        | 1,4E-05     | 1,4E-03 |           |                                 |
| 6        | 1,6E-05     | 1,6E-03 |           |                                 |
| 7        | 1,8E-05     | 1,8E-03 |           |                                 |
| 8        | 2,0E-05     | 2,0E-03 |           |                                 |
| 9        | 2,2E-05     | 2,2E-03 |           |                                 |
| 10       | 2,8E-05     | 2,8E-03 |           |                                 |
| 14       | 2,9E-05     | 2,9E-03 |           |                                 |
| 15       | 3,4E-05     | 3,4E-03 |           |                                 |
| 20       | 4,0E-05     | 4,0E-03 |           |                                 |
| 30       | 4,4E-05     | 4,4E-03 |           |                                 |
| 40       | 4,5E-05     | 4,5E-03 |           |                                 |
| 45       | 4,5E-05     | 4,5E-03 |           |                                 |
| 50       | 4,6E-05     | 4,6E-03 |           |                                 |
| 60       | 4,7E-05     | 4,7E-03 |           |                                 |
| 70       | 4,7E-05     | 4,7E-03 |           |                                 |
| 80       | 4,7E-05     | 4,7E-03 |           |                                 |
| 90       | 4,8E-05     | 4,8E-03 |           |                                 |
| 100      | 4,8E-05     | 4,8E-03 |           |                                 |
| 120      |             |         |           |                                 |
| 180      |             |         |           |                                 |
| 200      |             |         |           |                                 |
| 300      |             |         |           |                                 |
| 360      |             |         |           |                                 |
| 400      |             |         |           |                                 |
| 500      |             |         |           |                                 |
| 600      |             |         |           |                                 |
| 700      |             |         |           |                                 |
| 800      |             |         |           |                                 |
| 900      |             |         |           |                                 |
| 1000     |             |         |           |                                 |
| 2000     |             |         |           |                                 |
| 3000     |             |         |           |                                 |
| 4000     |             |         |           |                                 |
| 5000     |             |         |           |                                 |
| 6000     |             |         |           |                                 |
| 8000     |             |         |           |                                 |
| 10000    |             |         |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Be-7**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 8,6E-01                   |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,2E+00                   |
| 4        | 8,2E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,8E+00                   |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 3,3E+00                   |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,7E+00   | 3,8E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 4,4E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 4,9E+00                   |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 5,4E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 5,9E+00                   |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 7,7E+00                   |
| 15       | 2,3E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 8,1E+00                   |
| 20       | 2,9E+00                          | 2,6E+00  | <b>2,3E+00</b> | 1,7E+00   | 1,8E+00   | 1,0E+01                   |
| 30       | 3,8E+00                          | 3,3E+00  | <b>2,7E+00</b> | 1,9E+00   | 1,8E+00   | 1,4E+01                   |
| 40       | 4,6E+00                          | 3,9E+00  | <b>3,0E+00</b> | 2,1E+00   | 1,8E+00   | 1,7E+01                   |
| 45       | 4,9E+00                          | 4,1E+00  | <b>3,2E+00</b> | 2,2E+00   | 1,8E+00   | 1,8E+01                   |
| 50       | 5,2E+00                          | 4,3E+00  | <b>3,3E+00</b> | 2,3E+00   | 1,8E+00   | 1,9E+01                   |
| 60       | 5,7E+00                          | 4,7E+00  | <b>3,6E+00</b> | 2,4E+00   | 1,8E+00   | 2,1E+01                   |
| 70       | 6,2E+00                          | 5,1E+00  | <b>3,8E+00</b> | 2,5E+00   | 1,8E+00   | 2,3E+01                   |
| 80       | 6,5E+00                          | 5,3E+00  | <b>3,9E+00</b> | 2,6E+00   | 1,9E+00   | 2,5E+01                   |
| 90       | 6,8E+00                          | 5,6E+00  | <b>4,1E+00</b> | 2,7E+00   | 1,9E+00   | 2,6E+01                   |
| 100      | 7,1E+00                          | 5,8E+00  | <b>4,2E+00</b> | 2,8E+00   |           | 2,7E+01                   |
| 120      | 7,5E+00                          | 6,1E+00  | <b>4,4E+00</b> | 2,9E+00   |           | 3,0E+01                   |
| 180      | 8,1E+00                          | 6,6E+00  | <b>4,7E+00</b> | 3,1E+00   |           | 3,3E+01                   |
| 200      | 8,3E+00                          | 6,7E+00  | <b>4,8E+00</b> | 3,1E+00   |           | 3,4E+01                   |
| 300      | 8,5E+00                          | 6,9E+00  | <b>4,9E+00</b> | 3,2E+00   |           | 3,5E+01                   |
| 360      | 8,6E+00                          | 6,9E+00  | <b>4,9E+00</b> | 3,2E+00   |           | 3,6E+01                   |
| 400      | 8,6E+00                          |          |                |           |           | 3,6E+01                   |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Be-7**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 8,6E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 6,7E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,2E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,8E+00                   |
| 5        | 1,0E+00                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 3,3E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 3,8E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,7E+00   | 4,4E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 4,9E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 5,4E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 5,9E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00   | 7,7E+00                   |
| 15       | 2,4E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00   | 8,1E+00                   |
| 20       | 3,0E+00                          | 2,6E+00  | <b>2,1E+00</b> | 1,5E+00   | 1,8E+00   | 1,0E+01                   |
| 30       | 4,0E+00                          | 3,3E+00  | <b>2,5E+00</b> | 1,7E+00   | 1,8E+00   | 1,4E+01                   |
| 40       | 4,8E+00                          | 3,9E+00  | <b>2,8E+00</b> | 1,9E+00   | 1,8E+00   | 1,7E+01                   |
| 45       | 5,2E+00                          | 4,2E+00  | <b>3,0E+00</b> | 1,9E+00   | 1,8E+00   | 1,8E+01                   |
| 50       | 5,5E+00                          | 4,4E+00  | <b>3,1E+00</b> | 2,0E+00   | 1,8E+00   | 1,9E+01                   |
| 60       | 6,1E+00                          | 4,8E+00  | <b>3,3E+00</b> | 2,1E+00   | 1,8E+00   | 2,1E+01                   |
| 70       | 6,6E+00                          | 5,2E+00  | <b>3,5E+00</b> | 2,2E+00   | 1,8E+00   | 2,3E+01                   |
| 80       | 7,0E+00                          | 5,5E+00  | <b>3,7E+00</b> | 2,2E+00   | 1,9E+00   | 2,5E+01                   |
| 90       | 7,4E+00                          | 5,7E+00  | <b>3,8E+00</b> | 2,3E+00   | 1,9E+00   | 2,6E+01                   |
| 100      | 7,7E+00                          | 6,0E+00  | <b>3,9E+00</b> | 2,4E+00   |           | 2,7E+01                   |
| 120      | 8,1E+00                          | 6,3E+00  | <b>4,1E+00</b> | 2,4E+00   |           | 3,0E+01                   |
| 180      | 9,0E+00                          | 6,9E+00  | <b>4,4E+00</b> | 2,6E+00   |           | 3,3E+01                   |
| 200      | 9,1E+00                          | 7,0E+00  | <b>4,4E+00</b> | 2,6E+00   |           | 3,4E+01                   |
| 300      | 9,5E+00                          | 7,3E+00  | <b>4,6E+00</b> | 2,7E+00   |           | 3,5E+01                   |
| 360      | 9,5E+00                          | 7,3E+00  | <b>4,6E+00</b> | 2,7E+00   |           | 3,6E+01                   |
| 400      | 9,6E+00                          | 7,3E+00  |                |           |           | 3,6E+01                   |
| 500      | 9,6E+00                          | 7,4E+00  |                |           |           |                           |
| 600      |                                  | 7,4E+00  |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**C-11**

| Zeit (d) | Inhalation (Absorptionsklasse) | Ingestion | direkte Aufnahme ins Blut |
|----------|--------------------------------|-----------|---------------------------|
|          | organisch                      |           |                           |
| 1        | 2,0E-02                        | 2,0E-02   | 2,0E-02                   |
| 2        | 2,0E-02                        | 2,0E-02   | 2,0E-02                   |
| 3        |                                |           |                           |
| 4        |                                |           |                           |
| 5        |                                |           |                           |
| 6        |                                |           |                           |
| 7        |                                |           |                           |
| 8        |                                |           |                           |
| 9        |                                |           |                           |
| 10       |                                |           |                           |
| 14       |                                |           |                           |
| 15       |                                |           |                           |
| 20       |                                |           |                           |
| 30       |                                |           |                           |
| 40       |                                |           |                           |
| 45       |                                |           |                           |
| 50       |                                |           |                           |
| 60       |                                |           |                           |
| 70       |                                |           |                           |
| 80       |                                |           |                           |
| 90       |                                |           |                           |
| 100      |                                |           |                           |
| 120      |                                |           |                           |
| 180      |                                |           |                           |
| 200      |                                |           |                           |
| 300      |                                |           |                           |
| 360      |                                |           |                           |
| 400      |                                |           |                           |
| 500      |                                |           |                           |
| 600      |                                |           |                           |
| 700      |                                |           |                           |
| 800      |                                |           |                           |
| 900      |                                |           |                           |
| 1000     |                                |           |                           |
| 2000     |                                |           |                           |
| 3000     |                                |           |                           |
| 4000     |                                |           |                           |
| 5000     |                                |           |                           |
| 6000     |                                |           |                           |
| 8000     |                                |           |                           |
| 10000    |                                |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**C-14**

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | organisch  |           |                                 |
| 1        | 1,6E-04    | 1,4E-04   | 1,6E-04                         |
| 2        | 7,1E-04    | 6,7E-04   | 7,1E-04                         |
| 3        | 1,3E-03    | 1,3E-03   | 1,3E-03                         |
| 4        | 1,9E-03    | 1,9E-03   | 1,9E-03                         |
| 5        | 2,5E-03    | 2,4E-03   | 2,5E-03                         |
| 6        | 3,1E-03    | 3,0E-03   | 3,1E-03                         |
| 7        | 3,6E-03    | 3,6E-03   | 3,6E-03                         |
| 8        | 4,2E-03    | 4,1E-03   | 4,2E-03                         |
| 9        | 4,7E-03    | 4,7E-03   | 4,7E-03                         |
| 10       | 5,3E-03    | 5,2E-03   | 5,3E-03                         |
| 14       | 7,3E-03    | 7,2E-03   | 7,3E-03                         |
| 15       | 7,8E-03    | 7,7E-03   | 7,8E-03                         |
| 20       | 1,0E-02    | 1,0E-02   | 1,0E-02                         |
| 30       | 1,4E-02    | 1,4E-02   | 1,4E-02                         |
| 40       | 1,8E-02    | 1,8E-02   | 1,8E-02                         |
| 45       | 1,9E-02    | 1,9E-02   | 1,9E-02                         |
| 50       | 2,1E-02    | 2,0E-02   | 2,1E-02                         |
| 60       | 2,3E-02    | 2,3E-02   | 2,3E-02                         |
| 70       | 2,5E-02    | 2,5E-02   | 2,5E-02                         |
| 80       | 2,7E-02    | 2,7E-02   | 2,7E-02                         |
| 90       | 2,8E-02    | 2,8E-02   | 2,8E-02                         |
| 100      | 3,0E-02    | 2,9E-02   | 3,0E-02                         |
| 120      | 3,1E-02    | 3,1E-02   | 3,1E-02                         |
| 180      | 3,4E-02    | 3,4E-02   | 3,4E-02                         |
| 200      | 3,5E-02    | 3,5E-02   | 3,5E-02                         |
| 300      | 3,6E-02    | 3,5E-02   | 3,6E-02                         |
| 360      | 3,6E-02    | 3,6E-02   | 3,6E-02                         |
| 400      |            | 3,6E-02   |                                 |
| 500      |            |           |                                 |
| 600      |            |           |                                 |
| 700      |            |           |                                 |
| 800      |            |           |                                 |
| 900      |            |           |                                 |
| 1000     |            |           |                                 |
| 2000     |            |           |                                 |
| 3000     |            |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**F-18**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 2        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**F-18**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 2        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**F-18**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 2        | 3,2E-02                          | 5,5E-02  | <b>8,6E-02</b>  | 8,1E-02   | 1,1E-01   | 1,1E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Na-22**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,5E-01  | <b>6,9E-01</b> | 6,4E-01   | 9,9E-01   | 9,9E-01                   |
| 2        | 5,1E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 1,9E+00                   |
| 3        | 7,3E-01                          | 1,1E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,8E+00   | 2,8E+00                   |
| 4        | 9,3E-01                          | 1,4E+00  | <b>2,1E+00</b> | 1,9E+00   | 3,6E+00   | 3,6E+00                   |
| 5        | 1,1E+00                          | 1,7E+00  | <b>2,4E+00</b> | 2,2E+00   | 4,3E+00   | 4,3E+00                   |
| 6        | 1,3E+00                          | 1,9E+00  | <b>2,8E+00</b> | 2,5E+00   | 5,0E+00   | 5,0E+00                   |
| 7        | 1,4E+00                          | 2,1E+00  | <b>3,1E+00</b> | 2,8E+00   | 5,7E+00   | 5,7E+00                   |
| 8        | 1,6E+00                          | 2,4E+00  | <b>3,4E+00</b> | 3,0E+00   | 6,3E+00   | 6,3E+00                   |
| 9        | 1,7E+00                          | 2,6E+00  | <b>3,6E+00</b> | 3,3E+00   | 6,9E+00   | 6,9E+00                   |
| 10       | 1,9E+00                          | 2,7E+00  | <b>3,9E+00</b> | 3,5E+00   | 7,4E+00   | 7,4E+00                   |
| 14       | 2,3E+00                          | 3,4E+00  | <b>4,8E+00</b> | 4,3E+00   | 9,2E+00   | 9,2E+00                   |
| 15       | 2,4E+00                          | 3,5E+00  | <b>4,9E+00</b> | 4,4E+00   | 9,5E+00   | 9,6E+00                   |
| 20       | 2,8E+00                          | 4,0E+00  | <b>5,7E+00</b> | 5,1E+00   | 1,1E+01   | 1,1E+01                   |
| 30       | 3,2E+00                          | 4,7E+00  | <b>6,6E+00</b> | 5,9E+00   | 1,3E+01   | 1,3E+01                   |
| 40       | 3,5E+00                          | 5,0E+00  | <b>7,0E+00</b> | 6,3E+00   | 1,4E+01   | 1,4E+01                   |
| 45       | 3,5E+00                          | 5,1E+00  | <b>7,1E+00</b> | 6,4E+00   | 1,4E+01   | 1,4E+01                   |
| 50       | 3,6E+00                          | 5,1E+00  | <b>7,2E+00</b> | 6,5E+00   | 1,4E+01   | 1,4E+01                   |
| 60       | 3,6E+00                          | 5,2E+00  | <b>7,4E+00</b> | 6,6E+00   | 1,5E+01   | 1,5E+01                   |
| 70       | 3,7E+00                          | 5,3E+00  | <b>7,4E+00</b> | 6,6E+00   | 1,5E+01   | 1,5E+01                   |
| 80       | 3,7E+00                          | 5,3E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,5E+01   | 1,5E+01                   |
| 90       | 3,7E+00                          | 5,3E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,5E+01   | 1,5E+01                   |
| 100      | 3,7E+00                          | 5,3E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,5E+01   | 1,5E+01                   |
| 120      | 3,7E+00                          | 5,4E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,5E+01   | 1,5E+01                   |
| 180      | 3,7E+00                          | 5,4E+00  | <b>7,6E+00</b> | 6,8E+00   | 1,5E+01   | 1,5E+01                   |
| 200      | 3,8E+00                          | 5,4E+00  | <b>7,6E+00</b> | 6,8E+00   | 1,5E+01   | 1,5E+01                   |
| 300      | 3,8E+00                          | 5,5E+00  | <b>7,7E+00</b> | 6,9E+00   | 1,5E+01   | 1,5E+01                   |
| 360      | 3,8E+00                          | 5,5E+00  | <b>7,8E+00</b> | 6,9E+00   | 1,5E+01   | 1,5E+01                   |
| 400      | 3,8E+00                          | 5,5E+00  | <b>7,8E+00</b> | 6,9E+00   | 1,5E+01   | 1,6E+01                   |
| 500      | 3,9E+00                          | 5,6E+00  | <b>7,8E+00</b> | 7,0E+00   | 1,6E+01   | 1,6E+01                   |
| 600      | 3,9E+00                          | 5,6E+00  | <b>7,9E+00</b> | 7,0E+00   | 1,6E+01   | 1,6E+01                   |
| 700      | 3,9E+00                          | 5,6E+00  | <b>7,9E+00</b> | 7,1E+00   |           |                           |
| 800      | 3,9E+00                          | 5,7E+00  | <b>7,9E+00</b> | 7,1E+00   |           |                           |
| 900      | 3,9E+00                          | 5,7E+00  | <b>8,0E+00</b> | 7,1E+00   |           |                           |
| 1000     | 3,9E+00                          |          | <b>8,0E+00</b> | 7,1E+00   |           |                           |
| 2000     | 4,0E+00                          |          | <b>8,1E+00</b> | 7,2E+00   |           |                           |
| 3000     | 4,0E+00                          |          | <b>8,1E+00</b> | 7,2E+00   |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Na-24**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,7E-01                          | 2,8E-01  | <b>4,3E-01</b>  | 4,0E-01   | 6,0E-01   | 6,0E-01                   |
| 2        | 2,2E-01                          | 3,5E-01  | <b>5,4E-01</b>  | 5,0E-01   | 7,8E-01   | 7,8E-01                   |
| 3        | 2,3E-01                          | 3,7E-01  | <b>5,7E-01</b>  | 5,2E-01   | 8,4E-01   | 8,4E-01                   |
| 4        | 2,3E-01                          | 3,8E-01  | <b>5,7E-01</b>  | 5,3E-01   | 8,6E-01   | 8,6E-01                   |
| 5        | 2,4E-01                          | 3,8E-01  | <b>5,8E-01</b>  | 5,3E-01   | 8,6E-01   | 8,6E-01                   |
| 6        | 2,4E-01                          |          | <b>5,8E-01</b>  |           | 8,7E-01   | 8,7E-01                   |
| 7        |                                  |          |                 |           | 8,7E-01   | 8,7E-01                   |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mg-28**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,8E-01                          | 3,0E-01  | <b>4,7E-01</b>  | 4,4E-01   | 6,4E-01   | 6,5E-01                   |
| 2        | 2,5E-01                          | 4,0E-01  | <b>6,1E-01</b>  | 5,7E-01   | 8,5E-01   | 9,2E-01                   |
| 3        | 2,8E-01                          | 4,4E-01  | <b>6,6E-01</b>  | 6,1E-01   | 9,3E-01   | 1,0E+00                   |
| 4        | 2,9E-01                          | 4,5E-01  | <b>6,8E-01</b>  | 6,3E-01   | 9,6E-01   | 1,1E+00                   |
| 5        | 3,0E-01                          | 4,6E-01  | <b>6,9E-01</b>  | 6,4E-01   | 9,7E-01   | 1,1E+00                   |
| 6        | 3,0E-01                          | 4,6E-01  | <b>7,0E-01</b>  | 6,4E-01   | 9,7E-01   |                           |
| 7        |                                  | 4,7E-01  | <b>7,0E-01</b>  |           | 9,7E-01   |                           |
| 8        |                                  | 4,7E-01  |                 |           | 9,8E-01   |                           |
| 9        |                                  |          |                 |           | 9,8E-01   |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mg-28**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,9E-01                          | 3,1E-01  | <b>4,7E-01</b> | 4,4E-01   | 6,4E-01   | 6,5E-01                   |
| 2        | 2,6E-01                          | 4,0E-01  | <b>6,1E-01</b> | 5,6E-01   | 8,5E-01   | 9,2E-01                   |
| 3        | 2,9E-01                          | 4,4E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,3E-01   | 1,0E+00                   |
| 4        | 3,0E-01                          | 4,5E-01  | <b>6,7E-01</b> | 6,1E-01   | 9,6E-01   | 1,1E+00                   |
| 5        | 3,1E-01                          | 4,6E-01  | <b>6,7E-01</b> | 6,2E-01   | 9,7E-01   | 1,1E+00                   |
| 6        | 3,1E-01                          | 4,6E-01  | <b>6,8E-01</b> | 6,2E-01   | 9,7E-01   |                           |
| 7        |                                  | 4,6E-01  | <b>6,8E-01</b> |           | 9,7E-01   |                           |
| 8        |                                  | 4,7E-01  |                |           | 9,8E-01   |                           |
| 9        |                                  | 4,7E-01  |                |           | 9,8E-01   |                           |
| 10       |                                  |          |                |           |           |                           |
| 14       |                                  |          |                |           |           |                           |
| 15       |                                  |          |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**P-32**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,4E-02                          | 1,9E-02        | <b>2,5E-02</b> | 2,2E-02         | 4,2E-02   | 6,1E-02                   |
| 2        | 3,6E-02                          | 4,9E-02        | <b>6,6E-02</b> | 5,8E-02         | 1,2E-01   | 1,5E-01                   |
| 3        | 4,8E-02                          | 6,5E-02        | <b>8,8E-02</b> | 7,7E-02         | 1,6E-01   | 2,0E-01                   |
| 4        | 5,5E-02                          | 7,5E-02        | <b>1,0E-01</b> | 9,0E-02         | 1,8E-01   | 2,3E-01                   |
| 5        | 6,1E-02                          | 8,3E-02        | <b>1,1E-01</b> | 9,9E-02         | 2,0E-01   | 2,6E-01                   |
| 6        | 6,5E-02                          | 8,9E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,2E-01   | 2,7E-01                   |
| 7        | 6,9E-02                          | 9,4E-02        | <b>1,3E-01</b> | 1,1E-01         | 2,3E-01   | 2,9E-01                   |
| 8        | 7,2E-02                          | 9,8E-02        | <b>1,3E-01</b> | 1,2E-01         | 2,4E-01   | 3,0E-01                   |
| 9        | 7,4E-02                          | 1,0E-01        | <b>1,4E-01</b> | 1,2E-01         | 2,5E-01   | 3,1E-01                   |
| 10       | 7,6E-02                          | 1,0E-01        | <b>1,4E-01</b> | 1,2E-01         | 2,5E-01   | 3,2E-01                   |
| 14       | 8,2E-02                          | 1,1E-01        | <b>1,5E-01</b> | 1,3E-01         | 2,7E-01   | 3,4E-01                   |
| 15       | 8,3E-02                          | 1,1E-01        | <b>1,5E-01</b> | 1,3E-01         | 2,8E-01   | 3,5E-01                   |
| 20       | 8,7E-02                          | 1,2E-01        | <b>1,6E-01</b> | 1,4E-01         | 2,9E-01   | 3,6E-01                   |
| 30       | 9,1E-02                          | 1,2E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,0E-01   | 3,8E-01                   |
| 40       | 9,3E-02                          | 1,3E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,1E-01   | 3,9E-01                   |
| 45       | 9,3E-02                          | 1,3E-01        |                |                 | 3,1E-01   | 3,9E-01                   |
| 50       | 9,4E-02                          |                |                |                 |           | 3,9E-01                   |
| 60       | 9,4E-02                          |                |                |                 |           | 3,9E-01                   |
| 70       |                                  |                |                |                 |           | 3,9E-01                   |
| 80       |                                  |                |                |                 |           | 3,9E-01                   |
| 90       |                                  |                |                |                 |           | 3,9E-01                   |
| 100      |                                  |                |                |                 |           | 4,0E-01                   |
| 120      |                                  |                |                |                 |           | 4,0E-01                   |
| 180      |                                  |                |                |                 |           |                           |
| 200      |                                  |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**P-32**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,8E-03                          | 9,9E-03        | <b>1,8E-02</b> | 1,7E-02         | 4,2E-02   | 6,1E-02                   |
| 2        | 1,1E-02                          | 2,8E-02        | <b>5,0E-02</b> | 4,7E-02         | 1,2E-01   | 1,5E-01                   |
| 3        | 1,6E-02                          | 3,8E-02        | <b>6,8E-02</b> | 6,4E-02         | 1,6E-01   | 2,0E-01                   |
| 4        | 1,9E-02                          | 4,5E-02        | <b>7,9E-02</b> | 7,5E-02         | 1,8E-01   | 2,3E-01                   |
| 5        | 2,1E-02                          | 5,0E-02        | <b>8,8E-02</b> | 8,3E-02         | 2,0E-01   | 2,6E-01                   |
| 6        | 2,3E-02                          | 5,4E-02        | <b>9,4E-02</b> | 8,9E-02         | 2,2E-01   | 2,7E-01                   |
| 7        | 2,4E-02                          | 5,7E-02        | <b>1,0E-01</b> | 9,3E-02         | 2,3E-01   | 2,9E-01                   |
| 8        | 2,6E-02                          | 6,0E-02        | <b>1,0E-01</b> | 9,7E-02         | 2,4E-01   | 3,0E-01                   |
| 9        | 2,7E-02                          | 6,2E-02        | <b>1,1E-01</b> | 1,0E-01         | 2,5E-01   | 3,1E-01                   |
| 10       | 2,8E-02                          | 6,4E-02        | <b>1,1E-01</b> | 1,0E-01         | 2,5E-01   | 3,2E-01                   |
| 14       | 3,1E-02                          | 7,0E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,7E-01   | 3,4E-01                   |
| 15       | 3,2E-02                          | 7,1E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,8E-01   | 3,5E-01                   |
| 20       | 3,5E-02                          | 7,5E-02        | <b>1,3E-01</b> | 1,2E-01         | 2,9E-01   | 3,6E-01                   |
| 30       | 3,8E-02                          | 8,0E-02        | <b>1,3E-01</b> | 1,2E-01         | 3,0E-01   | 3,8E-01                   |
| 40       | 4,0E-02                          | 8,2E-02        | <b>1,4E-01</b> | 1,3E-01         | 3,1E-01   | 3,9E-01                   |
| 45       | 4,0E-02                          | 8,3E-02        | <b>1,4E-01</b> | 1,3E-01         | 3,1E-01   | 3,9E-01                   |
| 50       | 4,1E-02                          | 8,3E-02        |                |                 |           | 3,9E-01                   |
| 60       | 4,1E-02                          | 8,4E-02        |                |                 |           | 3,9E-01                   |
| 70       | 4,1E-02                          | 8,4E-02        |                |                 |           | 3,9E-01                   |
| 80       | 4,1E-02                          |                |                |                 |           | 3,9E-01                   |
| 90       | 4,2E-02                          |                |                |                 |           | 3,9E-01                   |
| 100      | 4,2E-02                          |                |                |                 |           | 4,0E-01                   |
| 120      |                                  |                |                |                 |           | 4,0E-01                   |
| 180      |                                  |                |                |                 |           |                           |
| 200      |                                  |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**P-33**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,4E-02                          | 1,9E-02        | <b>2,5E-02</b> | 2,2E-02         | 4,2E-02   | 6,1E-02                   |
| 2        | 3,6E-02                          | 4,9E-02        | <b>6,6E-02</b> | 5,8E-02         | 1,2E-01   | 1,5E-01                   |
| 3        | 4,9E-02                          | 6,6E-02        | <b>9,0E-02</b> | 7,9E-02         | 1,6E-01   | 2,0E-01                   |
| 4        | 5,7E-02                          | 7,8E-02        | <b>1,1E-01</b> | 9,2E-02         | 1,9E-01   | 2,4E-01                   |
| 5        | 6,3E-02                          | 8,6E-02        | <b>1,2E-01</b> | 1,0E-01         | 2,1E-01   | 2,6E-01                   |
| 6        | 6,8E-02                          | 9,3E-02        | <b>1,3E-01</b> | 1,1E-01         | 2,3E-01   | 2,9E-01                   |
| 7        | 7,2E-02                          | 9,8E-02        | <b>1,3E-01</b> | 1,2E-01         | 2,4E-01   | 3,0E-01                   |
| 8        | 7,5E-02                          | 1,0E-01        | <b>1,4E-01</b> | 1,2E-01         | 2,5E-01   | 3,1E-01                   |
| 9        | 7,8E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,3E-01         | 2,6E-01   | 3,3E-01                   |
| 10       | 8,0E-02                          | 1,1E-01        | <b>1,5E-01</b> | 1,3E-01         | 2,7E-01   | 3,4E-01                   |
| 14       | 8,7E-02                          | 1,2E-01        | <b>1,6E-01</b> | 1,4E-01         | 2,9E-01   | 3,7E-01                   |
| 15       | 8,9E-02                          | 1,2E-01        | <b>1,6E-01</b> | 1,4E-01         | 3,0E-01   | 3,7E-01                   |
| 20       | 9,5E-02                          | 1,3E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,2E-01   | 4,0E-01                   |
| 30       | 1,0E-01                          | 1,4E-01        | <b>1,9E-01</b> | 1,7E-01         | 3,4E-01   | 4,3E-01                   |
| 40       | 1,1E-01                          | 1,4E-01        | <b>1,9E-01</b> | 1,7E-01         | 3,5E-01   | 4,4E-01                   |
| 45       | 1,1E-01                          | 1,5E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,6E-01   | 4,5E-01                   |
| 50       |                                  | 1,5E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,6E-01   | 4,5E-01                   |
| 60       |                                  |                |                | 1,8E-01         | 3,6E-01   | 4,5E-01                   |
| 70       |                                  |                |                | 1,8E-01         | 3,7E-01   | 4,6E-01                   |
| 80       |                                  |                |                |                 | 3,7E-01   | 4,6E-01                   |
| 90       |                                  |                |                |                 |           |                           |
| 100      |                                  |                |                |                 |           |                           |
| 120      |                                  |                |                |                 |           |                           |
| 180      |                                  |                |                |                 |           |                           |
| 200      |                                  |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**P-33**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,8E-03                          | 1,0E-02        | <b>1,8E-02</b> | 1,7E-02         | 4,2E-02   | 6,1E-02                   |
| 2        | 1,1E-02                          | 2,9E-02        | <b>5,1E-02</b> | 4,8E-02         | 1,2E-01   | 1,5E-01                   |
| 3        | 1,6E-02                          | 3,9E-02        | <b>6,9E-02</b> | 6,5E-02         | 1,6E-01   | 2,0E-01                   |
| 4        | 1,9E-02                          | 4,7E-02        | <b>8,2E-02</b> | 7,7E-02         | 1,9E-01   | 2,4E-01                   |
| 5        | 2,2E-02                          | 5,2E-02        | <b>9,1E-02</b> | 8,5E-02         | 2,1E-01   | 2,6E-01                   |
| 6        | 2,4E-02                          | 5,6E-02        | <b>9,8E-02</b> | 9,2E-02         | 2,3E-01   | 2,9E-01                   |
| 7        | 2,6E-02                          | 6,0E-02        | <b>1,0E-01</b> | 9,8E-02         | 2,4E-01   | 3,0E-01                   |
| 8        | 2,7E-02                          | 6,3E-02        | <b>1,1E-01</b> | 1,0E-01         | 2,5E-01   | 3,1E-01                   |
| 9        | 2,9E-02                          | 6,5E-02        | <b>1,1E-01</b> | 1,1E-01         | 2,6E-01   | 3,3E-01                   |
| 10       | 3,0E-02                          | 6,8E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,7E-01   | 3,4E-01                   |
| 14       | 3,4E-02                          | 7,5E-02        | <b>1,3E-01</b> | 1,2E-01         | 2,9E-01   | 3,7E-01                   |
| 15       | 3,5E-02                          | 7,6E-02        | <b>1,3E-01</b> | 1,2E-01         | 3,0E-01   | 3,7E-01                   |
| 20       | 3,9E-02                          | 8,3E-02        | <b>1,4E-01</b> | 1,3E-01         | 3,2E-01   | 4,0E-01                   |
| 30       | 4,4E-02                          | 9,1E-02        | <b>1,5E-01</b> | 1,4E-01         | 3,4E-01   | 4,3E-01                   |
| 40       | 4,8E-02                          | 9,5E-02        | <b>1,6E-01</b> | 1,5E-01         | 3,5E-01   | 4,4E-01                   |
| 45       | 4,9E-02                          | 9,7E-02        | <b>1,6E-01</b> | 1,5E-01         | 3,6E-01   | 4,5E-01                   |
| 50       | 5,0E-02                          | 9,8E-02        | <b>1,6E-01</b> |                 | 3,6E-01   | 4,5E-01                   |
| 60       | 5,2E-02                          | 1,0E-01        | <b>1,6E-01</b> |                 | 3,6E-01   | 4,5E-01                   |
| 70       | 5,3E-02                          | 1,0E-01        | <b>1,6E-01</b> |                 | 3,7E-01   | 4,6E-01                   |
| 80       | 5,3E-02                          |                | <b>1,6E-01</b> |                 | 3,7E-01   | 4,6E-01                   |
| 90       | 5,4E-02                          |                | <b>1,6E-01</b> |                 |           |                           |
| 100      | 5,4E-02                          |                | <b>1,7E-01</b> |                 |           |                           |
| 120      | 5,4E-02                          |                | <b>1,7E-01</b> |                 |           |                           |
| 180      | 5,5E-02                          |                |                |                 |           |                           |
| 200      | 5,5E-02                          |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**S-35**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,8$ | direkte<br>Aufnahme<br>ins Blut<br>(anorg.) |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |   |
| 1        | 9,8E-02                          | 1,3E-01        | <b>1,8E-01</b> | 1,5E-01         | 3,0E-01                | 4,2E-01                                     |
| 2        | 1,7E-01                          | 2,3E-01        | <b>3,1E-01</b> | 2,7E-01         | 5,6E-01                | 7,0E-01                                     |
| 3        | 1,7E-01                          | 2,4E-01        | <b>3,2E-01</b> | 2,8E-01         | 5,8E-01                | 7,3E-01                                     |
| 4        | 1,7E-01                          | 2,4E-01        | <b>3,2E-01</b> | 2,8E-01         | 5,8E-01                | 7,3E-01                                     |
| 5        | 1,8E-01                          | 2,4E-01        | <b>3,2E-01</b> | 2,9E-01         | 5,9E-01                | 7,3E-01                                     |
| 6        | 1,8E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 5,9E-01                | 7,4E-01                                     |
| 7        | 1,8E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 5,9E-01                | 7,4E-01                                     |
| 8        | 1,8E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,0E-01                | 7,5E-01                                     |
| 9        | 1,8E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,0E-01                | 7,5E-01                                     |
| 10       | 1,8E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,0E-01                | 7,5E-01                                     |
| 14       | 1,8E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,1E-01                | 7,6E-01                                     |
| 15       | 1,8E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,1E-01                | 7,7E-01                                     |
| 20       | 1,9E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,2E-01                | 7,8E-01                                     |
| 30       | 1,9E-01                          | 2,6E-01        | <b>3,5E-01</b> | 3,1E-01         | 6,4E-01                | 8,0E-01                                     |
| 40       | 1,9E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,1E-01         | 6,4E-01                | 8,1E-01                                     |
| 45       | 1,9E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,1E-01         | 6,5E-01                | 8,1E-01                                     |
| 50       | 1,9E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,2E-01         | 6,5E-01                | 8,1E-01                                     |
| 60       | 2,0E-01                          | 2,7E-01        | <b>3,6E-01</b> | 3,2E-01         | 6,5E-01                | 8,2E-01                                     |
| 70       | 2,0E-01                          | 2,7E-01        | <b>3,6E-01</b> |                 | 6,6E-01                | 8,2E-01                                     |
| 80       |                                  |                | <b>3,6E-01</b> |                 | 6,6E-01                | 8,2E-01                                     |
| 90       |                                  |                | <b>3,6E-01</b> |                 |                        | 8,3E-01                                     |
| 100      |                                  |                | <b>3,6E-01</b> |                 |                        | 8,3E-01                                     |
| 120      |                                  |                | <b>3,6E-01</b> |                 |                        |   |
| 180      |                                  |                | <b>3,7E-01</b> |                 |                        |   |
| 200      |                                  |                | <b>3,7E-01</b> |                 |                        |   |
| 300      |                                  |                |                |                 |                        |   |
| 360      |                                  |                |                |                 |                        |   |
| 400      |                                  |                |                |                 |                        |   |
| 500      |                                  |                |                |                 |                        |   |
| 600      |                                  |                |                |                 |                        |   |
| 700      |                                  |                |                |                 |                        |   |
| 800      |                                  |                |                |                 |                        |   |
| 900      |                                  |                |                |                 |                        |   |
| 1000     |                                  |                |                |                 |                        |   |
| 2000     |                                  |                |                |                 |                        |   |
| 3000     |                                  |                |                |                 |                        |   |
| 4000     |                                  |                |                |                 |                        |   |
| 5000     |                                  |                |                |                 |                        |   |
| 6000     |                                  |                |                |                 |                        |   |
| 8000     |                                  |                |                |                 |                        |   |
| 10000    |                                  |                |                |                 |                        |   |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**S-35**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_i=0,1$ | direkte<br>Aufnahme<br>ins Blut<br>(anorg.) |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |   |
| 1        | 2,7E-02                          | 7,1E-02        | <b>1,3E-01</b> | 1,2E-01         | 3,0E-02                | 4,2E-01                                     |
| 2        | 5,5E-02                          | 1,4E-01        | <b>2,4E-01</b> | 2,3E-01         | 6,8E-02                | 7,0E-01                                     |
| 3        | 5,9E-02                          | 1,4E-01        | <b>2,5E-01</b> | 2,4E-01         | 7,2E-02                | 7,3E-01                                     |
| 4        | 6,1E-02                          | 1,5E-01        | <b>2,5E-01</b> | 2,4E-01         | 7,3E-02                | 7,3E-01                                     |
| 5        | 6,3E-02                          | 1,5E-01        | <b>2,5E-01</b> | 2,4E-01         | 7,3E-02                | 7,3E-01                                     |
| 6        | 6,4E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,4E-01         | 7,4E-02                | 7,4E-01                                     |
| 7        | 6,6E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,4E-01         | 7,4E-02                | 7,4E-01                                     |
| 8        | 6,7E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,4E-01         | 7,4E-02                | 7,5E-01                                     |
| 9        | 6,9E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,4E-01         | 7,5E-02                | 7,5E-01                                     |
| 10       | 7,0E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,5E-01         | 7,5E-02                | 7,5E-01                                     |
| 14       | 7,5E-02                          | 1,6E-01        | <b>2,7E-01</b> | 2,5E-01         | 7,6E-02                | 7,6E-01                                     |
| 15       | 7,6E-02                          | 1,6E-01        | <b>2,7E-01</b> | 2,5E-01         | 7,7E-02                | 7,7E-01                                     |
| 20       | 8,2E-02                          | 1,7E-01        | <b>2,8E-01</b> | 2,6E-01         | 7,8E-02                | 7,8E-01                                     |
| 30       | 9,1E-02                          | 1,8E-01        | <b>2,9E-01</b> | 2,6E-01         | 7,9E-02                | 8,0E-01                                     |
| 40       | 9,8E-02                          | 1,8E-01        | <b>2,9E-01</b> | 2,7E-01         | 8,1E-02                | 8,1E-01                                     |
| 45       | 1,0E-01                          | 1,8E-01        | <b>2,9E-01</b> | 2,7E-01         | 8,1E-02                | 8,1E-01                                     |
| 50       | 1,0E-01                          | 1,9E-01        | <b>3,0E-01</b> | 2,7E-01         | 8,1E-02                | 8,1E-01                                     |
| 60       | 1,1E-01                          | 1,9E-01        | <b>3,0E-01</b> | 2,7E-01         | 8,2E-02                | 8,2E-01                                     |
| 70       | 1,1E-01                          | 1,9E-01        | <b>3,0E-01</b> | 2,8E-01         | 8,2E-02                | 8,2E-01                                     |
| 80       | 1,1E-01                          | 2,0E-01        | <b>3,0E-01</b> | 2,8E-01         | 8,2E-02                | 8,2E-01                                     |
| 90       | 1,2E-01                          | 2,0E-01        | <b>3,0E-01</b> |                 | 8,2E-02                | 8,3E-01                                     |
| 100      | 1,2E-01                          | 2,0E-01        | <b>3,1E-01</b> |                 | 8,3E-02                | 8,3E-01                                     |
| 120      | 1,2E-01                          | 2,0E-01        | <b>3,1E-01</b> |                 | 8,3E-02                |   |
| 180      | 1,3E-01                          | 2,0E-01        |                |                 |                        |   |
| 200      | 1,3E-01                          | 2,1E-01        |                |                 |                        |   |
| 300      |                                  | 2,1E-01        |                |                 |                        |   |
| 360      |                                  |                |                |                 |                        |   |
| 400      |                                  |                |                |                 |                        |   |
| 500      |                                  |                |                |                 |                        |   |
| 600      |                                  |                |                |                 |                        |   |
| 700      |                                  |                |                |                 |                        |   |
| 800      |                                  |                |                |                 |                        |   |
| 900      |                                  |                |                |                 |                        |   |
| 1000     |                                  |                |                |                 |                        |   |
| 2000     |                                  |                |                |                 |                        |   |
| 3000     |                                  |                |                |                 |                        |   |
| 4000     |                                  |                |                |                 |                        |   |
| 5000     |                                  |                |                |                 |                        |   |
| 6000     |                                  |                |                |                 |                        |   |
| 8000     |                                  |                |                |                 |                        |   |
| 10000    |                                  |                |                |                 |                        |   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**S-35**

| Zeit (d) | Inhalation (Gase und Dämpfe) |                 |         | Ingestion<br>$f_1=1,0$ | direkte<br>Aufnahme<br>ins Blut<br>(org.) |
|----------|------------------------------|-----------------|---------|------------------------|---|
|          | CS <sub>2</sub>              | SO <sub>2</sub> | Dampf   |                        |   |
| 1        | 7,9E-04                      | 3,1E-01         | 4,2E-01 | 8,3E-04                | 9,4E-04                                   |
| 2        | 4,1E-03                      | 5,2E-01         | 7,0E-01 | 4,5E-03                | 4,7E-03                                   |
| 3        | 7,9E-03                      | 5,4E-01         | 7,3E-01 | 8,7E-03                | 9,0E-03                                   |
| 4        | 1,2E-02                      | 5,5E-01         | 7,3E-01 | 1,3E-02                | 1,3E-02                                   |
| 5        | 1,5E-02                      | 5,5E-01         | 7,3E-01 | 1,7E-02                | 1,8E-02                                   |
| 6        | 1,9E-02                      | 5,5E-01         | 7,4E-01 | 2,1E-02                | 2,2E-02                                   |
| 7        | 2,3E-02                      | 5,5E-01         | 7,4E-01 | 2,5E-02                | 2,6E-02                                   |
| 8        | 2,6E-02                      | 5,6E-01         | 7,5E-01 | 2,9E-02                | 3,0E-02                                   |
| 9        | 3,0E-02                      | 5,6E-01         | 7,5E-01 | 3,3E-02                | 3,4E-02                                   |
| 10       | 3,3E-02                      | 5,6E-01         | 7,5E-01 | 3,7E-02                | 3,8E-02                                   |
| 14       | 4,7E-02                      | 5,7E-01         | 7,6E-01 | 5,3E-02                | 5,3E-02                                   |
| 15       | 5,0E-02                      | 5,7E-01         | 7,7E-01 | 5,6E-02                | 5,7E-02                                   |
| 20       | 6,6E-02                      | 5,8E-01         | 7,8E-01 | 7,4E-02                | 7,5E-02                                   |
| 30       | 9,5E-02                      | 5,9E-01         | 8,0E-01 | 1,1E-01                | 1,1E-01                                   |
| 40       | 1,2E-01                      | 6,0E-01         | 8,1E-01 | 1,3E-01                | 1,4E-01                                   |
| 45       | 1,3E-01                      | 6,1E-01         | 8,1E-01 | 1,5E-01                | 1,5E-01                                   |
| 50       | 1,4E-01                      | 6,1E-01         | 8,1E-01 | 1,6E-01                | 1,6E-01                                   |
| 60       | 1,6E-01                      | 6,1E-01         | 8,2E-01 | 1,8E-01                | 1,8E-01                                   |
| 70       | 1,8E-01                      | 6,1E-01         | 8,2E-01 | 2,0E-01                | 2,0E-01                                   |
| 80       | 1,9E-01                      | 6,2E-01         | 8,2E-01 | 2,2E-01                | 2,2E-01                                   |
| 90       | 2,1E-01                      | 6,2E-01         | 8,3E-01 | 2,3E-01                | 2,4E-01                                   |
| 100      | 2,2E-01                      |                 | 8,3E-01 | 2,5E-01                | 2,5E-01                                   |
| 120      | 2,4E-01                      |                 |         | 2,7E-01                | 2,7E-01                                   |
| 180      | 2,7E-01                      |                 |         | 3,1E-01                | 3,1E-01                                   |
| 200      | 2,8E-01                      |                 |         | 3,1E-01                | 3,2E-01                                   |
| 300      | 3,0E-01                      |                 |         | 3,3E-01                | 3,4E-01                                   |
| 360      | 3,0E-01                      |                 |         | 3,4E-01                | 3,4E-01                                   |
| 400      |                              |                 |         | 3,4E-01                |   |
| 500      |                              |                 |         |                        |   |
| 600      |                              |                 |         |                        |   |
| 700      |                              |                 |         |                        |   |
| 800      |                              |                 |         |                        |   |
| 900      |                              |                 |         |                        |   |
| 1000     |                              |                 |         |                        |   |
| 2000     |                              |                 |         |                        |   |
| 3000     |                              |                 |         |                        |   |
| 4000     |                              |                 |         |                        |   |
| 5000     |                              |                 |         |                        |   |
| 6000     |                              |                 |         |                        |   |
| 8000     |                              |                 |         |                        |   |
| 10000    |                              |                 |         |                        |   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**CI-36**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,4E-03                          | 4,7E-03        | <b>6,4E-03</b>                 | 5,7E-03         | 1,3E-02   | 1,4E-02                   |
| 2        | 1,7E-02                          | 2,4E-02        | <b>3,3E-02</b>                 | 2,9E-02         | 6,7E-02   | 7,0E-02                   |
| 3        | 3,2E-02                          | 4,5E-02        | <b>6,2E-02</b>                 | 5,5E-02         | 1,3E-01   | 1,3E-01                   |
| 4        | 4,6E-02                          | 6,5E-02        | <b>9,0E-02</b>                 | 7,9E-02         | 1,8E-01   | 1,9E-01                   |
| 5        | 5,9E-02                          | 8,3E-02        | <b>1,2E-01</b>                 | 1,0E-01         | 2,4E-01   | 2,4E-01                   |
| 6        | 7,1E-02                          | 1,0E-01        | <b>1,4E-01</b>                 | 1,2E-01         | 2,9E-01   | 2,9E-01                   |
| 7        | 8,3E-02                          | 1,2E-01        | <b>1,6E-01</b>                 | 1,4E-01         | 3,3E-01   | 3,4E-01                   |
| 8        | 9,3E-02                          | 1,3E-01        | <b>1,8E-01</b>                 | 1,6E-01         | 3,8E-01   | 3,8E-01                   |
| 9        | 1,0E-01                          | 1,5E-01        | <b>2,0E-01</b>                 | 1,8E-01         | 4,2E-01   | 4,2E-01                   |
| 10       | 1,1E-01                          | 1,6E-01        | <b>2,2E-01</b>                 | 2,0E-01         | 4,6E-01   | 4,6E-01                   |
| 14       | 1,4E-01                          | 2,0E-01        | <b>2,8E-01</b>                 | 2,5E-01         | 5,8E-01   | 5,9E-01                   |
| 15       | 1,5E-01                          | 2,1E-01        | <b>2,9E-01</b>                 | 2,6E-01         | 6,1E-01   | 6,2E-01                   |
| 20       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b>                 | 3,1E-01         | 7,2E-01   | 7,3E-01                   |
| 30       | 2,1E-01                          | 3,0E-01        | <b>4,1E-01</b>                 | 3,6E-01         | 8,5E-01   | 8,6E-01                   |
| 40       | 2,3E-01                          | 3,2E-01        | <b>4,4E-01</b>                 | 3,9E-01         | 9,1E-01   | 9,2E-01                   |
| 45       | 2,3E-01                          | 3,3E-01        | <b>4,5E-01</b>                 | 4,0E-01         | 9,3E-01   | 9,4E-01                   |
| 50       | 2,3E-01                          | 3,3E-01        | <b>4,6E-01</b>                 | 4,1E-01         | 9,5E-01   | 9,6E-01                   |
| 60       | 2,4E-01                          | 3,4E-01        | <b>4,7E-01</b>                 | 4,1E-01         | 9,6E-01   | 9,7E-01                   |
| 70       | 2,4E-01                          | 3,4E-01        | <b>4,7E-01</b>                 | 4,2E-01         | 9,7E-01   | 9,8E-01                   |
| 80       |                                  |                |                                | 4,2E-01         | 9,8E-01   | 9,9E-01                   |
| 90       |                                  |                |                                |                 | 9,8E-01   | 9,9E-01                   |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**CI-36**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 2,9E-03        | <b>5,2E-03</b> | 4,9E-03         | 1,3E-02   | 1,4E-02                   |
| 2        | 5,9E-03                          | 1,6E-02        | <b>2,8E-02</b> | 2,6E-02         | 6,7E-02   | 7,0E-02                   |
| 3        | 1,2E-02                          | 3,0E-02        | <b>5,4E-02</b> | 5,1E-02         | 1,3E-01   | 1,3E-01                   |
| 4        | 1,7E-02                          | 4,4E-02        | <b>7,8E-02</b> | 7,4E-02         | 1,8E-01   | 1,9E-01                   |
| 5        | 2,3E-02                          | 5,7E-02        | <b>1,0E-01</b> | 9,5E-02         | 2,4E-01   | 2,4E-01                   |
| 6        | 2,8E-02                          | 6,9E-02        | <b>1,2E-01</b> | 1,2E-01         | 2,9E-01   | 2,9E-01                   |
| 7        | 3,3E-02                          | 8,1E-02        | <b>1,4E-01</b> | 1,3E-01         | 3,3E-01   | 3,4E-01                   |
| 8        | 3,8E-02                          | 9,2E-02        | <b>1,6E-01</b> | 1,5E-01         | 3,8E-01   | 3,8E-01                   |
| 9        | 4,2E-02                          | 1,0E-01        | <b>1,8E-01</b> | 1,7E-01         | 4,2E-01   | 4,2E-01                   |
| 10       | 4,7E-02                          | 1,1E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,6E-01   | 4,6E-01                   |
| 14       | 6,2E-02                          | 1,4E-01        | <b>2,5E-01</b> | 2,3E-01         | 5,8E-01   | 5,9E-01                   |
| 15       | 6,6E-02                          | 1,5E-01        | <b>2,6E-01</b> | 2,5E-01         | 6,1E-01   | 6,2E-01                   |
| 20       | 8,2E-02                          | 1,8E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,2E-01   | 7,3E-01                   |
| 30       | 1,1E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 8,5E-01   | 8,6E-01                   |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,0E-01</b> | 3,7E-01         | 9,1E-01   | 9,2E-01                   |
| 45       | 1,3E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,8E-01         | 9,3E-01   | 9,4E-01                   |
| 50       | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> | 3,9E-01         | 9,5E-01   | 9,6E-01                   |
| 60       | 1,5E-01                          | 2,7E-01        | <b>4,3E-01</b> | 4,0E-01         | 9,6E-01   | 9,7E-01                   |
| 70       | 1,6E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,0E-01         | 9,7E-01   | 9,8E-01                   |
| 80       | 1,7E-01                          | 2,9E-01        | <b>4,4E-01</b> | 4,0E-01         | 9,8E-01   | 9,9E-01                   |
| 90       | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         | 9,8E-01   | 9,9E-01                   |
| 100      | 1,8E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |           |                           |
| 120      | 1,9E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |           |                           |
| 180      | 2,0E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,1E-01         |           |                           |
| 200      | 2,1E-01                          | 3,2E-01        | <b>4,6E-01</b> | 4,1E-01         |           |                           |
| 300      | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> | 4,2E-01         |           |                           |
| 360      | 2,3E-01                          | 3,3E-01        | <b>4,7E-01</b> | 4,2E-01         |           |                           |
| 400      | 2,3E-01                          | 3,3E-01        |                |                 |           |                           |
| 500      | 2,4E-01                          | 3,4E-01        |                |                 |           |                           |
| 600      | 2,4E-01                          | 3,4E-01        |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**K-42**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,5E-01                          | 2,5E-01  | <b>3,9E-01</b>  | 3,7E-01   | 5,5E-01   | 5,5E-01                   |
| 2        | 1,9E-01                          | 3,1E-01  | <b>4,7E-01</b>  | 4,4E-01   | 6,9E-01   | 6,9E-01                   |
| 3        | 2,0E-01                          | 3,2E-01  | <b>4,9E-01</b>  | 4,6E-01   | 7,2E-01   | 7,3E-01                   |
| 4        | 2,0E-01                          | 3,3E-01  | <b>5,0E-01</b>  | 4,6E-01   | 7,3E-01   | 7,4E-01                   |
| 5        |                                  | 3,3E-01  | <b>5,0E-01</b>  |           | 7,4E-01   | 7,4E-01                   |
| 6        |                                  |          |                 |           | 7,4E-01   |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ca-45**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,7E-04                          | 3,2E-04        | <b>5,1E-04</b> | 4,7E-04         | 9,8E-04   | 5,2E-03                   |
| 2        | 1,1E-03                          | 2,2E-03        | <b>3,7E-03</b> | 3,4E-03         | 7,4E-03   | 2,9E-02                   |
| 3        | 2,4E-03                          | 4,8E-03        | <b>7,9E-03</b> | 7,3E-03         | 1,6E-02   | 5,8E-02                   |
| 4        | 3,5E-03                          | 7,0E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,3E-02   | 8,2E-02                   |
| 5        | 4,4E-03                          | 8,8E-03        | <b>1,4E-02</b> | 1,3E-02         | 2,9E-02   | 1,0E-01                   |
| 6        | 5,2E-03                          | 1,0E-02        | <b>1,7E-02</b> | 1,5E-02         | 3,4E-02   | 1,2E-01                   |
| 7        | 5,8E-03                          | 1,1E-02        | <b>1,8E-02</b> | 1,7E-02         | 3,7E-02   | 1,3E-01                   |
| 8        | 6,4E-03                          | 1,2E-02        | <b>2,0E-02</b> | 1,8E-02         | 4,0E-02   | 1,4E-01                   |
| 9        | 6,9E-03                          | 1,3E-02        | <b>2,1E-02</b> | 1,9E-02         | 4,2E-02   | 1,4E-01                   |
| 10       | 7,3E-03                          | 1,4E-02        | <b>2,2E-02</b> | 2,0E-02         | 4,4E-02   | 1,5E-01                   |
| 14       | 8,7E-03                          | 1,6E-02        | <b>2,5E-02</b> | 2,3E-02         | 5,0E-02   | 1,7E-01                   |
| 15       | 9,1E-03                          | 1,6E-02        | <b>2,6E-02</b> | 2,4E-02         | 5,1E-02   | 1,7E-01                   |
| 20       | 1,1E-02                          | 1,8E-02        | <b>2,8E-02</b> | 2,6E-02         | 5,6E-02   | 1,9E-01                   |
| 30       | 1,3E-02                          | 2,1E-02        | <b>3,2E-02</b> | 2,9E-02         | 6,2E-02   | 2,1E-01                   |
| 40       | 1,5E-02                          | 2,3E-02        | <b>3,4E-02</b> | 3,1E-02         | 6,5E-02   | 2,2E-01                   |
| 45       | 1,6E-02                          | 2,4E-02        | <b>3,5E-02</b> | 3,1E-02         | 6,7E-02   | 2,2E-01                   |
| 50       | 1,7E-02                          | 2,5E-02        | <b>3,6E-02</b> | 3,2E-02         | 6,8E-02   | 2,3E-01                   |
| 60       | 1,8E-02                          | 2,6E-02        | <b>3,7E-02</b> | 3,3E-02         | 7,0E-02   | 2,3E-01                   |
| 70       | 1,9E-02                          | 2,7E-02        | <b>3,8E-02</b> | 3,4E-02         | 7,1E-02   | 2,4E-01                   |
| 80       | 2,0E-02                          | 2,8E-02        | <b>3,9E-02</b> | 3,4E-02         | 7,2E-02   | 2,4E-01                   |
| 90       | 2,1E-02                          | 2,9E-02        | <b>4,0E-02</b> | 3,5E-02         | 7,3E-02   | 2,4E-01                   |
| 100      | 2,2E-02                          | 3,0E-02        | <b>4,0E-02</b> | 3,5E-02         | 7,3E-02   | 2,4E-01                   |
| 120      | 2,3E-02                          | 3,1E-02        | <b>4,1E-02</b> | 3,6E-02         | 7,4E-02   | 2,5E-01                   |
| 180      | 2,6E-02                          | 3,3E-02        | <b>4,3E-02</b> | 3,7E-02         | 7,6E-02   | 2,6E-01                   |
| 200      | 2,7E-02                          | 3,4E-02        | <b>4,4E-02</b> | 3,8E-02         | 7,7E-02   | 2,6E-01                   |
| 300      | 2,8E-02                          | 3,5E-02        | <b>4,5E-02</b> | 3,8E-02         | 7,8E-02   |                           |
| 360      | 2,9E-02                          | 3,6E-02        | <b>4,5E-02</b> | 3,9E-02         | 7,8E-02   |                           |
| 400      | 2,9E-02                          | 3,6E-02        | <b>4,5E-02</b> | 3,9E-02         | 7,8E-02   |                           |
| 500      | 3,0E-02                          | 3,6E-02        | <b>4,5E-02</b> |                 | 7,9E-02   |                           |
| 600      | 3,0E-02                          | 3,6E-02        | <b>4,6E-02</b> |                 | 7,9E-02   |                           |
| 700      |                                  | 3,7E-02        | <b>4,6E-02</b> |                 |           |                           |
| 800      |                                  | 3,7E-02        |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ca-47**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,1E-01  | <b>6,2E-01</b> | 5,8E-01   | 8,6E-01   | 9,2E-01                   |
| 2        | 4,4E-01                          | 6,5E-01  | <b>9,5E-01</b> | 8,7E-01   | 1,4E+00   | 1,7E+00                   |
| 3        | 5,8E-01                          | 8,1E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,7E+00   | 2,3E+00                   |
| 4        | 6,9E-01                          | 9,3E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,8E+00   | 2,8E+00                   |
| 5        | 7,9E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,2E+00   | 2,0E+00   | 3,2E+00                   |
| 6        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,3E+00   | 2,1E+00   | 3,6E+00                   |
| 7        | 9,3E-01                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,2E+00   | 3,9E+00                   |
| 8        | 9,9E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,2E+00   | 4,1E+00                   |
| 9        | 1,0E+00                          | 1,3E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,3E+00   | 4,3E+00                   |
| 10       | 1,1E+00                          | 1,3E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,4E+00   | 4,5E+00                   |
| 14       | 1,2E+00                          | 1,4E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,5E+00   | 4,9E+00                   |
| 15       | 1,2E+00                          | 1,4E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,5E+00   | 5,0E+00                   |
| 20       | 1,3E+00                          | 1,5E+00  | <b>1,8E+00</b> | 1,6E+00   | 2,6E+00   | 5,2E+00                   |
| 30       | 1,3E+00                          | 1,5E+00  | <b>1,8E+00</b> | 1,6E+00   | 2,6E+00   | 5,4E+00                   |
| 40       |                                  |          | <b>1,9E+00</b> |           |           | 5,4E+00                   |
| 45       |                                  |          | <b>1,9E+00</b> |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sc-46**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,8E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,9E+00                   |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,9E+00                   |
| 5        | 1,0E+00                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,8E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 5,7E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,7E+00   | 6,6E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 7,5E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 8,4E+00                   |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,7E+00   | 9,2E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,7E+00   | 1,3E+01                   |
| 15       | 2,5E+00                          | 2,2E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,7E+00   | 1,3E+01                   |
| 20       | 3,1E+00                          | 2,7E+00  | <b>2,2E+00</b> | 1,5E+00   | 1,7E+00   | 1,7E+01                   |
| 30       | 4,2E+00                          | 3,5E+00  | <b>2,6E+00</b> | 1,7E+00   | 1,7E+00   | 2,5E+01                   |
| 40       | 5,2E+00                          | 4,2E+00  | <b>3,0E+00</b> | 1,9E+00   | 1,7E+00   | 3,1E+01                   |
| 45       | 5,7E+00                          | 4,5E+00  | <b>3,1E+00</b> | 2,0E+00   | 1,7E+00   | 3,4E+01                   |
| 50       | 6,1E+00                          | 4,8E+00  | <b>3,3E+00</b> | 2,1E+00   | 1,8E+00   | 3,7E+01                   |
| 60       | 6,8E+00                          | 5,4E+00  | <b>3,6E+00</b> | 2,2E+00   | 1,8E+00   | 4,3E+01                   |
| 70       | 7,5E+00                          | 5,8E+00  | <b>3,8E+00</b> | 2,3E+00   |           | 4,8E+01                   |
| 80       | 8,1E+00                          | 6,3E+00  | <b>4,0E+00</b> | 2,4E+00   |           | 5,3E+01                   |
| 90       | 8,6E+00                          | 6,6E+00  | <b>4,2E+00</b> | 2,5E+00   |           | 5,7E+01                   |
| 100      | 9,1E+00                          | 7,0E+00  | <b>4,4E+00</b> | 2,6E+00   |           | 6,1E+01                   |
| 120      | 9,9E+00                          | 7,6E+00  | <b>4,7E+00</b> | 2,7E+00   |           | 6,8E+01                   |
| 180      | 1,2E+01                          | 8,8E+00  | <b>5,3E+00</b> | 3,0E+00   |           | 8,3E+01                   |
| 200      | 1,2E+01                          | 9,0E+00  | <b>5,4E+00</b> | 3,0E+00   |           | 8,6E+01                   |
| 300      | 1,3E+01                          | 9,8E+00  | <b>5,8E+00</b> | 3,2E+00   |           | 9,6E+01                   |
| 360      | 1,3E+01                          | 1,0E+01  | <b>6,0E+00</b> | 3,3E+00   |           | 9,9E+01                   |
| 400      | 1,4E+01                          | 1,0E+01  | <b>6,0E+00</b> | 3,3E+00   |           | 1,0E+02                   |
| 500      | 1,4E+01                          |          | <b>6,1E+00</b> |           |           | 1,0E+02                   |
| 600      |                                  |          | <b>6,1E+00</b> |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cr-51**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>i</sub> =0,1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,6E-01                          | 4,2E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01                          | 9,2E-01                         |
| 2        | 4,5E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,6E-01   | 1,4E+00                          | 1,7E+00                         |
| 3        | 6,0E-01                          | 9,0E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00                          | 2,4E+00                         |
| 4        | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,8E+00                          | 2,9E+00                         |
| 5        | 8,5E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,9E+00                          | 3,5E+00                         |
| 6        | 9,6E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00                          | 4,0E+00                         |
| 7        | 1,1E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,7E+00   | 2,0E+00                          | 4,4E+00                         |
| 8        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,9E+00   | 2,0E+00                          | 4,8E+00                         |
| 9        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 2,1E+00                          | 5,2E+00                         |
| 10       | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 2,1E+00                          | 5,5E+00                         |
| 14       | 1,6E+00                          | 2,0E+00  | <b>2,7E+00</b> | 2,3E+00   | 2,2E+00                          | 6,7E+00                         |
| 15       | 1,6E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 2,2E+00                          | 7,0E+00                         |
| 20       | 1,9E+00                          | 2,3E+00  | <b>3,1E+00</b> | 2,7E+00   | 2,3E+00                          | 8,0E+00                         |
| 30       | 2,2E+00                          | 2,7E+00  | <b>3,5E+00</b> | 3,1E+00   | 2,5E+00                          | 9,6E+00                         |
| 40       | 2,4E+00                          | 3,0E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,6E+00                          | 1,1E+01                         |
| 45       | 2,5E+00                          | 3,1E+00  | <b>3,9E+00</b> | 3,4E+00   | 2,6E+00                          | 1,1E+01                         |
| 50       | 2,6E+00                          | 3,2E+00  | <b>4,0E+00</b> | 3,5E+00   | 2,7E+00                          | 1,1E+01                         |
| 60       | 2,7E+00                          | 3,3E+00  | <b>4,2E+00</b> | 3,6E+00   | 2,7E+00                          | 1,2E+01                         |
| 70       | 2,8E+00                          | 3,4E+00  | <b>4,3E+00</b> | 3,7E+00   | 2,8E+00                          | 1,2E+01                         |
| 80       | 2,8E+00                          | 3,5E+00  | <b>4,4E+00</b> | 3,8E+00   | 2,8E+00                          | 1,2E+01                         |
| 90       | 2,9E+00                          | 3,5E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,8E+00                          | 1,3E+01                         |
| 100      | 2,9E+00                          | 3,6E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,8E+00                          | 1,3E+01                         |
| 120      | 2,9E+00                          | 3,6E+00  | <b>4,6E+00</b> | 3,9E+00   | 2,8E+00                          |                                 |
| 180      | 3,0E+00                          | 3,6E+00  | <b>4,6E+00</b> | 4,0E+00   | 2,9E+00                          |                                 |
| 200      | 3,0E+00                          | 3,7E+00  |                | 4,0E+00   | 2,9E+00                          |                                 |
| 300      |                                  | 3,7E+00  |                |           |                                  |                                 |
| 360      |                                  |          |                |           |                                  |                                 |
| 400      |                                  |          |                |           |                                  |                                 |
| 500      |                                  |          |                |           |                                  |                                 |
| 600      |                                  |          |                |           |                                  |                                 |
| 700      |                                  |          |                |           |                                  |                                 |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cr-51**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01                          | 9,2E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                          | 1,7E+00                         |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00                          | 2,4E+00                         |
| 4        | 8,2E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00                          | 2,9E+00                         |
| 5        | 9,7E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00                          | 3,5E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00                          | 4,0E+00                         |
| 7        | 1,2E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,0E+00                          | 4,4E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00                          | 4,8E+00                         |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00                          | 5,2E+00                         |
| 10       | 1,6E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,1E+00                          | 5,5E+00                         |
| 14       | 2,1E+00                          | 2,0E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,2E+00                          | 6,7E+00                         |
| 15       | 2,2E+00                          | 2,1E+00  | <b>2,1E+00</b> | 1,7E+00   | 2,2E+00                          | 7,0E+00                         |
| 20       | 2,6E+00                          | 2,5E+00  | <b>2,3E+00</b> | 1,8E+00   | 2,3E+00                          | 8,0E+00                         |
| 30       | 3,3E+00                          | 3,0E+00  | <b>2,7E+00</b> | 2,0E+00   | 2,5E+00                          | 9,6E+00                         |
| 40       | 3,8E+00                          | 3,4E+00  | <b>2,9E+00</b> | 2,1E+00   | 2,6E+00                          | 1,1E+01                         |
| 45       | 4,0E+00                          | 3,5E+00  | <b>3,0E+00</b> | 2,2E+00   | 2,6E+00                          | 1,1E+01                         |
| 50       | 4,1E+00                          | 3,6E+00  | <b>3,1E+00</b> | 2,2E+00   | 2,7E+00                          | 1,1E+01                         |
| 60       | 4,4E+00                          | 3,8E+00  | <b>3,2E+00</b> | 2,3E+00   | 2,7E+00                          | 1,2E+01                         |
| 70       | 4,5E+00                          | 4,0E+00  | <b>3,3E+00</b> | 2,4E+00   | 2,8E+00                          | 1,2E+01                         |
| 80       | 4,7E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,4E+00   | 2,8E+00                          | 1,2E+01                         |
| 90       | 4,8E+00                          | 4,1E+00  | <b>3,4E+00</b> | 2,4E+00   | 2,8E+00                          | 1,3E+01                         |
| 100      | 4,8E+00                          | 4,2E+00  | <b>3,4E+00</b> | 2,4E+00   | 2,8E+00                          | 1,3E+01                         |
| 120      | 4,9E+00                          | 4,2E+00  | <b>3,5E+00</b> | 2,5E+00   | 2,8E+00                          |                                 |
| 180      | 5,0E+00                          | 4,3E+00  | <b>3,5E+00</b> | 2,5E+00   | 2,9E+00                          |                                 |
| 200      | 5,0E+00                          | 4,3E+00  |                |           | 2,9E+00                          |                                 |
| 300      |                                  |          |                |           |                                  |                                 |
| 360      |                                  |          |                |           |                                  |                                 |
| 400      |                                  |          |                |           |                                  |                                 |
| 500      |                                  |          |                |           |                                  |                                 |
| 600      |                                  |          |                |           |                                  |                                 |
| 700      |                                  |          |                |           |                                  |                                 |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cr-51**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                 |           | Ingestion<br>f <sub>i</sub> =0,01 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 μm                      | AMAD=1μm | <b>AMAD=5μm</b> | AMAD=10μm |                                   |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b>  | 6,0E-01   | 8,9E-01                           | 9,2E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b>  | 9,2E-01   | 1,4E+00                           | 1,7E+00                         |
| 3        | 6,7E-01                          | 8,8E-01  | <b>1,2E+00</b>  | 1,1E+00   | 1,6E+00                           | 2,4E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b>  | 1,2E+00   | 1,7E+00                           | 2,9E+00                         |
| 5        | 9,8E-01                          | 1,2E+00  | <b>1,4E+00</b>  | 1,2E+00   | 1,7E+00                           | 3,5E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b>  | 1,3E+00   | 1,7E+00                           | 4,0E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b>  | 1,3E+00   | 1,7E+00                           | 4,4E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b>  | 1,4E+00   | 1,7E+00                           | 4,8E+00                         |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b>  | 1,4E+00   | 1,7E+00                           | 5,2E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b>  | 1,4E+00   | 1,7E+00                           | 5,5E+00                         |
| 14       | 2,1E+00                          | 2,0E+00  | <b>2,0E+00</b>  | 1,6E+00   | 1,8E+00                           | 6,7E+00                         |
| 15       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b>  | 1,6E+00   | 1,8E+00                           | 7,0E+00                         |
| 20       | 2,7E+00                          | 2,5E+00  | <b>2,3E+00</b>  | 1,7E+00   |                                   | 8,0E+00                         |
| 30       | 3,5E+00                          | 3,1E+00  | <b>2,6E+00</b>  | 1,9E+00   |                                   | 9,6E+00                         |
| 40       | 4,1E+00                          | 3,5E+00  | <b>2,9E+00</b>  | 2,0E+00   |                                   | 1,1E+01                         |
| 45       | 4,3E+00                          | 3,7E+00  | <b>3,0E+00</b>  | 2,1E+00   |                                   | 1,1E+01                         |
| 50       | 4,5E+00                          | 3,8E+00  | <b>3,0E+00</b>  | 2,1E+00   |                                   | 1,1E+01                         |
| 60       | 4,8E+00                          | 4,0E+00  | <b>3,2E+00</b>  | 2,2E+00   |                                   | 1,2E+01                         |
| 70       | 5,0E+00                          | 4,2E+00  | <b>3,3E+00</b>  | 2,3E+00   |                                   | 1,2E+01                         |
| 80       | 5,2E+00                          | 4,3E+00  | <b>3,3E+00</b>  | 2,3E+00   |                                   | 1,2E+01                         |
| 90       | 5,3E+00                          | 4,4E+00  | <b>3,4E+00</b>  | 2,3E+00   |                                   | 1,3E+01                         |
| 100      | 5,4E+00                          | 4,5E+00  | <b>3,4E+00</b>  | 2,3E+00   |                                   | 1,3E+01                         |
| 120      | 5,5E+00                          | 4,6E+00  | <b>3,5E+00</b>  | 2,4E+00   |                                   |                                 |
| 180      | 5,7E+00                          | 4,7E+00  | <b>3,6E+00</b>  | 2,4E+00   |                                   |                                 |
| 200      | 5,7E+00                          | 4,7E+00  | <b>3,6E+00</b>  |           |                                   |                                 |
| 300      |                                  |          |                 |           |                                   |                                 |
| 360      |                                  |          |                 |           |                                   |                                 |
| 400      |                                  |          |                 |           |                                   |                                 |
| 500      |                                  |          |                 |           |                                   |                                 |
| 600      |                                  |          |                 |           |                                   |                                 |
| 700      |                                  |          |                 |           |                                   |                                 |
| 800      |                                  |          |                 |           |                                   |                                 |
| 900      |                                  |          |                 |           |                                   |                                 |
| 1000     |                                  |          |                 |           |                                   |                                 |
| 2000     |                                  |          |                 |           |                                   |                                 |
| 3000     |                                  |          |                 |           |                                   |                                 |
| 4000     |                                  |          |                 |           |                                   |                                 |
| 5000     |                                  |          |                 |           |                                   |                                 |
| 6000     |                                  |          |                 |           |                                   |                                 |
| 8000     |                                  |          |                 |           |                                   |                                 |
| 10000    |                                  |          |                 |           |                                   |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mn-54**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b> | 6,3E-01   | 9,1E-01   | 9,9E-01                   |
| 2        | 5,1E-01                          | 7,7E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,5E+00   | 1,9E+00                   |
| 3        | 7,2E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 2,9E+00                   |
| 4        | 9,1E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00   | 3,7E+00                   |
| 5        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b> | 1,8E+00   | 2,0E+00   | 4,6E+00                   |
| 6        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 2,1E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 2,2E+00   | 6,1E+00                   |
| 8        | 1,6E+00                          | 2,0E+00  | <b>2,7E+00</b> | 2,4E+00   | 2,3E+00   | 6,8E+00                   |
| 9        | 1,7E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,6E+00   | 2,3E+00   | 7,5E+00                   |
| 10       | 1,9E+00                          | 2,4E+00  | <b>3,1E+00</b> | 2,7E+00   | 2,4E+00   | 8,2E+00                   |
| 14       | 2,4E+00                          | 3,0E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,6E+00   | 1,1E+01                   |
| 15       | 2,5E+00                          | 3,1E+00  | <b>4,0E+00</b> | 3,5E+00   | 2,7E+00   | 1,1E+01                   |
| 20       | 3,1E+00                          | 3,8E+00  | <b>4,8E+00</b> | 4,1E+00   | 3,0E+00   | 1,4E+01                   |
| 30       | 4,1E+00                          | 4,9E+00  | <b>6,2E+00</b> | 5,3E+00   | 3,4E+00   | 1,8E+01                   |
| 40       | 4,9E+00                          | 5,8E+00  | <b>7,2E+00</b> | 6,2E+00   | 3,8E+00   | 2,2E+01                   |
| 45       | 5,2E+00                          | 6,2E+00  | <b>7,7E+00</b> | 6,6E+00   | 3,9E+00   | 2,3E+01                   |
| 50       | 5,5E+00                          | 6,6E+00  | <b>8,1E+00</b> | 6,9E+00   | 4,1E+00   | 2,5E+01                   |
| 60       | 6,0E+00                          | 7,2E+00  | <b>8,9E+00</b> | 7,6E+00   | 4,3E+00   | 2,7E+01                   |
| 70       | 6,5E+00                          | 7,7E+00  | <b>9,5E+00</b> | 8,1E+00   | 4,5E+00   | 2,9E+01                   |
| 80       | 6,8E+00                          | 8,1E+00  | <b>1,0E+01</b> | 8,5E+00   | 4,7E+00   | 3,1E+01                   |
| 90       | 7,1E+00                          | 8,5E+00  | <b>1,0E+01</b> | 8,8E+00   | 4,8E+00   | 3,2E+01                   |
| 100      | 7,4E+00                          | 8,7E+00  | <b>1,1E+01</b> | 9,1E+00   | 4,9E+00   | 3,3E+01                   |
| 120      | 7,8E+00                          | 9,2E+00  | <b>1,1E+01</b> | 9,5E+00   | 5,1E+00   | 3,5E+01                   |
| 180      | 8,3E+00                          | 9,8E+00  | <b>1,2E+01</b> | 1,0E+01   | 5,3E+00   | 3,8E+01                   |
| 200      | 8,4E+00                          | 9,9E+00  | <b>1,2E+01</b> | 1,0E+01   | 5,4E+00   | 3,8E+01                   |
| 300      | 8,5E+00                          | 1,0E+01  |                |           | 5,4E+00   | 3,9E+01                   |
| 360      | 8,5E+00                          | 1,0E+01  |                |           |           | 3,9E+01                   |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mn-54**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 9,9E-01                   |
| 2        | 5,0E-01                          | 7,2E-01  | <b>1,0E+00</b> | 9,5E-01   | 1,5E+00   | 1,9E+00                   |
| 3        | 6,9E-01                          | 9,3E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,9E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,3E+00   | 1,9E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 4,6E+00                   |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,2E+00   | 6,1E+00                   |
| 8        | 1,5E+00                          | 1,7E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,3E+00   | 6,8E+00                   |
| 9        | 1,7E+00                          | 1,8E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,3E+00   | 7,5E+00                   |
| 10       | 1,9E+00                          | 1,9E+00  | <b>2,1E+00</b> | 1,7E+00   | 2,4E+00   | 8,2E+00                   |
| 14       | 2,5E+00                          | 2,4E+00  | <b>2,4E+00</b> | 1,9E+00   | 2,6E+00   | 1,1E+01                   |
| 15       | 2,6E+00                          | 2,5E+00  | <b>2,5E+00</b> | 2,0E+00   | 2,7E+00   | 1,1E+01                   |
| 20       | 3,3E+00                          | 3,1E+00  | <b>2,9E+00</b> | 2,3E+00   | 3,0E+00   | 1,4E+01                   |
| 30       | 4,6E+00                          | 4,2E+00  | <b>3,7E+00</b> | 2,7E+00   | 3,4E+00   | 1,8E+01                   |
| 40       | 5,8E+00                          | 5,1E+00  | <b>4,3E+00</b> | 3,1E+00   | 3,8E+00   | 2,2E+01                   |
| 45       | 6,3E+00                          | 5,5E+00  | <b>4,6E+00</b> | 3,3E+00   | 3,9E+00   | 2,3E+01                   |
| 50       | 6,8E+00                          | 5,9E+00  | <b>4,9E+00</b> | 3,5E+00   | 4,1E+00   | 2,5E+01                   |
| 60       | 7,7E+00                          | 6,6E+00  | <b>5,4E+00</b> | 3,8E+00   | 4,3E+00   | 2,7E+01                   |
| 70       | 8,6E+00                          | 7,3E+00  | <b>5,8E+00</b> | 4,0E+00   | 4,5E+00   | 2,9E+01                   |
| 80       | 9,3E+00                          | 7,9E+00  | <b>6,2E+00</b> | 4,2E+00   | 4,7E+00   | 3,1E+01                   |
| 90       | 1,0E+01                          | 8,4E+00  | <b>6,5E+00</b> | 4,4E+00   | 4,8E+00   | 3,2E+01                   |
| 100      | 1,1E+01                          | 8,9E+00  | <b>6,8E+00</b> | 4,6E+00   | 4,9E+00   | 3,3E+01                   |
| 120      | 1,2E+01                          | 9,7E+00  | <b>7,3E+00</b> | 4,9E+00   | 5,1E+00   | 3,5E+01                   |
| 180      | 1,4E+01                          | 1,1E+01  | <b>8,3E+00</b> | 5,4E+00   | 5,3E+00   | 3,8E+01                   |
| 200      | 1,5E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,5E+00   | 5,4E+00   | 3,8E+01                   |
| 300      | 1,6E+01                          | 1,3E+01  | <b>9,1E+00</b> | 5,8E+00   | 5,4E+00   | 3,9E+01                   |
| 360      | 1,7E+01                          | 1,4E+01  | <b>9,3E+00</b> | 5,9E+00   |           | 3,9E+01                   |
| 400      | 1,7E+01                          | 1,4E+01  | <b>9,4E+00</b> | 6,0E+00   |           |                           |
| 500      | 1,8E+01                          |          | <b>9,6E+00</b> | 6,0E+00   |           |                           |
| 600      | 1,8E+01                          |          | <b>9,6E+00</b> | 6,0E+00   |           |                           |
| 700      |                                  |          | <b>9,6E+00</b> | 6,0E+00   |           |                           |
| 800      |                                  |          | <b>9,6E+00</b> | 6,0E+00   |           |                           |
| 900      |                                  |          | <b>9,6E+00</b> | 6,1E+00   |           |                           |
| 1000     |                                  |          | <b>9,6E+00</b> | 6,1E+00   |           |                           |
| 2000     |                                  |          | <b>9,7E+00</b> |           |           |                           |
| 3000     |                                  |          | <b>9,7E+00</b> |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Fe-55**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 2,6E-03                          | 9,3E-03        | <b>1,8E-02</b> | 1,7E-02         | 8,9E-02   | 1,4E-06                   |
| 2        | 1,3E-02                          | 4,7E-02        | <b>8,9E-02</b> | 8,6E-02         | 4,5E-01   | 2,4E-05                   |
| 3        | 2,1E-02                          | 7,5E-02        | <b>1,4E-01</b> | 1,4E-01         | 7,1E-01   | 8,7E-05                   |
| 4        | 2,4E-02                          | 8,7E-02        | <b>1,6E-01</b> | 1,6E-01         | 8,2E-01   | 1,9E-04                   |
| 5        | 2,6E-02                          | 9,2E-02        | <b>1,7E-01</b> | 1,7E-01         | 8,7E-01   | 3,1E-04                   |
| 6        | 2,6E-02                          | 9,4E-02        | <b>1,8E-01</b> | 1,7E-01         | 8,9E-01   | 4,5E-04                   |
| 7        | 2,6E-02                          | 9,5E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 6,0E-04                   |
| 8        | 2,6E-02                          | 9,5E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 7,5E-04                   |
| 9        | 2,6E-02                          | 9,5E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 9,1E-04                   |
| 10       | 2,7E-02                          | 9,5E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 1,1E-03                   |
| 14       | 2,7E-02                          | 9,6E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 1,7E-03                   |
| 15       | 2,7E-02                          | 9,6E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 1,9E-03                   |
| 20       | 2,7E-02                          | 9,6E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 2,7E-03                   |
| 30       | 2,7E-02                          | 9,6E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 4,3E-03                   |
| 40       | 2,8E-02                          | 9,7E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 5,8E-03                   |
| 45       | 2,8E-02                          | 9,7E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 6,6E-03                   |
| 50       | 2,8E-02                          | 9,7E-02        | <b>1,8E-01</b> | 1,7E-01         | 9,0E-01   | 7,4E-03                   |
| 60       | 2,8E-02                          | 9,7E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 8,8E-03                   |
| 70       | 2,9E-02                          | 9,8E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 1,0E-02                   |
| 80       | 2,9E-02                          | 9,8E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 1,2E-02                   |
| 90       | 2,9E-02                          | 9,8E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 1,3E-02                   |
| 100      | 2,9E-02                          | 9,9E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 1,4E-02                   |
| 120      | 3,0E-02                          | 9,9E-02        | <b>1,8E-01</b> | 1,8E-01         | 9,0E-01   | 1,7E-02                   |
| 180      | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 9,0E-01   | 2,4E-02                   |
| 200      | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 9,0E-01   | 2,6E-02                   |
| 300      | 3,4E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 9,0E-01   | 3,6E-02                   |
| 360      | 3,5E-02                          | 1,1E-01        | <b>1,9E-01</b> | 1,8E-01         | 9,0E-01   | 4,1E-02                   |
| 400      | 3,6E-02                          | 1,1E-01        | <b>1,9E-01</b> | 1,8E-01         | 9,0E-01   | 4,4E-02                   |
| 500      | 3,7E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 9,0E-01   | 5,1E-02                   |
| 600      | 3,9E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 9,0E-01   | 5,7E-02                   |
| 700      | 4,0E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 9,1E-01   | 6,2E-02                   |
| 800      | 4,1E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 9,1E-01   | 6,7E-02                   |
| 900      | 4,2E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         |           | 7,1E-02                   |
| 1000     | 4,3E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         |           | 7,5E-02                   |
| 2000     | 4,7E-02                          | 1,2E-01        | <b>2,1E-01</b> | 2,0E-01         |           | 9,7E-02                   |
| 3000     | 4,9E-02                          | 1,2E-01        | <b>2,1E-01</b> | 2,0E-01         |           | 1,1E-01                   |
| 4000     | 5,0E-02                          |                |                |                 |           | 1,1E-01                   |
| 5000     | 5,0E-02                          |                |                |                 |           |                           |
| 6000     | 5,1E-02                          |                |                |                 |           |                           |
| 8000     | 5,1E-02                          |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Fe-55**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 5,3E-03                          | 1,8E-02        | <b>3,4E-02</b> | 3,2E-02         | 8,9E-02   | 1,4E-06                   |
| 2        | 2,9E-02                          | 9,4E-02        | <b>1,7E-01</b> | 1,7E-01         | 4,5E-01   | 2,4E-05                   |
| 3        | 5,0E-02                          | 1,5E-01        | <b>2,8E-01</b> | 2,7E-01         | 7,1E-01   | 8,7E-05                   |
| 4        | 6,0E-02                          | 1,8E-01        | <b>3,3E-01</b> | 3,1E-01         | 8,2E-01   | 1,9E-04                   |
| 5        | 6,5E-02                          | 1,9E-01        | <b>3,5E-01</b> | 3,3E-01         | 8,7E-01   | 3,1E-04                   |
| 6        | 6,8E-02                          | 1,9E-01        | <b>3,5E-01</b> | 3,4E-01         | 8,9E-01   | 4,5E-04                   |
| 7        | 6,9E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 6,0E-04                   |
| 8        | 7,1E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 7,5E-04                   |
| 9        | 7,2E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 9,1E-04                   |
| 10       | 7,3E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 1,1E-03                   |
| 14       | 7,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 1,7E-03                   |
| 15       | 7,8E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 1,9E-03                   |
| 20       | 8,2E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,0E-01   | 2,7E-03                   |
| 30       | 8,9E-02                          | 2,1E-01        | <b>3,7E-01</b> | 3,4E-01         | 9,0E-01   | 4,3E-03                   |
| 40       | 9,4E-02                          | 2,1E-01        | <b>3,7E-01</b> | 3,4E-01         | 9,0E-01   | 5,8E-03                   |
| 45       | 9,6E-02                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 6,6E-03                   |
| 50       | 9,8E-02                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 7,4E-03                   |
| 60       | 1,0E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 8,8E-03                   |
| 70       | 1,0E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 1,0E-02                   |
| 80       | 1,1E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 1,2E-02                   |
| 90       | 1,1E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 1,3E-02                   |
| 100      | 1,1E-01                          | 2,2E-01        | <b>3,7E-01</b> | 3,5E-01         | 9,0E-01   | 1,4E-02                   |
| 120      | 1,1E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 1,7E-02                   |
| 180      | 1,1E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 2,4E-02                   |
| 200      | 1,2E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 2,6E-02                   |
| 300      | 1,2E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 3,6E-02                   |
| 360      | 1,2E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 4,1E-02                   |
| 400      | 1,2E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 4,4E-02                   |
| 500      | 1,2E-01                          | 2,3E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 5,1E-02                   |
| 600      | 1,2E-01                          | 2,4E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,0E-01   | 5,7E-02                   |
| 700      | 1,2E-01                          | 2,4E-01        | <b>3,8E-01</b> | 3,5E-01         | 9,1E-01   | 6,2E-02                   |
| 800      | 1,2E-01                          |                | <b>3,8E-01</b> | 3,5E-01         | 9,1E-01   | 6,7E-02                   |
| 900      | 1,2E-01                          |                | <b>3,8E-01</b> | 3,5E-01         |           | 7,1E-02                   |
| 1000     | 1,2E-01                          |                | <b>3,8E-01</b> | 3,5E-01         |           | 7,5E-02                   |
| 2000     | 1,3E-01                          |                | <b>3,9E-01</b> | 3,6E-01         |           | 9,7E-02                   |
| 3000     | 1,3E-01                          |                | <b>3,9E-01</b> | 3,6E-01         |           | 1,1E-01                   |
| 4000     |                                  |                |                |                 |           | 1,1E-01                   |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Fe-59**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b> | 6,2E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 5,1E-01                          | 7,7E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 2,0E+00                         |
| 3        | 7,3E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 2,9E+00                         |
| 4        | 9,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00   | 3,9E+00                         |
| 5        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,9E+00   | 2,0E+00   | 4,8E+00                         |
| 6        | 1,3E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 2,1E+00   | 5,7E+00                         |
| 7        | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,2E+00   | 6,6E+00                         |
| 8        | 1,7E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,5E+00   | 2,3E+00   | 7,5E+00                         |
| 9        | 1,9E+00                          | 2,4E+00  | <b>3,2E+00</b> | 2,8E+00   | 2,4E+00   | 8,4E+00                         |
| 10       | 2,1E+00                          | 2,6E+00  | <b>3,4E+00</b> | 3,0E+00   | 2,5E+00   | 9,2E+00                         |
| 14       | 2,8E+00                          | 3,5E+00  | <b>4,4E+00</b> | 3,8E+00   | 2,8E+00   | 1,3E+01                         |
| 15       | 3,0E+00                          | 3,7E+00  | <b>4,7E+00</b> | 4,0E+00   | 2,9E+00   | 1,3E+01                         |
| 20       | 3,8E+00                          | 4,6E+00  | <b>5,8E+00</b> | 5,0E+00   | 3,3E+00   | 1,7E+01                         |
| 30       | 5,3E+00                          | 6,3E+00  | <b>7,8E+00</b> | 6,7E+00   | 3,9E+00   | 2,4E+01                         |
| 40       | 6,6E+00                          | 7,8E+00  | <b>9,6E+00</b> | 8,1E+00   | 4,5E+00   | 3,0E+01                         |
| 45       | 7,1E+00                          | 8,4E+00  | <b>1,0E+01</b> | 8,8E+00   | 4,8E+00   | 3,2E+01                         |
| 50       | 7,6E+00                          | 9,0E+00  | <b>1,1E+01</b> | 9,4E+00   | 5,0E+00   | 3,5E+01                         |
| 60       | 8,5E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,0E+01   | 5,4E+00   | 3,9E+01                         |
| 70       | 9,3E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 5,8E+00   | 4,2E+01                         |
| 80       | 1,0E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 6,1E+00   | 4,5E+01                         |
| 90       | 1,1E+01                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 6,3E+00   | 4,8E+01                         |
| 100      | 1,1E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,3E+01   | 6,6E+00   | 5,0E+01                         |
| 120      | 1,2E+01                          | 1,4E+01  | <b>1,7E+01</b> | 1,4E+01   | 6,9E+00   | 5,4E+01                         |
| 180      | 1,3E+01                          | 1,5E+01  | <b>1,9E+01</b> | 1,6E+01   | 7,5E+00   | 6,0E+01                         |
| 200      | 1,3E+01                          | 1,6E+01  | <b>1,9E+01</b> | 1,6E+01   | 7,6E+00   | 6,1E+01                         |
| 300      | 1,4E+01                          | 1,6E+01  | <b>2,0E+01</b> | 1,7E+01   | 7,8E+00   | 6,3E+01                         |
| 360      | 1,4E+01                          |          | <b>2,0E+01</b> | 1,7E+01   | 7,9E+00   | 6,3E+01                         |
| 400      |                                  |          |                |           | 7,9E+00   |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Fe-59**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 2,5E-03                          | 9,2E-03        | <b>1,7E-02</b>                 | 1,7E-02         | 8,8E-02   | 1,4E-06                   |
| 2        | 1,3E-02                          | 4,7E-02        | <b>8,8E-02</b>                 | 8,5E-02         | 4,4E-01   | 2,3E-05                   |
| 3        | 2,0E-02                          | 7,3E-02        | <b>1,4E-01</b>                 | 1,3E-01         | 6,9E-01   | 8,5E-05                   |
| 4        | 2,4E-02                          | 8,5E-02        | <b>1,6E-01</b>                 | 1,5E-01         | 8,1E-01   | 1,8E-04                   |
| 5        | 2,5E-02                          | 9,0E-02        | <b>1,7E-01</b>                 | 1,6E-01         | 8,5E-01   | 3,0E-04                   |
| 6        | 2,5E-02                          | 9,2E-02        | <b>1,7E-01</b>                 | 1,7E-01         | 8,7E-01   | 4,2E-04                   |
| 7        | 2,6E-02                          | 9,2E-02        | <b>1,7E-01</b>                 | 1,7E-01         | 8,7E-01   | 5,6E-04                   |
| 8        | 2,6E-02                          | 9,3E-02        | <b>1,8E-01</b>                 |                 | 8,7E-01   | 7,0E-04                   |
| 9        | 2,6E-02                          | 9,3E-02        | <b>1,8E-01</b>                 |                 | 8,8E-01   | 8,4E-04                   |
| 10       | 2,6E-02                          | 9,3E-02        |                                |                 | 8,8E-01   | 9,8E-04                   |
| 14       | 2,6E-02                          | 9,3E-02        |                                |                 |           | 1,5E-03                   |
| 15       | 2,6E-02                          | 9,3E-02        |                                |                 |           | 1,7E-03                   |
| 20       | 2,6E-02                          | 9,3E-02        |                                |                 |           | 2,3E-03                   |
| 30       | 2,6E-02                          | 9,4E-02        |                                |                 |           | 3,4E-03                   |
| 40       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 4,3E-03                   |
| 45       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 4,7E-03                   |
| 50       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 5,1E-03                   |
| 60       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 5,8E-03                   |
| 70       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 6,3E-03                   |
| 80       | 2,7E-02                          | 9,4E-02        |                                |                 |           | 6,8E-03                   |
| 90       | 2,7E-02                          | 9,5E-02        |                                |                 |           | 7,2E-03                   |
| 100      | 2,7E-02                          | 9,5E-02        |                                |                 |           | 7,5E-03                   |
| 120      | 2,7E-02                          |                |                                |                 |           | 8,0E-03                   |
| 180      | 2,8E-02                          |                |                                |                 |           | 8,8E-03                   |
| 200      | 2,8E-02                          |                |                                |                 |           | 8,9E-03                   |
| 300      |                                  |                |                                |                 |           | 9,2E-03                   |
| 360      |                                  |                |                                |                 |           | 9,3E-03                   |
| 400      |                                  |                |                                |                 |           | 9,3E-03                   |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Fe-59

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 2,0E+00                         |
| 3        | 6,8E-01                          | 9,2E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,9E+00                         |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00   | 3,9E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 4,8E+00                         |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00   | 5,7E+00                         |
| 7        | 1,3E+00                          | 1,5E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,2E+00   | 6,6E+00                         |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,3E+00   | 7,5E+00                         |
| 9        | 1,7E+00                          | 1,8E+00  | <b>2,0E+00</b> | 1,7E+00   | 2,4E+00   | 8,4E+00                         |
| 10       | 1,8E+00                          | 1,9E+00  | <b>2,1E+00</b> | 1,7E+00   | 2,5E+00   | 9,2E+00                         |
| 14       | 2,4E+00                          | 2,4E+00  | <b>2,5E+00</b> | 2,0E+00   | 2,8E+00   | 1,3E+01                         |
| 15       | 2,5E+00                          | 2,5E+00  | <b>2,6E+00</b> | 2,1E+00   | 2,9E+00   | 1,3E+01                         |
| 20       | 3,1E+00                          | 3,0E+00  | <b>3,0E+00</b> | 2,4E+00   | 3,3E+00   | 1,7E+01                         |
| 30       | 4,2E+00                          | 4,0E+00  | <b>3,8E+00</b> | 3,0E+00   | 3,9E+00   | 2,4E+01                         |
| 40       | 5,1E+00                          | 4,8E+00  | <b>4,5E+00</b> | 3,4E+00   | 4,5E+00   | 3,0E+01                         |
| 45       | 5,5E+00                          | 5,1E+00  | <b>4,8E+00</b> | 3,6E+00   | 4,8E+00   | 3,2E+01                         |
| 50       | 5,8E+00                          | 5,4E+00  | <b>5,0E+00</b> | 3,8E+00   | 5,0E+00   | 3,5E+01                         |
| 60       | 6,4E+00                          | 6,0E+00  | <b>5,5E+00</b> | 4,2E+00   | 5,4E+00   | 3,9E+01                         |
| 70       | 6,9E+00                          | 6,4E+00  | <b>5,9E+00</b> | 4,5E+00   | 5,8E+00   | 4,2E+01                         |
| 80       | 7,4E+00                          | 6,8E+00  | <b>6,2E+00</b> | 4,7E+00   | 6,1E+00   | 4,5E+01                         |
| 90       | 7,7E+00                          | 7,1E+00  | <b>6,5E+00</b> | 4,9E+00   | 6,3E+00   | 4,8E+01                         |
| 100      | 8,0E+00                          | 7,4E+00  | <b>6,8E+00</b> | 5,1E+00   | 6,6E+00   | 5,0E+01                         |
| 120      | 8,5E+00                          | 7,8E+00  | <b>7,1E+00</b> | 5,4E+00   | 6,9E+00   | 5,4E+01                         |
| 180      | 9,3E+00                          | 8,5E+00  | <b>7,8E+00</b> | 5,8E+00   | 7,5E+00   | 6,0E+01                         |
| 200      | 9,4E+00                          | 8,7E+00  | <b>7,9E+00</b> | 5,9E+00   | 7,6E+00   | 6,1E+01                         |
| 300      | 9,7E+00                          | 8,9E+00  | <b>8,1E+00</b> | 6,1E+00   | 7,8E+00   | 6,3E+01                         |
| 360      | 9,8E+00                          | 9,0E+00  | <b>8,1E+00</b> | 6,1E+00   | 7,9E+00   | 6,3E+01                         |
| 400      | 9,8E+00                          | 9,0E+00  |                |           | 7,9E+00   |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Fe-59**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,2E-03                          | 1,8E-02        | <b>3,3E-02</b>                 | 3,2E-02         | 8,8E-02   | 1,4E-06                   |
| 2        | 2,9E-02                          | 9,2E-02        | <b>1,7E-01</b>                 | 1,6E-01         | 4,4E-01   | 2,3E-05                   |
| 3        | 4,9E-02                          | 1,5E-01        | <b>2,7E-01</b>                 | 2,6E-01         | 6,9E-01   | 8,5E-05                   |
| 4        | 5,9E-02                          | 1,7E-01        | <b>3,2E-01</b>                 | 3,0E-01         | 8,1E-01   | 1,8E-04                   |
| 5        | 6,3E-02                          | 1,8E-01        | <b>3,4E-01</b>                 | 3,2E-01         | 8,5E-01   | 3,0E-04                   |
| 6        | 6,6E-02                          | 1,9E-01        | <b>3,4E-01</b>                 | 3,3E-01         | 8,7E-01   | 4,2E-04                   |
| 7        | 6,7E-02                          | 1,9E-01        | <b>3,5E-01</b>                 | 3,3E-01         | 8,7E-01   | 5,6E-04                   |
| 8        | 6,9E-02                          | 1,9E-01        | <b>3,5E-01</b>                 | 3,3E-01         | 8,7E-01   | 7,0E-04                   |
| 9        | 7,0E-02                          | 1,9E-01        | <b>3,5E-01</b>                 | 3,3E-01         | 8,8E-01   | 8,4E-04                   |
| 10       | 7,0E-02                          | 1,9E-01        | <b>3,5E-01</b>                 | 3,3E-01         | 8,8E-01   | 9,8E-04                   |
| 14       | 7,4E-02                          | 2,0E-01        | <b>3,5E-01</b>                 | 3,3E-01         |           | 1,5E-03                   |
| 15       | 7,4E-02                          | 2,0E-01        | <b>3,5E-01</b>                 | 3,3E-01         |           | 1,7E-03                   |
| 20       | 7,8E-02                          | 2,0E-01        | <b>3,5E-01</b>                 | 3,3E-01         |           | 2,3E-03                   |
| 30       | 8,2E-02                          | 2,0E-01        | <b>3,5E-01</b>                 | 3,3E-01         |           | 3,4E-03                   |
| 40       | 8,6E-02                          | 2,0E-01        | <b>3,6E-01</b>                 | 3,3E-01         |           | 4,3E-03                   |
| 45       | 8,7E-02                          | 2,0E-01        | <b>3,6E-01</b>                 | 3,3E-01         |           | 4,7E-03                   |
| 50       | 8,8E-02                          | 2,1E-01        |                                | 3,4E-01         |           | 5,1E-03                   |
| 60       | 8,9E-02                          | 2,1E-01        |                                | 3,4E-01         |           | 5,8E-03                   |
| 70       | 9,0E-02                          |                |                                |                 |           | 6,3E-03                   |
| 80       | 9,1E-02                          |                |                                |                 |           | 6,8E-03                   |
| 90       | 9,1E-02                          |                |                                |                 |           | 7,2E-03                   |
| 100      | 9,2E-02                          |                |                                |                 |           | 7,5E-03                   |
| 120      | 9,2E-02                          |                |                                |                 |           | 8,0E-03                   |
| 180      | 9,2E-02                          |                |                                |                 |           | 8,8E-03                   |
| 200      | 9,2E-02                          |                |                                |                 |           | 8,9E-03                   |
| 300      | 9,3E-02                          |                |                                |                 |           | 9,2E-03                   |
| 360      | 9,3E-02                          |                |                                |                 |           | 9,3E-03                   |
| 400      |                                  |                |                                |                 |           | 9,3E-03                   |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-57**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01                          | 8,2E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                          | 1,4E+00                         |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                          | 1,9E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00                          | 2,3E+00                         |
| 5        | 9,9E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                          | 2,7E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00                          | 3,1E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00                          | 3,5E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00                          | 3,8E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00                          | 4,1E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00                          | 4,4E+00                         |
| 14       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,1E+00                          | 5,5E+00                         |
| 15       | 2,4E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,7E+00   | 2,2E+00                          | 5,7E+00                         |
| 20       | 3,1E+00                          | 2,8E+00  | <b>2,4E+00</b> | 1,8E+00   | 2,3E+00                          | 6,8E+00                         |
| 30       | 4,2E+00                          | 3,6E+00  | <b>3,0E+00</b> | 2,1E+00   | 2,4E+00                          | 8,6E+00                         |
| 40       | 5,2E+00                          | 4,4E+00  | <b>3,4E+00</b> | 2,4E+00   | 2,6E+00                          | 1,0E+01                         |
| 45       | 5,7E+00                          | 4,7E+00  | <b>3,7E+00</b> | 2,5E+00   | 2,7E+00                          | 1,1E+01                         |
| 50       | 6,1E+00                          | 5,1E+00  | <b>3,9E+00</b> | 2,6E+00   | 2,7E+00                          | 1,2E+01                         |
| 60       | 6,9E+00                          | 5,7E+00  | <b>4,2E+00</b> | 2,8E+00   | 2,9E+00                          | 1,3E+01                         |
| 70       | 7,7E+00                          | 6,2E+00  | <b>4,6E+00</b> | 3,0E+00   | 3,0E+00                          | 1,4E+01                         |
| 80       | 8,3E+00                          | 6,8E+00  | <b>4,9E+00</b> | 3,2E+00   | 3,1E+00                          | 1,5E+01                         |
| 90       | 8,9E+00                          | 7,2E+00  | <b>5,2E+00</b> | 3,3E+00   | 3,2E+00                          | 1,6E+01                         |
| 100      | 9,5E+00                          | 7,6E+00  | <b>5,4E+00</b> | 3,5E+00   | 3,3E+00                          | 1,7E+01                         |
| 120      | 1,0E+01                          | 8,4E+00  | <b>5,9E+00</b> | 3,8E+00   | 3,5E+00                          | 1,9E+01                         |
| 180      | 1,3E+01                          | 1,0E+01  | <b>6,9E+00</b> | 4,4E+00   | 3,9E+00                          | 2,3E+01                         |
| 200      | 1,3E+01                          | 1,0E+01  | <b>7,2E+00</b> | 4,5E+00   | 4,1E+00                          | 2,5E+01                         |
| 300      | 1,5E+01                          | 1,2E+01  | <b>8,1E+00</b> | 5,1E+00   | 4,5E+00                          | 2,9E+01                         |
| 360      | 1,6E+01                          | 1,2E+01  | <b>8,4E+00</b> | 5,3E+00   | 4,7E+00                          | 3,1E+01                         |
| 400      | 1,6E+01                          | 1,3E+01  | <b>8,6E+00</b> | 5,4E+00   | 4,8E+00                          | 3,2E+01                         |
| 500      | 1,6E+01                          | 1,3E+01  | <b>8,9E+00</b> | 5,6E+00   | 5,0E+00                          | 3,5E+01                         |
| 600      | 1,7E+01                          | 1,3E+01  | <b>9,1E+00</b> | 5,7E+00   | 5,2E+00                          | 3,6E+01                         |
| 700      | 1,7E+01                          | 1,3E+01  | <b>9,3E+00</b> | 5,8E+00   | 5,3E+00                          | 3,7E+01                         |
| 800      |                                  | 1,4E+01  | <b>9,3E+00</b> | 5,9E+00   | 5,4E+00                          | 3,8E+01                         |
| 900      |                                  | 1,4E+01  | <b>9,4E+00</b> | 5,9E+00   | 5,4E+00                          | 3,9E+01                         |
| 1000     |                                  |          | <b>9,4E+00</b> | 6,0E+00   | 5,5E+00                          | 3,9E+01                         |
| 2000     |                                  |          | <b>9,6E+00</b> | 6,0E+00   | 5,6E+00                          | 4,0E+01                         |
| 3000     |                                  |          | <b>9,6E+00</b> | 6,1E+00   | 5,6E+00                          | 4,0E+01                         |
| 4000     |                                  |          |                | 6,1E+00   |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-57**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,1$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 4,5E-03                          | 6,7E-03        | <b>9,5E-03</b> | 8,5E-03         | 1,2E-02                | 1,8E-01                         |
| 2        | 1,1E-02                          | 1,7E-02        | <b>2,5E-02</b> | 2,3E-02         | 3,6E-02                | 3,9E-01                         |
| 3        | 1,4E-02                          | 2,1E-02        | <b>3,1E-02</b> | 2,8E-02         | 4,5E-02                | 4,6E-01                         |
| 4        | 1,5E-02                          | 2,3E-02        | <b>3,4E-02</b> | 3,0E-02         | 4,9E-02                | 5,0E-01                         |
| 5        | 1,6E-02                          | 2,5E-02        | <b>3,6E-02</b> | 3,2E-02         | 5,1E-02                | 5,2E-01                         |
| 6        | 1,7E-02                          | 2,6E-02        | <b>3,7E-02</b> | 3,3E-02         | 5,4E-02                | 5,4E-01                         |
| 7        | 1,8E-02                          | 2,7E-02        | <b>3,8E-02</b> | 3,4E-02         | 5,5E-02                | 5,6E-01                         |
| 8        | 1,9E-02                          | 2,8E-02        | <b>4,0E-02</b> | 3,5E-02         | 5,7E-02                | 5,7E-01                         |
| 9        | 2,0E-02                          | 2,9E-02        | <b>4,1E-02</b> | 3,6E-02         | 5,8E-02                | 5,9E-01                         |
| 10       | 2,1E-02                          | 3,0E-02        | <b>4,2E-02</b> | 3,7E-02         | 6,0E-02                | 6,0E-01                         |
| 14       | 2,4E-02                          | 3,3E-02        | <b>4,5E-02</b> | 4,0E-02         | 6,3E-02                | 6,4E-01                         |
| 15       | 2,5E-02                          | 3,4E-02        | <b>4,6E-02</b> | 4,0E-02         | 6,4E-02                | 6,4E-01                         |
| 20       | 2,8E-02                          | 3,6E-02        | <b>4,9E-02</b> | 4,2E-02         | 6,7E-02                | 6,7E-01                         |
| 30       | 3,3E-02                          | 4,1E-02        | <b>5,2E-02</b> | 4,5E-02         | 7,0E-02                | 7,0E-01                         |
| 40       | 3,7E-02                          | 4,4E-02        | <b>5,4E-02</b> | 4,6E-02         | 7,1E-02                | 7,1E-01                         |
| 45       | 3,9E-02                          | 4,6E-02        | <b>5,5E-02</b> | 4,7E-02         | 7,1E-02                | 7,1E-01                         |
| 50       | 4,0E-02                          | 4,7E-02        | <b>5,6E-02</b> | 4,7E-02         | 7,2E-02                | 7,2E-01                         |
| 60       | 4,4E-02                          | 4,9E-02        | <b>5,8E-02</b> | 4,8E-02         | 7,2E-02                | 7,2E-01                         |
| 70       | 4,6E-02                          | 5,2E-02        | <b>5,9E-02</b> | 4,9E-02         | 7,3E-02                | 7,3E-01                         |
| 80       | 4,9E-02                          | 5,3E-02        | <b>6,0E-02</b> | 5,0E-02         | 7,3E-02                | 7,3E-01                         |
| 90       | 5,1E-02                          | 5,5E-02        | <b>6,1E-02</b> | 5,0E-02         | 7,4E-02                | 7,4E-01                         |
| 100      | 5,3E-02                          | 5,7E-02        | <b>6,2E-02</b> | 5,1E-02         | 7,4E-02                | 7,4E-01                         |
| 120      | 5,7E-02                          | 5,9E-02        | <b>6,4E-02</b> | 5,2E-02         | 7,4E-02                | 7,4E-01                         |
| 180      | 6,4E-02                          | 6,5E-02        | <b>6,7E-02</b> | 5,3E-02         | 7,5E-02                | 7,5E-01                         |
| 200      | 6,6E-02                          | 6,6E-02        | <b>6,8E-02</b> | 5,4E-02         | 7,6E-02                | 7,6E-01                         |
| 300      | 7,2E-02                          | 7,1E-02        | <b>7,0E-02</b> | 5,5E-02         | 7,6E-02                | 7,6E-01                         |
| 360      | 7,3E-02                          | 7,2E-02        | <b>7,1E-02</b> | 5,5E-02         | 7,6E-02                | 7,7E-01                         |
| 400      | 7,4E-02                          | 7,2E-02        | <b>7,1E-02</b> | 5,6E-02         | 7,7E-02                | 7,7E-01                         |
| 500      | 7,5E-02                          | 7,3E-02        | <b>7,2E-02</b> | 5,6E-02         | 7,7E-02                |                                 |
| 600      | 7,6E-02                          | 7,4E-02        | <b>7,2E-02</b> |                 |                        |                                 |
| 700      | 7,6E-02                          | 7,4E-02        |                |                 |                        |                                 |
| 800      | 7,6E-02                          |                |                |                 |                        |                                 |
| 900      | 7,7E-02                          |                |                |                 |                        |                                 |
| 1000     | 7,7E-02                          |                |                |                 |                        |                                 |
| 2000     |                                  |                |                |                 |                        |                                 |
| 3000     |                                  |                |                |                 |                        |                                 |
| 4000     |                                  |                |                |                 |                        |                                 |
| 5000     |                                  |                |                |                 |                        |                                 |
| 6000     |                                  |                |                |                 |                        |                                 |
| 8000     |                                  |                |                |                 |                        |                                 |
| 10000    |                                  |                |                |                 |                        |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-57**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion<br>f <sub>i</sub> =0,05 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01                           | 8,2E-01                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                           | 1,4E+00                         |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                           | 1,9E+00                         |
| 4        | 8,6E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00                           | 2,3E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                           | 2,7E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00                           | 3,1E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00                           | 3,5E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00                           | 3,8E+00                         |
| 9        | 1,7E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00                           | 4,1E+00                         |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00                           | 4,4E+00                         |
| 14       | 2,4E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,9E+00                           | 5,5E+00                         |
| 15       | 2,6E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,5E+00   | 2,0E+00                           | 5,7E+00                         |
| 20       | 3,3E+00                          | 2,8E+00  | <b>2,3E+00</b> | 1,7E+00   | 2,0E+00                           | 6,8E+00                         |
| 30       | 4,6E+00                          | 3,8E+00  | <b>2,9E+00</b> | 1,9E+00   | 2,1E+00                           | 8,6E+00                         |
| 40       | 5,8E+00                          | 4,7E+00  | <b>3,4E+00</b> | 2,2E+00   | 2,2E+00                           | 1,0E+01                         |
| 45       | 6,4E+00                          | 5,1E+00  | <b>3,6E+00</b> | 2,3E+00   | 2,2E+00                           | 1,1E+01                         |
| 50       | 6,9E+00                          | 5,5E+00  | <b>3,8E+00</b> | 2,4E+00   | 2,3E+00                           | 1,2E+01                         |
| 60       | 8,0E+00                          | 6,3E+00  | <b>4,2E+00</b> | 2,6E+00   | 2,3E+00                           | 1,3E+01                         |
| 70       | 8,9E+00                          | 7,0E+00  | <b>4,6E+00</b> | 2,8E+00   | 2,4E+00                           | 1,4E+01                         |
| 80       | 9,8E+00                          | 7,6E+00  | <b>4,9E+00</b> | 2,9E+00   | 2,4E+00                           | 1,5E+01                         |
| 90       | 1,1E+01                          | 8,3E+00  | <b>5,3E+00</b> | 3,1E+00   | 2,5E+00                           | 1,6E+01                         |
| 100      | 1,2E+01                          | 8,9E+00  | <b>5,6E+00</b> | 3,3E+00   | 2,5E+00                           | 1,7E+01                         |
| 120      | 1,3E+01                          | 1,0E+01  | <b>6,2E+00</b> | 3,5E+00   | 2,6E+00                           | 1,9E+01                         |
| 180      | 1,7E+01                          | 1,3E+01  | <b>7,7E+00</b> | 4,3E+00   | 2,8E+00                           | 2,3E+01                         |
| 200      | 1,8E+01                          | 1,4E+01  | <b>8,1E+00</b> | 4,5E+00   | 2,9E+00                           | 2,5E+01                         |
| 300      | 2,2E+01                          | 1,7E+01  | <b>9,8E+00</b> | 5,3E+00   | 3,1E+00                           | 2,9E+01                         |
| 360      | 2,4E+01                          | 1,8E+01  | <b>1,1E+01</b> | 5,6E+00   | 3,2E+00                           | 3,1E+01                         |
| 400      | 2,6E+01                          | 1,9E+01  | <b>1,1E+01</b> | 5,8E+00   | 3,3E+00                           | 3,2E+01                         |
| 500      | 2,8E+01                          | 2,1E+01  | <b>1,2E+01</b> | 6,2E+00   | 3,4E+00                           | 3,5E+01                         |
| 600      | 2,9E+01                          | 2,2E+01  | <b>1,2E+01</b> | 6,5E+00   | 3,5E+00                           | 3,6E+01                         |
| 700      | 3,0E+01                          | 2,3E+01  | <b>1,3E+01</b> | 6,7E+00   | 3,5E+00                           | 3,7E+01                         |
| 800      | 3,1E+01                          | 2,3E+01  | <b>1,3E+01</b> | 6,9E+00   | 3,6E+00                           | 3,8E+01                         |
| 900      | 3,2E+01                          | 2,4E+01  | <b>1,3E+01</b> | 7,0E+00   | 3,6E+00                           | 3,9E+01                         |
| 1000     | 3,2E+01                          | 2,4E+01  | <b>1,3E+01</b> | 7,0E+00   | 3,6E+00                           | 3,9E+01                         |
| 2000     | 3,3E+01                          | 2,5E+01  | <b>1,4E+01</b> | 7,2E+00   | 3,7E+00                           | 4,0E+01                         |
| 3000     | 3,3E+01                          | 2,5E+01  | <b>1,4E+01</b> | 7,2E+00   | 3,7E+00                           | 4,0E+01                         |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-57**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,05$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 4,2E-04                          | 1,3E-03        | <b>2,4E-03</b> | 2,3E-03         | 6,0E-03                 | 1,8E-01                         |
| 2        | 1,4E-03                          | 4,1E-03        | <b>7,5E-03</b> | 7,1E-03         | 1,8E-02                 | 3,9E-01                         |
| 3        | 1,8E-03                          | 5,2E-03        | <b>9,5E-03</b> | 9,0E-03         | 2,2E-02                 | 4,6E-01                         |
| 4        | 2,1E-03                          | 5,7E-03        | <b>1,0E-02</b> | 9,8E-03         | 2,4E-02                 | 5,0E-01                         |
| 5        | 2,2E-03                          | 6,0E-03        | <b>1,1E-02</b> | 1,0E-02         | 2,6E-02                 | 5,2E-01                         |
| 6        | 2,3E-03                          | 6,3E-03        | <b>1,1E-02</b> | 1,1E-02         | 2,7E-02                 | 5,4E-01                         |
| 7        | 2,5E-03                          | 6,5E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,8E-02                 | 5,6E-01                         |
| 8        | 2,6E-03                          | 6,8E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,8E-02                 | 5,7E-01                         |
| 9        | 2,7E-03                          | 6,9E-03        | <b>1,2E-02</b> | 1,2E-02         | 2,9E-02                 | 5,9E-01                         |
| 10       | 2,8E-03                          | 7,1E-03        | <b>1,3E-02</b> | 1,2E-02         | 3,0E-02                 | 6,0E-01                         |
| 14       | 3,1E-03                          | 7,7E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,2E-02                 | 6,4E-01                         |
| 15       | 3,2E-03                          | 7,8E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,2E-02                 | 6,4E-01                         |
| 20       | 3,5E-03                          | 8,3E-03        | <b>1,4E-02</b> | 1,4E-02         | 3,3E-02                 | 6,7E-01                         |
| 30       | 4,1E-03                          | 8,9E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,5E-02                 | 7,0E-01                         |
| 40       | 4,5E-03                          | 9,3E-03        | <b>1,6E-02</b> | 1,5E-02         | 3,5E-02                 | 7,1E-01                         |
| 45       | 4,6E-03                          | 9,5E-03        | <b>1,6E-02</b> | 1,5E-02         | 3,6E-02                 | 7,1E-01                         |
| 50       | 4,8E-03                          | 9,6E-03        | <b>1,6E-02</b> | 1,5E-02         | 3,6E-02                 | 7,2E-01                         |
| 60       | 5,1E-03                          | 9,9E-03        | <b>1,6E-02</b> | 1,5E-02         | 3,6E-02                 | 7,2E-01                         |
| 70       | 5,3E-03                          | 1,0E-02        | <b>1,6E-02</b> | 1,5E-02         | 3,6E-02                 | 7,3E-01                         |
| 80       | 5,5E-03                          | 1,0E-02        | <b>1,7E-02</b> | 1,5E-02         | 3,7E-02                 | 7,3E-01                         |
| 90       | 5,7E-03                          | 1,0E-02        | <b>1,7E-02</b> | 1,5E-02         | 3,7E-02                 | 7,4E-01                         |
| 100      | 5,9E-03                          | 1,1E-02        | <b>1,7E-02</b> | 1,5E-02         | 3,7E-02                 | 7,4E-01                         |
| 120      | 6,2E-03                          | 1,1E-02        | <b>1,7E-02</b> | 1,6E-02         | 3,7E-02                 | 7,4E-01                         |
| 180      | 6,7E-03                          | 1,1E-02        | <b>1,7E-02</b> | 1,6E-02         | 3,8E-02                 | 7,5E-01                         |
| 200      | 6,9E-03                          | 1,2E-02        | <b>1,7E-02</b> |                 | 3,8E-02                 | 7,6E-01                         |
| 300      | 7,5E-03                          | 1,2E-02        | <b>1,8E-02</b> |                 | 3,8E-02                 | 7,6E-01                         |
| 360      | 7,7E-03                          | 1,2E-02        | <b>1,8E-02</b> |                 | 3,8E-02                 | 7,7E-01                         |
| 400      | 7,8E-03                          | 1,2E-02        |                |                 | 3,8E-02                 | 7,7E-01                         |
| 500      | 8,1E-03                          | 1,2E-02        |                |                 | 3,8E-02                 |                                 |
| 600      | 8,3E-03                          | 1,3E-02        |                |                 | 3,8E-02                 |                                 |
| 700      | 8,4E-03                          | 1,3E-02        |                |                 | 3,8E-02                 |                                 |
| 800      | 8,5E-03                          |                |                |                 | 3,9E-02                 |                                 |
| 900      | 8,6E-03                          |                |                |                 | 3,9E-02                 |                                 |
| 1000     | 8,6E-03                          |                |                |                 |                         |                                 |
| 2000     | 8,8E-03                          |                |                |                 |                         |                                 |
| 3000     | 8,8E-03                          |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-58**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,2E-01  | <b>6,5E-01</b> | 6,0E-01   | 8,9E-01                          | 8,2E-01                         |
| 2        | 4,8E-01                          | 6,9E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00                          | 1,4E+00                         |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                          | 1,9E+00                         |
| 4        | 8,2E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00                          | 2,3E+00                         |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                          | 2,7E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00                          | 3,0E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00                          | 3,4E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,9E+00                          | 3,7E+00                         |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00                          | 4,0E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,0E+00                          | 4,3E+00                         |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,1E+00                          | 5,2E+00                         |
| 15       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,1E+00                          | 5,5E+00                         |
| 20       | 2,9E+00                          | 2,6E+00  | <b>2,3E+00</b> | 1,8E+00   | 2,2E+00                          | 6,4E+00                         |
| 30       | 3,8E+00                          | 3,3E+00  | <b>2,8E+00</b> | 2,0E+00   | 2,4E+00                          | 7,9E+00                         |
| 40       | 4,6E+00                          | 3,9E+00  | <b>3,2E+00</b> | 2,2E+00   | 2,5E+00                          | 9,2E+00                         |
| 45       | 5,0E+00                          | 4,2E+00  | <b>3,3E+00</b> | 2,3E+00   | 2,5E+00                          | 9,7E+00                         |
| 50       | 5,3E+00                          | 4,4E+00  | <b>3,5E+00</b> | 2,4E+00   | 2,6E+00                          | 1,0E+01                         |
| 60       | 5,8E+00                          | 4,8E+00  | <b>3,7E+00</b> | 2,5E+00   | 2,7E+00                          | 1,1E+01                         |
| 70       | 6,3E+00                          | 5,2E+00  | <b>3,9E+00</b> | 2,6E+00   | 2,8E+00                          | 1,2E+01                         |
| 80       | 6,7E+00                          | 5,5E+00  | <b>4,1E+00</b> | 2,7E+00   | 2,8E+00                          | 1,2E+01                         |
| 90       | 7,0E+00                          | 5,7E+00  | <b>4,2E+00</b> | 2,8E+00   | 2,9E+00                          | 1,3E+01                         |
| 100      | 7,3E+00                          | 5,9E+00  | <b>4,4E+00</b> | 2,9E+00   | 2,9E+00                          | 1,4E+01                         |
| 120      | 7,7E+00                          | 6,3E+00  | <b>4,6E+00</b> | 3,0E+00   | 3,0E+00                          | 1,4E+01                         |
| 180      | 8,4E+00                          | 6,9E+00  | <b>4,9E+00</b> | 3,2E+00   | 3,2E+00                          | 1,6E+01                         |
| 200      | 8,6E+00                          | 7,0E+00  | <b>5,0E+00</b> | 3,3E+00   | 3,2E+00                          | 1,6E+01                         |
| 300      | 8,9E+00                          | 7,2E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 360      | 9,0E+00                          | 7,2E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 400      | 9,0E+00                          | 7,3E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 500      | 9,0E+00                          | 7,3E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 600      | 9,0E+00                          | 7,3E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 700      | 9,0E+00                          | 7,3E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,3E+00                          | 1,7E+01                         |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-58**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                 |                 | Ingestion<br>$f_1=0,1$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 4,5E-03                          | 6,6E-03        | <b>9,5E-03</b>                  | 8,5E-03         | 1,2E-02                | 1,8E-01                         |
| 2        | 1,1E-02                          | 1,7E-02        | <b>2,5E-02</b>                  | 2,2E-02         | 3,6E-02                | 3,9E-01                         |
| 3        | 1,4E-02                          | 2,1E-02        | <b>3,1E-02</b>                  | 2,8E-02         | 4,5E-02                | 4,6E-01                         |
| 4        | 1,5E-02                          | 2,3E-02        | <b>3,3E-02</b>                  | 3,0E-02         | 4,9E-02                | 4,9E-01                         |
| 5        | 1,6E-02                          | 2,4E-02        | <b>3,5E-02</b>                  | 3,2E-02         | 5,1E-02                | 5,2E-01                         |
| 6        | 1,7E-02                          | 2,6E-02        | <b>3,7E-02</b>                  | 3,3E-02         | 5,3E-02                | 5,3E-01                         |
| 7        | 1,8E-02                          | 2,7E-02        | <b>3,8E-02</b>                  | 3,4E-02         | 5,5E-02                | 5,5E-01                         |
| 8        | 1,9E-02                          | 2,8E-02        | <b>3,9E-02</b>                  | 3,5E-02         | 5,6E-02                | 5,7E-01                         |
| 9        | 2,0E-02                          | 2,9E-02        | <b>4,0E-02</b>                  | 3,6E-02         | 5,8E-02                | 5,8E-01                         |
| 10       | 2,1E-02                          | 2,9E-02        | <b>4,1E-02</b>                  | 3,7E-02         | 5,9E-02                | 5,9E-01                         |
| 14       | 2,3E-02                          | 3,2E-02        | <b>4,4E-02</b>                  | 3,9E-02         | 6,2E-02                | 6,2E-01                         |
| 15       | 2,4E-02                          | 3,3E-02        | <b>4,5E-02</b>                  | 4,0E-02         | 6,3E-02                | 6,3E-01                         |
| 20       | 2,7E-02                          | 3,5E-02        | <b>4,7E-02</b>                  | 4,1E-02         | 6,5E-02                | 6,6E-01                         |
| 30       | 3,1E-02                          | 3,9E-02        | <b>5,0E-02</b>                  | 4,3E-02         | 6,8E-02                | 6,8E-01                         |
| 40       | 3,4E-02                          | 4,2E-02        | <b>5,2E-02</b>                  | 4,5E-02         | 6,9E-02                | 6,9E-01                         |
| 45       | 3,5E-02                          | 4,3E-02        | <b>5,3E-02</b>                  | 4,5E-02         | 6,9E-02                | 6,9E-01                         |
| 50       | 3,7E-02                          | 4,4E-02        | <b>5,3E-02</b>                  | 4,5E-02         | 6,9E-02                | 6,9E-01                         |
| 60       | 3,9E-02                          | 4,5E-02        | <b>5,4E-02</b>                  | 4,6E-02         | 7,0E-02                | 7,0E-01                         |
| 70       | 4,1E-02                          | 4,7E-02        | <b>5,5E-02</b>                  | 4,6E-02         | 7,0E-02                | 7,0E-01                         |
| 80       | 4,2E-02                          | 4,8E-02        | <b>5,6E-02</b>                  | 4,7E-02         | 7,0E-02                | 7,0E-01                         |
| 90       | 4,3E-02                          | 4,9E-02        | <b>5,6E-02</b>                  | 4,7E-02         | 7,0E-02                | 7,1E-01                         |
| 100      | 4,4E-02                          | 4,9E-02        | <b>5,7E-02</b>                  | 4,7E-02         | 7,1E-02                | 7,1E-01                         |
| 120      | 4,6E-02                          | 5,1E-02        | <b>5,8E-02</b>                  | 4,8E-02         | 7,1E-02                |                                 |
| 180      | 4,9E-02                          | 5,3E-02        | <b>5,9E-02</b>                  | 4,8E-02         |                        |                                 |
| 200      | 4,9E-02                          | 5,3E-02        | <b>5,9E-02</b>                  | 4,8E-02         |                        |                                 |
| 300      | 5,0E-02                          | 5,4E-02        |                                 | 4,9E-02         |                        |                                 |
| 360      | 5,0E-02                          | 5,4E-02        |                                 | 4,9E-02         |                        |                                 |
| 400      |                                  |                |                                 |                 |                        |                                 |
| 500      |                                  |                |                                 |                 |                        |                                 |
| 600      |                                  |                |                                 |                 |                        |                                 |
| 700      |                                  |                |                                 |                 |                        |                                 |
| 800      |                                  |                |                                 |                 |                        |                                 |
| 900      |                                  |                |                                 |                 |                        |                                 |
| 1000     |                                  |                |                                 |                 |                        |                                 |
| 2000     |                                  |                |                                 |                 |                        |                                 |
| 3000     |                                  |                |                                 |                 |                        |                                 |
| 4000     |                                  |                |                                 |                 |                        |                                 |
| 5000     |                                  |                |                                 |                 |                        |                                 |
| 6000     |                                  |                |                                 |                 |                        |                                 |
| 8000     |                                  |                |                                 |                 |                        |                                 |
| 10000    |                                  |                |                                 |                 |                        |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-58**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion<br>f <sub>i</sub> =0,05 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01                           | 8,2E-01                         |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                           | 1,4E+00                         |
| 3        | 6,8E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                           | 1,9E+00                         |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00                           | 2,3E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                           | 2,7E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00                           | 3,0E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00                           | 3,4E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00                           | 3,7E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,9E+00                           | 4,0E+00                         |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00                           | 4,3E+00                         |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,5E+00   | 1,9E+00                           | 5,2E+00                         |
| 15       | 2,4E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,9E+00                           | 5,5E+00                         |
| 20       | 3,1E+00                          | 2,7E+00  | <b>2,2E+00</b> | 1,6E+00   | 2,0E+00                           | 6,4E+00                         |
| 30       | 4,2E+00                          | 3,5E+00  | <b>2,7E+00</b> | 1,8E+00   | 2,1E+00                           | 7,9E+00                         |
| 40       | 5,1E+00                          | 4,2E+00  | <b>3,1E+00</b> | 2,0E+00   | 2,1E+00                           | 9,2E+00                         |
| 45       | 5,5E+00                          | 4,5E+00  | <b>3,2E+00</b> | 2,1E+00   | 2,1E+00                           | 9,7E+00                         |
| 50       | 5,9E+00                          | 4,8E+00  | <b>3,4E+00</b> | 2,2E+00   | 2,2E+00                           | 1,0E+01                         |
| 60       | 6,6E+00                          | 5,3E+00  | <b>3,7E+00</b> | 2,3E+00   | 2,2E+00                           | 1,1E+01                         |
| 70       | 7,2E+00                          | 5,7E+00  | <b>3,9E+00</b> | 2,4E+00   | 2,2E+00                           | 1,2E+01                         |
| 80       | 7,8E+00                          | 6,1E+00  | <b>4,1E+00</b> | 2,5E+00   | 2,3E+00                           | 1,2E+01                         |
| 90       | 8,2E+00                          | 6,4E+00  | <b>4,3E+00</b> | 2,6E+00   | 2,3E+00                           | 1,3E+01                         |
| 100      | 8,6E+00                          | 6,7E+00  | <b>4,4E+00</b> | 2,7E+00   | 2,3E+00                           | 1,4E+01                         |
| 120      | 9,3E+00                          | 7,2E+00  | <b>4,7E+00</b> | 2,8E+00   | 2,4E+00                           | 1,4E+01                         |
| 180      | 1,1E+01                          | 8,2E+00  | <b>5,2E+00</b> | 3,1E+00   | 2,5E+00                           | 1,6E+01                         |
| 200      | 1,1E+01                          | 8,4E+00  | <b>5,3E+00</b> | 3,1E+00   | 2,5E+00                           | 1,6E+01                         |
| 300      | 1,2E+01                          | 9,0E+00  | <b>5,6E+00</b> | 3,3E+00   |                                   | 1,7E+01                         |
| 360      | 1,2E+01                          | 9,1E+00  | <b>5,7E+00</b> | 3,3E+00   |                                   | 1,7E+01                         |
| 400      |                                  | 9,2E+00  | <b>5,7E+00</b> |           |                                   |                                 |
| 500      |                                  | 9,2E+00  | <b>5,7E+00</b> |           |                                   |                                 |
| 600      |                                  | 9,2E+00  | <b>5,8E+00</b> |           |                                   |                                 |
| 700      |                                  | 9,3E+00  | <b>5,8E+00</b> |           |                                   |                                 |
| 800      |                                  | 9,3E+00  |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-58**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,05$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 4,2E-04                          | 1,3E-03        | <b>2,4E-03</b> | 2,3E-03         | 5,9E-03                 | 1,8E-01                         |
| 2        | 1,4E-03                          | 4,1E-03        | <b>7,5E-03</b> | 7,1E-03         | 1,8E-02                 | 3,9E-01                         |
| 3        | 1,8E-03                          | 5,1E-03        | <b>9,4E-03</b> | 8,9E-03         | 2,2E-02                 | 4,6E-01                         |
| 4        | 2,0E-03                          | 5,6E-03        | <b>1,0E-02</b> | 9,7E-03         | 2,4E-02                 | 4,9E-01                         |
| 5        | 2,2E-03                          | 6,0E-03        | <b>1,1E-02</b> | 1,0E-02         | 2,6E-02                 | 5,2E-01                         |
| 6        | 2,3E-03                          | 6,2E-03        | <b>1,1E-02</b> | 1,1E-02         | 2,6E-02                 | 5,3E-01                         |
| 7        | 2,4E-03                          | 6,5E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,7E-02                 | 5,5E-01                         |
| 8        | 2,5E-03                          | 6,7E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,8E-02                 | 5,7E-01                         |
| 9        | 2,6E-03                          | 6,8E-03        | <b>1,2E-02</b> | 1,2E-02         | 2,9E-02                 | 5,8E-01                         |
| 10       | 2,7E-03                          | 7,0E-03        | <b>1,3E-02</b> | 1,2E-02         | 2,9E-02                 | 5,9E-01                         |
| 14       | 3,0E-03                          | 7,6E-03        | <b>1,3E-02</b> | 1,3E-02         | 3,1E-02                 | 6,2E-01                         |
| 15       | 3,1E-03                          | 7,7E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,1E-02                 | 6,3E-01                         |
| 20       | 3,4E-03                          | 8,1E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,3E-02                 | 6,6E-01                         |
| 30       | 3,9E-03                          | 8,6E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,4E-02                 | 6,8E-01                         |
| 40       | 4,2E-03                          | 8,9E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,4E-02                 | 6,9E-01                         |
| 45       | 4,3E-03                          | 9,0E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,4E-02                 | 6,9E-01                         |
| 50       | 4,4E-03                          | 9,2E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,5E-02                 | 6,9E-01                         |
| 60       | 4,6E-03                          | 9,3E-03        | <b>1,5E-02</b> | 1,4E-02         | 3,5E-02                 | 7,0E-01                         |
| 70       | 4,8E-03                          | 9,5E-03        | <b>1,6E-02</b> | 1,4E-02         | 3,5E-02                 | 7,0E-01                         |
| 80       | 4,9E-03                          | 9,6E-03        | <b>1,6E-02</b> | 1,4E-02         | 3,5E-02                 | 7,0E-01                         |
| 90       | 5,0E-03                          | 9,7E-03        |                | 1,5E-02         | 3,5E-02                 | 7,1E-01                         |
| 100      | 5,1E-03                          | 9,7E-03        |                | 1,5E-02         | 3,5E-02                 | 7,1E-01                         |
| 120      | 5,2E-03                          | 9,8E-03        |                |                 | 3,5E-02                 |                                 |
| 180      | 5,4E-03                          | 1,0E-02        |                |                 | 3,6E-02                 |                                 |
| 200      | 5,4E-03                          | 1,0E-02        |                |                 | 3,6E-02                 |                                 |
| 300      | 5,5E-03                          |                |                |                 |                         |                                 |
| 360      | 5,5E-03                          |                |                |                 |                         |                                 |
| 400      | 5,6E-03                          |                |                |                 |                         |                                 |
| 500      | 5,6E-03                          |                |                |                 |                         |                                 |
| 600      |                                  |                |                |                 |                         |                                 |
| 700      |                                  |                |                |                 |                         |                                 |
| 800      |                                  |                |                |                 |                         |                                 |
| 900      |                                  |                |                |                 |                         |                                 |
| 1000     |                                  |                |                |                 |                         |                                 |
| 2000     |                                  |                |                |                 |                         |                                 |
| 3000     |                                  |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-60**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01                          | 8,2E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                          | 1,4E+00                         |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00                          | 1,9E+00                         |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00                          | 2,3E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                          | 2,7E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00                          | 3,1E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00                          | 3,5E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00                          | 3,8E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,0E+00                          | 4,1E+00                         |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00                          | 4,4E+00                         |
| 14       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,1E+00                          | 5,5E+00                         |
| 15       | 2,5E+00                          | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,2E+00                          | 5,8E+00                         |
| 20       | 3,1E+00                          | 2,8E+00  | <b>2,5E+00</b> | 1,8E+00   | 2,3E+00                          | 6,9E+00                         |
| 30       | 4,3E+00                          | 3,7E+00  | <b>3,0E+00</b> | 2,2E+00   | 2,5E+00                          | 8,8E+00                         |
| 40       | 5,4E+00                          | 4,6E+00  | <b>3,5E+00</b> | 2,4E+00   | 2,6E+00                          | 1,1E+01                         |
| 45       | 5,9E+00                          | 4,9E+00  | <b>3,8E+00</b> | 2,6E+00   | 2,7E+00                          | 1,1E+01                         |
| 50       | 6,4E+00                          | 5,3E+00  | <b>4,0E+00</b> | 2,7E+00   | 2,8E+00                          | 1,2E+01                         |
| 60       | 7,3E+00                          | 6,0E+00  | <b>4,4E+00</b> | 2,9E+00   | 2,9E+00                          | 1,4E+01                         |
| 70       | 8,2E+00                          | 6,6E+00  | <b>4,8E+00</b> | 3,1E+00   | 3,1E+00                          | 1,5E+01                         |
| 80       | 9,0E+00                          | 7,2E+00  | <b>5,2E+00</b> | 3,4E+00   | 3,2E+00                          | 1,6E+01                         |
| 90       | 9,7E+00                          | 7,8E+00  | <b>5,5E+00</b> | 3,5E+00   | 3,3E+00                          | 1,8E+01                         |
| 100      | 1,0E+01                          | 8,3E+00  | <b>5,8E+00</b> | 3,7E+00   | 3,5E+00                          | 1,9E+01                         |
| 120      | 1,2E+01                          | 9,3E+00  | <b>6,4E+00</b> | 4,1E+00   | 3,7E+00                          | 2,1E+01                         |
| 180      | 1,5E+01                          | 1,2E+01  | <b>7,8E+00</b> | 4,9E+00   | 4,3E+00                          | 2,7E+01                         |
| 200      | 1,5E+01                          | 1,2E+01  | <b>8,2E+00</b> | 5,1E+00   | 4,5E+00                          | 2,9E+01                         |
| 300      | 1,8E+01                          | 1,5E+01  | <b>9,8E+00</b> | 6,1E+00   | 5,3E+00                          | 3,7E+01                         |
| 360      | 2,0E+01                          | 1,6E+01  | <b>1,1E+01</b> | 6,5E+00   | 5,7E+00                          | 4,1E+01                         |
| 400      | 2,0E+01                          | 1,6E+01  | <b>1,1E+01</b> | 6,8E+00   | 6,0E+00                          | 4,4E+01                         |
| 500      | 2,2E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,3E+00   | 6,5E+00                          | 4,9E+01                         |
| 600      | 2,3E+01                          | 1,8E+01  | <b>1,2E+01</b> | 7,8E+00   | 7,0E+00                          | 5,5E+01                         |
| 700      | 2,4E+01                          | 1,9E+01  | <b>1,3E+01</b> | 8,2E+00   | 7,5E+00                          | 5,9E+01                         |
| 800      | 2,4E+01                          | 1,9E+01  | <b>1,3E+01</b> | 8,5E+00   | 7,9E+00                          | 6,3E+01                         |
| 900      | 2,5E+01                          | 2,0E+01  | <b>1,4E+01</b> | 8,8E+00   | 8,3E+00                          | 6,7E+01                         |
| 1000     | 2,5E+01                          | 2,0E+01  | <b>1,4E+01</b> | 9,1E+00   | 8,6E+00                          | 7,0E+01                         |
| 2000     | 2,8E+01                          | 2,3E+01  | <b>1,6E+01</b> | 1,0E+01   | 1,0E+01                          | 8,7E+01                         |
| 3000     | 2,9E+01                          | 2,3E+01  | <b>1,7E+01</b> | 1,1E+01   | 1,1E+01                          | 9,2E+01                         |
| 4000     | 2,9E+01                          |          | <b>1,7E+01</b> | 1,1E+01   | 1,1E+01                          | 9,4E+01                         |
| 5000     |                                  |          |                |           |                                  | 9,4E+01                         |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-60**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,1$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 4,5E-03                          | 6,7E-03        | <b>9,5E-03</b> | 8,5E-03         | 1,2E-02                | 1,8E-01                         |
| 2        | 1,1E-02                          | 1,7E-02        | <b>2,5E-02</b> | 2,3E-02         | 3,6E-02                | 3,9E-01                         |
| 3        | 1,4E-02                          | 2,1E-02        | <b>3,1E-02</b> | 2,8E-02         | 4,5E-02                | 4,6E-01                         |
| 4        | 1,5E-02                          | 2,3E-02        | <b>3,4E-02</b> | 3,0E-02         | 4,9E-02                | 5,0E-01                         |
| 5        | 1,6E-02                          | 2,5E-02        | <b>3,6E-02</b> | 3,2E-02         | 5,2E-02                | 5,2E-01                         |
| 6        | 1,7E-02                          | 2,6E-02        | <b>3,7E-02</b> | 3,3E-02         | 5,4E-02                | 5,4E-01                         |
| 7        | 1,8E-02                          | 2,7E-02        | <b>3,9E-02</b> | 3,4E-02         | 5,6E-02                | 5,6E-01                         |
| 8        | 1,9E-02                          | 2,8E-02        | <b>4,0E-02</b> | 3,5E-02         | 5,7E-02                | 5,7E-01                         |
| 9        | 2,0E-02                          | 2,9E-02        | <b>4,1E-02</b> | 3,6E-02         | 5,9E-02                | 5,9E-01                         |
| 10       | 2,1E-02                          | 3,0E-02        | <b>4,2E-02</b> | 3,7E-02         | 6,0E-02                | 6,0E-01                         |
| 14       | 2,4E-02                          | 3,3E-02        | <b>4,5E-02</b> | 4,0E-02         | 6,4E-02                | 6,4E-01                         |
| 15       | 2,5E-02                          | 3,4E-02        | <b>4,6E-02</b> | 4,1E-02         | 6,5E-02                | 6,5E-01                         |
| 20       | 2,8E-02                          | 3,7E-02        | <b>4,9E-02</b> | 4,3E-02         | 6,7E-02                | 6,7E-01                         |
| 30       | 3,3E-02                          | 4,1E-02        | <b>5,3E-02</b> | 4,5E-02         | 7,0E-02                | 7,0E-01                         |
| 40       | 3,8E-02                          | 4,5E-02        | <b>5,5E-02</b> | 4,7E-02         | 7,2E-02                | 7,2E-01                         |
| 45       | 4,0E-02                          | 4,7E-02        | <b>5,6E-02</b> | 4,7E-02         | 7,2E-02                | 7,2E-01                         |
| 50       | 4,2E-02                          | 4,8E-02        | <b>5,7E-02</b> | 4,8E-02         | 7,3E-02                | 7,3E-01                         |
| 60       | 4,5E-02                          | 5,1E-02        | <b>5,9E-02</b> | 4,9E-02         | 7,3E-02                | 7,3E-01                         |
| 70       | 4,9E-02                          | 5,3E-02        | <b>6,0E-02</b> | 5,0E-02         | 7,4E-02                | 7,4E-01                         |
| 80       | 5,2E-02                          | 5,6E-02        | <b>6,2E-02</b> | 5,1E-02         | 7,4E-02                | 7,4E-01                         |
| 90       | 5,4E-02                          | 5,8E-02        | <b>6,3E-02</b> | 5,1E-02         | 7,5E-02                | 7,5E-01                         |
| 100      | 5,7E-02                          | 5,9E-02        | <b>6,4E-02</b> | 5,2E-02         | 7,5E-02                | 7,5E-01                         |
| 120      | 6,1E-02                          | 6,3E-02        | <b>6,6E-02</b> | 5,3E-02         | 7,6E-02                | 7,6E-01                         |
| 180      | 7,2E-02                          | 7,1E-02        | <b>7,1E-02</b> | 5,5E-02         | 7,7E-02                | 7,7E-01                         |
| 200      | 7,4E-02                          | 7,3E-02        | <b>7,2E-02</b> | 5,6E-02         | 7,7E-02                | 7,7E-01                         |
| 300      | 8,4E-02                          | 8,0E-02        | <b>7,6E-02</b> | 5,8E-02         | 7,9E-02                | 7,9E-01                         |
| 360      | 8,8E-02                          | 8,3E-02        | <b>7,7E-02</b> | 5,9E-02         | 7,9E-02                | 7,9E-01                         |
| 400      | 8,9E-02                          | 8,4E-02        | <b>7,8E-02</b> | 6,0E-02         | 7,9E-02                | 7,9E-01                         |
| 500      | 9,2E-02                          | 8,6E-02        | <b>8,0E-02</b> | 6,0E-02         | 8,0E-02                | 8,0E-01                         |
| 600      | 9,4E-02                          | 8,8E-02        | <b>8,1E-02</b> | 6,1E-02         | 8,0E-02                | 8,0E-01                         |
| 700      | 9,6E-02                          | 8,9E-02        | <b>8,1E-02</b> | 6,1E-02         | 8,0E-02                | 8,0E-01                         |
| 800      | 9,6E-02                          | 8,9E-02        | <b>8,2E-02</b> | 6,2E-02         | 8,1E-02                | 8,1E-01                         |
| 900      | 9,7E-02                          | 9,0E-02        | <b>8,2E-02</b> | 6,2E-02         | 8,1E-02                | 8,1E-01                         |
| 1000     | 9,7E-02                          | 9,0E-02        | <b>8,2E-02</b> | 6,2E-02         | 8,1E-02                | 8,1E-01                         |
| 2000     | 9,9E-02                          | 9,2E-02        | <b>8,4E-02</b> | 6,3E-02         | 8,2E-02                | 8,2E-01                         |
| 3000     | 1,0E-01                          | 9,2E-02        | <b>8,4E-02</b> | 6,3E-02         | 8,3E-02                | 8,3E-01                         |
| 4000     | 1,0E-01                          | 9,3E-02        |                |                 | 8,3E-02                | 8,3E-01                         |
| 5000     |                                  | 9,3E-02        |                |                 |                        |                                 |
| 6000     |                                  |                |                |                 |                        |                                 |
| 8000     |                                  |                |                |                 |                        |                                 |
| 10000    |                                  |                |                |                 |                        |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Co-60**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion<br>f <sub>i</sub> =0,05 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01                           | 8,2E-01                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                           | 1,4E+00                         |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                           | 1,9E+00                         |
| 4        | 8,6E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00                           | 2,3E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                           | 2,7E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00                           | 3,1E+00                         |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00                           | 3,5E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00                           | 3,8E+00                         |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00                           | 4,1E+00                         |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,9E+00                           | 4,4E+00                         |
| 14       | 2,5E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 2,0E+00                           | 5,5E+00                         |
| 15       | 2,6E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,5E+00   | 2,0E+00                           | 5,8E+00                         |
| 20       | 3,3E+00                          | 2,9E+00  | <b>2,4E+00</b> | 1,7E+00   | 2,0E+00                           | 6,9E+00                         |
| 30       | 4,7E+00                          | 3,9E+00  | <b>2,9E+00</b> | 2,0E+00   | 2,1E+00                           | 8,8E+00                         |
| 40       | 6,0E+00                          | 4,9E+00  | <b>3,4E+00</b> | 2,2E+00   | 2,2E+00                           | 1,1E+01                         |
| 45       | 6,7E+00                          | 5,3E+00  | <b>3,7E+00</b> | 2,3E+00   | 2,2E+00                           | 1,1E+01                         |
| 50       | 7,3E+00                          | 5,8E+00  | <b>3,9E+00</b> | 2,5E+00   | 2,3E+00                           | 1,2E+01                         |
| 60       | 8,5E+00                          | 6,6E+00  | <b>4,4E+00</b> | 2,7E+00   | 2,4E+00                           | 1,4E+01                         |
| 70       | 9,6E+00                          | 7,4E+00  | <b>4,8E+00</b> | 2,9E+00   | 2,4E+00                           | 1,5E+01                         |
| 80       | 1,1E+01                          | 8,2E+00  | <b>5,2E+00</b> | 3,1E+00   | 2,5E+00                           | 1,6E+01                         |
| 90       | 1,2E+01                          | 9,0E+00  | <b>5,7E+00</b> | 3,3E+00   | 2,6E+00                           | 1,8E+01                         |
| 100      | 1,3E+01                          | 9,7E+00  | <b>6,0E+00</b> | 3,5E+00   | 2,6E+00                           | 1,9E+01                         |
| 120      | 1,5E+01                          | 1,1E+01  | <b>6,8E+00</b> | 3,8E+00   | 2,7E+00                           | 2,1E+01                         |
| 180      | 2,0E+01                          | 1,5E+01  | <b>8,9E+00</b> | 4,8E+00   | 3,0E+00                           | 2,7E+01                         |
| 200      | 2,2E+01                          | 1,6E+01  | <b>9,5E+00</b> | 5,1E+00   | 3,1E+00                           | 2,9E+01                         |
| 300      | 2,9E+01                          | 2,2E+01  | <b>1,2E+01</b> | 6,5E+00   | 3,5E+00                           | 3,7E+01                         |
| 360      | 3,3E+01                          | 2,5E+01  | <b>1,4E+01</b> | 7,3E+00   | 3,7E+00                           | 4,1E+01                         |
| 400      | 3,6E+01                          | 2,7E+01  | <b>1,5E+01</b> | 7,8E+00   | 3,9E+00                           | 4,4E+01                         |
| 500      | 4,2E+01                          | 3,1E+01  | <b>1,7E+01</b> | 8,8E+00   | 4,1E+00                           | 4,9E+01                         |
| 600      | 4,7E+01                          | 3,5E+01  | <b>1,9E+01</b> | 9,8E+00   | 4,4E+00                           | 5,5E+01                         |
| 700      | 5,2E+01                          | 3,8E+01  | <b>2,1E+01</b> | 1,1E+01   | 4,6E+00                           | 5,9E+01                         |
| 800      | 5,6E+01                          | 4,1E+01  | <b>2,3E+01</b> | 1,1E+01   | 4,8E+00                           | 6,3E+01                         |
| 900      | 5,9E+01                          | 4,4E+01  | <b>2,4E+01</b> | 1,2E+01   | 5,0E+00                           | 6,7E+01                         |
| 1000     | 6,3E+01                          | 4,6E+01  | <b>2,5E+01</b> | 1,3E+01   | 5,2E+00                           | 7,0E+01                         |
| 2000     | 8,1E+01                          | 5,9E+01  | <b>3,2E+01</b> | 1,6E+01   | 6,0E+00                           | 8,7E+01                         |
| 3000     | 8,7E+01                          | 6,4E+01  | <b>3,5E+01</b> | 1,7E+01   | 6,3E+00                           | 9,2E+01                         |
| 4000     | 9,0E+01                          | 6,6E+01  | <b>3,6E+01</b> | 1,8E+01   | 6,4E+00                           | 9,4E+01                         |
| 5000     | 9,2E+01                          | 6,7E+01  | <b>3,6E+01</b> | 1,8E+01   | 6,4E+00                           | 9,4E+01                         |
| 6000     | 9,2E+01                          | 6,8E+01  | <b>3,7E+01</b> |           |                                   |                                 |
| 8000     | 9,3E+01                          | 6,8E+01  | <b>3,7E+01</b> |           |                                   |                                 |
| 10000    | 9,3E+01                          |          |                |           |                                   |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Co-60**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                                 |                 | Ingestion<br>$f_1=0,05$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 4,2E-04                          | 1,3E-03        | <b>2,4E-03</b>                  | 2,3E-03         | 6,0E-03                 | 1,8E-01                         |
| 2        | 1,4E-03                          | 4,1E-03        | <b>7,5E-03</b>                  | 7,2E-03         | 1,8E-02                 | 3,9E-01                         |
| 3        | 1,8E-03                          | 5,2E-03        | <b>9,5E-03</b>                  | 9,0E-03         | 2,2E-02                 | 4,6E-01                         |
| 4        | 2,1E-03                          | 5,7E-03        | <b>1,0E-02</b>                  | 9,9E-03         | 2,5E-02                 | 5,0E-01                         |
| 5        | 2,2E-03                          | 6,0E-03        | <b>1,1E-02</b>                  | 1,0E-02         | 2,6E-02                 | 5,2E-01                         |
| 6        | 2,3E-03                          | 6,3E-03        | <b>1,1E-02</b>                  | 1,1E-02         | 2,7E-02                 | 5,4E-01                         |
| 7        | 2,5E-03                          | 6,6E-03        | <b>1,2E-02</b>                  | 1,1E-02         | 2,8E-02                 | 5,6E-01                         |
| 8        | 2,6E-03                          | 6,8E-03        | <b>1,2E-02</b>                  | 1,2E-02         | 2,9E-02                 | 5,7E-01                         |
| 9        | 2,7E-03                          | 7,0E-03        | <b>1,2E-02</b>                  | 1,2E-02         | 2,9E-02                 | 5,9E-01                         |
| 10       | 2,8E-03                          | 7,2E-03        | <b>1,3E-02</b>                  | 1,2E-02         | 3,0E-02                 | 6,0E-01                         |
| 14       | 3,1E-03                          | 7,8E-03        | <b>1,4E-02</b>                  | 1,3E-02         | 3,2E-02                 | 6,4E-01                         |
| 15       | 3,2E-03                          | 7,9E-03        | <b>1,4E-02</b>                  | 1,3E-02         | 3,2E-02                 | 6,5E-01                         |
| 20       | 3,6E-03                          | 8,4E-03        | <b>1,5E-02</b>                  | 1,4E-02         | 3,4E-02                 | 6,7E-01                         |
| 30       | 4,1E-03                          | 9,0E-03        | <b>1,5E-02</b>                  | 1,4E-02         | 3,5E-02                 | 7,0E-01                         |
| 40       | 4,6E-03                          | 9,5E-03        | <b>1,6E-02</b>                  | 1,5E-02         | 3,6E-02                 | 7,2E-01                         |
| 45       | 4,8E-03                          | 9,7E-03        | <b>1,6E-02</b>                  | 1,5E-02         | 3,6E-02                 | 7,2E-01                         |
| 50       | 4,9E-03                          | 9,8E-03        | <b>1,6E-02</b>                  | 1,5E-02         | 3,6E-02                 | 7,3E-01                         |
| 60       | 5,3E-03                          | 1,0E-02        | <b>1,6E-02</b>                  | 1,5E-02         | 3,7E-02                 | 7,3E-01                         |
| 70       | 5,5E-03                          | 1,0E-02        | <b>1,7E-02</b>                  | 1,5E-02         | 3,7E-02                 | 7,4E-01                         |
| 80       | 5,8E-03                          | 1,1E-02        | <b>1,7E-02</b>                  | 1,5E-02         | 3,7E-02                 | 7,4E-01                         |
| 90       | 6,0E-03                          | 1,1E-02        | <b>1,7E-02</b>                  | 1,6E-02         | 3,7E-02                 | 7,5E-01                         |
| 100      | 6,2E-03                          | 1,1E-02        | <b>1,7E-02</b>                  | 1,6E-02         | 3,8E-02                 | 7,5E-01                         |
| 120      | 6,5E-03                          | 1,1E-02        | <b>1,7E-02</b>                  | 1,6E-02         | 3,8E-02                 | 7,6E-01                         |
| 180      | 7,4E-03                          | 1,2E-02        | <b>1,8E-02</b>                  | 1,6E-02         | 3,9E-02                 | 7,7E-01                         |
| 200      | 7,6E-03                          | 1,2E-02        | <b>1,8E-02</b>                  | 1,6E-02         | 3,9E-02                 | 7,7E-01                         |
| 300      | 8,6E-03                          | 1,3E-02        | <b>1,9E-02</b>                  | 1,7E-02         | 3,9E-02                 | 7,9E-01                         |
| 360      | 9,1E-03                          | 1,3E-02        | <b>1,9E-02</b>                  | 1,7E-02         | 3,9E-02                 | 7,9E-01                         |
| 400      | 9,4E-03                          | 1,4E-02        | <b>1,9E-02</b>                  | 1,7E-02         | 4,0E-02                 | 7,9E-01                         |
| 500      | 1,0E-02                          | 1,4E-02        | <b>1,9E-02</b>                  | 1,7E-02         | 4,0E-02                 | 8,0E-01                         |
| 600      | 1,1E-02                          | 1,5E-02        | <b>2,0E-02</b>                  | 1,7E-02         | 4,0E-02                 | 8,0E-01                         |
| 700      | 1,1E-02                          | 1,5E-02        | <b>2,0E-02</b>                  | 1,8E-02         | 4,0E-02                 | 8,0E-01                         |
| 800      | 1,2E-02                          | 1,5E-02        | <b>2,0E-02</b>                  | 1,8E-02         | 4,0E-02                 | 8,1E-01                         |
| 900      | 1,2E-02                          | 1,6E-02        | <b>2,0E-02</b>                  | 1,8E-02         | 4,1E-02                 | 8,1E-01                         |
| 1000     | 1,3E-02                          | 1,6E-02        | <b>2,1E-02</b>                  | 1,8E-02         | 4,1E-02                 | 8,1E-01                         |
| 2000     | 1,5E-02                          | 1,8E-02        | <b>2,2E-02</b>                  | 1,9E-02         | 4,1E-02                 | 8,2E-01                         |
| 3000     | 1,6E-02                          | 1,8E-02        | <b>2,2E-02</b>                  | 1,9E-02         | 4,1E-02                 | 8,3E-01                         |
| 4000     | 1,6E-02                          | 1,9E-02        |                                 |                 | 4,1E-02                 | 8,3E-01                         |
| 5000     |                                  | 1,9E-02        |                                 |                 | 4,2E-02                 |                                 |
| 6000     |                                  |                |                                 |                 | 4,2E-02                 |                                 |
| 8000     |                                  |                |                                 |                 |                         |                                 |
| 10000    |                                  |                |                                 |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ni-59**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 8,2E-02                          | 9,3E-02        | <b>1,1E-01</b> | 9,2E-02         | 1,4E-02   | 3,9E-01                   |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,1E-02   | 6,5E-01                   |
| 3        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 4        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 5        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 6        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 7        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 8        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 9        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 10       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 14       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 15       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 20       | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                   |
| 30       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                   |
| 40       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                   |
| 45       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                   |
| 50       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                   |
| 60       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,8E-01                   |
| 70       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                   |
| 80       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                   |
| 90       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                   |
| 100      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                   |
| 120      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,9E-01                   |
| 180      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,5E-02   | 6,9E-01                   |
| 200      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,5E-02   | 7,0E-01                   |
| 300      | 1,5E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 3,6E-02   | 7,1E-01                   |
| 360      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,6E-02   | 7,2E-01                   |
| 400      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,6E-02   | 7,3E-01                   |
| 500      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,7E-02   | 7,4E-01                   |
| 600      | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 3,7E-02   | 7,5E-01                   |
| 700      | 1,6E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,9E-01         | 3,8E-02   | 7,6E-01                   |
| 800      | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,9E-01         | 3,9E-02   | 7,7E-01                   |
| 900      | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 3,9E-02   | 7,8E-01                   |
| 1000     | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 4,0E-02   | 7,9E-01                   |
| 2000     | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 4,3E-02   | 8,6E-01                   |
| 3000     | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 4,5E-02   | 9,0E-01                   |
| 4000     | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 4,6E-02   | 9,2E-01                   |
| 5000     | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 4,7E-02   | 9,4E-01                   |
| 6000     | 2,0E-01                          |                | <b>2,7E-01</b> |                 | 4,7E-02   | 9,4E-01                   |
| 8000     | 2,1E-01                          |                | <b>2,8E-01</b> |                 | 4,7E-02   | 9,5E-01                   |
| 10000    | 2,1E-01                          |                | <b>2,8E-01</b> |                 | 4,8E-02   | 9,5E-01                   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ni-59**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 9,1E-03                          | 1,2E-02        | <b>1,6E-02</b> | 1,4E-02         | 1,4E-02   | 3,9E-01                   |
| 2        | 1,7E-02                          | 2,3E-02        | <b>3,1E-02</b> | 2,7E-02         | 3,1E-02   | 6,5E-01                   |
| 3        | 1,8E-02                          | 2,4E-02        | <b>3,2E-02</b> | 2,8E-02         | 3,3E-02   | 6,7E-01                   |
| 4        | 1,8E-02                          | 2,4E-02        | <b>3,3E-02</b> | 2,8E-02         | 3,3E-02   | 6,7E-01                   |
| 5        | 1,9E-02                          | 2,5E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 6        | 1,9E-02                          | 2,5E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 7        | 2,0E-02                          | 2,6E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 8        | 2,0E-02                          | 2,6E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 9        | 2,1E-02                          | 2,6E-02        | <b>3,4E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 10       | 2,1E-02                          | 2,7E-02        | <b>3,4E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 14       | 2,3E-02                          | 2,8E-02        | <b>3,5E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 15       | 2,4E-02                          | 2,8E-02        | <b>3,5E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 20       | 2,6E-02                          | 3,0E-02        | <b>3,6E-02</b> | 3,0E-02         | 3,3E-02   | 6,7E-01                   |
| 30       | 3,0E-02                          | 3,3E-02        | <b>3,7E-02</b> | 3,1E-02         | 3,4E-02   | 6,7E-01                   |
| 40       | 3,4E-02                          | 3,5E-02        | <b>3,9E-02</b> | 3,1E-02         | 3,4E-02   | 6,7E-01                   |
| 45       | 3,5E-02                          | 3,7E-02        | <b>3,9E-02</b> | 3,2E-02         | 3,4E-02   | 6,7E-01                   |
| 50       | 3,7E-02                          | 3,8E-02        | <b>4,0E-02</b> | 3,2E-02         | 3,4E-02   | 6,7E-01                   |
| 60       | 4,0E-02                          | 4,0E-02        | <b>4,1E-02</b> | 3,2E-02         | 3,4E-02   | 6,8E-01                   |
| 70       | 4,2E-02                          | 4,2E-02        | <b>4,2E-02</b> | 3,3E-02         | 3,4E-02   | 6,8E-01                   |
| 80       | 4,5E-02                          | 4,4E-02        | <b>4,3E-02</b> | 3,3E-02         | 3,4E-02   | 6,8E-01                   |
| 90       | 4,7E-02                          | 4,5E-02        | <b>4,4E-02</b> | 3,4E-02         | 3,4E-02   | 6,8E-01                   |
| 100      | 4,9E-02                          | 4,7E-02        | <b>4,5E-02</b> | 3,4E-02         | 3,4E-02   | 6,8E-01                   |
| 120      | 5,3E-02                          | 5,0E-02        | <b>4,6E-02</b> | 3,5E-02         | 3,4E-02   | 6,9E-01                   |
| 180      | 6,2E-02                          | 5,6E-02        | <b>5,0E-02</b> | 3,7E-02         | 3,5E-02   | 6,9E-01                   |
| 200      | 6,5E-02                          | 5,8E-02        | <b>5,1E-02</b> | 3,7E-02         | 3,5E-02   | 7,0E-01                   |
| 300      | 7,3E-02                          | 6,5E-02        | <b>5,5E-02</b> | 3,9E-02         | 3,6E-02   | 7,1E-01                   |
| 360      | 7,7E-02                          | 6,8E-02        | <b>5,6E-02</b> | 4,0E-02         | 3,6E-02   | 7,2E-01                   |
| 400      | 7,9E-02                          | 6,9E-02        | <b>5,7E-02</b> | 4,1E-02         | 3,6E-02   | 7,3E-01                   |
| 500      | 8,3E-02                          | 7,2E-02        | <b>5,9E-02</b> | 4,2E-02         | 3,7E-02   | 7,4E-01                   |
| 600      | 8,6E-02                          | 7,4E-02        | <b>6,1E-02</b> | 4,3E-02         | 3,7E-02   | 7,5E-01                   |
| 700      | 8,8E-02                          | 7,6E-02        | <b>6,2E-02</b> | 4,4E-02         | 3,8E-02   | 7,6E-01                   |
| 800      | 9,0E-02                          | 7,7E-02        | <b>6,3E-02</b> | 4,4E-02         | 3,9E-02   | 7,7E-01                   |
| 900      | 9,1E-02                          | 7,9E-02        | <b>6,4E-02</b> | 4,5E-02         | 3,9E-02   | 7,8E-01                   |
| 1000     | 9,3E-02                          | 8,0E-02        | <b>6,5E-02</b> | 4,6E-02         | 4,0E-02   | 7,9E-01                   |
| 2000     | 1,0E-01                          | 8,8E-02        | <b>7,1E-02</b> | 5,0E-02         | 4,3E-02   | 8,6E-01                   |
| 3000     | 1,1E-01                          | 9,2E-02        | <b>7,4E-02</b> | 5,2E-02         | 4,5E-02   | 9,0E-01                   |
| 4000     | 1,1E-01                          | 9,4E-02        | <b>7,6E-02</b> | 5,3E-02         | 4,6E-02   | 9,2E-01                   |
| 5000     |                                  | 9,6E-02        | <b>7,7E-02</b> | 5,4E-02         | 4,7E-02   | 9,4E-01                   |
| 6000     |                                  | 9,6E-02        | <b>7,8E-02</b> | 5,5E-02         | 4,7E-02   | 9,4E-01                   |
| 8000     |                                  | 9,7E-02        | <b>7,8E-02</b> | 5,5E-02         | 4,7E-02   | 9,5E-01                   |
| 10000    |                                  | 9,7E-02        |                |                 | 4,8E-02   | 9,5E-01                   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Ni-59**

| Zeit (d) | Inhalation | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|-----------|---------------------------|
|          | Carbonyl   |           |                           |
| 1        | 3,0E-01    |           |                           |
| 2        | 6,3E-01    |           |                           |
| 3        | 6,6E-01    |           |                           |
| 4        | 6,7E-01    |           |                           |
| 5        | 6,7E-01    |           |                           |
| 6        | 6,7E-01    |           |                           |
| 7        | 6,7E-01    |           |                           |
| 8        | 6,7E-01    |           |                           |
| 9        | 6,7E-01    |           |                           |
| 10       | 6,7E-01    |           |                           |
| 14       | 6,7E-01    |           |                           |
| 15       | 6,7E-01    |           |                           |
| 20       | 6,7E-01    |           |                           |
| 30       | 6,7E-01    |           |                           |
| 40       | 6,7E-01    |           |                           |
| 45       | 6,7E-01    |           |                           |
| 50       | 6,7E-01    |           |                           |
| 60       | 6,8E-01    |           |                           |
| 70       | 6,8E-01    |           |                           |
| 80       | 6,8E-01    |           |                           |
| 90       | 6,8E-01    |           |                           |
| 100      | 6,8E-01    |           |                           |
| 120      | 6,9E-01    |           |                           |
| 180      | 6,9E-01    |           |                           |
| 200      | 7,0E-01    |           |                           |
| 300      | 7,1E-01    |           |                           |
| 360      | 7,2E-01    |           |                           |
| 400      | 7,3E-01    |           |                           |
| 500      | 7,4E-01    |           |                           |
| 600      | 7,5E-01    |           |                           |
| 700      | 7,6E-01    |           |                           |
| 800      | 7,7E-01    |           |                           |
| 900      | 7,8E-01    |           |                           |
| 1000     | 7,9E-01    |           |                           |
| 2000     | 8,6E-01    |           |                           |
| 3000     | 9,0E-01    |           |                           |
| 4000     | 9,2E-01    |           |                           |
| 5000     | 9,4E-01    |           |                           |
| 6000     | 9,4E-01    |           |                           |
| 8000     | 9,5E-01    |           |                           |
| 10000    | 9,5E-01    |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ni-63**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                                 |
| 1        | 8,2E-02                          | 9,3E-02        | <b>1,1E-01</b> | 9,2E-02         | 1,4E-02   | 3,9E-01                         |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,1E-02   | 6,5E-01                         |
| 3        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 4        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 5        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 6        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 7        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 8        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 9        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 10       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 14       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 15       | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 20       | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,3E-02   | 6,7E-01                         |
| 30       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                         |
| 40       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                         |
| 45       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                         |
| 50       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,7E-01                         |
| 60       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,6E-01         | 3,4E-02   | 6,8E-01                         |
| 70       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                         |
| 80       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                         |
| 90       | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                         |
| 100      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,8E-01                         |
| 120      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,4E-02   | 6,9E-01                         |
| 180      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,5E-02   | 6,9E-01                         |
| 200      | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 3,5E-02   | 7,0E-01                         |
| 300      | 1,5E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 3,6E-02   | 7,1E-01                         |
| 360      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,6E-02   | 7,2E-01                         |
| 400      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,6E-02   | 7,2E-01                         |
| 500      | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 3,7E-02   | 7,4E-01                         |
| 600      | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 3,7E-02   | 7,5E-01                         |
| 700      | 1,6E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,9E-01         | 3,8E-02   | 7,6E-01                         |
| 800      | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,9E-01         | 3,9E-02   | 7,7E-01                         |
| 900      | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 3,9E-02   | 7,8E-01                         |
| 1000     | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 4,0E-02   | 7,9E-01                         |
| 2000     | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 4,3E-02   | 8,6E-01                         |
| 3000     | 1,9E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 4,5E-02   | 9,0E-01                         |
| 4000     | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 4,6E-02   | 9,2E-01                         |
| 5000     | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 4,6E-02   | 9,3E-01                         |
| 6000     |                                  |                |                | 2,3E-01         | 4,7E-02   | 9,3E-01                         |
| 8000     |                                  |                |                |                 | 4,7E-02   | 9,4E-01                         |
| 10000    |                                  |                |                |                 |           | 9,4E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ni-63**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 9,1E-03                          | 1,2E-02        | <b>1,6E-02</b> | 1,4E-02         | 1,4E-02   | 3,9E-01                   |
| 2        | 1,7E-02                          | 2,3E-02        | <b>3,1E-02</b> | 2,7E-02         | 3,1E-02   | 6,5E-01                   |
| 3        | 1,8E-02                          | 2,4E-02        | <b>3,2E-02</b> | 2,8E-02         | 3,3E-02   | 6,7E-01                   |
| 4        | 1,8E-02                          | 2,4E-02        | <b>3,3E-02</b> | 2,8E-02         | 3,3E-02   | 6,7E-01                   |
| 5        | 1,9E-02                          | 2,5E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 6        | 1,9E-02                          | 2,5E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 7        | 2,0E-02                          | 2,6E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 8        | 2,0E-02                          | 2,6E-02        | <b>3,3E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 9        | 2,1E-02                          | 2,6E-02        | <b>3,4E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 10       | 2,1E-02                          | 2,7E-02        | <b>3,4E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 14       | 2,3E-02                          | 2,8E-02        | <b>3,5E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 15       | 2,4E-02                          | 2,8E-02        | <b>3,5E-02</b> | 2,9E-02         | 3,3E-02   | 6,7E-01                   |
| 20       | 2,6E-02                          | 3,0E-02        | <b>3,6E-02</b> | 3,0E-02         | 3,3E-02   | 6,7E-01                   |
| 30       | 3,0E-02                          | 3,3E-02        | <b>3,7E-02</b> | 3,1E-02         | 3,4E-02   | 6,7E-01                   |
| 40       | 3,4E-02                          | 3,5E-02        | <b>3,9E-02</b> | 3,1E-02         | 3,4E-02   | 6,7E-01                   |
| 45       | 3,5E-02                          | 3,7E-02        | <b>3,9E-02</b> | 3,2E-02         | 3,4E-02   | 6,7E-01                   |
| 50       | 3,7E-02                          | 3,8E-02        | <b>4,0E-02</b> | 3,2E-02         | 3,4E-02   | 6,7E-01                   |
| 60       | 4,0E-02                          | 4,0E-02        | <b>4,1E-02</b> | 3,2E-02         | 3,4E-02   | 6,8E-01                   |
| 70       | 4,2E-02                          | 4,2E-02        | <b>4,2E-02</b> | 3,3E-02         | 3,4E-02   | 6,8E-01                   |
| 80       | 4,5E-02                          | 4,4E-02        | <b>4,3E-02</b> | 3,3E-02         | 3,4E-02   | 6,8E-01                   |
| 90       | 4,7E-02                          | 4,5E-02        | <b>4,4E-02</b> | 3,4E-02         | 3,4E-02   | 6,8E-01                   |
| 100      | 4,9E-02                          | 4,7E-02        | <b>4,5E-02</b> | 3,4E-02         | 3,4E-02   | 6,8E-01                   |
| 120      | 5,3E-02                          | 5,0E-02        | <b>4,6E-02</b> | 3,5E-02         | 3,4E-02   | 6,9E-01                   |
| 180      | 6,2E-02                          | 5,6E-02        | <b>5,0E-02</b> | 3,7E-02         | 3,5E-02   | 6,9E-01                   |
| 200      | 6,4E-02                          | 5,8E-02        | <b>5,1E-02</b> | 3,7E-02         | 3,5E-02   | 7,0E-01                   |
| 300      | 7,3E-02                          | 6,5E-02        | <b>5,5E-02</b> | 3,9E-02         | 3,6E-02   | 7,1E-01                   |
| 360      | 7,7E-02                          | 6,7E-02        | <b>5,6E-02</b> | 4,0E-02         | 3,6E-02   | 7,2E-01                   |
| 400      | 7,9E-02                          | 6,9E-02        | <b>5,7E-02</b> | 4,1E-02         | 3,6E-02   | 7,2E-01                   |
| 500      | 8,3E-02                          | 7,2E-02        | <b>5,9E-02</b> | 4,2E-02         | 3,7E-02   | 7,4E-01                   |
| 600      | 8,6E-02                          | 7,4E-02        | <b>6,0E-02</b> | 4,3E-02         | 3,7E-02   | 7,5E-01                   |
| 700      | 8,8E-02                          | 7,6E-02        | <b>6,2E-02</b> | 4,4E-02         | 3,8E-02   | 7,6E-01                   |
| 800      | 8,9E-02                          | 7,7E-02        | <b>6,3E-02</b> | 4,4E-02         | 3,9E-02   | 7,7E-01                   |
| 900      | 9,1E-02                          | 7,8E-02        | <b>6,4E-02</b> | 4,5E-02         | 3,9E-02   | 7,8E-01                   |
| 1000     | 9,2E-02                          | 8,0E-02        | <b>6,4E-02</b> | 4,5E-02         | 4,0E-02   | 7,9E-01                   |
| 2000     | 1,0E-01                          | 8,7E-02        | <b>7,0E-02</b> | 5,0E-02         | 4,3E-02   | 8,6E-01                   |
| 3000     | 1,1E-01                          | 9,1E-02        | <b>7,4E-02</b> | 5,2E-02         | 4,5E-02   | 9,0E-01                   |
| 4000     | 1,1E-01                          | 9,3E-02        | <b>7,5E-02</b> | 5,3E-02         | 4,6E-02   | 9,2E-01                   |
| 5000     |                                  | 9,5E-02        | <b>7,6E-02</b> | 5,4E-02         | 4,6E-02   | 9,3E-01                   |
| 6000     |                                  | 9,5E-02        | <b>7,7E-02</b> | 5,4E-02         | 4,7E-02   | 9,3E-01                   |
| 8000     |                                  | 9,6E-02        | <b>7,7E-02</b> |                 | 4,7E-02   | 9,4E-01                   |
| 10000    |                                  | 9,6E-02        |                |                 |           | 9,4E-01                   |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Ni-63**

| Zeit (d) | Inhalation | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|-----------|---------------------------|
|          | Carbonyl   |           |                           |
| 1        | 3,0E-01    |           |                           |
| 2        | 6,3E-01    |           |                           |
| 3        | 6,6E-01    |           |                           |
| 4        | 6,7E-01    |           |                           |
| 5        | 6,7E-01    |           |                           |
| 6        | 6,7E-01    |           |                           |
| 7        | 6,7E-01    |           |                           |
| 8        | 6,7E-01    |           |                           |
| 9        | 6,7E-01    |           |                           |
| 10       | 6,7E-01    |           |                           |
| 14       | 6,7E-01    |           |                           |
| 15       | 6,7E-01    |           |                           |
| 20       | 6,7E-01    |           |                           |
| 30       | 6,7E-01    |           |                           |
| 40       | 6,7E-01    |           |                           |
| 45       | 6,7E-01    |           |                           |
| 50       | 6,7E-01    |           |                           |
| 60       | 6,8E-01    |           |                           |
| 70       | 6,8E-01    |           |                           |
| 80       | 6,8E-01    |           |                           |
| 90       | 6,8E-01    |           |                           |
| 100      | 6,8E-01    |           |                           |
| 120      | 6,9E-01    |           |                           |
| 180      | 6,9E-01    |           |                           |
| 200      | 7,0E-01    |           |                           |
| 300      | 7,1E-01    |           |                           |
| 360      | 7,2E-01    |           |                           |
| 400      | 7,2E-01    |           |                           |
| 500      | 7,4E-01    |           |                           |
| 600      | 7,5E-01    |           |                           |
| 700      | 7,6E-01    |           |                           |
| 800      | 7,7E-01    |           |                           |
| 900      | 7,8E-01    |           |                           |
| 1000     | 7,9E-01    |           |                           |
| 2000     | 8,6E-01    |           |                           |
| 3000     | 9,0E-01    |           |                           |
| 4000     | 9,2E-01    |           |                           |
| 5000     | 9,3E-01    |           |                           |
| 6000     | 9,3E-01    |           |                           |
| 8000     | 9,4E-01    |           |                           |
| 10000    | 9,4E-01    |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cu-64**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 2,6E-01  | <b>4,0E-01</b>  | 3,7E-01   | 5,3E-01   | 5,6E-01                   |
| 2        | 1,9E-01                          | 3,1E-01  | <b>4,7E-01</b>  | 4,4E-01   | 6,5E-01   | 7,1E-01                   |
| 3        | 2,0E-01                          | 3,2E-01  | <b>4,9E-01</b>  | 4,5E-01   | 6,7E-01   | 7,5E-01                   |
| 4        | 2,1E-01                          | 3,3E-01  | <b>4,9E-01</b>  | 4,6E-01   | 6,8E-01   | 7,6E-01                   |
| 5        | 2,1E-01                          | 3,3E-01  | <b>5,0E-01</b>  | 4,6E-01   | 6,8E-01   | 7,6E-01                   |
| 6        | <b>5,0E-01</b>                   |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cu-64**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 2,5E-01  | <b>3,9E-01</b>  | 3,6E-01   | 5,3E-01   | 5,6E-01                   |
| 2        | 1,9E-01                          | 3,0E-01  | <b>4,6E-01</b>  | 4,3E-01   | 6,5E-01   | 7,1E-01                   |
| 3        | 2,0E-01                          | 3,2E-01  | <b>4,8E-01</b>  | 4,4E-01   | 6,7E-01   | 7,5E-01                   |
| 4        | 2,0E-01                          | 3,2E-01  | <b>4,8E-01</b>  | 4,4E-01   | 6,8E-01   | 7,6E-01                   |
| 5        |                                  |          |                 |           | 6,8E-01   | 7,6E-01                   |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cu-64**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 2,5E-01  | <b>3,9E-01</b>  | 3,6E-01   | 5,3E-01   | 5,6E-01                   |
| 2        | 1,9E-01                          | 3,0E-01  | <b>4,6E-01</b>  | 4,3E-01   | 6,5E-01   | 7,1E-01                   |
| 3        | 2,0E-01                          | 3,1E-01  | <b>4,8E-01</b>  | 4,4E-01   | 6,7E-01   | 7,5E-01                   |
| 4        | 2,0E-01                          | 3,2E-01  | <b>4,8E-01</b>  | 4,4E-01   | 6,8E-01   | 7,6E-01                   |
| 5        |                                  | 3,2E-01  |                 |           | 6,8E-01   | 7,6E-01                   |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Zn-65**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                 |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b>  | 6,2E-01   | 9,4E-01   | 1,0E+00                         |
| 2        | 5,1E-01                          | 7,6E-01  | <b>1,1E+00</b>  | 1,0E+00   | 1,7E+00   | 2,0E+00                         |
| 3        | 7,3E-01                          | 1,0E+00  | <b>1,5E+00</b>  | 1,3E+00   | 2,3E+00   | 3,0E+00                         |
| 4        | 9,3E-01                          | 1,3E+00  | <b>1,8E+00</b>  | 1,6E+00   | 2,8E+00   | 3,9E+00                         |
| 5        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b>  | 1,8E+00   | 3,3E+00   | 4,9E+00                         |
| 6        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b>  | 2,0E+00   | 3,8E+00   | 5,9E+00                         |
| 7        | 1,5E+00                          | 2,0E+00  | <b>2,5E+00</b>  | 2,2E+00   | 4,2E+00   | 6,8E+00                         |
| 8        | 1,7E+00                          | 2,2E+00  | <b>2,8E+00</b>  | 2,4E+00   | 4,7E+00   | 7,7E+00                         |
| 9        | 1,9E+00                          | 2,4E+00  | <b>3,1E+00</b>  | 2,7E+00   | 5,2E+00   | 8,6E+00                         |
| 10       | 2,1E+00                          | 2,6E+00  | <b>3,3E+00</b>  | 2,9E+00   | 5,6E+00   | 9,5E+00                         |
| 14       | 2,9E+00                          | 3,5E+00  | <b>4,3E+00</b>  | 3,7E+00   | 7,4E+00   | 1,3E+01                         |
| 15       | 3,1E+00                          | 3,7E+00  | <b>4,5E+00</b>  | 3,9E+00   | 7,8E+00   | 1,4E+01                         |
| 20       | 4,0E+00                          | 4,7E+00  | <b>5,7E+00</b>  | 4,8E+00   | 9,9E+00   | 1,8E+01                         |
| 30       | 5,7E+00                          | 6,6E+00  | <b>7,8E+00</b>  | 6,6E+00   | 1,4E+01   | 2,6E+01                         |
| 40       | 7,3E+00                          | 8,4E+00  | <b>9,8E+00</b>  | 8,3E+00   | 1,7E+01   | 3,3E+01                         |
| 45       | 8,1E+00                          | 9,2E+00  | <b>1,1E+01</b>  | 9,1E+00   | 1,9E+01   | 3,7E+01                         |
| 50       | 8,8E+00                          | 1,0E+01  | <b>1,2E+01</b>  | 9,8E+00   | 2,1E+01   | 4,0E+01                         |
| 60       | 1,0E+01                          | 1,2E+01  | <b>1,3E+01</b>  | 1,1E+01   | 2,4E+01   | 4,6E+01                         |
| 70       | 1,2E+01                          | 1,3E+01  | <b>1,5E+01</b>  | 1,3E+01   | 2,7E+01   | 5,2E+01                         |
| 80       | 1,3E+01                          | 1,4E+01  | <b>1,7E+01</b>  | 1,4E+01   | 3,0E+01   | 5,8E+01                         |
| 90       | 1,4E+01                          | 1,6E+01  | <b>1,8E+01</b>  | 1,5E+01   | 3,2E+01   | 6,3E+01                         |
| 100      | 1,5E+01                          | 1,7E+01  | <b>2,0E+01</b>  | 1,6E+01   | 3,5E+01   | 6,8E+01                         |
| 120      | 1,7E+01                          | 1,9E+01  | <b>2,2E+01</b>  | 1,8E+01   | 3,9E+01   | 7,7E+01                         |
| 180      | 2,3E+01                          | 2,5E+01  | <b>2,9E+01</b>  | 2,4E+01   | 5,1E+01   | 1,0E+02                         |
| 200      | 2,5E+01                          | 2,7E+01  | <b>3,1E+01</b>  | 2,5E+01   | 5,4E+01   | 1,1E+02                         |
| 300      | 3,1E+01                          | 3,4E+01  | <b>3,8E+01</b>  | 3,1E+01   | 6,7E+01   | 1,3E+02                         |
| 360      | 3,4E+01                          | 3,7E+01  | <b>4,1E+01</b>  | 3,4E+01   | 7,2E+01   | 1,4E+02                         |
| 400      | 3,5E+01                          | 3,8E+01  | <b>4,2E+01</b>  | 3,5E+01   | 7,4E+01   | 1,5E+02                         |
| 500      | 3,8E+01                          | 4,1E+01  | <b>4,5E+01</b>  | 3,7E+01   | 7,9E+01   | 1,6E+02                         |
| 600      | 4,0E+01                          | 4,3E+01  | <b>4,7E+01</b>  | 3,9E+01   | 8,2E+01   | 1,6E+02                         |
| 700      | 4,1E+01                          | 4,4E+01  | <b>4,9E+01</b>  | 4,0E+01   | 8,4E+01   | 1,7E+02                         |
| 800      | 4,2E+01                          | 4,5E+01  | <b>4,9E+01</b>  | 4,0E+01   | 8,6E+01   | 1,7E+02                         |
| 900      | 4,3E+01                          | 4,6E+01  | <b>5,0E+01</b>  | 4,1E+01   | 8,6E+01   |                                 |
| 1000     | 4,3E+01                          | 4,6E+01  | <b>5,0E+01</b>  | 4,1E+01   | 8,7E+01   |                                 |
| 2000     | 4,4E+01                          | 4,7E+01  | <b>5,1E+01</b>  | 4,2E+01   | 8,8E+01   |                                 |
| 3000     | 4,4E+01                          | 4,7E+01  | <b>5,1E+01</b>  | 4,2E+01   | 8,8E+01   |                                 |
| 4000     |                                  |          |                 |           |           |                                 |
| 5000     |                                  |          |                 |           |           |                                 |
| 6000     |                                  |          |                 |           |           |                                 |
| 8000     |                                  |          |                 |           |           |                                 |
| 10000    |                                  |          |                 |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ga-67**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 4,0E-01  | <b>6,1E-01</b> | 5,7E-01   | 8,2E-01   | 8,8E-01                   |
| 2        | 4,1E-01                          | 6,2E-01  | <b>9,3E-01</b> | 8,5E-01   | 1,2E+00   | 1,5E+00                   |
| 3        | 5,2E-01                          | 7,6E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,3E+00   | 2,0E+00                   |
| 4        | 6,0E-01                          | 8,5E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,4E+00   | 2,4E+00                   |
| 5        | 6,5E-01                          | 9,2E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,4E+00   | 2,7E+00                   |
| 6        | 7,0E-01                          | 9,7E-01  | <b>1,4E+00</b> | 1,2E+00   |           | 2,9E+00                   |
| 7        | 7,4E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   |           | 3,0E+00                   |
| 8        | 7,6E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   |           | 3,2E+00                   |
| 9        | 7,9E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   |           | 3,3E+00                   |
| 10       | 8,1E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   |           | 3,4E+00                   |
| 14       | 8,5E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   |           | 3,5E+00                   |
| 15       | 8,5E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   |           | 3,6E+00                   |
| 20       | 8,7E-01                          | 1,2E+00  |                |           |           | 3,6E+00                   |
| 30       | 8,7E-01                          | 1,2E+00  |                |           |           | 3,7E+00                   |
| 40       | 8,8E-01                          |          |                |           |           | 3,7E+00                   |
| 45       | 8,8E-01                          |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ga-67**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 3,9E-01  | <b>6,0E-01</b> | 5,6E-01   | 8,2E-01   | 8,8E-01                   |
| 2        | 4,1E-01                          | 6,0E-01  | <b>8,7E-01</b> | 7,9E-01   | 1,2E+00   | 1,5E+00                   |
| 3        | 5,2E-01                          | 7,1E-01  | <b>9,8E-01</b> | 8,9E-01   | 1,3E+00   | 2,0E+00                   |
| 4        | 6,0E-01                          | 7,8E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 2,4E+00                   |
| 5        | 6,7E-01                          | 8,3E-01  | <b>1,1E+00</b> | 9,5E-01   | 1,4E+00   | 2,7E+00                   |
| 6        | 7,2E-01                          | 8,7E-01  | <b>1,1E+00</b> | 9,7E-01   |           | 2,9E+00                   |
| 7        | 7,6E-01                          | 9,0E-01  | <b>1,1E+00</b> | 9,8E-01   |           | 3,0E+00                   |
| 8        | 7,9E-01                          | 9,3E-01  | <b>1,1E+00</b> | 9,9E-01   |           | 3,2E+00                   |
| 9        | 8,1E-01                          | 9,4E-01  | <b>1,2E+00</b> | 9,9E-01   |           | 3,3E+00                   |
| 10       | 8,3E-01                          | 9,6E-01  | <b>1,2E+00</b> | 1,0E+00   |           | 3,4E+00                   |
| 14       | 8,8E-01                          | 1,0E+00  |                | 1,0E+00   |           | 3,5E+00                   |
| 15       | 8,9E-01                          | 1,0E+00  |                |           |           | 3,6E+00                   |
| 20       | 9,1E-01                          |          |                |           |           | 3,6E+00                   |
| 30       | 9,2E-01                          |          |                |           |           | 3,7E+00                   |
| 40       | 9,2E-01                          |          |                |           |           | 3,7E+00                   |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Se-75**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>1</sub> =0,8 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,5E-01  | <b>6,9E-01</b> | 6,4E-01   | 9,7E-01                          | 9,9E-01                         |
| 2        | 5,2E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,8E+00                          | 2,0E+00                         |
| 3        | 7,5E-01                          | 1,1E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,6E+00                          | 2,9E+00                         |
| 4        | 9,7E-01                          | 1,4E+00  | <b>2,1E+00</b> | 1,9E+00   | 3,4E+00                          | 3,8E+00                         |
| 5        | 1,2E+00                          | 1,7E+00  | <b>2,5E+00</b> | 2,2E+00   | 4,1E+00                          | 4,7E+00                         |
| 6        | 1,4E+00                          | 2,0E+00  | <b>2,9E+00</b> | 2,6E+00   | 4,8E+00                          | 5,6E+00                         |
| 7        | 1,6E+00                          | 2,3E+00  | <b>3,2E+00</b> | 2,9E+00   | 5,4E+00                          | 6,4E+00                         |
| 8        | 1,8E+00                          | 2,5E+00  | <b>3,6E+00</b> | 3,2E+00   | 6,1E+00                          | 7,2E+00                         |
| 9        | 2,0E+00                          | 2,8E+00  | <b>3,9E+00</b> | 3,5E+00   | 6,7E+00                          | 8,0E+00                         |
| 10       | 2,2E+00                          | 3,1E+00  | <b>4,3E+00</b> | 3,8E+00   | 7,4E+00                          | 8,8E+00                         |
| 14       | 2,9E+00                          | 4,0E+00  | <b>5,6E+00</b> | 5,0E+00   | 9,8E+00                          | 1,2E+01                         |
| 15       | 3,0E+00                          | 4,3E+00  | <b>5,9E+00</b> | 5,3E+00   | 1,0E+01                          | 1,2E+01                         |
| 20       | 3,8E+00                          | 5,4E+00  | <b>7,4E+00</b> | 6,6E+00   | 1,3E+01                          | 1,6E+01                         |
| 30       | 5,3E+00                          | 7,3E+00  | <b>1,0E+01</b> | 8,9E+00   | 1,8E+01                          | 2,2E+01                         |
| 40       | 6,5E+00                          | 9,0E+00  | <b>1,2E+01</b> | 1,1E+01   | 2,2E+01                          | 2,7E+01                         |
| 45       | 7,0E+00                          | 9,7E+00  | <b>1,3E+01</b> | 1,2E+01   | 2,4E+01                          | 2,9E+01                         |
| 50       | 7,6E+00                          | 1,0E+01  | <b>1,4E+01</b> | 1,3E+01   | 2,5E+01                          | 3,1E+01                         |
| 60       | 8,5E+00                          | 1,2E+01  | <b>1,6E+01</b> | 1,4E+01   | 2,9E+01                          | 3,5E+01                         |
| 70       | 9,3E+00                          | 1,3E+01  | <b>1,7E+01</b> | 1,5E+01   | 3,1E+01                          | 3,9E+01                         |
| 80       | 1,0E+01                          | 1,4E+01  | <b>1,9E+01</b> | 1,7E+01   | 3,4E+01                          | 4,2E+01                         |
| 90       | 1,1E+01                          | 1,5E+01  | <b>2,0E+01</b> | 1,8E+01   | 3,6E+01                          | 4,4E+01                         |
| 100      | 1,1E+01                          | 1,5E+01  | <b>2,1E+01</b> | 1,8E+01   | 3,8E+01                          | 4,7E+01                         |
| 120      | 1,2E+01                          | 1,7E+01  | <b>2,3E+01</b> | 2,0E+01   | 4,1E+01                          | 5,1E+01                         |
| 180      | 1,4E+01                          | 1,9E+01  | <b>2,6E+01</b> | 2,3E+01   | 4,7E+01                          | 5,9E+01                         |
| 200      | 1,4E+01                          | 2,0E+01  | <b>2,7E+01</b> | 2,4E+01   | 4,9E+01                          | 6,0E+01                         |
| 300      | 1,6E+01                          | 2,2E+01  | <b>2,9E+01</b> | 2,6E+01   | 5,3E+01                          | 6,5E+01                         |
| 360      | 1,6E+01                          | 2,2E+01  | <b>3,0E+01</b> | 2,6E+01   | 5,4E+01                          | 6,7E+01                         |
| 400      |                                  | 2,2E+01  | <b>3,0E+01</b> | 2,7E+01   | 5,4E+01                          | 6,8E+01                         |
| 500      |                                  | 2,2E+01  | <b>3,1E+01</b> | 2,7E+01   | 5,5E+01                          | 6,8E+01                         |
| 600      |                                  | 2,3E+01  | <b>3,1E+01</b> |           | 5,5E+01                          | 6,9E+01                         |
| 700      |                                  | 2,3E+01  |                |           |                                  | 6,9E+01                         |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Se-75**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,05 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,1E-01                           | 9,9E-01                         |
| 2        | 5,2E-01                          | 8,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,4E+00                           | 2,0E+00                         |
| 3        | 7,5E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,7E+00                           | 2,9E+00                         |
| 4        | 9,7E-01                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 1,8E+00                           | 3,8E+00                         |
| 5        | 1,2E+00                          | 1,7E+00  | <b>2,4E+00</b> | 2,1E+00   | 1,9E+00                           | 4,7E+00                         |
| 6        | 1,4E+00                          | 2,0E+00  | <b>2,7E+00</b> | 2,4E+00   | 1,9E+00                           | 5,6E+00                         |
| 7        | 1,6E+00                          | 2,2E+00  | <b>3,1E+00</b> | 2,7E+00   | 2,0E+00                           | 6,4E+00                         |
| 8        | 1,8E+00                          | 2,5E+00  | <b>3,4E+00</b> | 3,0E+00   | 2,0E+00                           | 7,2E+00                         |
| 9        | 2,0E+00                          | 2,7E+00  | <b>3,7E+00</b> | 3,3E+00   | 2,1E+00                           | 8,0E+00                         |
| 10       | 2,2E+00                          | 3,0E+00  | <b>4,1E+00</b> | 3,6E+00   | 2,1E+00                           | 8,8E+00                         |
| 14       | 3,0E+00                          | 4,0E+00  | <b>5,3E+00</b> | 4,6E+00   | 2,2E+00                           | 1,2E+01                         |
| 15       | 3,2E+00                          | 4,2E+00  | <b>5,6E+00</b> | 4,9E+00   | 2,3E+00                           | 1,2E+01                         |
| 20       | 4,1E+00                          | 5,3E+00  | <b>7,0E+00</b> | 6,1E+00   | 2,5E+00                           | 1,6E+01                         |
| 30       | 5,8E+00                          | 7,4E+00  | <b>9,5E+00</b> | 8,3E+00   | 2,8E+00                           | 2,2E+01                         |
| 40       | 7,3E+00                          | 9,2E+00  | <b>1,2E+01</b> | 1,0E+01   | 3,0E+00                           | 2,7E+01                         |
| 45       | 8,0E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 3,1E+00                           | 2,9E+01                         |
| 50       | 8,6E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 3,2E+00                           | 3,1E+01                         |
| 60       | 9,8E+00                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 3,4E+00                           | 3,5E+01                         |
| 70       | 1,1E+01                          | 1,3E+01  | <b>1,7E+01</b> | 1,4E+01   | 3,6E+00                           | 3,9E+01                         |
| 80       | 1,2E+01                          | 1,4E+01  | <b>1,8E+01</b> | 1,5E+01   | 3,7E+00                           | 4,2E+01                         |
| 90       | 1,3E+01                          | 1,5E+01  | <b>1,9E+01</b> | 1,6E+01   | 3,9E+00                           | 4,4E+01                         |
| 100      | 1,3E+01                          | 1,6E+01  | <b>2,0E+01</b> | 1,7E+01   | 4,0E+00                           | 4,7E+01                         |
| 120      | 1,5E+01                          | 1,8E+01  | <b>2,2E+01</b> | 1,9E+01   | 4,2E+00                           | 5,1E+01                         |
| 180      | 1,8E+01                          | 2,1E+01  | <b>2,5E+01</b> | 2,2E+01   | 4,6E+00                           | 5,9E+01                         |
| 200      | 1,8E+01                          | 2,2E+01  | <b>2,6E+01</b> | 2,2E+01   | 4,7E+00                           | 6,0E+01                         |
| 300      | 2,0E+01                          | 2,4E+01  | <b>2,9E+01</b> | 2,4E+01   | 4,9E+00                           | 6,5E+01                         |
| 360      | 2,1E+01                          | 2,4E+01  | <b>2,9E+01</b> | 2,5E+01   | 5,0E+00                           | 6,7E+01                         |
| 400      | 2,1E+01                          | 2,4E+01  | <b>3,0E+01</b> | 2,5E+01   | 5,0E+00                           | 6,8E+01                         |
| 500      |                                  | 2,5E+01  | <b>3,0E+01</b> |           | 5,1E+00                           | 6,8E+01                         |
| 600      |                                  | 2,5E+01  |                |           | 5,1E+00                           | 6,9E+01                         |
| 700      |                                  |          |                |           |                                   | 6,9E+01                         |
| 800      |                                  |          |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sr-85**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>1</sub> =0,3 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,4E-01                          | 4,0E-01  | <b>6,3E-01</b> | 5,9E-01   | 8,9E-01                          | 8,5E-01                         |
| 2        | 4,3E-01                          | 6,7E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00                          | 1,6E+00                         |
| 3        | 5,8E-01                          | 8,8E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00                          | 2,2E+00                         |
| 4        | 7,1E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,4E+00   | 2,0E+00                          | 2,8E+00                         |
| 5        | 8,2E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,2E+00                          | 3,3E+00                         |
| 6        | 9,3E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,7E+00   | 2,3E+00                          | 3,8E+00                         |
| 7        | 1,0E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 2,5E+00                          | 4,2E+00                         |
| 8        | 1,1E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 2,6E+00                          | 4,6E+00                         |
| 9        | 1,2E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 2,7E+00                          | 5,0E+00                         |
| 10       | 1,3E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,2E+00   | 2,8E+00                          | 5,4E+00                         |
| 14       | 1,6E+00                          | 2,1E+00  | <b>2,9E+00</b> | 2,5E+00   | 3,2E+00                          | 6,7E+00                         |
| 15       | 1,7E+00                          | 2,2E+00  | <b>3,0E+00</b> | 2,6E+00   | 3,3E+00                          | 7,0E+00                         |
| 20       | 2,0E+00                          | 2,6E+00  | <b>3,4E+00</b> | 3,0E+00   | 3,7E+00                          | 8,4E+00                         |
| 30       | 2,4E+00                          | 3,2E+00  | <b>4,2E+00</b> | 3,7E+00   | 4,4E+00                          | 1,1E+01                         |
| 40       | 2,8E+00                          | 3,6E+00  | <b>4,7E+00</b> | 4,1E+00   | 4,9E+00                          | 1,2E+01                         |
| 45       | 3,0E+00                          | 3,8E+00  | <b>5,0E+00</b> | 4,3E+00   | 5,1E+00                          | 1,3E+01                         |
| 50       | 3,1E+00                          | 4,0E+00  | <b>5,2E+00</b> | 4,5E+00   | 5,3E+00                          | 1,4E+01                         |
| 60       | 3,4E+00                          | 4,3E+00  | <b>5,6E+00</b> | 4,9E+00   | 5,6E+00                          | 1,5E+01                         |
| 70       | 3,6E+00                          | 4,6E+00  | <b>5,9E+00</b> | 5,2E+00   | 5,9E+00                          | 1,6E+01                         |
| 80       | 3,8E+00                          | 4,8E+00  | <b>6,2E+00</b> | 5,4E+00   | 6,2E+00                          | 1,7E+01                         |
| 90       | 4,0E+00                          | 5,0E+00  | <b>6,5E+00</b> | 5,6E+00   | 6,4E+00                          | 1,7E+01                         |
| 100      | 4,1E+00                          | 5,2E+00  | <b>6,7E+00</b> | 5,8E+00   | 6,6E+00                          | 1,8E+01                         |
| 120      | 4,4E+00                          | 5,5E+00  | <b>7,1E+00</b> | 6,1E+00   | 6,9E+00                          | 1,9E+01                         |
| 180      | 4,8E+00                          | 6,0E+00  | <b>7,8E+00</b> | 6,7E+00   | 7,5E+00                          | 2,1E+01                         |
| 200      | 4,9E+00                          | 6,2E+00  | <b>7,9E+00</b> | 6,9E+00   | 7,7E+00                          | 2,2E+01                         |
| 300      | 5,1E+00                          | 6,4E+00  | <b>8,3E+00</b> | 7,2E+00   | 8,0E+00                          | 2,3E+01                         |
| 360      | 5,2E+00                          | 6,5E+00  | <b>8,4E+00</b> | 7,2E+00   | 8,1E+00                          | 2,3E+01                         |
| 400      | 5,2E+00                          | 6,5E+00  | <b>8,4E+00</b> | 7,3E+00   | 8,1E+00                          |                                 |
| 500      |                                  | 6,6E+00  |                | 7,3E+00   |                                  |                                 |
| 600      |                                  | 6,6E+00  |                |           |                                  |                                 |
| 700      |                                  |          |                |           |                                  |                                 |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-85**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,3$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 3,0E-02                          | 3,6E-02        | <b>4,4E-02</b> | 3,8E-02         | 3,2E-02                | 1,4E-01                         |
| 2        | 5,3E-02                          | 6,4E-02        | <b>8,0E-02</b> | 6,9E-02         | 6,8E-02                | 2,4E-01                         |
| 3        | 6,5E-02                          | 7,9E-02        | <b>9,9E-02</b> | 8,5E-02         | 8,5E-02                | 2,9E-01                         |
| 4        | 7,4E-02                          | 9,0E-02        | <b>1,1E-01</b> | 9,6E-02         | 9,7E-02                | 3,3E-01                         |
| 5        | 8,0E-02                          | 9,8E-02        | <b>1,2E-01</b> | 1,0E-01         | 1,1E-01                | 3,6E-01                         |
| 6        | 8,5E-02                          | 1,0E-01        | <b>1,3E-01</b> | 1,1E-01         | 1,1E-01                | 3,8E-01                         |
| 7        | 9,0E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,2E-01         | 1,2E-01                | 4,0E-01                         |
| 8        | 9,3E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,2E-01         | 1,2E-01                | 4,2E-01                         |
| 9        | 9,6E-02                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 1,3E-01                | 4,3E-01                         |
| 10       | 9,9E-02                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 1,3E-01                | 4,4E-01                         |
| 14       | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,4E-01         | 1,4E-01                | 4,8E-01                         |
| 15       | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,4E-01         | 1,4E-01                | 4,8E-01                         |
| 20       | 1,1E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,5E-01         | 1,5E-01                | 5,1E-01                         |
| 30       | 1,2E-01                          | 1,5E-01        | <b>1,8E-01</b> | 1,6E-01         | 1,6E-01                | 5,4E-01                         |
| 40       | 1,2E-01                          | 1,5E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,7E-01                | 5,6E-01                         |
| 45       | 1,3E-01                          | 1,5E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,7E-01                | 5,6E-01                         |
| 50       | 1,3E-01                          | 1,5E-01        | <b>1,9E-01</b> | 1,6E-01         |                        | 5,6E-01                         |
| 60       |                                  | 1,5E-01        | <b>1,9E-01</b> | 1,7E-01         |                        | 5,7E-01                         |
| 70       |                                  | 1,6E-01        | <b>1,9E-01</b> | 1,7E-01         |                        | 5,7E-01                         |
| 80       |                                  | 1,6E-01        | <b>2,0E-01</b> |                 |                        | 5,7E-01                         |
| 90       |                                  |                | <b>2,0E-01</b> |                 |                        | 5,7E-01                         |
| 100      |                                  |                |                |                 |                        | 5,7E-01                         |
| 120      |                                  |                |                |                 |                        | 5,8E-01                         |
| 180      |                                  |                |                |                 |                        | 5,8E-01                         |
| 200      |                                  |                |                |                 |                        |                                 |
| 300      |                                  |                |                |                 |                        |                                 |
| 360      |                                  |                |                |                 |                        |                                 |
| 400      |                                  |                |                |                 |                        |                                 |
| 500      |                                  |                |                |                 |                        |                                 |
| 600      |                                  |                |                |                 |                        |                                 |
| 700      |                                  |                |                |                 |                        |                                 |
| 800      |                                  |                |                |                 |                        |                                 |
| 900      |                                  |                |                |                 |                        |                                 |
| 1000     |                                  |                |                |                 |                        |                                 |
| 2000     |                                  |                |                |                 |                        |                                 |
| 3000     |                                  |                |                |                 |                        |                                 |
| 4000     |                                  |                |                |                 |                        |                                 |
| 5000     |                                  |                |                |                 |                        |                                 |
| 6000     |                                  |                |                |                 |                        |                                 |
| 8000     |                                  |                |                |                 |                        |                                 |
| 10000    |                                  |                |                |                 |                        |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sr-85**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion<br>f <sub>i</sub> =0,01 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01                           | 8,5E-01                         |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00                           | 1,6E+00                         |
| 3        | 6,7E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                           | 2,2E+00                         |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00                           | 2,8E+00                         |
| 5        | 1,0E+00                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00                           | 3,3E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                           | 3,8E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00                           | 4,2E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00                           | 4,6E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00                           | 5,0E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00                           | 5,4E+00                         |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00                           | 6,7E+00                         |
| 15       | 2,4E+00                          | 2,2E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00                           | 7,0E+00                         |
| 20       | 3,0E+00                          | 2,6E+00  | <b>2,2E+00</b> | 1,6E+00   | 1,8E+00                           | 8,4E+00                         |
| 30       | 4,1E+00                          | 3,4E+00  | <b>2,6E+00</b> | 1,7E+00   | 1,8E+00                           | 1,1E+01                         |
| 40       | 5,0E+00                          | 4,1E+00  | <b>2,9E+00</b> | 1,9E+00   | 1,8E+00                           | 1,2E+01                         |
| 45       | 5,4E+00                          | 4,3E+00  | <b>3,1E+00</b> | 2,0E+00   | 1,9E+00                           | 1,3E+01                         |
| 50       | 5,8E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,0E+00   | 1,9E+00                           | 1,4E+01                         |
| 60       | 6,4E+00                          | 5,1E+00  | <b>3,5E+00</b> | 2,2E+00   | 1,9E+00                           | 1,5E+01                         |
| 70       | 7,0E+00                          | 5,5E+00  | <b>3,7E+00</b> | 2,3E+00   | 1,9E+00                           | 1,6E+01                         |
| 80       | 7,5E+00                          | 5,9E+00  | <b>3,9E+00</b> | 2,3E+00   | 1,9E+00                           | 1,7E+01                         |
| 90       | 7,9E+00                          | 6,2E+00  | <b>4,0E+00</b> | 2,4E+00   | 1,9E+00                           | 1,7E+01                         |
| 100      | 8,3E+00                          | 6,4E+00  | <b>4,2E+00</b> | 2,5E+00   | 1,9E+00                           | 1,8E+01                         |
| 120      | 8,9E+00                          | 6,9E+00  | <b>4,4E+00</b> | 2,6E+00   | 1,9E+00                           | 1,9E+01                         |
| 180      | 1,0E+01                          | 7,7E+00  | <b>4,8E+00</b> | 2,8E+00   | 1,9E+00                           | 2,1E+01                         |
| 200      | 1,0E+01                          | 7,9E+00  | <b>4,9E+00</b> | 2,8E+00   | 1,9E+00                           | 2,2E+01                         |
| 300      | 1,1E+01                          | 8,3E+00  | <b>5,1E+00</b> | 2,9E+00   | 1,9E+00                           | 2,3E+01                         |
| 360      | 1,1E+01                          | 8,4E+00  | <b>5,2E+00</b> | 2,9E+00   | 2,0E+00                           | 2,3E+01                         |
| 400      |                                  | 8,5E+00  | <b>5,2E+00</b> | 3,0E+00   | 2,0E+00                           |                                 |
| 500      |                                  | 8,5E+00  |                | 3,0E+00   |                                   |                                 |
| 600      |                                  |          |                |           |                                   |                                 |
| 700      |                                  |          |                |           |                                   |                                 |
| 800      |                                  |          |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-85**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,01$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 9,3E-05                          | 2,4E-04        | <b>4,3E-04</b> | 4,1E-04         | 9,8E-04                 | 1,4E-01                         |
| 2        | 2,2E-04                          | 5,6E-04        | <b>9,9E-04</b> | 9,3E-04         | 2,2E-03                 | 2,4E-01                         |
| 3        | 2,9E-04                          | 7,1E-04        | <b>1,3E-03</b> | 1,2E-03         | 2,8E-03                 | 2,9E-01                         |
| 4        | 3,4E-04                          | 8,2E-04        | <b>1,4E-03</b> | 1,4E-03         | 3,2E-03                 | 3,3E-01                         |
| 5        | 3,8E-04                          | 9,0E-04        | <b>1,6E-03</b> | 1,5E-03         | 3,5E-03                 | 3,6E-01                         |
| 6        | 4,1E-04                          | 9,7E-04        | <b>1,7E-03</b> | 1,6E-03         | 3,8E-03                 | 3,8E-01                         |
| 7        | 4,4E-04                          | 1,0E-03        | <b>1,8E-03</b> | 1,7E-03         | 4,0E-03                 | 4,0E-01                         |
| 8        | 4,7E-04                          | 1,1E-03        | <b>1,9E-03</b> | 1,7E-03         | 4,1E-03                 | 4,2E-01                         |
| 9        | 5,0E-04                          | 1,1E-03        | <b>1,9E-03</b> | 1,8E-03         | 4,3E-03                 | 4,3E-01                         |
| 10       | 5,2E-04                          | 1,2E-03        | <b>2,0E-03</b> | 1,9E-03         | 4,4E-03                 | 4,4E-01                         |
| 14       | 6,0E-04                          | 1,3E-03        | <b>2,2E-03</b> | 2,0E-03         | 4,7E-03                 | 4,8E-01                         |
| 15       | 6,2E-04                          | 1,3E-03        | <b>2,2E-03</b> | 2,1E-03         | 4,8E-03                 | 4,8E-01                         |
| 20       | 7,0E-04                          | 1,4E-03        | <b>2,3E-03</b> | 2,2E-03         | 5,1E-03                 | 5,1E-01                         |
| 30       | 8,4E-04                          | 1,6E-03        | <b>2,5E-03</b> | 2,3E-03         | 5,4E-03                 | 5,4E-01                         |
| 40       | 9,4E-04                          | 1,7E-03        | <b>2,6E-03</b> | 2,4E-03         | 5,5E-03                 | 5,6E-01                         |
| 45       | 9,9E-04                          | 1,7E-03        | <b>2,7E-03</b> | 2,4E-03         | 5,6E-03                 | 5,6E-01                         |
| 50       | 1,0E-03                          | 1,7E-03        | <b>2,7E-03</b> | 2,4E-03         | 5,6E-03                 | 5,6E-01                         |
| 60       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 70       | 1,1E-03                          | 1,8E-03        | <b>2,8E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 80       | 1,2E-03                          | 1,9E-03        | <b>2,8E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 90       | 1,2E-03                          | 1,9E-03        | <b>2,8E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 100      | 1,3E-03                          | 1,9E-03        | <b>2,8E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 120      | 1,3E-03                          | 2,0E-03        | <b>2,8E-03</b> | 2,5E-03         | 5,7E-03                 | 5,8E-01                         |
| 180      | 1,4E-03                          | 2,0E-03        | <b>2,9E-03</b> | 2,6E-03         | 5,8E-03                 | 5,8E-01                         |
| 200      | 1,4E-03                          | 2,1E-03        | <b>2,9E-03</b> | 2,6E-03         | 5,8E-03                 |                                 |
| 300      | 1,5E-03                          | 2,1E-03        |                |                 |                         |                                 |
| 360      | 1,5E-03                          |                |                |                 |                         |                                 |
| 400      |                                  |                |                |                 |                         |                                 |
| 500      |                                  |                |                |                 |                         |                                 |
| 600      |                                  |                |                |                 |                         |                                 |
| 700      |                                  |                |                |                 |                         |                                 |
| 800      |                                  |                |                |                 |                         |                                 |
| 900      |                                  |                |                |                 |                         |                                 |
| 1000     |                                  |                |                |                 |                         |                                 |
| 2000     |                                  |                |                |                 |                         |                                 |
| 3000     |                                  |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-89**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                 |                 | Ingestion<br>$f_1=0,3$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 3,0E-02                          | 3,6E-02        | <b>4,4E-02</b>                  | 3,8E-02         | 3,2E-02                | 1,4E-01                         |
| 2        | 5,3E-02                          | 6,4E-02        | <b>8,0E-02</b>                  | 6,9E-02         | 6,8E-02                | 2,4E-01                         |
| 3        | 6,5E-02                          | 7,9E-02        | <b>9,9E-02</b>                  | 8,5E-02         | 8,5E-02                | 2,9E-01                         |
| 4        | 7,4E-02                          | 8,9E-02        | <b>1,1E-01</b>                  | 9,6E-02         | 9,7E-02                | 3,3E-01                         |
| 5        | 8,0E-02                          | 9,7E-02        | <b>1,2E-01</b>                  | 1,0E-01         | 1,1E-01                | 3,6E-01                         |
| 6        | 8,5E-02                          | 1,0E-01        | <b>1,3E-01</b>                  | 1,1E-01         | 1,1E-01                | 3,8E-01                         |
| 7        | 8,9E-02                          | 1,1E-01        | <b>1,4E-01</b>                  | 1,2E-01         | 1,2E-01                | 4,0E-01                         |
| 8        | 9,3E-02                          | 1,1E-01        | <b>1,4E-01</b>                  | 1,2E-01         | 1,2E-01                | 4,1E-01                         |
| 9        | 9,6E-02                          | 1,2E-01        | <b>1,5E-01</b>                  | 1,2E-01         | 1,3E-01                | 4,3E-01                         |
| 10       | 9,8E-02                          | 1,2E-01        | <b>1,5E-01</b>                  | 1,3E-01         | 1,3E-01                | 4,4E-01                         |
| 14       | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b>                  | 1,4E-01         | 1,4E-01                | 4,7E-01                         |
| 15       | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b>                  | 1,4E-01         | 1,4E-01                | 4,8E-01                         |
| 20       | 1,1E-01                          | 1,4E-01        | <b>1,7E-01</b>                  | 1,5E-01         | 1,5E-01                | 5,0E-01                         |
| 30       | 1,2E-01                          | 1,5E-01        | <b>1,8E-01</b>                  | 1,6E-01         | 1,6E-01                | 5,3E-01                         |
| 40       | 1,2E-01                          | 1,5E-01        | <b>1,9E-01</b>                  | 1,6E-01         | 1,6E-01                | 5,5E-01                         |
| 45       | 1,2E-01                          |                | <b>1,9E-01</b>                  |                 | 1,6E-01                | 5,5E-01                         |
| 50       | 1,2E-01                          |                |                                 |                 | 1,7E-01                | 5,5E-01                         |
| 60       | 1,2E-01                          |                |                                 |                 | 1,7E-01                | 5,6E-01                         |
| 70       | 1,3E-01                          |                |                                 |                 |                        | 5,6E-01                         |
| 80       | 1,3E-01                          |                |                                 |                 |                        | 5,6E-01                         |
| 90       |                                  |                |                                 |                 |                        | 5,6E-01                         |
| 100      |                                  |                |                                 |                 |                        | 5,6E-01                         |
| 120      |                                  |                |                                 |                 |                        | 5,6E-01                         |
| 180      |                                  |                |                                 |                 |                        | 5,6E-01                         |
| 200      |                                  |                |                                 |                 |                        | 5,7E-01                         |
| 300      |                                  |                |                                 |                 |                        | 5,7E-01                         |
| 360      |                                  |                |                                 |                 |                        |                                 |
| 400      |                                  |                |                                 |                 |                        |                                 |
| 500      |                                  |                |                                 |                 |                        |                                 |
| 600      |                                  |                |                                 |                 |                        |                                 |
| 700      |                                  |                |                                 |                 |                        |                                 |
| 800      |                                  |                |                                 |                 |                        |                                 |
| 900      |                                  |                |                                 |                 |                        |                                 |
| 1000     |                                  |                |                                 |                 |                        |                                 |
| 2000     |                                  |                |                                 |                 |                        |                                 |
| 3000     |                                  |                |                                 |                 |                        |                                 |
| 4000     |                                  |                |                                 |                 |                        |                                 |
| 5000     |                                  |                |                                 |                 |                        |                                 |
| 6000     |                                  |                |                                 |                 |                        |                                 |
| 8000     |                                  |                |                                 |                 |                        |                                 |
| 10000    |                                  |                |                                 |                 |                        |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-89**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,01$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 9,3E-05                          | 2,4E-04        | <b>4,3E-04</b> | 4,1E-04         | 9,8E-04                 | 1,4E-01                         |
| 2        | 2,2E-04                          | 5,6E-04        | <b>9,9E-04</b> | 9,3E-04         | 2,2E-03                 | 2,4E-01                         |
| 3        | 2,9E-04                          | 7,1E-04        | <b>1,3E-03</b> | 1,2E-03         | 2,8E-03                 | 2,9E-01                         |
| 4        | 3,4E-04                          | 8,2E-04        | <b>1,4E-03</b> | 1,4E-03         | 3,2E-03                 | 3,3E-01                         |
| 5        | 3,8E-04                          | 9,0E-04        | <b>1,6E-03</b> | 1,5E-03         | 3,5E-03                 | 3,6E-01                         |
| 6        | 4,1E-04                          | 9,7E-04        | <b>1,7E-03</b> | 1,6E-03         | 3,7E-03                 | 3,8E-01                         |
| 7        | 4,4E-04                          | 1,0E-03        | <b>1,8E-03</b> | 1,7E-03         | 3,9E-03                 | 4,0E-01                         |
| 8        | 4,7E-04                          | 1,1E-03        | <b>1,9E-03</b> | 1,7E-03         | 4,1E-03                 | 4,1E-01                         |
| 9        | 4,9E-04                          | 1,1E-03        | <b>1,9E-03</b> | 1,8E-03         | 4,2E-03                 | 4,3E-01                         |
| 10       | 5,1E-04                          | 1,2E-03        | <b>2,0E-03</b> | 1,8E-03         | 4,4E-03                 | 4,4E-01                         |
| 14       | 5,9E-04                          | 1,3E-03        | <b>2,1E-03</b> | 2,0E-03         | 4,7E-03                 | 4,7E-01                         |
| 15       | 6,1E-04                          | 1,3E-03        | <b>2,2E-03</b> | 2,0E-03         | 4,8E-03                 | 4,8E-01                         |
| 20       | 6,9E-04                          | 1,4E-03        | <b>2,3E-03</b> | 2,1E-03         | 5,0E-03                 | 5,0E-01                         |
| 30       | 8,2E-04                          | 1,5E-03        | <b>2,5E-03</b> | 2,3E-03         | 5,3E-03                 | 5,3E-01                         |
| 40       | 9,1E-04                          | 1,6E-03        | <b>2,6E-03</b> | 2,4E-03         | 5,4E-03                 | 5,5E-01                         |
| 45       | 9,5E-04                          | 1,7E-03        | <b>2,6E-03</b> | 2,4E-03         | 5,5E-03                 | 5,5E-01                         |
| 50       | 9,8E-04                          | 1,7E-03        | <b>2,6E-03</b> | 2,4E-03         | 5,5E-03                 | 5,5E-01                         |
| 60       | 1,0E-03                          | 1,7E-03        | <b>2,7E-03</b> | 2,4E-03         | 5,5E-03                 | 5,6E-01                         |
| 70       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,4E-03         | 5,6E-03                 | 5,6E-01                         |
| 80       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,5E-03         | 5,6E-03                 | 5,6E-01                         |
| 90       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,5E-03         |                         | 5,6E-01                         |
| 100      | 1,2E-03                          | 1,9E-03        | <b>2,7E-03</b> |                 |                         | 5,6E-01                         |
| 120      | 1,2E-03                          | 1,9E-03        | <b>2,8E-03</b> |                 |                         | 5,6E-01                         |
| 180      | 1,3E-03                          | 1,9E-03        | <b>2,8E-03</b> |                 |                         | 5,6E-01                         |
| 200      | 1,3E-03                          | 1,9E-03        |                |                 |                         | 5,7E-01                         |
| 300      |                                  | 1,9E-03        |                |                 |                         | 5,7E-01                         |
| 360      |                                  | 2,0E-03        |                |                 |                         |                                 |
| 400      |                                  | 2,0E-03        |                |                 |                         |                                 |
| 500      |                                  |                |                |                 |                         |                                 |
| 600      |                                  |                |                |                 |                         |                                 |
| 700      |                                  |                |                |                 |                         |                                 |
| 800      |                                  |                |                |                 |                         |                                 |
| 900      |                                  |                |                |                 |                         |                                 |
| 1000     |                                  |                |                |                 |                         |                                 |
| 2000     |                                  |                |                |                 |                         |                                 |
| 3000     |                                  |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-90**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,3$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 3,0E-02                          | 3,6E-02        | <b>4,4E-02</b> | 3,8E-02         | 3,2E-02                | 1,4E-01                         |
| 2        | 5,3E-02                          | 6,5E-02        | <b>8,1E-02</b> | 6,9E-02         | 6,8E-02                | 2,4E-01                         |
| 3        | 6,6E-02                          | 8,0E-02        | <b>1,0E-01</b> | 8,5E-02         | 8,6E-02                | 2,9E-01                         |
| 4        | 7,5E-02                          | 9,1E-02        | <b>1,1E-01</b> | 9,7E-02         | 9,8E-02                | 3,3E-01                         |
| 5        | 8,1E-02                          | 9,9E-02        | <b>1,2E-01</b> | 1,1E-01         | 1,1E-01                | 3,6E-01                         |
| 6        | 8,7E-02                          | 1,1E-01        | <b>1,3E-01</b> | 1,1E-01         | 1,2E-01                | 3,9E-01                         |
| 7        | 9,1E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,2E-01         | 1,2E-01                | 4,1E-01                         |
| 8        | 9,5E-02                          | 1,2E-01        | <b>1,4E-01</b> | 1,2E-01         | 1,3E-01                | 4,3E-01                         |
| 9        | 9,8E-02                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 1,3E-01                | 4,4E-01                         |
| 10       | 1,0E-01                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 1,4E-01                | 4,5E-01                         |
| 14       | 1,1E-01                          | 1,3E-01        | <b>1,7E-01</b> | 1,4E-01         | 1,5E-01                | 4,9E-01                         |
| 15       | 1,1E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,5E-01         | 1,5E-01                | 5,0E-01                         |
| 20       | 1,2E-01                          | 1,4E-01        | <b>1,8E-01</b> | 1,6E-01         | 1,6E-01                | 5,3E-01                         |
| 30       | 1,3E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,7E-01         | 1,7E-01                | 5,7E-01                         |
| 40       | 1,3E-01                          | 1,6E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,8E-01                | 5,9E-01                         |
| 45       | 1,3E-01                          | 1,6E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,8E-01                | 6,0E-01                         |
| 50       | 1,4E-01                          | 1,6E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,8E-01                | 6,0E-01                         |
| 60       | 1,4E-01                          | 1,7E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,8E-01                | 6,1E-01                         |
| 70       | 1,4E-01                          | 1,7E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,9E-01                | 6,2E-01                         |
| 80       | 1,4E-01                          | 1,7E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,9E-01                | 6,2E-01                         |
| 90       | 1,4E-01                          | 1,7E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,9E-01                | 6,3E-01                         |
| 100      | 1,4E-01                          | 1,7E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,9E-01                | 6,3E-01                         |
| 120      | 1,4E-01                          | 1,7E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,9E-01                | 6,3E-01                         |
| 180      | 1,4E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,9E-01         | 1,9E-01                | 6,5E-01                         |
| 200      | 1,5E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,9E-01         | 1,9E-01                | 6,5E-01                         |
| 300      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 1,9E-01         | 2,0E-01                | 6,6E-01                         |
| 360      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 1,9E-01         | 2,0E-01                | 6,6E-01                         |
| 400      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 1,9E-01         | 2,0E-01                | 6,7E-01                         |
| 500      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,7E-01                         |
| 600      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,7E-01                         |
| 700      | 1,5E-01                          | 1,8E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,8E-01                         |
| 800      | 1,5E-01                          | 1,9E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,8E-01                         |
| 900      | 1,5E-01                          | 1,9E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,8E-01                         |
| 1000     | 1,5E-01                          | 1,9E-01        | <b>2,3E-01</b> | 2,0E-01         | 2,0E-01                | 6,8E-01                         |
| 2000     | 1,6E-01                          | 1,9E-01        | <b>2,4E-01</b> | 2,0E-01         | 2,1E-01                | 7,0E-01                         |
| 3000     | 1,6E-01                          | 1,9E-01        | <b>2,4E-01</b> | 2,1E-01         | 2,1E-01                | 7,1E-01                         |
| 4000     |                                  | 1,9E-01        | <b>2,4E-01</b> | 2,1E-01         | 2,1E-01                | 7,1E-01                         |
| 5000     |                                  | 2,0E-01        | <b>2,5E-01</b> |                 | 2,2E-01                | 7,2E-01                         |
| 6000     |                                  | 2,0E-01        | <b>2,5E-01</b> |                 | 2,2E-01                | 7,2E-01                         |
| 8000     |                                  |                |                |                 |                        | 7,3E-01                         |
| 10000    |                                  |                |                |                 |                        | 7,3E-01                         |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-90**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,01$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 9,4E-05                          | 2,4E-04        | <b>4,3E-04</b> | 4,1E-04         | 9,8E-04                 | 1,4E-01                         |
| 2        | 2,2E-04                          | 5,6E-04        | <b>1,0E-03</b> | 9,4E-04         | 2,2E-03                 | 2,4E-01                         |
| 3        | 2,9E-04                          | 7,2E-04        | <b>1,3E-03</b> | 1,2E-03         | 2,8E-03                 | 2,9E-01                         |
| 4        | 3,4E-04                          | 8,3E-04        | <b>1,5E-03</b> | 1,4E-03         | 3,3E-03                 | 3,3E-01                         |
| 5        | 3,8E-04                          | 9,2E-04        | <b>1,6E-03</b> | 1,5E-03         | 3,6E-03                 | 3,6E-01                         |
| 6        | 4,2E-04                          | 9,9E-04        | <b>1,7E-03</b> | 1,6E-03         | 3,8E-03                 | 3,9E-01                         |
| 7        | 4,5E-04                          | 1,1E-03        | <b>1,8E-03</b> | 1,7E-03         | 4,0E-03                 | 4,1E-01                         |
| 8        | 4,8E-04                          | 1,1E-03        | <b>1,9E-03</b> | 1,8E-03         | 4,2E-03                 | 4,3E-01                         |
| 9        | 5,1E-04                          | 1,2E-03        | <b>2,0E-03</b> | 1,9E-03         | 4,4E-03                 | 4,4E-01                         |
| 10       | 5,4E-04                          | 1,2E-03        | <b>2,0E-03</b> | 1,9E-03         | 4,5E-03                 | 4,5E-01                         |
| 14       | 6,3E-04                          | 1,3E-03        | <b>2,2E-03</b> | 2,1E-03         | 4,9E-03                 | 4,9E-01                         |
| 15       | 6,5E-04                          | 1,4E-03        | <b>2,3E-03</b> | 2,1E-03         | 5,0E-03                 | 5,0E-01                         |
| 20       | 7,5E-04                          | 1,5E-03        | <b>2,5E-03</b> | 2,3E-03         | 5,3E-03                 | 5,3E-01                         |
| 30       | 9,3E-04                          | 1,7E-03        | <b>2,7E-03</b> | 2,5E-03         | 5,7E-03                 | 5,7E-01                         |
| 40       | 1,1E-03                          | 1,8E-03        | <b>2,8E-03</b> | 2,6E-03         | 5,9E-03                 | 5,9E-01                         |
| 45       | 1,1E-03                          | 1,9E-03        | <b>2,9E-03</b> | 2,6E-03         | 6,0E-03                 | 6,0E-01                         |
| 50       | 1,2E-03                          | 2,0E-03        | <b>2,9E-03</b> | 2,7E-03         | 6,0E-03                 | 6,0E-01                         |
| 60       | 1,3E-03                          | 2,1E-03        | <b>3,0E-03</b> | 2,7E-03         | 6,1E-03                 | 6,1E-01                         |
| 70       | 1,4E-03                          | 2,1E-03        | <b>3,1E-03</b> | 2,7E-03         | 6,2E-03                 | 6,2E-01                         |
| 80       | 1,5E-03                          | 2,2E-03        | <b>3,1E-03</b> | 2,8E-03         | 6,2E-03                 | 6,2E-01                         |
| 90       | 1,6E-03                          | 2,3E-03        | <b>3,2E-03</b> | 2,8E-03         | 6,3E-03                 | 6,3E-01                         |
| 100      | 1,7E-03                          | 2,4E-03        | <b>3,2E-03</b> | 2,8E-03         | 6,3E-03                 | 6,3E-01                         |
| 120      | 1,9E-03                          | 2,5E-03        | <b>3,3E-03</b> | 2,9E-03         | 6,3E-03                 | 6,3E-01                         |
| 180      | 2,3E-03                          | 2,8E-03        | <b>3,5E-03</b> | 3,0E-03         | 6,5E-03                 | 6,5E-01                         |
| 200      | 2,5E-03                          | 2,9E-03        | <b>3,6E-03</b> | 3,0E-03         | 6,5E-03                 | 6,5E-01                         |
| 300      | 3,1E-03                          | 3,4E-03        | <b>3,8E-03</b> | 3,2E-03         | 6,6E-03                 | 6,6E-01                         |
| 360      | 3,4E-03                          | 3,6E-03        | <b>4,0E-03</b> | 3,3E-03         | 6,6E-03                 | 6,6E-01                         |
| 400      | 3,6E-03                          | 3,8E-03        | <b>4,1E-03</b> | 3,3E-03         | 6,7E-03                 | 6,7E-01                         |
| 500      | 4,1E-03                          | 4,2E-03        | <b>4,3E-03</b> | 3,4E-03         | 6,7E-03                 | 6,7E-01                         |
| 600      | 4,6E-03                          | 4,5E-03        | <b>4,4E-03</b> | 3,5E-03         | 6,7E-03                 | 6,7E-01                         |
| 700      | 5,0E-03                          | 4,8E-03        | <b>4,6E-03</b> | 3,6E-03         | 6,8E-03                 | 6,8E-01                         |
| 800      | 5,4E-03                          | 5,1E-03        | <b>4,8E-03</b> | 3,6E-03         | 6,8E-03                 | 6,8E-01                         |
| 900      | 5,7E-03                          | 5,3E-03        | <b>4,9E-03</b> | 3,7E-03         | 6,8E-03                 | 6,8E-01                         |
| 1000     | 6,0E-03                          | 5,6E-03        | <b>5,0E-03</b> | 3,8E-03         | 6,8E-03                 | 6,8E-01                         |
| 2000     | 8,1E-03                          | 7,1E-03        | <b>5,8E-03</b> | 4,2E-03         | 7,0E-03                 | 7,0E-01                         |
| 3000     | 9,2E-03                          | 7,9E-03        | <b>6,3E-03</b> | 4,4E-03         | 7,1E-03                 | 7,1E-01                         |
| 4000     | 9,9E-03                          | 8,4E-03        | <b>6,6E-03</b> | 4,5E-03         | 7,1E-03                 | 7,1E-01                         |
| 5000     | 1,0E-02                          | 8,7E-03        | <b>6,8E-03</b> | 4,6E-03         | 7,2E-03                 | 7,2E-01                         |
| 6000     | 1,1E-02                          | 9,0E-03        | <b>6,9E-03</b> | 4,7E-03         | 7,2E-03                 | 7,2E-01                         |
| 8000     | 1,1E-02                          | 9,4E-03        | <b>7,1E-03</b> | 4,8E-03         | 7,3E-03                 | 7,3E-01                         |
| 10000    |                                  | 9,6E-03        | <b>7,2E-03</b> | 4,9E-03         | 7,3E-03                 | 7,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Sr-90**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,01$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                 | 5,8E-03                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                 | 3,1E-02                         |
| 3        | 5,8E-02                          | 1,7E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                 | 5,7E-02                         |
| 4        | 7,0E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                 | 7,8E-02                         |
| 5        | 7,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,6E-01                 | 9,3E-02                         |
| 6        | 8,0E-02                          | 2,2E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,8E-01                 | 1,0E-01                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                 | 1,1E-01                         |
| 8        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 3,9E-01         | 9,9E-01                 | 1,2E-01                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                         | 1,3E-01                         |
| 10       | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                         | 1,3E-01                         |
| 14       | 9,1E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                         | 1,5E-01                         |
| 15       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                         | 1,5E-01                         |
| 20       | 9,8E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                         | 1,6E-01                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                         | 1,7E-01                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                         | 1,8E-01                         |
| 45       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                         | 1,8E-01                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                         | 1,8E-01                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                         | 1,9E-01                         |
| 70       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,0E-01         |                         | 1,9E-01                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 1,9E-01                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 1,9E-01                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 1,9E-01                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 1,9E-01                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 500      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |                         | 2,0E-01                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                         | 2,1E-01                         |
| 800      | 1,9E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                         | 2,1E-01                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,1E-01         |                         | 2,1E-01                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,1E-01         |                         | 2,1E-01                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> | 4,2E-01         |                         | 2,1E-01                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> | 4,2E-01         |                         | 2,1E-01                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                         | 2,2E-01                         |
| 5000     |                                  |                |                |                 |                         | 2,2E-01                         |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Y-88**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,1E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,7E+00                   |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,5E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,2E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,0E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 4,7E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 5,4E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,7E+00   | 6,1E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,8E+00                   |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,6E+00                   |
| 14       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,0E+01                   |
| 15       | 2,5E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,1E+01                   |
| 20       | 3,1E+00                          | 2,8E+00  | <b>2,4E+00</b> | 1,8E+00   |           | 1,4E+01                   |
| 30       | 4,3E+00                          | 3,7E+00  | <b>3,0E+00</b> | 2,1E+00   |           | 2,1E+01                   |
| 40       | 5,4E+00                          | 4,5E+00  | <b>3,5E+00</b> | 2,4E+00   |           | 2,7E+01                   |
| 45       | 5,8E+00                          | 4,9E+00  | <b>3,8E+00</b> | 2,6E+00   |           | 3,0E+01                   |
| 50       | 6,3E+00                          | 5,2E+00  | <b>4,0E+00</b> | 2,7E+00   |           | 3,2E+01                   |
| 60       | 7,1E+00                          | 5,9E+00  | <b>4,4E+00</b> | 2,9E+00   |           | 3,8E+01                   |
| 70       | 7,9E+00                          | 6,5E+00  | <b>4,8E+00</b> | 3,2E+00   |           | 4,2E+01                   |
| 80       | 8,6E+00                          | 7,0E+00  | <b>5,1E+00</b> | 3,4E+00   |           | 4,7E+01                   |
| 90       | 9,2E+00                          | 7,5E+00  | <b>5,4E+00</b> | 3,6E+00   |           | 5,1E+01                   |
| 100      | 9,8E+00                          | 7,9E+00  | <b>5,7E+00</b> | 3,7E+00   |           | 5,5E+01                   |
| 120      | 1,1E+01                          | 8,7E+00  | <b>6,3E+00</b> | 4,1E+00   |           | 6,3E+01                   |
| 180      | 1,3E+01                          | 1,1E+01  | <b>7,4E+00</b> | 4,8E+00   |           | 8,0E+01                   |
| 200      | 1,4E+01                          | 1,1E+01  | <b>7,7E+00</b> | 4,9E+00   |           | 8,4E+01                   |
| 300      | 1,6E+01                          | 1,2E+01  | <b>8,7E+00</b> | 5,5E+00   |           | 9,9E+01                   |
| 360      | 1,6E+01                          | 1,3E+01  | <b>9,0E+00</b> | 5,8E+00   |           | 1,0E+02                   |
| 400      | 1,6E+01                          | 1,3E+01  | <b>9,2E+00</b> | 5,9E+00   |           | 1,1E+02                   |
| 500      | 1,7E+01                          | 1,4E+01  | <b>9,5E+00</b> | 6,0E+00   |           | 1,1E+02                   |
| 600      | 1,7E+01                          | 1,4E+01  | <b>9,6E+00</b> | 6,1E+00   |           | 1,1E+02                   |
| 700      |                                  |          | <b>9,7E+00</b> | 6,1E+00   |           | 1,1E+02                   |
| 800      |                                  |          | <b>9,7E+00</b> | 6,2E+00   |           | 1,2E+02                   |
| 900      |                                  |          |                | 6,2E+00   |           | 1,2E+02                   |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Y-88**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,1E-01                         |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,7E+00                         |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,5E+00                         |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,2E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,0E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,7E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,7E+00   | 5,4E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 6,1E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,8E+00                         |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 7,6E+00                         |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   |           | 1,0E+01                         |
| 15       | 2,5E+00                          | 2,2E+00  | <b>1,9E+00</b> | 1,4E+00   |           | 1,1E+01                         |
| 20       | 3,1E+00                          | 2,7E+00  | <b>2,2E+00</b> | 1,6E+00   |           | 1,4E+01                         |
| 30       | 4,3E+00                          | 3,5E+00  | <b>2,6E+00</b> | 1,8E+00   |           | 2,1E+01                         |
| 40       | 5,4E+00                          | 4,3E+00  | <b>3,0E+00</b> | 1,9E+00   |           | 2,7E+01                         |
| 45       | 5,9E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 3,0E+01                         |
| 50       | 6,3E+00                          | 5,0E+00  | <b>3,4E+00</b> | 2,1E+00   |           | 3,2E+01                         |
| 60       | 7,1E+00                          | 5,6E+00  | <b>3,7E+00</b> | 2,2E+00   |           | 3,8E+01                         |
| 70       | 7,9E+00                          | 6,1E+00  | <b>4,0E+00</b> | 2,4E+00   |           | 4,2E+01                         |
| 80       | 8,6E+00                          | 6,6E+00  | <b>4,2E+00</b> | 2,5E+00   |           | 4,7E+01                         |
| 90       | 9,2E+00                          | 7,0E+00  | <b>4,4E+00</b> | 2,6E+00   |           | 5,1E+01                         |
| 100      | 9,8E+00                          | 7,5E+00  | <b>4,6E+00</b> | 2,7E+00   |           | 5,5E+01                         |
| 120      | 1,1E+01                          | 8,2E+00  | <b>5,0E+00</b> | 2,8E+00   |           | 6,3E+01                         |
| 180      | 1,3E+01                          | 9,7E+00  | <b>5,8E+00</b> | 3,2E+00   |           | 8,0E+01                         |
| 200      | 1,3E+01                          | 1,0E+01  | <b>6,0E+00</b> | 3,3E+00   |           | 8,4E+01                         |
| 300      | 1,5E+01                          | 1,1E+01  | <b>6,6E+00</b> | 3,6E+00   |           | 9,9E+01                         |
| 360      | 1,6E+01                          | 1,2E+01  | <b>6,8E+00</b> | 3,6E+00   |           | 1,0E+02                         |
| 400      | 1,6E+01                          | 1,2E+01  | <b>6,9E+00</b> | 3,7E+00   |           | 1,1E+02                         |
| 500      | 1,6E+01                          |          | <b>7,0E+00</b> | 3,8E+00   |           | 1,1E+02                         |
| 600      | 1,7E+01                          |          | <b>7,1E+00</b> | 3,8E+00   |           | 1,1E+02                         |
| 700      | 1,7E+01                          |          | <b>7,1E+00</b> |           |           | 1,1E+02                         |
| 800      |                                  |          | <b>7,1E+00</b> |           |           | 1,2E+02                         |
| 900      |                                  |          | <b>7,2E+00</b> |           |           | 1,2E+02                         |
| 1000     |                                  |          | <b>7,2E+00</b> |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Y-90**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,5E-03                          | 1,6E-03        | <b>1,9E-03</b>                 | 1,6E-03         | 4,6E-06   | 6,8E-02                   |
| 2        | 2,4E-03                          | 2,7E-03        | <b>3,1E-03</b>                 | 2,6E-03         | 1,0E-05   | 1,1E-01                   |
| 3        | 2,5E-03                          | 2,8E-03        | <b>3,2E-03</b>                 | 2,6E-03         | 1,1E-05   | 1,1E-01                   |
| 4        | 2,6E-03                          | 2,8E-03        | <b>3,2E-03</b>                 | 2,7E-03         | 1,1E-05   |                           |
| 5        | 2,6E-03                          | 2,8E-03        | <b>3,2E-03</b>                 | 2,7E-03         |           |                           |
| 6        | 2,6E-03                          | 2,9E-03        | <b>3,2E-03</b>                 |                 |           |                           |
| 7        | 2,7E-03                          | 2,9E-03        | <b>3,2E-03</b>                 |                 |           |                           |
| 8        | 2,7E-03                          |                | <b>3,2E-03</b>                 |                 |           |                           |
| 9        |                                  |                | <b>3,3E-03</b>                 |                 |           |                           |
| 10       |                                  |                | <b>3,3E-03</b>                 |                 |           |                           |
| 14       |                                  |                |                                |                 |           |                           |
| 15       |                                  |                |                                |                 |           |                           |
| 20       |                                  |                |                                |                 |           |                           |
| 30       |                                  |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Y-90**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,2E-03                          | 1,8E-02        | <b>3,3E-02</b>                 | 3,2E-02         | 8,3E-02   | 8,2E-03                   |
| 2        | 2,7E-02                          | 8,5E-02        | <b>1,6E-01</b>                 | 1,5E-01         | 3,9E-01   | 4,2E-02                   |
| 3        | 4,1E-02                          | 1,3E-01        | <b>2,3E-01</b>                 | 2,2E-01         | 5,7E-01   | 6,6E-02                   |
| 4        | 4,7E-02                          | 1,4E-01        | <b>2,6E-01</b>                 | 2,5E-01         | 6,3E-01   | 7,5E-02                   |
| 5        | 5,0E-02                          | 1,5E-01        | <b>2,7E-01</b>                 | 2,6E-01         | 6,5E-01   | 7,8E-02                   |
| 6        | 5,1E-02                          | 1,5E-01        | <b>2,7E-01</b>                 | 2,6E-01         | 6,6E-01   | 7,9E-02                   |
| 7        | 5,1E-02                          |                |                                |                 | 6,6E-01   | 7,9E-02                   |
| 8        | 5,1E-02                          |                |                                |                 |           |                           |
| 9        | 5,2E-02                          |                |                                |                 |           |                           |
| 10       | 5,2E-02                          |                |                                |                 |           |                           |
| 14       |                                  |                |                                |                 |           |                           |
| 15       |                                  |                |                                |                 |           |                           |
| 20       |                                  |                |                                |                 |           |                           |
| 30       |                                  |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Zr-95

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b> | 6,2E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 5,0E-01                          | 7,5E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 1,9E+00                         |
| 3        | 7,0E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 1,6E+00   | 2,8E+00                         |
| 4        | 8,9E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,7E+00   | 3,7E+00                         |
| 5        | 1,1E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 1,7E+00   | 4,5E+00                         |
| 6        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 1,7E+00   | 5,2E+00                         |
| 7        | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 1,7E+00   | 6,0E+00                         |
| 8        | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,2E+00   | 1,7E+00   | 6,7E+00                         |
| 9        | 1,7E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 1,8E+00   | 7,3E+00                         |
| 10       | 1,8E+00                          | 2,3E+00  | <b>2,9E+00</b> | 2,5E+00   | 1,8E+00   | 8,0E+00                         |
| 14       | 2,3E+00                          | 2,8E+00  | <b>3,6E+00</b> | 3,1E+00   |           | 1,0E+01                         |
| 15       | 2,4E+00                          | 3,0E+00  | <b>3,7E+00</b> | 3,2E+00   |           | 1,1E+01                         |
| 20       | 3,0E+00                          | 3,6E+00  | <b>4,4E+00</b> | 3,8E+00   |           | 1,3E+01                         |
| 30       | 3,9E+00                          | 4,6E+00  | <b>5,6E+00</b> | 4,8E+00   |           | 1,7E+01                         |
| 40       | 4,6E+00                          | 5,4E+00  | <b>6,6E+00</b> | 5,6E+00   |           | 2,1E+01                         |
| 45       | 5,0E+00                          | 5,8E+00  | <b>7,0E+00</b> | 6,0E+00   |           | 2,3E+01                         |
| 50       | 5,3E+00                          | 6,2E+00  | <b>7,5E+00</b> | 6,3E+00   |           | 2,4E+01                         |
| 60       | 5,9E+00                          | 6,8E+00  | <b>8,2E+00</b> | 7,0E+00   |           | 2,7E+01                         |
| 70       | 6,4E+00                          | 7,4E+00  | <b>8,9E+00</b> | 7,6E+00   |           | 2,9E+01                         |
| 80       | 6,9E+00                          | 8,0E+00  | <b>9,6E+00</b> | 8,1E+00   |           | 3,2E+01                         |
| 90       | 7,3E+00                          | 8,4E+00  | <b>1,0E+01</b> | 8,5E+00   |           | 3,4E+01                         |
| 100      | 7,7E+00                          | 8,9E+00  | <b>1,1E+01</b> | 9,0E+00   |           | 3,5E+01                         |
| 120      | 8,3E+00                          | 9,6E+00  | <b>1,1E+01</b> | 9,7E+00   |           | 3,8E+01                         |
| 180      | 9,6E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   |           | 4,4E+01                         |
| 200      | 9,9E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,1E+01   |           | 4,6E+01                         |
| 300      | 1,1E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   |           | 4,9E+01                         |
| 360      | 1,1E+01                          | 1,2E+01  | <b>1,5E+01</b> | 1,2E+01   |           | 5,0E+01                         |
| 400      |                                  | 1,2E+01  | <b>1,5E+01</b> | 1,2E+01   |           | 5,0E+01                         |
| 500      |                                  | 1,3E+01  |                | 1,3E+01   |           | 5,1E+01                         |
| 600      |                                  | 1,3E+01  |                | 1,3E+01   |           | 5,1E+01                         |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Zr-95**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 5,2E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,7E+00   | 6,7E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 7,3E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 8,0E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,6E+00   |           | 1,0E+01                   |
| 15       | 2,4E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,1E+01                   |
| 20       | 3,0E+00                          | 2,7E+00  | <b>2,4E+00</b> | 1,8E+00   |           | 1,3E+01                   |
| 30       | 4,0E+00                          | 3,5E+00  | <b>2,8E+00</b> | 2,0E+00   |           | 1,7E+01                   |
| 40       | 4,9E+00                          | 4,1E+00  | <b>3,2E+00</b> | 2,2E+00   |           | 2,1E+01                   |
| 45       | 5,2E+00                          | 4,4E+00  | <b>3,4E+00</b> | 2,3E+00   |           | 2,3E+01                   |
| 50       | 5,6E+00                          | 4,6E+00  | <b>3,6E+00</b> | 2,4E+00   |           | 2,4E+01                   |
| 60       | 6,2E+00                          | 5,1E+00  | <b>3,8E+00</b> | 2,6E+00   |           | 2,7E+01                   |
| 70       | 6,7E+00                          | 5,5E+00  | <b>4,1E+00</b> | 2,7E+00   |           | 2,9E+01                   |
| 80       | 7,2E+00                          | 5,8E+00  | <b>4,3E+00</b> | 2,8E+00   |           | 3,2E+01                   |
| 90       | 7,5E+00                          | 6,1E+00  | <b>4,5E+00</b> | 2,9E+00   |           | 3,4E+01                   |
| 100      | 7,9E+00                          | 6,4E+00  | <b>4,6E+00</b> | 3,0E+00   |           | 3,5E+01                   |
| 120      | 8,4E+00                          | 6,8E+00  | <b>4,9E+00</b> | 3,2E+00   |           | 3,8E+01                   |
| 180      | 9,4E+00                          | 7,6E+00  | <b>5,4E+00</b> | 3,5E+00   |           | 4,4E+01                   |
| 200      | 9,6E+00                          | 7,7E+00  | <b>5,5E+00</b> | 3,5E+00   |           | 4,6E+01                   |
| 300      | 1,0E+01                          | 8,1E+00  | <b>5,7E+00</b> | 3,7E+00   |           | 4,9E+01                   |
| 360      | 1,0E+01                          | 8,2E+00  | <b>5,8E+00</b> | 3,7E+00   |           | 5,0E+01                   |
| 400      |                                  | 8,2E+00  | <b>5,8E+00</b> |           |           | 5,0E+01                   |
| 500      |                                  | 8,2E+00  |                |           |           | 5,1E+01                   |
| 600      |                                  | 8,3E+00  |                |           |           | 5,1E+01                   |
| 700      |                                  | 8,3E+00  |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Zr-95**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,7E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 5,2E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,7E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 6,7E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 7,3E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 8,0E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   |           | 1,0E+01                   |
| 15       | 2,4E+00                          | 2,2E+00  | <b>1,9E+00</b> | 1,4E+00   |           | 1,1E+01                   |
| 20       | 3,0E+00                          | 2,6E+00  | <b>2,2E+00</b> | 1,5E+00   |           | 1,3E+01                   |
| 30       | 4,1E+00                          | 3,4E+00  | <b>2,6E+00</b> | 1,7E+00   |           | 1,7E+01                   |
| 40       | 5,0E+00                          | 4,0E+00  | <b>2,9E+00</b> | 1,9E+00   |           | 2,1E+01                   |
| 45       | 5,4E+00                          | 4,3E+00  | <b>3,0E+00</b> | 1,9E+00   |           | 2,3E+01                   |
| 50       | 5,8E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 2,4E+01                   |
| 60       | 6,4E+00                          | 5,1E+00  | <b>3,4E+00</b> | 2,1E+00   |           | 2,7E+01                   |
| 70       | 7,0E+00                          | 5,5E+00  | <b>3,6E+00</b> | 2,2E+00   |           | 2,9E+01                   |
| 80       | 7,5E+00                          | 5,8E+00  | <b>3,8E+00</b> | 2,3E+00   |           | 3,2E+01                   |
| 90       | 7,9E+00                          | 6,1E+00  | <b>4,0E+00</b> | 2,4E+00   |           | 3,4E+01                   |
| 100      | 8,3E+00                          | 6,4E+00  | <b>4,1E+00</b> | 2,4E+00   |           | 3,5E+01                   |
| 120      | 8,9E+00                          | 6,8E+00  | <b>4,3E+00</b> | 2,5E+00   |           | 3,8E+01                   |
| 180      | 1,0E+01                          | 7,7E+00  | <b>4,7E+00</b> | 2,7E+00   |           | 4,4E+01                   |
| 200      | 1,0E+01                          | 7,8E+00  | <b>4,8E+00</b> | 2,8E+00   |           | 4,6E+01                   |
| 300      | 1,1E+01                          | 8,2E+00  | <b>5,0E+00</b> | 2,9E+00   |           | 4,9E+01                   |
| 360      | 1,1E+01                          | 8,3E+00  | <b>5,1E+00</b> | 2,9E+00   |           | 5,0E+01                   |
| 400      |                                  | 8,4E+00  | <b>5,1E+00</b> |           |           | 5,0E+01                   |
| 500      |                                  | 8,4E+00  |                |           |           | 5,1E+01                   |
| 600      |                                  |          |                |           |           | 5,1E+01                   |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Nb-94**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,9E-01                          | 9,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,8E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,8E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,4E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,5E+00   | 1,8E+00   | 8,1E+00                   |
| 14       | 2,4E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,9E+00   | 1,1E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,9E+00   | 1,1E+01                   |
| 20       | 3,3E+00                          | 2,9E+00  | <b>2,5E+00</b> | 1,9E+00   | 1,9E+00   | 1,4E+01                   |
| 30       | 4,6E+00                          | 3,9E+00  | <b>3,2E+00</b> | 2,2E+00   | 1,9E+00   | 1,9E+01                   |
| 40       | 5,8E+00                          | 4,9E+00  | <b>3,7E+00</b> | 2,5E+00   | 2,0E+00   | 2,3E+01                   |
| 45       | 6,4E+00                          | 5,3E+00  | <b>4,0E+00</b> | 2,7E+00   | 2,0E+00   | 2,6E+01                   |
| 50       | 7,0E+00                          | 5,7E+00  | <b>4,2E+00</b> | 2,8E+00   | 2,0E+00   | 2,8E+01                   |
| 60       | 8,0E+00                          | 6,5E+00  | <b>4,7E+00</b> | 3,1E+00   | 2,1E+00   | 3,2E+01                   |
| 70       | 9,1E+00                          | 7,3E+00  | <b>5,2E+00</b> | 3,4E+00   | 2,1E+00   | 3,6E+01                   |
| 80       | 1,0E+01                          | 8,0E+00  | <b>5,6E+00</b> | 3,6E+00   | 2,1E+00   | 4,0E+01                   |
| 90       | 1,1E+01                          | 8,7E+00  | <b>6,1E+00</b> | 3,8E+00   | 2,2E+00   | 4,3E+01                   |
| 100      | 1,2E+01                          | 9,4E+00  | <b>6,5E+00</b> | 4,1E+00   | 2,2E+00   | 4,7E+01                   |
| 120      | 1,3E+01                          | 1,1E+01  | <b>7,2E+00</b> | 4,5E+00   | 2,3E+00   | 5,4E+01                   |
| 180      | 1,8E+01                          | 1,4E+01  | <b>9,2E+00</b> | 5,6E+00   | 2,5E+00   | 7,2E+01                   |
| 200      | 1,9E+01                          | 1,5E+01  | <b>9,7E+00</b> | 5,9E+00   | 2,5E+00   | 7,7E+01                   |
| 300      | 2,4E+01                          | 1,8E+01  | <b>1,2E+01</b> | 7,2E+00   | 2,7E+00   | 9,8E+01                   |
| 360      | 2,6E+01                          | 2,0E+01  | <b>1,3E+01</b> | 7,8E+00   | 2,8E+00   | 1,1E+02                   |
| 400      | 2,7E+01                          | 2,1E+01  | <b>1,4E+01</b> | 8,1E+00   | 2,9E+00   | 1,1E+02                   |
| 500      | 2,9E+01                          | 2,3E+01  | <b>1,5E+01</b> | 8,8E+00   | 3,0E+00   | 1,2E+02                   |
| 600      | 3,1E+01                          | 2,4E+01  | <b>1,6E+01</b> | 9,2E+00   | 3,1E+00   | 1,3E+02                   |
| 700      | 3,2E+01                          | 2,5E+01  | <b>1,6E+01</b> | 9,6E+00   | 3,1E+00   | 1,4E+02                   |
| 800      | 3,3E+01                          | 2,6E+01  | <b>1,7E+01</b> | 9,8E+00   | 3,1E+00   | 1,4E+02                   |
| 900      | 3,4E+01                          | 2,6E+01  | <b>1,7E+01</b> | 1,0E+01   | 3,2E+00   | 1,4E+02                   |
| 1000     | 3,4E+01                          | 2,7E+01  | <b>1,7E+01</b> | 1,0E+01   | 3,2E+00   | 1,4E+02                   |
| 2000     | 3,5E+01                          | 2,7E+01  | <b>1,8E+01</b> |           |           | 1,5E+02                   |
| 3000     | 3,5E+01                          |          | <b>1,8E+01</b> |           |           | 1,5E+02                   |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Nb-94**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,8E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,6E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,8E+00                   |
| 9        | 1,7E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 7,4E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 8,1E+00                   |
| 14       | 2,5E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,9E+00   | 1,1E+01                   |
| 15       | 2,6E+00                          | 2,3E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,9E+00   | 1,1E+01                   |
| 20       | 3,3E+00                          | 2,9E+00  | <b>2,3E+00</b> | 1,6E+00   | 1,9E+00   | 1,4E+01                   |
| 30       | 4,7E+00                          | 3,9E+00  | <b>2,9E+00</b> | 1,9E+00   | 1,9E+00   | 1,9E+01                   |
| 40       | 6,1E+00                          | 4,8E+00  | <b>3,4E+00</b> | 2,1E+00   | 2,0E+00   | 2,3E+01                   |
| 45       | 6,7E+00                          | 5,3E+00  | <b>3,6E+00</b> | 2,3E+00   | 2,0E+00   | 2,6E+01                   |
| 50       | 7,3E+00                          | 5,7E+00  | <b>3,9E+00</b> | 2,4E+00   | 2,0E+00   | 2,8E+01                   |
| 60       | 8,5E+00                          | 6,6E+00  | <b>4,3E+00</b> | 2,6E+00   | 2,1E+00   | 3,2E+01                   |
| 70       | 9,7E+00                          | 7,4E+00  | <b>4,7E+00</b> | 2,8E+00   | 2,1E+00   | 3,6E+01                   |
| 80       | 1,1E+01                          | 8,2E+00  | <b>5,2E+00</b> | 3,0E+00   | 2,1E+00   | 4,0E+01                   |
| 90       | 1,2E+01                          | 9,0E+00  | <b>5,6E+00</b> | 3,2E+00   | 2,2E+00   | 4,3E+01                   |
| 100      | 1,3E+01                          | 9,8E+00  | <b>6,0E+00</b> | 3,4E+00   | 2,2E+00   | 4,7E+01                   |
| 120      | 1,5E+01                          | 1,1E+01  | <b>6,7E+00</b> | 3,7E+00   | 2,3E+00   | 5,4E+01                   |
| 180      | 2,1E+01                          | 1,5E+01  | <b>8,8E+00</b> | 4,7E+00   | 2,5E+00   | 7,2E+01                   |
| 200      | 2,2E+01                          | 1,7E+01  | <b>9,5E+00</b> | 5,0E+00   | 2,5E+00   | 7,7E+01                   |
| 300      | 3,1E+01                          | 2,3E+01  | <b>1,3E+01</b> | 6,5E+00   | 2,7E+00   | 9,8E+01                   |
| 360      | 3,5E+01                          | 2,6E+01  | <b>1,4E+01</b> | 7,3E+00   | 2,8E+00   | 1,1E+02                   |
| 400      | 3,8E+01                          | 2,8E+01  | <b>1,5E+01</b> | 7,8E+00   | 2,9E+00   | 1,1E+02                   |
| 500      | 4,5E+01                          | 3,3E+01  | <b>1,8E+01</b> | 9,0E+00   | 3,0E+00   | 1,2E+02                   |
| 600      | 5,2E+01                          | 3,8E+01  | <b>2,0E+01</b> | 1,0E+01   | 3,1E+00   | 1,3E+02                   |
| 700      | 5,8E+01                          | 4,2E+01  | <b>2,2E+01</b> | 1,1E+01   | 3,1E+00   | 1,4E+02                   |
| 800      | 6,3E+01                          | 4,6E+01  | <b>2,4E+01</b> | 1,2E+01   | 3,1E+00   | 1,4E+02                   |
| 900      | 6,8E+01                          | 4,9E+01  | <b>2,6E+01</b> | 1,3E+01   | 3,2E+00   | 1,4E+02                   |
| 1000     | 7,2E+01                          | 5,3E+01  | <b>2,8E+01</b> | 1,3E+01   | 3,2E+00   | 1,4E+02                   |
| 2000     | 1,0E+02                          | 7,4E+01  | <b>3,9E+01</b> | 1,8E+01   |           | 1,5E+02                   |
| 3000     | 1,2E+02                          | 8,5E+01  | <b>4,5E+01</b> | 2,1E+01   |           | 1,5E+02                   |
| 4000     | 1,3E+02                          | 9,3E+01  | <b>4,8E+01</b> | 2,3E+01   |           |                           |
| 5000     | 1,3E+02                          | 9,8E+01  | <b>5,1E+01</b> | 2,4E+01   |           |                           |
| 6000     | 1,4E+02                          | 1,0E+02  | <b>5,3E+01</b> | 2,5E+01   |           |                           |
| 8000     | 1,5E+02                          | 1,1E+02  | <b>5,7E+01</b> | 2,7E+01   |           |                           |
| 10000    | 1,5E+02                          | 1,1E+02  | <b>5,9E+01</b> | 2,8E+01   |           |                           |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Nb-95

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,8E-01                         |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,9E+00                         |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,6E+00                         |
| 5        | 9,9E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,3E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 5,0E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 5,7E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,3E+00                         |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,9E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,4E+00                         |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 9,4E+00                         |
| 15       | 2,3E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,6E+00   | 1,8E+00   | 9,8E+00                         |
| 20       | 2,8E+00                          | 2,5E+00  | <b>2,3E+00</b> | 1,7E+00   | 1,8E+00   | 1,2E+01                         |
| 30       | 3,6E+00                          | 3,1E+00  | <b>2,6E+00</b> | 1,9E+00   | 1,9E+00   | 1,5E+01                         |
| 40       | 4,2E+00                          | 3,6E+00  | <b>2,9E+00</b> | 2,1E+00   | 1,9E+00   | 1,7E+01                         |
| 45       | 4,4E+00                          | 3,8E+00  | <b>3,0E+00</b> | 2,1E+00   | 1,9E+00   | 1,8E+01                         |
| 50       | 4,7E+00                          | 4,0E+00  | <b>3,1E+00</b> | 2,2E+00   | 1,9E+00   | 1,9E+01                         |
| 60       | 5,0E+00                          | 4,2E+00  | <b>3,3E+00</b> | 2,3E+00   | 1,9E+00   | 2,0E+01                         |
| 70       | 5,3E+00                          | 4,4E+00  | <b>3,4E+00</b> | 2,4E+00   | 1,9E+00   | 2,1E+01                         |
| 80       | 5,5E+00                          | 4,6E+00  | <b>3,5E+00</b> | 2,4E+00   | 1,9E+00   | 2,2E+01                         |
| 90       | 5,7E+00                          | 4,7E+00  | <b>3,6E+00</b> | 2,5E+00   | 1,9E+00   | 2,3E+01                         |
| 100      | 5,8E+00                          | 4,8E+00  | <b>3,7E+00</b> | 2,5E+00   | 1,9E+00   | 2,3E+01                         |
| 120      | 6,0E+00                          | 5,0E+00  | <b>3,8E+00</b> | 2,5E+00   | 1,9E+00   | 2,4E+01                         |
| 180      | 6,2E+00                          | 5,2E+00  | <b>3,9E+00</b> | 2,6E+00   | 2,0E+00   | 2,5E+01                         |
| 200      | 6,3E+00                          | 5,2E+00  | <b>3,9E+00</b> | 2,6E+00   | 2,0E+00   | 2,5E+01                         |
| 300      | 6,3E+00                          |          |                |           |           | 2,6E+01                         |
| 360      |                                  |          |                |           |           | 2,6E+01                         |
| 400      |                                  |          |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Nb-95**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 9,8E-01                   |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,7E-01                          | 8,7E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,6E+00                   |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,3E+00                   |
| 6        | 1,1E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 5,0E+00                   |
| 7        | 1,3E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00   | 5,7E+00                   |
| 8        | 1,4E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 6,3E+00                   |
| 9        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,9E+00                   |
| 10       | 1,7E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 7,4E+00                   |
| 14       | 2,2E+00                          | 2,0E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 9,4E+00                   |
| 15       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00   | 9,8E+00                   |
| 20       | 2,8E+00                          | 2,5E+00  | <b>2,1E+00</b> | 1,5E+00   | 1,8E+00   | 1,2E+01                   |
| 30       | 3,7E+00                          | 3,1E+00  | <b>2,4E+00</b> | 1,7E+00   | 1,9E+00   | 1,5E+01                   |
| 40       | 4,3E+00                          | 3,6E+00  | <b>2,7E+00</b> | 1,8E+00   | 1,9E+00   | 1,7E+01                   |
| 45       | 4,6E+00                          | 3,8E+00  | <b>2,8E+00</b> | 1,9E+00   | 1,9E+00   | 1,8E+01                   |
| 50       | 4,8E+00                          | 3,9E+00  | <b>2,9E+00</b> | 1,9E+00   | 1,9E+00   | 1,9E+01                   |
| 60       | 5,3E+00                          | 4,2E+00  | <b>3,0E+00</b> | 2,0E+00   | 1,9E+00   | 2,0E+01                   |
| 70       | 5,6E+00                          | 4,5E+00  | <b>3,1E+00</b> | 2,0E+00   | 1,9E+00   | 2,1E+01                   |
| 80       | 5,8E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,1E+00   | 1,9E+00   | 2,2E+01                   |
| 90       | 6,0E+00                          | 4,8E+00  | <b>3,3E+00</b> | 2,1E+00   | 1,9E+00   | 2,3E+01                   |
| 100      | 6,2E+00                          | 4,9E+00  | <b>3,4E+00</b> | 2,1E+00   | 1,9E+00   | 2,3E+01                   |
| 120      | 6,4E+00                          | 5,1E+00  | <b>3,5E+00</b> | 2,2E+00   | 1,9E+00   | 2,4E+01                   |
| 180      | 6,7E+00                          | 5,3E+00  | <b>3,6E+00</b> | 2,2E+00   | 2,0E+00   | 2,5E+01                   |
| 200      | 6,8E+00                          | 5,3E+00  | <b>3,6E+00</b> | 2,2E+00   | 2,0E+00   | 2,5E+01                   |
| 300      | 6,8E+00                          | 5,4E+00  |                | 2,2E+00   |           | 2,6E+01                   |
| 360      | 6,9E+00                          | 5,4E+00  |                | 2,3E+00   |           | 2,6E+01                   |
| 400      | 6,9E+00                          |          |                | 2,3E+00   |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mo-99**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion<br>f <sub>1</sub> =0,8 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 μm                      | AMAD=1μm | <b>AMAD=5μm</b> | AMAD=10μm |                                  |                                 |
| 1        | 2,4E-01                          | 4,0E-01  | <b>6,1E-01</b>  | 5,7E-01   | 8,6E-01                          | 8,7E-01                         |
| 2        | 4,1E-01                          | 6,4E-01  | <b>9,7E-01</b>  | 8,9E-01   | 1,4E+00                          | 1,5E+00                         |
| 3        | 5,3E-01                          | 8,1E-01  | <b>1,2E+00</b>  | 1,1E+00   | 1,9E+00                          | 2,0E+00                         |
| 4        | 6,2E-01                          | 9,3E-01  | <b>1,4E+00</b>  | 1,2E+00   | 2,2E+00                          | 2,4E+00                         |
| 5        | 6,9E-01                          | 1,0E+00  | <b>1,5E+00</b>  | 1,4E+00   | 2,4E+00                          | 2,7E+00                         |
| 6        | 7,4E-01                          | 1,1E+00  | <b>1,6E+00</b>  | 1,4E+00   | 2,6E+00                          | 2,9E+00                         |
| 7        | 7,8E-01                          | 1,2E+00  | <b>1,7E+00</b>  | 1,5E+00   | 2,7E+00                          | 3,0E+00                         |
| 8        | 8,1E-01                          | 1,2E+00  | <b>1,7E+00</b>  | 1,6E+00   | 2,8E+00                          | 3,2E+00                         |
| 9        | 8,3E-01                          | 1,2E+00  | <b>1,8E+00</b>  | 1,6E+00   | 2,9E+00                          | 3,3E+00                         |
| 10       | 8,5E-01                          | 1,2E+00  | <b>1,8E+00</b>  | 1,6E+00   | 2,9E+00                          | 3,3E+00                         |
| 14       | 8,9E-01                          | 1,3E+00  | <b>1,9E+00</b>  | 1,7E+00   | 3,1E+00                          | 3,5E+00                         |
| 15       | 8,9E-01                          | 1,3E+00  | <b>1,9E+00</b>  | 1,7E+00   | 3,1E+00                          | 3,5E+00                         |
| 20       | 9,0E-01                          |          |                 |           |                                  | 3,6E+00                         |
| 30       | 9,1E-01                          |          |                 |           |                                  | 3,6E+00                         |
| 40       | 9,1E-01                          |          |                 |           |                                  |                                 |
| 45       |                                  |          |                 |           |                                  |                                 |
| 50       |                                  |          |                 |           |                                  |                                 |
| 60       |                                  |          |                 |           |                                  |                                 |
| 70       |                                  |          |                 |           |                                  |                                 |
| 80       |                                  |          |                 |           |                                  |                                 |
| 90       |                                  |          |                 |           |                                  |                                 |
| 100      |                                  |          |                 |           |                                  |                                 |
| 120      |                                  |          |                 |           |                                  |                                 |
| 180      |                                  |          |                 |           |                                  |                                 |
| 200      |                                  |          |                 |           |                                  |                                 |
| 300      |                                  |          |                 |           |                                  |                                 |
| 360      |                                  |          |                 |           |                                  |                                 |
| 400      |                                  |          |                 |           |                                  |                                 |
| 500      |                                  |          |                 |           |                                  |                                 |
| 600      |                                  |          |                 |           |                                  |                                 |
| 700      |                                  |          |                 |           |                                  |                                 |
| 800      |                                  |          |                 |           |                                  |                                 |
| 900      |                                  |          |                 |           |                                  |                                 |
| 1000     |                                  |          |                 |           |                                  |                                 |
| 2000     |                                  |          |                 |           |                                  |                                 |
| 3000     |                                  |          |                 |           |                                  |                                 |
| 4000     |                                  |          |                 |           |                                  |                                 |
| 5000     |                                  |          |                 |           |                                  |                                 |
| 6000     |                                  |          |                 |           |                                  |                                 |
| 8000     |                                  |          |                 |           |                                  |                                 |
| 10000    |                                  |          |                 |           |                                  |                                 |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Mo-99**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                 |                 | Ingestion<br>$f_1=0,8$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 2,5E-03                          | 3,3E-03        | <b>4,3E-03</b>                  | 3,8E-03         | 7,0E-03                | 1,1E-02                         |
| 2        | 9,6E-03                          | 1,3E-02        | <b>1,7E-02</b>                  | 1,5E-02         | 3,0E-02                | 4,1E-02                         |
| 3        | 1,4E-02                          | 1,9E-02        | <b>2,6E-02</b>                  | 2,2E-02         | 4,5E-02                | 5,9E-02                         |
| 4        | 1,6E-02                          | 2,2E-02        | <b>3,0E-02</b>                  | 2,6E-02         | 5,3E-02                | 6,8E-02                         |
| 5        | 1,8E-02                          | 2,4E-02        | <b>3,2E-02</b>                  | 2,8E-02         | 5,8E-02                | 7,4E-02                         |
| 6        | 1,8E-02                          | 2,5E-02        | <b>3,4E-02</b>                  | 3,0E-02         | 6,0E-02                | 7,7E-02                         |
| 7        | 1,9E-02                          | 2,6E-02        | <b>3,5E-02</b>                  | 3,1E-02         | 6,2E-02                | 8,0E-02                         |
| 8        | 1,9E-02                          | 2,6E-02        | <b>3,6E-02</b>                  | 3,1E-02         | 6,4E-02                | 8,1E-02                         |
| 9        | 2,0E-02                          | 2,7E-02        | <b>3,6E-02</b>                  | 3,2E-02         | 6,5E-02                | 8,3E-02                         |
| 10       | 2,0E-02                          | 2,7E-02        | <b>3,6E-02</b>                  | 3,2E-02         | 6,5E-02                | 8,3E-02                         |
| 14       | 2,0E-02                          | 2,8E-02        | <b>3,7E-02</b>                  | 3,3E-02         | 6,7E-02                | 8,5E-02                         |
| 15       | 2,0E-02                          | 2,8E-02        | <b>3,7E-02</b>                  | 3,3E-02         | 6,7E-02                | 8,6E-02                         |
| 20       | 2,0E-02                          |                | <b>3,8E-02</b>                  |                 | 6,8E-02                | 8,6E-02                         |
| 30       | 2,1E-02                          |                | <b>3,8E-02</b>                  |                 | 6,8E-02                | 8,6E-02                         |
| 40       | 2,1E-02                          |                |                                 |                 |                        | 8,7E-02                         |
| 45       |                                  |                |                                 |                 |                        | 8,7E-02                         |
| 50       |                                  |                |                                 |                 |                        |                                 |
| 60       |                                  |                |                                 |                 |                        |                                 |
| 70       |                                  |                |                                 |                 |                        |                                 |
| 80       |                                  |                |                                 |                 |                        |                                 |
| 90       |                                  |                |                                 |                 |                        |                                 |
| 100      |                                  |                |                                 |                 |                        |                                 |
| 120      |                                  |                |                                 |                 |                        |                                 |
| 180      |                                  |                |                                 |                 |                        |                                 |
| 200      |                                  |                |                                 |                 |                        |                                 |
| 300      |                                  |                |                                 |                 |                        |                                 |
| 360      |                                  |                |                                 |                 |                        |                                 |
| 400      |                                  |                |                                 |                 |                        |                                 |
| 500      |                                  |                |                                 |                 |                        |                                 |
| 600      |                                  |                |                                 |                 |                        |                                 |
| 700      |                                  |                |                                 |                 |                        |                                 |
| 800      |                                  |                |                                 |                 |                        |                                 |
| 900      |                                  |                |                                 |                 |                        |                                 |
| 1000     |                                  |                |                                 |                 |                        |                                 |
| 2000     |                                  |                |                                 |                 |                        |                                 |
| 3000     |                                  |                |                                 |                 |                        |                                 |
| 4000     |                                  |                |                                 |                 |                        |                                 |
| 5000     |                                  |                |                                 |                 |                        |                                 |
| 6000     |                                  |                |                                 |                 |                        |                                 |
| 8000     |                                  |                |                                 |                 |                        |                                 |
| 10000    |                                  |                |                                 |                 |                        |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Mo-99**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion<br>f <sub>i</sub> =0,05 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 μm                      | AMAD=1μm | AMAD=5μm       | AMAD=10μm |                                   |                                 |
| 1        | 2,4E-01                          | 3,8E-01  | <b>5,9E-01</b> | 5,5E-01   | 8,1E-01                           | 8,7E-01                         |
| 2        | 4,0E-01                          | 5,8E-01  | <b>8,4E-01</b> | 7,7E-01   | 1,2E+00                           | 1,5E+00                         |
| 3        | 5,0E-01                          | 6,8E-01  | <b>9,5E-01</b> | 8,6E-01   | 1,3E+00                           | 2,0E+00                         |
| 4        | 5,7E-01                          | 7,5E-01  | <b>1,0E+00</b> | 8,9E-01   | 1,4E+00                           | 2,4E+00                         |
| 5        | 6,3E-01                          | 7,9E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00                           | 2,7E+00                         |
| 6        | 6,7E-01                          | 8,2E-01  | <b>1,1E+00</b> | 9,3E-01   |                                   | 2,9E+00                         |
| 7        | 7,0E-01                          | 8,5E-01  | <b>1,1E+00</b> | 9,4E-01   |                                   | 3,0E+00                         |
| 8        | 7,3E-01                          | 8,7E-01  |                | 9,4E-01   |                                   | 3,2E+00                         |
| 9        | 7,5E-01                          | 8,8E-01  |                | 9,5E-01   |                                   | 3,3E+00                         |
| 10       | 7,6E-01                          | 8,9E-01  |                | 9,5E-01   |                                   | 3,3E+00                         |
| 14       | 7,9E-01                          | 9,2E-01  |                | 9,6E-01   |                                   | 3,5E+00                         |
| 15       | 8,0E-01                          | 9,2E-01  |                | 9,6E-01   |                                   | 3,5E+00                         |
| 20       | 8,1E-01                          | 9,3E-01  |                | 9,7E-01   |                                   | 3,6E+00                         |
| 30       | 8,1E-01                          | 9,3E-01  |                | 9,7E-01   |                                   | 3,6E+00                         |
| 40       |                                  |          |                |           |                                   |                                 |
| 45       |                                  |          |                |           |                                   |                                 |
| 50       |                                  |          |                |           |                                   |                                 |
| 60       |                                  |          |                |           |                                   |                                 |
| 70       |                                  |          |                |           |                                   |                                 |
| 80       |                                  |          |                |           |                                   |                                 |
| 90       |                                  |          |                |           |                                   |                                 |
| 100      |                                  |          |                |           |                                   |                                 |
| 120      |                                  |          |                |           |                                   |                                 |
| 180      |                                  |          |                |           |                                   |                                 |
| 200      |                                  |          |                |           |                                   |                                 |
| 300      |                                  |          |                |           |                                   |                                 |
| 360      |                                  |          |                |           |                                   |                                 |
| 400      |                                  |          |                |           |                                   |                                 |
| 500      |                                  |          |                |           |                                   |                                 |
| 600      |                                  |          |                |           |                                   |                                 |
| 700      |                                  |          |                |           |                                   |                                 |
| 800      |                                  |          |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |



**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Mo-99**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,05$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 2,2E-05                          | 6,8E-05        | 1,3E-04        | 1,2E-04         | 3,1E-04                 | 1,1E-02                         |
| 2        | 1,2E-04                          | 3,8E-04        | 7,0E-04        | 6,7E-04         | 1,7E-03                 | 4,1E-02                         |
| 3        | 2,1E-04                          | 6,1E-04        | 1,1E-03        | 1,1E-03         | 2,7E-03                 | 5,9E-02                         |
| 4        | 2,5E-04                          | 7,3E-04        | 1,3E-03        | 1,3E-03         | 3,2E-03                 | 6,8E-02                         |
| 5        | 2,8E-04                          | 8,0E-04        | 1,5E-03        | 1,4E-03         | 3,5E-03                 | 7,4E-02                         |
| 6        | 3,0E-04                          | 8,4E-04        | 1,5E-03        | 1,5E-03         | 3,6E-03                 | 7,7E-02                         |
| 7        | 3,1E-04                          | 8,7E-04        | 1,6E-03        | 1,5E-03         | 3,8E-03                 | 8,0E-02                         |
| 8        | 3,2E-04                          | 8,9E-04        | 1,6E-03        | 1,5E-03         | 3,9E-03                 | 8,1E-02                         |
| 9        | 3,3E-04                          | 9,1E-04        | 1,7E-03        | 1,6E-03         | 3,9E-03                 | 8,3E-02                         |
| 10       | 3,3E-04                          | 9,2E-04        | 1,7E-03        | 1,6E-03         | 4,0E-03                 | 8,3E-02                         |
| 14       | 3,4E-04                          | 9,5E-04        |                | 1,6E-03         | 4,1E-03                 | 8,5E-02                         |
| 15       | 3,5E-04                          | 9,5E-04        |                | 1,6E-03         | 4,1E-03                 | 8,6E-02                         |
| 20       | 3,5E-04                          | 9,6E-04        |                | 1,6E-03         |                         | 8,6E-02                         |
| 30       |                                  | 9,6E-04        |                | 1,7E-03         |                         | 8,6E-02                         |
| 40       |                                  |                |                | 1,7E-03         |                         | 8,7E-02                         |
| 45       |                                  |                |                |                 |                         | 8,7E-02                         |
| 50       |                                  |                |                |                 |                         |                                 |
| 60       |                                  |                |                |                 |                         |                                 |
| 70       |                                  |                |                |                 |                         |                                 |
| 80       |                                  |                |                |                 |                         |                                 |
| 90       |                                  |                |                |                 |                         |                                 |
| 100      |                                  |                |                |                 |                         |                                 |
| 120      |                                  |                |                |                 |                         |                                 |
| 180      |                                  |                |                |                 |                         |                                 |
| 200      |                                  |                |                |                 |                         |                                 |
| 300      |                                  |                |                |                 |                         |                                 |
| 360      |                                  |                |                |                 |                         |                                 |
| 400      |                                  |                |                |                 |                         |                                 |
| 500      |                                  |                |                |                 |                         |                                 |
| 600      |                                  |                |                |                 |                         |                                 |
| 700      |                                  |                |                |                 |                         |                                 |
| 800      |                                  |                |                |                 |                         |                                 |
| 900      |                                  |                |                |                 |                         |                                 |
| 1000     |                                  |                |                |                 |                         |                                 |
| 2000     |                                  |                |                |                 |                         |                                 |
| 3000     |                                  |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Tc-99**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,6E-02                          | 2,1E-02        | <b>2,9E-02</b>                 | 2,5E-02         | 4,7E-02   | 6,9E-02                   |
| 2        | 4,7E-02                          | 6,4E-02        | <b>8,7E-02</b>                 | 7,6E-02         | 1,5E-01   | 2,0E-01                   |
| 3        | 6,8E-02                          | 9,3E-02        | <b>1,3E-01</b>                 | 1,1E-01         | 2,2E-01   | 2,9E-01                   |
| 4        | 8,2E-02                          | 1,1E-01        | <b>1,5E-01</b>                 | 1,3E-01         | 2,7E-01   | 3,4E-01                   |
| 5        | 9,1E-02                          | 1,2E-01        | <b>1,7E-01</b>                 | 1,5E-01         | 3,0E-01   | 3,8E-01                   |
| 6        | 9,8E-02                          | 1,3E-01        | <b>1,8E-01</b>                 | 1,6E-01         | 3,3E-01   | 4,1E-01                   |
| 7        | 1,0E-01                          | 1,4E-01        | <b>1,9E-01</b>                 | 1,7E-01         | 3,4E-01   | 4,3E-01                   |
| 8        | 1,1E-01                          | 1,4E-01        | <b>1,9E-01</b>                 | 1,7E-01         | 3,5E-01   | 4,4E-01                   |
| 9        | 1,1E-01                          | 1,5E-01        | <b>2,0E-01</b>                 | 1,8E-01         | 3,6E-01   | 4,5E-01                   |
| 10       | 1,1E-01                          | 1,5E-01        | <b>2,0E-01</b>                 | 1,8E-01         | 3,7E-01   | 4,6E-01                   |
| 14       | 1,1E-01                          | 1,5E-01        | <b>2,1E-01</b>                 | 1,8E-01         | 3,8E-01   | 4,8E-01                   |
| 15       | 1,1E-01                          | 1,6E-01        | <b>2,1E-01</b>                 | 1,9E-01         | 3,8E-01   | 4,8E-01                   |
| 20       | 1,2E-01                          | 1,6E-01        | <b>2,1E-01</b>                 | 1,9E-01         | 3,9E-01   | 4,8E-01                   |
| 30       | 1,2E-01                          |                | <b>2,2E-01</b>                 |                 | 3,9E-01   | 4,9E-01                   |
| 40       |                                  |                | <b>2,2E-01</b>                 |                 | 3,9E-01   | 4,9E-01                   |
| 45       |                                  |                |                                |                 | 4,0E-01   | 4,9E-01                   |
| 50       |                                  |                |                                |                 | 4,0E-01   | 4,9E-01                   |
| 60       |                                  |                |                                |                 |           | 5,0E-01                   |
| 70       |                                  |                |                                |                 |           | 5,0E-01                   |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Tc-99**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                 |                 | Ingestion | Direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |           |                           |
| 1        | 4,3E-03                          | 1,1E-02        | <b>2,0E-02</b>                  | 1,9E-02         | 4,7E-02   | 6,9E-02                   |
| 2        | 1,5E-02                          | 3,7E-02        | <b>6,6E-02</b>                  | 6,2E-02         | 1,5E-01   | 2,0E-01                   |
| 3        | 2,2E-02                          | 5,5E-02        | <b>9,7E-02</b>                  | 9,1E-02         | 2,2E-01   | 2,9E-01                   |
| 4        | 2,8E-02                          | 6,7E-02        | <b>1,2E-01</b>                  | 1,1E-01         | 2,7E-01   | 3,4E-01                   |
| 5        | 3,2E-02                          | 7,5E-02        | <b>1,3E-01</b>                  | 1,2E-01         | 3,0E-01   | 3,8E-01                   |
| 6        | 3,5E-02                          | 8,1E-02        | <b>1,4E-01</b>                  | 1,3E-01         | 3,3E-01   | 4,1E-01                   |
| 7        | 3,7E-02                          | 8,6E-02        | <b>1,5E-01</b>                  | 1,4E-01         | 3,4E-01   | 4,3E-01                   |
| 8        | 3,9E-02                          | 8,9E-02        | <b>1,5E-01</b>                  | 1,4E-01         | 3,5E-01   | 4,4E-01                   |
| 9        | 4,0E-02                          | 9,1E-02        | <b>1,6E-01</b>                  | 1,5E-01         | 3,6E-01   | 4,5E-01                   |
| 10       | 4,2E-02                          | 9,3E-02        | <b>1,6E-01</b>                  | 1,5E-01         | 3,7E-01   | 4,6E-01                   |
| 14       | 4,6E-02                          | 9,9E-02        | <b>1,7E-01</b>                  | 1,6E-01         | 3,8E-01   | 4,8E-01                   |
| 15       | 4,7E-02                          | 1,0E-01        | <b>1,7E-01</b>                  | 1,6E-01         | 3,8E-01   | 4,8E-01                   |
| 20       | 5,1E-02                          | 1,0E-01        | <b>1,7E-01</b>                  | 1,6E-01         | 3,9E-01   | 4,8E-01                   |
| 30       | 5,7E-02                          | 1,1E-01        | <b>1,8E-01</b>                  | 1,6E-01         | 3,9E-01   | 4,9E-01                   |
| 40       | 6,2E-02                          | 1,1E-01        | <b>1,8E-01</b>                  | 1,6E-01         | 3,9E-01   | 4,9E-01                   |
| 45       | 6,4E-02                          | 1,1E-01        | <b>1,8E-01</b>                  | 1,7E-01         | 4,0E-01   | 4,9E-01                   |
| 50       | 6,7E-02                          | 1,2E-01        | <b>1,8E-01</b>                  | 1,7E-01         | 4,0E-01   | 4,9E-01                   |
| 60       | 7,0E-02                          | 1,2E-01        | <b>1,8E-01</b>                  |                 |           | 5,0E-01                   |
| 70       | 7,3E-02                          | 1,2E-01        | <b>1,8E-01</b>                  |                 |           | 5,0E-01                   |
| 80       | 7,6E-02                          | 1,2E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 90       | 7,9E-02                          | 1,3E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 100      | 8,1E-02                          | 1,3E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 120      | 8,5E-02                          | 1,3E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 180      | 9,2E-02                          | 1,4E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 200      | 9,4E-02                          | 1,4E-01        | <b>1,9E-01</b>                  |                 |           |                           |
| 300      | 1,0E-01                          | 1,4E-01        | <b>2,0E-01</b>                  |                 |           |                           |
| 360      | 1,0E-01                          | 1,4E-01        | <b>2,0E-01</b>                  |                 |           |                           |
| 400      | 1,0E-01                          | 1,4E-01        |                                 |                 |           |                           |
| 500      | 1,1E-01                          | 1,5E-01        |                                 |                 |           |                           |
| 600      | 1,1E-01                          | 1,5E-01        |                                 |                 |           |                           |
| 700      |                                  |                |                                 |                 |           |                           |
| 800      |                                  |                |                                 |                 |           |                           |
| 900      |                                  |                |                                 |                 |           |                           |
| 1000     |                                  |                |                                 |                 |           |                           |
| 2000     |                                  |                |                                 |                 |           |                           |
| 3000     |                                  |                |                                 |                 |           |                           |
| 4000     |                                  |                |                                 |                 |           |                           |
| 5000     |                                  |                |                                 |                 |           |                           |
| 6000     |                                  |                |                                 |                 |           |                           |
| 8000     |                                  |                |                                 |                 |           |                           |
| 10000    |                                  |                |                                 |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Tc-99m**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 9,3E-02                          | 1,6E-01  | <b>2,4E-01</b>  | 2,3E-01   | 3,3E-01   | 3,3E-01                   |
| 2        | 9,8E-02                          | 1,6E-01  | <b>2,5E-01</b>  | 2,4E-01   | 3,4E-01   | 3,4E-01                   |
| 3        | 9,8E-02                          |          | <b>2,6E-01</b>  | 2,4E-01   | 3,4E-01   | 3,4E-01                   |
| 4        |                                  |          | <b>2,6E-01</b>  |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Tc-99m**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 9,5E-02                          | 1,6E-01  | <b>2,5E-01</b>  | 2,3E-01   | 3,3E-01   | 3,3E-01                   |
| 2        | 1,0E-01                          | 1,6E-01  | <b>2,6E-01</b>  | 2,4E-01   | 3,4E-01   | 3,4E-01                   |
| 3        | 1,0E-01                          | 1,7E-01  | <b>2,6E-01</b>  | 2,4E-01   | 3,4E-01   | 3,4E-01                   |
| 4        |                                  | 1,7E-01  |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-103**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,6E-01                          | 4,2E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,2E-01                   |
| 2        | 4,6E-01                          | 7,1E-01  | <b>1,1E+00</b> | 9,8E-01   | 1,4E+00   | 1,7E+00                   |
| 3        | 6,4E-01                          | 9,3E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,6E+00   | 2,5E+00                   |
| 4        | 8,0E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,8E+00   | 3,2E+00                   |
| 5        | 9,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,8E+00   | 3,9E+00                   |
| 6        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b> | 1,8E+00   | 1,9E+00   | 4,5E+00                   |
| 7        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 1,9E+00   | 5,2E+00                   |
| 8        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,1E+00   | 1,9E+00   | 5,7E+00                   |
| 9        | 1,5E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 1,9E+00   | 6,3E+00                   |
| 10       | 1,6E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,0E+00   | 6,8E+00                   |
| 14       | 2,0E+00                          | 2,5E+00  | <b>3,2E+00</b> | 2,8E+00   | 2,1E+00   | 8,7E+00                   |
| 15       | 2,1E+00                          | 2,6E+00  | <b>3,3E+00</b> | 2,9E+00   | 2,1E+00   | 9,1E+00                   |
| 20       | 2,5E+00                          | 3,0E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,2E+00   | 1,1E+01                   |
| 30       | 3,1E+00                          | 3,7E+00  | <b>4,6E+00</b> | 4,0E+00   | 2,3E+00   | 1,4E+01                   |
| 40       | 3,5E+00                          | 4,2E+00  | <b>5,2E+00</b> | 4,5E+00   | 2,4E+00   | 1,6E+01                   |
| 45       | 3,7E+00                          | 4,4E+00  | <b>5,4E+00</b> | 4,7E+00   | 2,5E+00   | 1,6E+01                   |
| 50       | 3,8E+00                          | 4,6E+00  | <b>5,6E+00</b> | 4,8E+00   | 2,5E+00   | 1,7E+01                   |
| 60       | 4,1E+00                          | 4,8E+00  | <b>6,0E+00</b> | 5,1E+00   | 2,6E+00   | 1,8E+01                   |
| 70       | 4,2E+00                          | 5,0E+00  | <b>6,2E+00</b> | 5,3E+00   | 2,6E+00   | 1,9E+01                   |
| 80       | 4,4E+00                          | 5,2E+00  | <b>6,4E+00</b> | 5,5E+00   | 2,6E+00   | 2,0E+01                   |
| 90       | 4,5E+00                          | 5,4E+00  | <b>6,6E+00</b> | 5,6E+00   | 2,7E+00   | 2,0E+01                   |
| 100      | 4,6E+00                          | 5,5E+00  | <b>6,7E+00</b> | 5,7E+00   | 2,7E+00   | 2,1E+01                   |
| 120      | 4,7E+00                          | 5,6E+00  | <b>6,9E+00</b> | 5,9E+00   | 2,7E+00   | 2,1E+01                   |
| 180      | 4,9E+00                          | 5,8E+00  | <b>7,2E+00</b> | 6,1E+00   | 2,8E+00   | 2,2E+01                   |
| 200      | 5,0E+00                          | 5,9E+00  | <b>7,2E+00</b> | 6,1E+00   | 2,8E+00   | 2,2E+01                   |
| 300      | 5,0E+00                          | 5,9E+00  | <b>7,3E+00</b> | 6,2E+00   |           | 2,3E+01                   |
| 360      |                                  |          | <b>7,3E+00</b> | 6,2E+00   |           | 2,3E+01                   |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-103**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,2E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,7E+00                         |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,5E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 3,2E+00                         |
| 5        | 9,9E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 4,5E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,9E+00   | 5,2E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00   | 5,7E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,9E+00   | 6,3E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00   | 6,8E+00                         |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,1E+00   | 8,7E+00                         |
| 15       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,7E+00   | 2,1E+00   | 9,1E+00                         |
| 20       | 2,8E+00                          | 2,6E+00  | <b>2,4E+00</b> | 1,8E+00   | 2,2E+00   | 1,1E+01                         |
| 30       | 3,7E+00                          | 3,3E+00  | <b>2,8E+00</b> | 2,1E+00   | 2,3E+00   | 1,4E+01                         |
| 40       | 4,3E+00                          | 3,8E+00  | <b>3,1E+00</b> | 2,3E+00   | 2,4E+00   | 1,6E+01                         |
| 45       | 4,6E+00                          | 4,0E+00  | <b>3,3E+00</b> | 2,3E+00   | 2,5E+00   | 1,6E+01                         |
| 50       | 4,8E+00                          | 4,2E+00  | <b>3,4E+00</b> | 2,4E+00   | 2,5E+00   | 1,7E+01                         |
| 60       | 5,2E+00                          | 4,5E+00  | <b>3,6E+00</b> | 2,5E+00   | 2,6E+00   | 1,8E+01                         |
| 70       | 5,5E+00                          | 4,7E+00  | <b>3,7E+00</b> | 2,6E+00   | 2,6E+00   | 1,9E+01                         |
| 80       | 5,8E+00                          | 4,9E+00  | <b>3,8E+00</b> | 2,7E+00   | 2,6E+00   | 2,0E+01                         |
| 90       | 6,0E+00                          | 5,0E+00  | <b>3,9E+00</b> | 2,7E+00   | 2,7E+00   | 2,0E+01                         |
| 100      | 6,1E+00                          | 5,1E+00  | <b>4,0E+00</b> | 2,8E+00   | 2,7E+00   | 2,1E+01                         |
| 120      | 6,3E+00                          | 5,3E+00  | <b>4,1E+00</b> | 2,8E+00   | 2,7E+00   | 2,1E+01                         |
| 180      | 6,6E+00                          | 5,5E+00  | <b>4,2E+00</b> | 2,9E+00   | 2,8E+00   | 2,2E+01                         |
| 200      | 6,6E+00                          | 5,5E+00  | <b>4,3E+00</b> | 2,9E+00   | 2,8E+00   | 2,2E+01                         |
| 300      | 6,7E+00                          | 5,6E+00  | <b>4,3E+00</b> |           |           | 2,3E+01                         |
| 360      | 6,7E+00                          | 5,6E+00  |                |           |           | 2,3E+01                         |
| 400      |                                  |          |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-103**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 9,2E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,7E+00                   |
| 3        | 6,7E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,5E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 3,2E+00                   |
| 5        | 9,9E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                   |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,9E+00   | 4,5E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 5,2E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00   | 5,7E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00   | 6,3E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,8E+00                   |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 2,1E+00   | 8,7E+00                   |
| 15       | 2,3E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 2,1E+00   | 9,1E+00                   |
| 20       | 2,9E+00                          | 2,6E+00  | <b>2,3E+00</b> | 1,7E+00   | 2,2E+00   | 1,1E+01                   |
| 30       | 3,8E+00                          | 3,3E+00  | <b>2,7E+00</b> | 1,9E+00   | 2,3E+00   | 1,4E+01                   |
| 40       | 4,5E+00                          | 3,8E+00  | <b>3,0E+00</b> | 2,0E+00   | 2,4E+00   | 1,6E+01                   |
| 45       | 4,8E+00                          | 4,0E+00  | <b>3,1E+00</b> | 2,1E+00   | 2,5E+00   | 1,6E+01                   |
| 50       | 5,1E+00                          | 4,2E+00  | <b>3,2E+00</b> | 2,2E+00   | 2,5E+00   | 1,7E+01                   |
| 60       | 5,6E+00                          | 4,6E+00  | <b>3,4E+00</b> | 2,3E+00   | 2,6E+00   | 1,8E+01                   |
| 70       | 5,9E+00                          | 4,8E+00  | <b>3,5E+00</b> | 2,3E+00   | 2,6E+00   | 1,9E+01                   |
| 80       | 6,2E+00                          | 5,1E+00  | <b>3,7E+00</b> | 2,4E+00   | 2,6E+00   | 2,0E+01                   |
| 90       | 6,5E+00                          | 5,2E+00  | <b>3,8E+00</b> | 2,5E+00   | 2,7E+00   | 2,0E+01                   |
| 100      | 6,7E+00                          | 5,4E+00  | <b>3,8E+00</b> | 2,5E+00   | 2,7E+00   | 2,1E+01                   |
| 120      | 7,0E+00                          | 5,6E+00  | <b>4,0E+00</b> | 2,6E+00   | 2,7E+00   | 2,1E+01                   |
| 180      | 7,4E+00                          | 5,9E+00  | <b>4,1E+00</b> | 2,6E+00   | 2,8E+00   | 2,2E+01                   |
| 200      | 7,5E+00                          | 6,0E+00  | <b>4,2E+00</b> | 2,7E+00   | 2,8E+00   | 2,2E+01                   |
| 300      | 7,6E+00                          | 6,1E+00  | <b>4,2E+00</b> | 2,7E+00   |           | 2,3E+01                   |
| 360      | 7,6E+00                          | 6,1E+00  |                |           |           | 2,3E+01                   |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-103**

| Zeit (d) | Inhalation (Absorptionsklasse) | Ingestion | direkte Aufnahme ins Blut |
|----------|--------------------------------|-----------|---------------------------|
|          | Tetroxid                       |           |                           |
| 1        | 9,1E-01                        |           |                           |
| 2        | 1,6E+00                        |           |                           |
| 3        | 2,1E+00                        |           |                           |
| 4        | 2,5E+00                        |           |                           |
| 5        | 2,9E+00                        |           |                           |
| 6        | 3,2E+00                        |           |                           |
| 7        | 3,5E+00                        |           |                           |
| 8        | 3,8E+00                        |           |                           |
| 9        | 4,1E+00                        |           |                           |
| 10       | 4,4E+00                        |           |                           |
| 14       | 5,4E+00                        |           |                           |
| 15       | 5,6E+00                        |           |                           |
| 20       | 6,5E+00                        |           |                           |
| 30       | 8,0E+00                        |           |                           |
| 40       | 9,0E+00                        |           |                           |
| 45       | 9,5E+00                        |           |                           |
| 50       | 9,8E+00                        |           |                           |
| 60       | 1,0E+01                        |           |                           |
| 70       | 1,1E+01                        |           |                           |
| 80       | 1,1E+01                        |           |                           |
| 90       | 1,2E+01                        |           |                           |
| 100      | 1,2E+01                        |           |                           |
| 120      | 1,2E+01                        |           |                           |
| 180      | 1,3E+01                        |           |                           |
| 200      | 1,3E+01                        |           |                           |
| 300      |                                |           |                           |
| 360      |                                |           |                           |
| 400      |                                |           |                           |
| 500      |                                |           |                           |
| 600      |                                |           |                           |
| 700      |                                |           |                           |
| 800      |                                |           |                           |
| 900      |                                |           |                           |
| 1000     |                                |           |                           |
| 2000     |                                |           |                           |
| 3000     |                                |           |                           |
| 4000     |                                |           |                           |
| 5000     |                                |           |                           |
| 6000     |                                |           |                           |
| 8000     |                                |           |                           |
| 10000    |                                |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,6E-01                          | 4,2E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,7E-01                          | 7,2E-01  | <b>1,1E+00</b> | 9,9E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,5E-01                          | 9,5E-01  | <b>1,4E+00</b> | 1,3E+00   | 1,7E+00   | 2,6E+00                   |
| 4        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,8E+00   | 3,3E+00                   |
| 5        | 9,8E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,7E+00   | 1,9E+00   | 4,1E+00                   |
| 6        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,8E+00   | 1,9E+00   | 4,8E+00                   |
| 7        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 1,9E+00   | 5,4E+00                   |
| 8        | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 2,0E+00   | 6,1E+00                   |
| 9        | 1,6E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,0E+00   | 6,7E+00                   |
| 10       | 1,7E+00                          | 2,1E+00  | <b>2,8E+00</b> | 2,5E+00   | 2,0E+00   | 7,3E+00                   |
| 14       | 2,2E+00                          | 2,7E+00  | <b>3,5E+00</b> | 3,0E+00   | 2,1E+00   | 9,5E+00                   |
| 15       | 2,3E+00                          | 2,8E+00  | <b>3,6E+00</b> | 3,1E+00   | 2,2E+00   | 1,0E+01                   |
| 20       | 2,8E+00                          | 3,4E+00  | <b>4,3E+00</b> | 3,7E+00   | 2,3E+00   | 1,2E+01                   |
| 30       | 3,7E+00                          | 4,4E+00  | <b>5,5E+00</b> | 4,7E+00   | 2,5E+00   | 1,7E+01                   |
| 40       | 4,4E+00                          | 5,3E+00  | <b>6,5E+00</b> | 5,5E+00   | 2,7E+00   | 2,0E+01                   |
| 45       | 4,8E+00                          | 5,6E+00  | <b>6,9E+00</b> | 5,9E+00   | 2,7E+00   | 2,2E+01                   |
| 50       | 5,1E+00                          | 6,0E+00  | <b>7,4E+00</b> | 6,3E+00   | 2,8E+00   | 2,3E+01                   |
| 60       | 5,7E+00                          | 6,7E+00  | <b>8,2E+00</b> | 6,9E+00   | 3,0E+00   | 2,6E+01                   |
| 70       | 6,2E+00                          | 7,3E+00  | <b>8,9E+00</b> | 7,5E+00   | 3,1E+00   | 2,8E+01                   |
| 80       | 6,7E+00                          | 7,8E+00  | <b>9,5E+00</b> | 8,1E+00   | 3,2E+00   | 3,0E+01                   |
| 90       | 7,1E+00                          | 8,3E+00  | <b>1,0E+01</b> | 8,6E+00   | 3,3E+00   | 3,2E+01                   |
| 100      | 7,6E+00                          | 8,8E+00  | <b>1,1E+01</b> | 9,1E+00   | 3,4E+00   | 3,4E+01                   |
| 120      | 8,3E+00                          | 9,7E+00  | <b>1,2E+01</b> | 9,9E+00   | 3,6E+00   | 3,8E+01                   |
| 180      | 1,0E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 4,0E+00   | 4,7E+01                   |
| 200      | 1,1E+01                          | 1,3E+01  | <b>1,5E+01</b> | 1,3E+01   | 4,1E+00   | 5,0E+01                   |
| 300      | 1,3E+01                          | 1,5E+01  | <b>1,8E+01</b> | 1,5E+01   | 4,7E+00   | 6,0E+01                   |
| 360      | 1,4E+01                          | 1,6E+01  | <b>2,0E+01</b> | 1,7E+01   | 4,9E+00   | 6,5E+01                   |
| 400      | 1,5E+01                          | 1,7E+01  | <b>2,1E+01</b> | 1,7E+01   | 5,1E+00   | 6,8E+01                   |
| 500      | 1,6E+01                          | 1,9E+01  | <b>2,2E+01</b> | 1,9E+01   | 5,4E+00   | 7,5E+01                   |
| 600      | 1,7E+01                          | 2,0E+01  | <b>2,4E+01</b> | 2,0E+01   | 5,6E+00   | 8,0E+01                   |
| 700      | 1,8E+01                          | 2,1E+01  | <b>2,5E+01</b> | 2,1E+01   | 5,8E+00   | 8,3E+01                   |
| 800      | 1,9E+01                          | 2,2E+01  | <b>2,6E+01</b> | 2,2E+01   | 6,0E+00   | 8,6E+01                   |
| 900      | 1,9E+01                          | 2,2E+01  | <b>2,6E+01</b> | 2,2E+01   | 6,1E+00   | 8,8E+01                   |
| 1000     | 2,0E+01                          | 2,3E+01  | <b>2,7E+01</b> | 2,3E+01   | 6,2E+00   | 9,0E+01                   |
| 2000     | 2,1E+01                          | 2,4E+01  | <b>2,9E+01</b> | 2,4E+01   | 6,5E+00   | 9,6E+01                   |
| 3000     | 2,1E+01                          | 2,4E+01  | <b>2,9E+01</b> | 2,4E+01   | 6,5E+00   | 9,6E+01                   |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 1,5E-02                          | 1,7E-02        | <b>2,0E-02</b> | 1,7E-02         | 2,4E-03   | 7,0E-02                   |
| 2        | 3,1E-02                          | 3,5E-02        | <b>4,1E-02</b> | 3,4E-02         | 6,6E-03   | 1,4E-01                   |
| 3        | 3,7E-02                          | 4,2E-02        | <b>5,0E-02</b> | 4,2E-02         | 8,4E-03   | 1,7E-01                   |
| 4        | 4,3E-02                          | 4,8E-02        | <b>5,7E-02</b> | 4,8E-02         | 9,6E-03   | 2,0E-01                   |
| 5        | 4,7E-02                          | 5,4E-02        | <b>6,4E-02</b> | 5,3E-02         | 1,1E-02   | 2,2E-01                   |
| 6        | 5,2E-02                          | 5,9E-02        | <b>7,0E-02</b> | 5,9E-02         | 1,2E-02   | 2,4E-01                   |
| 7        | 5,6E-02                          | 6,4E-02        | <b>7,5E-02</b> | 6,3E-02         | 1,3E-02   | 2,6E-01                   |
| 8        | 6,0E-02                          | 6,8E-02        | <b>8,1E-02</b> | 6,8E-02         | 1,4E-02   | 2,8E-01                   |
| 9        | 6,4E-02                          | 7,2E-02        | <b>8,6E-02</b> | 7,2E-02         | 1,5E-02   | 2,9E-01                   |
| 10       | 6,7E-02                          | 7,6E-02        | <b>9,0E-02</b> | 7,5E-02         | 1,5E-02   | 3,1E-01                   |
| 14       | 7,8E-02                          | 8,9E-02        | <b>1,1E-01</b> | 8,8E-02         | 1,8E-02   | 3,6E-01                   |
| 15       | 8,1E-02                          | 9,2E-02        | <b>1,1E-01</b> | 9,1E-02         | 1,9E-02   | 3,7E-01                   |
| 20       | 9,1E-02                          | 1,0E-01        | <b>1,2E-01</b> | 1,0E-01         | 2,1E-02   | 4,2E-01                   |
| 30       | 1,0E-01                          | 1,2E-01        | <b>1,4E-01</b> | 1,2E-01         | 2,4E-02   | 4,8E-01                   |
| 40       | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,3E-01         | 2,6E-02   | 5,1E-01                   |
| 45       | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,3E-01         | 2,6E-02   | 5,3E-01                   |
| 50       | 1,2E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,3E-01         | 2,7E-02   | 5,4E-01                   |
| 60       | 1,2E-01                          | 1,4E-01        | <b>1,6E-01</b> | 1,4E-01         | 2,8E-02   | 5,6E-01                   |
| 70       | 1,2E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,4E-01         | 2,8E-02   | 5,7E-01                   |
| 80       | 1,3E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,4E-01         | 2,9E-02   | 5,8E-01                   |
| 90       | 1,3E-01                          | 1,5E-01        | <b>1,7E-01</b> | 1,4E-01         | 2,9E-02   | 5,9E-01                   |
| 100      | 1,3E-01                          | 1,5E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,0E-02   | 6,0E-01                   |
| 120      | 1,3E-01                          | 1,5E-01        | <b>1,8E-01</b> | 1,5E-01         | 3,0E-02   | 6,1E-01                   |
| 180      | 1,4E-01                          | 1,5E-01        | <b>1,8E-01</b> | 1,5E-01         | 3,1E-02   | 6,2E-01                   |
| 200      | 1,4E-01                          | 1,5E-01        | <b>1,8E-01</b> | 1,5E-01         | 3,1E-02   | 6,3E-01                   |
| 300      |                                  | 1,6E-01        | <b>1,8E-01</b> | 1,5E-01         | 3,2E-02   | 6,4E-01                   |
| 360      |                                  | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,2E-02   | 6,4E-01                   |
| 400      |                                  |                | <b>1,9E-01</b> | 1,6E-01         | 3,2E-02   | 6,4E-01                   |
| 500      |                                  |                |                |                 | 3,2E-02   | 6,4E-01                   |
| 600      |                                  |                |                |                 | 3,2E-02   | 6,5E-01                   |
| 700      |                                  |                |                |                 | 3,2E-02   | 6,5E-01                   |
| 800      |                                  |                |                |                 | 3,2E-02   | 6,5E-01                   |
| 900      |                                  |                |                |                 | 3,3E-02   | 6,5E-01                   |
| 1000     |                                  |                |                |                 | 3,3E-02   | 6,5E-01                   |
| 2000     |                                  |                |                |                 |           | 6,6E-01                   |
| 3000     |                                  |                |                |                 |           | 6,6E-01                   |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,8E-01                          | 9,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 2,6E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,3E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 4,1E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00   | 4,8E+00                   |
| 7        | 1,3E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,9E+00   | 5,4E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,1E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00   | 6,7E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,5E+00   | 2,0E+00   | 7,3E+00                   |
| 14       | 2,4E+00                          | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,1E+00   | 9,5E+00                   |
| 15       | 2,5E+00                          | 2,4E+00  | <b>2,3E+00</b> | 1,8E+00   | 2,2E+00   | 1,0E+01                   |
| 20       | 3,2E+00                          | 2,9E+00  | <b>2,6E+00</b> | 2,0E+00   | 2,3E+00   | 1,2E+01                   |
| 30       | 4,5E+00                          | 3,9E+00  | <b>3,3E+00</b> | 2,4E+00   | 2,5E+00   | 1,7E+01                   |
| 40       | 5,6E+00                          | 4,8E+00  | <b>3,8E+00</b> | 2,7E+00   | 2,7E+00   | 2,0E+01                   |
| 45       | 6,1E+00                          | 5,2E+00  | <b>4,1E+00</b> | 2,8E+00   | 2,7E+00   | 2,2E+01                   |
| 50       | 6,6E+00                          | 5,6E+00  | <b>4,3E+00</b> | 3,0E+00   | 2,8E+00   | 2,3E+01                   |
| 60       | 7,6E+00                          | 6,3E+00  | <b>4,8E+00</b> | 3,2E+00   | 3,0E+00   | 2,6E+01                   |
| 70       | 8,4E+00                          | 6,9E+00  | <b>5,2E+00</b> | 3,5E+00   | 3,1E+00   | 2,8E+01                   |
| 80       | 9,2E+00                          | 7,5E+00  | <b>5,5E+00</b> | 3,7E+00   | 3,2E+00   | 3,0E+01                   |
| 90       | 9,9E+00                          | 8,1E+00  | <b>5,9E+00</b> | 3,9E+00   | 3,3E+00   | 3,2E+01                   |
| 100      | 1,1E+01                          | 8,6E+00  | <b>6,2E+00</b> | 4,0E+00   | 3,4E+00   | 3,4E+01                   |
| 120      | 1,2E+01                          | 9,5E+00  | <b>6,8E+00</b> | 4,4E+00   | 3,6E+00   | 3,8E+01                   |
| 180      | 1,5E+01                          | 1,2E+01  | <b>8,1E+00</b> | 5,2E+00   | 4,0E+00   | 4,7E+01                   |
| 200      | 1,5E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,4E+00   | 4,1E+00   | 5,0E+01                   |
| 300      | 1,8E+01                          | 1,4E+01  | <b>9,9E+00</b> | 6,3E+00   | 4,7E+00   | 6,0E+01                   |
| 360      | 1,9E+01                          | 1,5E+01  | <b>1,1E+01</b> | 6,6E+00   | 4,9E+00   | 6,5E+01                   |
| 400      | 2,0E+01                          | 1,6E+01  | <b>1,1E+01</b> | 6,8E+00   | 5,1E+00   | 6,8E+01                   |
| 500      | 2,1E+01                          | 1,7E+01  | <b>1,1E+01</b> | 7,3E+00   | 5,4E+00   | 7,5E+01                   |
| 600      | 2,2E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,6E+00   | 5,6E+00   | 8,0E+01                   |
| 700      | 2,2E+01                          | 1,8E+01  | <b>1,2E+01</b> | 7,8E+00   | 5,8E+00   | 8,3E+01                   |
| 800      | 2,3E+01                          | 1,8E+01  | <b>1,3E+01</b> | 8,0E+00   | 6,0E+00   | 8,6E+01                   |
| 900      | 2,3E+01                          | 1,8E+01  | <b>1,3E+01</b> | 8,1E+00   | 6,1E+00   | 8,8E+01                   |
| 1000     | 2,3E+01                          | 1,8E+01  |                | 8,2E+00   | 6,2E+00   | 9,0E+01                   |
| 2000     | 2,4E+01                          | 1,9E+01  |                | 8,6E+00   | 6,5E+00   | 9,6E+01                   |
| 3000     | 2,4E+01                          | 1,9E+01  |                | 8,6E+00   | 6,5E+00   | 9,6E+01                   |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,6E-03                          | 2,2E-03        | <b>2,9E-03</b> | 2,5E-03         | 2,4E-03   | 7,0E-02                   |
| 2        | 3,6E-03                          | 4,9E-03        | <b>6,6E-03</b> | 5,8E-03         | 6,6E-03   | 1,4E-01                   |
| 3        | 4,5E-03                          | 6,1E-03        | <b>8,2E-03</b> | 7,2E-03         | 8,4E-03   | 1,7E-01                   |
| 4        | 5,3E-03                          | 7,1E-03        | <b>9,5E-03</b> | 8,3E-03         | 9,6E-03   | 2,0E-01                   |
| 5        | 6,0E-03                          | 8,0E-03        | <b>1,1E-02</b> | 9,3E-03         | 1,1E-02   | 2,2E-01                   |
| 6        | 6,7E-03                          | 8,8E-03        | <b>1,2E-02</b> | 1,0E-02         | 1,2E-02   | 2,4E-01                   |
| 7        | 7,4E-03                          | 9,6E-03        | <b>1,3E-02</b> | 1,1E-02         | 1,3E-02   | 2,6E-01                   |
| 8        | 8,1E-03                          | 1,0E-02        | <b>1,4E-02</b> | 1,2E-02         | 1,4E-02   | 2,8E-01                   |
| 9        | 8,7E-03                          | 1,1E-02        | <b>1,5E-02</b> | 1,3E-02         | 1,5E-02   | 2,9E-01                   |
| 10       | 9,3E-03                          | 1,2E-02        | <b>1,5E-02</b> | 1,3E-02         | 1,5E-02   | 3,1E-01                   |
| 14       | 1,2E-02                          | 1,4E-02        | <b>1,8E-02</b> | 1,6E-02         | 1,8E-02   | 3,6E-01                   |
| 15       | 1,2E-02                          | 1,5E-02        | <b>1,9E-02</b> | 1,6E-02         | 1,9E-02   | 3,7E-01                   |
| 20       | 1,5E-02                          | 1,8E-02        | <b>2,2E-02</b> | 1,8E-02         | 2,1E-02   | 4,2E-01                   |
| 30       | 1,9E-02                          | 2,2E-02        | <b>2,6E-02</b> | 2,1E-02         | 2,4E-02   | 4,8E-01                   |
| 40       | 2,3E-02                          | 2,5E-02        | <b>2,8E-02</b> | 2,3E-02         | 2,6E-02   | 5,1E-01                   |
| 45       | 2,4E-02                          | 2,6E-02        | <b>2,9E-02</b> | 2,4E-02         | 2,6E-02   | 5,3E-01                   |
| 50       | 2,6E-02                          | 2,8E-02        | <b>3,0E-02</b> | 2,5E-02         | 2,7E-02   | 5,4E-01                   |
| 60       | 2,9E-02                          | 3,0E-02        | <b>3,2E-02</b> | 2,6E-02         | 2,8E-02   | 5,6E-01                   |
| 70       | 3,2E-02                          | 3,2E-02        | <b>3,4E-02</b> | 2,7E-02         | 2,8E-02   | 5,7E-01                   |
| 80       | 3,4E-02                          | 3,4E-02        | <b>3,5E-02</b> | 2,8E-02         | 2,9E-02   | 5,8E-01                   |
| 90       | 3,6E-02                          | 3,6E-02        | <b>3,6E-02</b> | 2,9E-02         | 2,9E-02   | 5,9E-01                   |
| 100      | 3,8E-02                          | 3,7E-02        | <b>3,7E-02</b> | 2,9E-02         | 3,0E-02   | 6,0E-01                   |
| 120      | 4,2E-02                          | 4,0E-02        | <b>3,9E-02</b> | 3,0E-02         | 3,0E-02   | 6,1E-01                   |
| 180      | 4,9E-02                          | 4,6E-02        | <b>4,2E-02</b> | 3,2E-02         | 3,1E-02   | 6,2E-01                   |
| 200      | 5,1E-02                          | 4,7E-02        | <b>4,3E-02</b> | 3,2E-02         | 3,1E-02   | 6,3E-01                   |
| 300      | 5,7E-02                          | 5,2E-02        | <b>4,6E-02</b> | 3,4E-02         | 3,2E-02   | 6,4E-01                   |
| 360      | 5,9E-02                          | 5,3E-02        | <b>4,7E-02</b> | 3,4E-02         | 3,2E-02   | 6,4E-01                   |
| 400      | 6,0E-02                          | 5,4E-02        | <b>4,7E-02</b> | 3,4E-02         | 3,2E-02   | 6,4E-01                   |
| 500      | 6,2E-02                          | 5,5E-02        | <b>4,8E-02</b> | 3,5E-02         | 3,2E-02   | 6,4E-01                   |
| 600      | 6,3E-02                          | 5,6E-02        | <b>4,8E-02</b> | 3,5E-02         | 3,2E-02   | 6,5E-01                   |
| 700      | 6,3E-02                          | 5,6E-02        | <b>4,8E-02</b> |                 | 3,2E-02   | 6,5E-01                   |
| 800      | 6,4E-02                          | 5,7E-02        | <b>4,9E-02</b> |                 | 3,2E-02   |                           |
| 900      | 6,4E-02                          | 5,7E-02        | <b>4,9E-02</b> |                 | 3,3E-02   |                           |
| 1000     |                                  |                |                |                 | 3,3E-02   |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,9E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 2,6E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 3,3E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00   | 4,1E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 4,8E+00                   |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,9E+00   | 5,4E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,1E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,7E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,0E+00   | 7,3E+00                   |
| 14       | 2,4E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,1E+00   | 9,5E+00                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,6E+00   | 2,2E+00   | 1,0E+01                   |
| 20       | 3,3E+00                          | 2,9E+00  | <b>2,5E+00</b> | 1,8E+00   | 2,3E+00   | 1,2E+01                   |
| 30       | 4,7E+00                          | 3,9E+00  | <b>3,1E+00</b> | 2,1E+00   | 2,5E+00   | 1,7E+01                   |
| 40       | 5,9E+00                          | 4,9E+00  | <b>3,6E+00</b> | 2,4E+00   | 2,7E+00   | 2,0E+01                   |
| 45       | 6,5E+00                          | 5,3E+00  | <b>3,8E+00</b> | 2,5E+00   | 2,7E+00   | 2,2E+01                   |
| 50       | 7,1E+00                          | 5,7E+00  | <b>4,1E+00</b> | 2,6E+00   | 2,8E+00   | 2,3E+01                   |
| 60       | 8,2E+00                          | 6,5E+00  | <b>4,5E+00</b> | 2,9E+00   | 3,0E+00   | 2,6E+01                   |
| 70       | 9,2E+00                          | 7,3E+00  | <b>5,0E+00</b> | 3,1E+00   | 3,1E+00   | 2,8E+01                   |
| 80       | 1,0E+01                          | 8,0E+00  | <b>5,4E+00</b> | 3,3E+00   | 3,2E+00   | 3,0E+01                   |
| 90       | 1,1E+01                          | 8,7E+00  | <b>5,7E+00</b> | 3,5E+00   | 3,3E+00   | 3,2E+01                   |
| 100      | 1,2E+01                          | 9,3E+00  | <b>6,1E+00</b> | 3,7E+00   | 3,4E+00   | 3,4E+01                   |
| 120      | 1,4E+01                          | 1,1E+01  | <b>6,8E+00</b> | 4,0E+00   | 3,6E+00   | 3,8E+01                   |
| 180      | 1,8E+01                          | 1,4E+01  | <b>8,5E+00</b> | 4,9E+00   | 4,0E+00   | 4,7E+01                   |
| 200      | 1,9E+01                          | 1,5E+01  | <b>9,0E+00</b> | 5,1E+00   | 4,1E+00   | 5,0E+01                   |
| 300      | 2,5E+01                          | 1,9E+01  | <b>1,1E+01</b> | 6,2E+00   | 4,7E+00   | 6,0E+01                   |
| 360      | 2,7E+01                          | 2,0E+01  | <b>1,2E+01</b> | 6,7E+00   | 4,9E+00   | 6,5E+01                   |
| 400      | 2,9E+01                          | 2,2E+01  | <b>1,3E+01</b> | 7,0E+00   | 5,1E+00   | 6,8E+01                   |
| 500      | 3,2E+01                          | 2,4E+01  | <b>1,4E+01</b> | 7,6E+00   | 5,4E+00   | 7,5E+01                   |
| 600      | 3,4E+01                          | 2,5E+01  | <b>1,5E+01</b> | 8,1E+00   | 5,6E+00   | 8,0E+01                   |
| 700      | 3,6E+01                          | 2,7E+01  | <b>1,6E+01</b> | 8,5E+00   | 5,8E+00   | 8,3E+01                   |
| 800      | 3,7E+01                          | 2,8E+01  | <b>1,6E+01</b> | 8,7E+00   | 6,0E+00   | 8,6E+01                   |
| 900      | 3,8E+01                          | 2,8E+01  | <b>1,7E+01</b> | 9,0E+00   | 6,1E+00   | 8,8E+01                   |
| 1000     | 3,9E+01                          | 2,9E+01  | <b>1,7E+01</b> | 9,1E+00   | 6,2E+00   | 9,0E+01                   |
| 2000     | 4,1E+01                          | 3,1E+01  | <b>1,8E+01</b> | 9,6E+00   | 6,5E+00   | 9,6E+01                   |
| 3000     | 4,1E+01                          | 3,1E+01  | <b>1,8E+01</b> | 9,7E+00   | 6,5E+00   | 9,6E+01                   |
| 4000     |                                  |          |                | 9,7E+00   |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ru-106**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 1,7E-04                          | 5,3E-04        | <b>9,9E-04</b> | 9,4E-04         | 2,4E-03   | 7,0E-02                   |
| 2        | 5,1E-04                          | 1,5E-03        | <b>2,8E-03</b> | 2,6E-03         | 6,6E-03   | 1,4E-01                   |
| 3        | 6,8E-04                          | 1,9E-03        | <b>3,5E-03</b> | 3,4E-03         | 8,4E-03   | 1,7E-01                   |
| 4        | 8,0E-04                          | 2,2E-03        | <b>4,1E-03</b> | 3,9E-03         | 9,6E-03   | 2,0E-01                   |
| 5        | 9,1E-04                          | 2,5E-03        | <b>4,6E-03</b> | 4,3E-03         | 1,1E-02   | 2,2E-01                   |
| 6        | 1,0E-03                          | 2,8E-03        | <b>5,0E-03</b> | 4,8E-03         | 1,2E-02   | 2,4E-01                   |
| 7        | 1,1E-03                          | 3,0E-03        | <b>5,4E-03</b> | 5,1E-03         | 1,3E-02   | 2,6E-01                   |
| 8        | 1,2E-03                          | 3,2E-03        | <b>5,8E-03</b> | 5,5E-03         | 1,4E-02   | 2,8E-01                   |
| 9        | 1,3E-03                          | 3,4E-03        | <b>6,2E-03</b> | 5,9E-03         | 1,5E-02   | 2,9E-01                   |
| 10       | 1,4E-03                          | 3,6E-03        | <b>6,5E-03</b> | 6,2E-03         | 1,5E-02   | 3,1E-01                   |
| 14       | 1,7E-03                          | 4,3E-03        | <b>7,7E-03</b> | 7,3E-03         | 1,8E-02   | 3,6E-01                   |
| 15       | 1,8E-03                          | 4,5E-03        | <b>8,0E-03</b> | 7,5E-03         | 1,9E-02   | 3,7E-01                   |
| 20       | 2,1E-03                          | 5,1E-03        | <b>9,0E-03</b> | 8,5E-03         | 2,1E-02   | 4,2E-01                   |
| 30       | 2,7E-03                          | 6,0E-03        | <b>1,0E-02</b> | 9,7E-03         | 2,4E-02   | 4,8E-01                   |
| 40       | 3,1E-03                          | 6,7E-03        | <b>1,1E-02</b> | 1,1E-02         | 2,6E-02   | 5,1E-01                   |
| 45       | 3,3E-03                          | 6,9E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,6E-02   | 5,3E-01                   |
| 50       | 3,5E-03                          | 7,1E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,7E-02   | 5,4E-01                   |
| 60       | 3,8E-03                          | 7,5E-03        | <b>1,2E-02</b> | 1,1E-02         | 2,8E-02   | 5,6E-01                   |
| 70       | 4,0E-03                          | 7,8E-03        | <b>1,3E-02</b> | 1,2E-02         | 2,8E-02   | 5,7E-01                   |
| 80       | 4,3E-03                          | 8,1E-03        | <b>1,3E-02</b> | 1,2E-02         | 2,9E-02   | 5,8E-01                   |
| 90       | 4,5E-03                          | 8,3E-03        | <b>1,3E-02</b> | 1,2E-02         | 2,9E-02   | 5,9E-01                   |
| 100      | 4,6E-03                          | 8,5E-03        | <b>1,3E-02</b> | 1,2E-02         | 3,0E-02   | 6,0E-01                   |
| 120      | 4,9E-03                          | 8,8E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,0E-02   | 6,1E-01                   |
| 180      | 5,6E-03                          | 9,4E-03        | <b>1,4E-02</b> | 1,3E-02         | 3,1E-02   | 6,2E-01                   |
| 200      | 5,7E-03                          | 9,5E-03        | <b>1,5E-02</b> | 1,3E-02         | 3,1E-02   | 6,3E-01                   |
| 300      | 6,4E-03                          | 1,0E-02        | <b>1,5E-02</b> | 1,3E-02         | 3,2E-02   | 6,4E-01                   |
| 360      | 6,6E-03                          | 1,0E-02        | <b>1,5E-02</b> | 1,4E-02         | 3,2E-02   | 6,4E-01                   |
| 400      | 6,8E-03                          | 1,0E-02        | <b>1,5E-02</b> | 1,4E-02         | 3,2E-02   | 6,4E-01                   |
| 500      | 7,1E-03                          | 1,1E-02        | <b>1,5E-02</b> |                 | 3,2E-02   | 6,4E-01                   |
| 600      | 7,3E-03                          | 1,1E-02        | <b>1,5E-02</b> |                 | 3,2E-02   | 6,5E-01                   |
| 700      | 7,5E-03                          | 1,1E-02        | <b>1,6E-02</b> |                 | 3,2E-02   | 6,5E-01                   |
| 800      | 7,7E-03                          | 1,1E-02        | <b>1,6E-02</b> |                 | 3,2E-02   | 6,5E-01                   |
| 900      | 7,8E-03                          | 1,1E-02        |                |                 | 3,3E-02   | 6,5E-01                   |
| 1000     | 7,9E-03                          | 1,1E-02        |                |                 | 3,3E-02   | 6,5E-01                   |
| 2000     | 8,1E-03                          | 1,2E-02        |                |                 |           | 6,6E-01                   |
| 3000     | 8,2E-03                          | 1,2E-02        |                |                 |           | 6,6E-01                   |
| 4000     | 8,2E-03                          |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ru-106**

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | Tetroxid   |           |                                 |
| 1        | 9,2E-01    |           |                                 |
| 2        | 1,6E+00    |           |                                 |
| 3        | 2,1E+00    |           |                                 |
| 4        | 2,6E+00    |           |                                 |
| 5        | 3,0E+00    |           |                                 |
| 6        | 3,3E+00    |           |                                 |
| 7        | 3,7E+00    |           |                                 |
| 8        | 4,0E+00    |           |                                 |
| 9        | 4,4E+00    |           |                                 |
| 10       | 4,7E+00    |           |                                 |
| 14       | 5,9E+00    |           |                                 |
| 15       | 6,1E+00    |           |                                 |
| 20       | 7,4E+00    |           |                                 |
| 30       | 9,5E+00    |           |                                 |
| 40       | 1,1E+01    |           |                                 |
| 45       | 1,2E+01    |           |                                 |
| 50       | 1,3E+01    |           |                                 |
| 60       | 1,4E+01    |           |                                 |
| 70       | 1,6E+01    |           |                                 |
| 80       | 1,7E+01    |           |                                 |
| 90       | 1,8E+01    |           |                                 |
| 100      | 1,9E+01    |           |                                 |
| 120      | 2,1E+01    |           |                                 |
| 180      | 2,6E+01    |           |                                 |
| 200      | 2,7E+01    |           |                                 |
| 300      | 3,2E+01    |           |                                 |
| 360      | 3,5E+01    |           |                                 |
| 400      | 3,7E+01    |           |                                 |
| 500      | 4,0E+01    |           |                                 |
| 600      | 4,3E+01    |           |                                 |
| 700      | 4,5E+01    |           |                                 |
| 800      | 4,6E+01    |           |                                 |
| 900      | 4,7E+01    |           |                                 |
| 1000     | 4,8E+01    |           |                                 |
| 2000     | 5,1E+01    |           |                                 |
| 3000     | 5,1E+01    |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |



**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ru-106**

| Zeit (d) | Inhalation | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|-----------|---------------------------|
|          | Tetroxid   |           |                           |
| 1        | 3,6E-02    |           |                           |
| 2        | 7,4E-02    |           |                           |
| 3        | 9,0E-02    |           |                           |
| 4        | 1,0E-01    |           |                           |
| 5        | 1,2E-01    |           |                           |
| 6        | 1,3E-01    |           |                           |
| 7        | 1,4E-01    |           |                           |
| 8        | 1,5E-01    |           |                           |
| 9        | 1,5E-01    |           |                           |
| 10       | 1,6E-01    |           |                           |
| 14       | 1,9E-01    |           |                           |
| 15       | 2,0E-01    |           |                           |
| 20       | 2,2E-01    |           |                           |
| 30       | 2,5E-01    |           |                           |
| 40       | 2,7E-01    |           |                           |
| 45       | 2,8E-01    |           |                           |
| 50       | 2,8E-01    |           |                           |
| 60       | 2,9E-01    |           |                           |
| 70       | 3,0E-01    |           |                           |
| 80       | 3,1E-01    |           |                           |
| 90       | 3,1E-01    |           |                           |
| 100      | 3,1E-01    |           |                           |
| 120      | 3,2E-01    |           |                           |
| 180      | 3,3E-01    |           |                           |
| 200      | 3,3E-01    |           |                           |
| 300      | 3,3E-01    |           |                           |
| 360      | 3,4E-01    |           |                           |
| 400      | 3,4E-01    |           |                           |
| 500      |            |           |                           |
| 600      |            |           |                           |
| 700      |            |           |                           |
| 800      |            |           |                           |
| 900      |            |           |                           |
| 1000     |            |           |                           |
| 2000     |            |           |                           |
| 3000     |            |           |                           |
| 4000     |            |           |                           |
| 5000     |            |           |                           |
| 6000     |            |           |                           |
| 8000     |            |           |                           |
| 10000    |            |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Rh-105**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,1E-01                          | 3,5E-01  | <b>5,4E-01</b> | 5,0E-01   | 7,3E-01   | 7,6E-01                   |
| 2        | 3,2E-01                          | 5,0E-01  | <b>7,6E-01</b> | 7,0E-01   | 1,0E+00   | 1,2E+00                   |
| 3        | 3,8E-01                          | 5,8E-01  | <b>8,5E-01</b> | 7,8E-01   | 1,1E+00   | 1,5E+00                   |
| 4        | 4,1E-01                          | 6,2E-01  | <b>9,0E-01</b> | 8,2E-01   | 1,1E+00   | 1,6E+00                   |
| 5        | 4,3E-01                          | 6,4E-01  | <b>9,3E-01</b> | 8,5E-01   |           | 1,7E+00                   |
| 6        | 4,5E-01                          | 6,5E-01  | <b>9,5E-01</b> | 8,6E-01   |           | 1,8E+00                   |
| 7        | 4,5E-01                          | 6,6E-01  | <b>9,6E-01</b> | 8,7E-01   |           | 1,8E+00                   |
| 8        | 4,6E-01                          | 6,7E-01  | <b>9,6E-01</b> | 8,7E-01   |           |                           |
| 9        | 4,6E-01                          | 6,7E-01  | <b>9,7E-01</b> | 8,8E-01   |           |                           |
| 10       |                                  |          | <b>9,7E-01</b> | 8,8E-01   |           |                           |
| 14       |                                  |          |                |           |           |                           |
| 15       |                                  |          |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Rh-105**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,2E-01                          | 3,5E-01  | <b>5,4E-01</b>  | 5,0E-01   | 7,3E-01   | 7,6E-01                   |
| 2        | 3,3E-01                          | 4,9E-01  | <b>7,2E-01</b>  | 6,6E-01   | 1,0E+00   | 1,2E+00                   |
| 3        | 3,9E-01                          | 5,5E-01  | <b>7,9E-01</b>  | 7,2E-01   | 1,1E+00   | 1,5E+00                   |
| 4        | 4,2E-01                          | 5,8E-01  | <b>8,2E-01</b>  | 7,4E-01   | 1,1E+00   | 1,6E+00                   |
| 5        | 4,4E-01                          | 6,0E-01  | <b>8,3E-01</b>  | 7,5E-01   |           | 1,7E+00                   |
| 6        | 4,6E-01                          | 6,1E-01  | <b>8,4E-01</b>  | 7,5E-01   |           | 1,8E+00                   |
| 7        | 4,6E-01                          | 6,2E-01  | <b>8,4E-01</b>  | 7,5E-01   |           | 1,8E+00                   |
| 8        | 4,7E-01                          | 6,2E-01  | <b>8,4E-01</b>  | 7,6E-01   |           |                           |
| 9        | 4,7E-01                          | 6,2E-01  | <b>8,5E-01</b>  | 7,6E-01   |           |                           |
| 10       | 4,7E-01                          | 6,3E-01  | <b>8,5E-01</b>  |           |           |                           |
| 14       | 4,8E-01                          | 6,3E-01  |                 |           |           |                           |
| 15       | 4,8E-01                          |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Rh-105**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,2E-01                          | 3,5E-01  | <b>5,3E-01</b> | 5,0E-01   | 7,3E-01   | 7,6E-01                   |
| 2        | 3,3E-01                          | 4,9E-01  | <b>7,2E-01</b> | 6,6E-01   | 1,0E+00   | 1,2E+00                   |
| 3        | 3,9E-01                          | 5,5E-01  | <b>7,8E-01</b> | 7,1E-01   | 1,1E+00   | 1,5E+00                   |
| 4        | 4,3E-01                          | 5,8E-01  | <b>8,1E-01</b> | 7,3E-01   | 1,1E+00   | 1,6E+00                   |
| 5        | 4,5E-01                          | 6,0E-01  | <b>8,2E-01</b> | 7,4E-01   |           | 1,7E+00                   |
| 6        | 4,6E-01                          | 6,1E-01  | <b>8,3E-01</b> | 7,4E-01   |           | 1,8E+00                   |
| 7        | 4,7E-01                          | 6,1E-01  | <b>8,3E-01</b> | 7,4E-01   |           | 1,8E+00                   |
| 8        | 4,7E-01                          | 6,2E-01  | <b>8,3E-01</b> | 7,4E-01   |           |                           |
| 9        | 4,7E-01                          | 6,2E-01  | <b>8,3E-01</b> | 7,4E-01   |           |                           |
| 10       | 4,8E-01                          |          | <b>8,3E-01</b> | 7,4E-01   |           |                           |
| 14       | 4,8E-01                          |          | <b>8,4E-01</b> | 7,5E-01   |           |                           |
| 15       |                                  |          | <b>8,4E-01</b> | 7,5E-01   |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-108m**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,2E-01                          | 7,7E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 2,0E+00                   |
| 3        | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 9,5E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,2E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,8E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,3E+00                          | 1,8E+00  | <b>2,3E+00</b> | 2,1E+00   | 2,0E+00   | 5,8E+00                   |
| 7        | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,7E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,5E+00   | 2,0E+00   | 7,5E+00                   |
| 9        | 1,9E+00                          | 2,4E+00  | <b>3,1E+00</b> | 2,7E+00   | 2,1E+00   | 8,4E+00                   |
| 10       | 2,1E+00                          | 2,6E+00  | <b>3,4E+00</b> | 2,9E+00   | 2,1E+00   | 9,2E+00                   |
| 14       | 2,8E+00                          | 3,4E+00  | <b>4,3E+00</b> | 3,7E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 3,0E+00                          | 3,6E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,8E+00                          | 4,5E+00  | <b>5,6E+00</b> | 4,8E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 5,2E+00                          | 6,2E+00  | <b>7,6E+00</b> | 6,5E+00   | 2,9E+00   | 2,4E+01                   |
| 40       | 6,5E+00                          | 7,7E+00  | <b>9,3E+00</b> | 7,9E+00   | 3,2E+00   | 3,0E+01                   |
| 45       | 7,1E+00                          | 8,3E+00  | <b>1,0E+01</b> | 8,6E+00   | 3,3E+00   | 3,3E+01                   |
| 50       | 7,7E+00                          | 9,0E+00  | <b>1,1E+01</b> | 9,2E+00   | 3,4E+00   | 3,5E+01                   |
| 60       | 8,7E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,0E+01   | 3,7E+00   | 4,0E+01                   |
| 70       | 9,7E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,1E+01   | 3,9E+00   | 4,4E+01                   |
| 80       | 1,0E+01                          | 1,2E+01  | <b>1,5E+01</b> | 1,2E+01   | 4,1E+00   | 4,8E+01                   |
| 90       | 1,1E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,3E+01   | 4,2E+00   | 5,1E+01                   |
| 100      | 1,2E+01                          | 1,4E+01  | <b>1,7E+01</b> | 1,4E+01   | 4,4E+00   | 5,4E+01                   |
| 120      | 1,3E+01                          | 1,5E+01  | <b>1,8E+01</b> | 1,5E+01   | 4,7E+00   | 6,0E+01                   |
| 180      | 1,5E+01                          | 1,8E+01  | <b>2,1E+01</b> | 1,8E+01   | 5,2E+00   | 7,1E+01                   |
| 200      | 1,6E+01                          | 1,8E+01  | <b>2,2E+01</b> | 1,9E+01   | 5,4E+00   | 7,4E+01                   |
| 300      | 1,8E+01                          | 2,1E+01  | <b>2,5E+01</b> | 2,1E+01   | 5,8E+00   | 8,3E+01                   |
| 360      | 1,9E+01                          | 2,2E+01  | <b>2,6E+01</b> | 2,2E+01   | 6,1E+00   | 8,8E+01                   |
| 400      | 2,0E+01                          | 2,3E+01  | <b>2,7E+01</b> | 2,3E+01   | 6,2E+00   | 9,0E+01                   |
| 500      | 2,1E+01                          | 2,4E+01  | <b>2,9E+01</b> | 2,4E+01   | 6,5E+00   | 9,6E+01                   |
| 600      | 2,2E+01                          | 2,5E+01  | <b>3,0E+01</b> | 2,5E+01   | 6,7E+00   | 1,0E+02                   |
| 700      | 2,3E+01                          | 2,6E+01  | <b>3,1E+01</b> | 2,6E+01   | 6,9E+00   | 1,0E+02                   |
| 800      | 2,3E+01                          | 2,7E+01  | <b>3,2E+01</b> | 2,7E+01   | 7,1E+00   | 1,1E+02                   |
| 900      | 2,4E+01                          | 2,8E+01  | <b>3,3E+01</b> | 2,8E+01   | 7,2E+00   | 1,1E+02                   |
| 1000     | 2,5E+01                          | 2,8E+01  | <b>3,4E+01</b> | 2,8E+01   | 7,4E+00   | 1,1E+02                   |
| 2000     | 2,8E+01                          | 3,2E+01  | <b>3,8E+01</b> | 3,2E+01   | 8,0E+00   | 1,3E+02                   |
| 3000     | 2,8E+01                          | 3,2E+01  | <b>3,9E+01</b> | 3,2E+01   | 8,2E+00   | 1,3E+02                   |
| 4000     | 2,8E+01                          | 3,3E+01  | <b>3,9E+01</b> | 3,3E+01   | 8,2E+00   |                           |
| 5000     | 2,9E+01                          | 3,3E+01  |                | 3,3E+01   |           |                           |
| 6000     | 2,9E+01                          | 3,3E+01  |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-108m**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,0E-01                          | 7,2E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,2E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,0E+00   | 5,8E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,6E+00                          | 1,6E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00   | 7,5E+00                   |
| 9        | 1,7E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,1E+00   | 8,4E+00                   |
| 10       | 1,9E+00                          | 1,9E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,1E+00   | 9,2E+00                   |
| 14       | 2,5E+00                          | 2,4E+00  | <b>2,4E+00</b> | 1,9E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 2,7E+00                          | 2,5E+00  | <b>2,5E+00</b> | 1,9E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,4E+00                          | 3,2E+00  | <b>2,9E+00</b> | 2,2E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 4,9E+00                          | 4,3E+00  | <b>3,7E+00</b> | 2,7E+00   | 2,9E+00   | 2,4E+01                   |
| 40       | 6,2E+00                          | 5,3E+00  | <b>4,4E+00</b> | 3,1E+00   | 3,2E+00   | 3,0E+01                   |
| 45       | 6,8E+00                          | 5,8E+00  | <b>4,7E+00</b> | 3,3E+00   | 3,3E+00   | 3,3E+01                   |
| 50       | 7,4E+00                          | 6,3E+00  | <b>5,1E+00</b> | 3,5E+00   | 3,4E+00   | 3,5E+01                   |
| 60       | 8,5E+00                          | 7,2E+00  | <b>5,7E+00</b> | 3,9E+00   | 3,7E+00   | 4,0E+01                   |
| 70       | 9,6E+00                          | 8,1E+00  | <b>6,2E+00</b> | 4,3E+00   | 3,9E+00   | 4,4E+01                   |
| 80       | 1,1E+01                          | 8,8E+00  | <b>6,7E+00</b> | 4,6E+00   | 4,1E+00   | 4,8E+01                   |
| 90       | 1,2E+01                          | 9,6E+00  | <b>7,2E+00</b> | 4,9E+00   | 4,2E+00   | 5,1E+01                   |
| 100      | 1,2E+01                          | 1,0E+01  | <b>7,7E+00</b> | 5,1E+00   | 4,4E+00   | 5,4E+01                   |
| 120      | 1,4E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,6E+00   | 4,7E+00   | 6,0E+01                   |
| 180      | 1,8E+01                          | 1,5E+01  | <b>1,0E+01</b> | 6,7E+00   | 5,2E+00   | 7,1E+01                   |
| 200      | 1,9E+01                          | 1,5E+01  | <b>1,1E+01</b> | 7,0E+00   | 5,4E+00   | 7,4E+01                   |
| 300      | 2,3E+01                          | 1,9E+01  | <b>1,3E+01</b> | 8,0E+00   | 5,8E+00   | 8,3E+01                   |
| 360      | 2,5E+01                          | 2,0E+01  | <b>1,4E+01</b> | 8,5E+00   | 6,1E+00   | 8,8E+01                   |
| 400      | 2,6E+01                          | 2,1E+01  | <b>1,4E+01</b> | 8,7E+00   | 6,2E+00   | 9,0E+01                   |
| 500      | 2,8E+01                          | 2,2E+01  | <b>1,5E+01</b> | 9,2E+00   | 6,5E+00   | 9,6E+01                   |
| 600      | 2,9E+01                          | 2,3E+01  | <b>1,5E+01</b> | 9,6E+00   | 6,7E+00   | 1,0E+02                   |
| 700      | 3,0E+01                          | 2,4E+01  | <b>1,6E+01</b> | 9,9E+00   | 6,9E+00   | 1,0E+02                   |
| 800      | 3,0E+01                          | 2,4E+01  | <b>1,6E+01</b> | 1,0E+01   | 7,1E+00   | 1,1E+02                   |
| 900      | 3,1E+01                          | 2,5E+01  | <b>1,7E+01</b> | 1,0E+01   | 7,2E+00   | 1,1E+02                   |
| 1000     | 3,1E+01                          | 2,5E+01  | <b>1,7E+01</b> | 1,0E+01   | 7,4E+00   | 1,1E+02                   |
| 2000     | 3,3E+01                          | 2,7E+01  | <b>1,8E+01</b> | 1,1E+01   | 8,0E+00   | 1,3E+02                   |
| 3000     | 3,4E+01                          | 2,7E+01  | <b>1,8E+01</b> | 1,2E+01   | 8,2E+00   | 1,3E+02                   |
| 4000     | 3,4E+01                          |          |                | 1,2E+01   | 8,2E+00   |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-108m**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,0E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 5,8E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 7,5E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,1E+00   | 8,4E+00                   |
| 10       | 1,9E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,5E+00   | 2,1E+00   | 9,2E+00                   |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,4E+00                          | 3,0E+00  | <b>2,6E+00</b> | 1,9E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,3E+00   | 2,9E+00   | 2,4E+01                   |
| 40       | 6,2E+00                          | 5,1E+00  | <b>3,9E+00</b> | 2,6E+00   | 3,2E+00   | 3,0E+01                   |
| 45       | 6,8E+00                          | 5,6E+00  | <b>4,2E+00</b> | 2,8E+00   | 3,3E+00   | 3,3E+01                   |
| 50       | 7,5E+00                          | 6,1E+00  | <b>4,5E+00</b> | 2,9E+00   | 3,4E+00   | 3,5E+01                   |
| 60       | 8,7E+00                          | 7,0E+00  | <b>5,0E+00</b> | 3,2E+00   | 3,7E+00   | 4,0E+01                   |
| 70       | 9,9E+00                          | 7,9E+00  | <b>5,5E+00</b> | 3,5E+00   | 3,9E+00   | 4,4E+01                   |
| 80       | 1,1E+01                          | 8,7E+00  | <b>6,0E+00</b> | 3,8E+00   | 4,1E+00   | 4,8E+01                   |
| 90       | 1,2E+01                          | 9,6E+00  | <b>6,5E+00</b> | 4,0E+00   | 4,2E+00   | 5,1E+01                   |
| 100      | 1,3E+01                          | 1,0E+01  | <b>6,9E+00</b> | 4,2E+00   | 4,4E+00   | 5,4E+01                   |
| 120      | 1,5E+01                          | 1,2E+01  | <b>7,8E+00</b> | 4,7E+00   | 4,7E+00   | 6,0E+01                   |
| 180      | 2,1E+01                          | 1,6E+01  | <b>1,0E+01</b> | 5,8E+00   | 5,2E+00   | 7,1E+01                   |
| 200      | 2,3E+01                          | 1,7E+01  | <b>1,1E+01</b> | 6,2E+00   | 5,4E+00   | 7,4E+01                   |
| 300      | 3,1E+01                          | 2,4E+01  | <b>1,4E+01</b> | 7,7E+00   | 5,8E+00   | 8,3E+01                   |
| 360      | 3,6E+01                          | 2,7E+01  | <b>1,6E+01</b> | 8,6E+00   | 6,1E+00   | 8,8E+01                   |
| 400      | 3,9E+01                          | 2,9E+01  | <b>1,7E+01</b> | 9,1E+00   | 6,2E+00   | 9,0E+01                   |
| 500      | 4,6E+01                          | 3,4E+01  | <b>2,0E+01</b> | 1,0E+01   | 6,5E+00   | 9,6E+01                   |
| 600      | 5,2E+01                          | 3,9E+01  | <b>2,2E+01</b> | 1,1E+01   | 6,7E+00   | 1,0E+02                   |
| 700      | 5,8E+01                          | 4,3E+01  | <b>2,4E+01</b> | 1,3E+01   | 6,9E+00   | 1,0E+02                   |
| 800      | 6,3E+01                          | 4,7E+01  | <b>2,6E+01</b> | 1,3E+01   | 7,1E+00   | 1,1E+02                   |
| 900      | 6,8E+01                          | 5,0E+01  | <b>2,8E+01</b> | 1,4E+01   | 7,2E+00   | 1,1E+02                   |
| 1000     | 7,2E+01                          | 5,3E+01  | <b>3,0E+01</b> | 1,5E+01   | 7,4E+00   | 1,1E+02                   |
| 2000     | 1,0E+02                          | 7,5E+01  | <b>4,1E+01</b> | 2,0E+01   | 8,0E+00   | 1,3E+02                   |
| 3000     | 1,2E+02                          | 8,6E+01  | <b>4,6E+01</b> | 2,3E+01   | 8,2E+00   | 1,3E+02                   |
| 4000     | 1,3E+02                          | 9,2E+01  | <b>5,0E+01</b> | 2,5E+01   | 8,2E+00   |                           |
| 5000     | 1,3E+02                          | 9,7E+01  | <b>5,2E+01</b> | 2,6E+01   |           |                           |
| 6000     | 1,4E+02                          | 1,0E+02  | <b>5,4E+01</b> | 2,7E+01   |           |                           |
| 8000     | 1,5E+02                          | 1,1E+02  | <b>5,7E+01</b> | 2,8E+01   |           |                           |
| 10000    | 1,5E+02                          | 1,1E+02  | <b>5,9E+01</b> | 2,9E+01   |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-110m**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,1E-01                          | 7,7E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 2,0E+00                   |
| 3        | 7,3E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 9,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,8E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,1E+00   | 1,9E+00   | 5,7E+00                   |
| 7        | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,7E+00                          | 2,2E+00  | <b>2,8E+00</b> | 2,5E+00   | 2,0E+00   | 7,4E+00                   |
| 9        | 1,9E+00                          | 2,4E+00  | <b>3,1E+00</b> | 2,7E+00   | 2,1E+00   | 8,3E+00                   |
| 10       | 2,1E+00                          | 2,6E+00  | <b>3,3E+00</b> | 2,9E+00   | 2,1E+00   | 9,1E+00                   |
| 14       | 2,7E+00                          | 3,4E+00  | <b>4,2E+00</b> | 3,6E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 2,9E+00                          | 3,5E+00  | <b>4,4E+00</b> | 3,8E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,7E+00                          | 4,4E+00  | <b>5,5E+00</b> | 4,7E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 5,1E+00                          | 6,0E+00  | <b>7,3E+00</b> | 6,2E+00   | 2,8E+00   | 2,3E+01                   |
| 40       | 6,2E+00                          | 7,3E+00  | <b>8,9E+00</b> | 7,6E+00   | 3,1E+00   | 2,8E+01                   |
| 45       | 6,8E+00                          | 7,9E+00  | <b>9,6E+00</b> | 8,2E+00   | 3,2E+00   | 3,1E+01                   |
| 50       | 7,3E+00                          | 8,5E+00  | <b>1,0E+01</b> | 8,7E+00   | 3,3E+00   | 3,3E+01                   |
| 60       | 8,1E+00                          | 9,5E+00  | <b>1,1E+01</b> | 9,7E+00   | 3,5E+00   | 3,7E+01                   |
| 70       | 8,9E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 3,7E+00   | 4,1E+01                   |
| 80       | 9,6E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 3,9E+00   | 4,4E+01                   |
| 90       | 1,0E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 4,0E+00   | 4,6E+01                   |
| 100      | 1,1E+01                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 4,1E+00   | 4,9E+01                   |
| 120      | 1,2E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 4,3E+00   | 5,3E+01                   |
| 180      | 1,3E+01                          | 1,5E+01  | <b>1,8E+01</b> | 1,5E+01   | 4,7E+00   | 6,0E+01                   |
| 200      | 1,3E+01                          | 1,6E+01  | <b>1,9E+01</b> | 1,6E+01   | 4,8E+00   | 6,2E+01                   |
| 300      | 1,5E+01                          | 1,7E+01  | <b>2,0E+01</b> | 1,7E+01   | 5,0E+00   | 6,7E+01                   |
| 360      | 1,5E+01                          | 1,7E+01  | <b>2,1E+01</b> | 1,7E+01   | 5,1E+00   | 6,9E+01                   |
| 400      | 1,5E+01                          | 1,7E+01  | <b>2,1E+01</b> | 1,8E+01   | 5,1E+00   | 6,9E+01                   |
| 500      | 1,5E+01                          | 1,8E+01  | <b>2,1E+01</b> | 1,8E+01   | 5,2E+00   | 7,1E+01                   |
| 600      | 1,6E+01                          | 1,8E+01  | <b>2,2E+01</b> | 1,8E+01   | 5,3E+00   | 7,2E+01                   |
| 700      | 1,6E+01                          | 1,8E+01  | <b>2,2E+01</b> | 1,8E+01   | 5,3E+00   | 7,3E+01                   |
| 800      |                                  | 1,8E+01  |                | 1,9E+01   | 5,3E+00   | 7,3E+01                   |
| 900      |                                  | 1,8E+01  |                | 1,9E+01   | 5,3E+00   | 7,4E+01                   |
| 1000     |                                  | 1,8E+01  |                |           | 5,4E+00   | 7,4E+01                   |
| 2000     |                                  | 1,9E+01  |                |           | 5,4E+00   |                           |
| 3000     |                                  | 1,9E+01  |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-110m**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,0E-01                          | 7,2E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,2E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,9E+00   | 5,7E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,0E+00   | 7,4E+00                   |
| 9        | 1,7E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,1E+00   | 8,3E+00                   |
| 10       | 1,9E+00                          | 1,9E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,1E+00   | 9,1E+00                   |
| 14       | 2,5E+00                          | 2,4E+00  | <b>2,3E+00</b> | 1,8E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 2,6E+00                          | 2,5E+00  | <b>2,4E+00</b> | 1,9E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,3E+00                          | 3,1E+00  | <b>2,8E+00</b> | 2,2E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 4,7E+00                          | 4,1E+00  | <b>3,6E+00</b> | 2,6E+00   | 2,8E+00   | 2,3E+01                   |
| 40       | 5,9E+00                          | 5,1E+00  | <b>4,2E+00</b> | 3,0E+00   | 3,1E+00   | 2,8E+01                   |
| 45       | 6,4E+00                          | 5,5E+00  | <b>4,5E+00</b> | 3,2E+00   | 3,2E+00   | 3,1E+01                   |
| 50       | 6,9E+00                          | 6,0E+00  | <b>4,8E+00</b> | 3,4E+00   | 3,3E+00   | 3,3E+01                   |
| 60       | 7,9E+00                          | 6,7E+00  | <b>5,3E+00</b> | 3,7E+00   | 3,5E+00   | 3,7E+01                   |
| 70       | 8,8E+00                          | 7,4E+00  | <b>5,8E+00</b> | 4,0E+00   | 3,7E+00   | 4,1E+01                   |
| 80       | 9,6E+00                          | 8,1E+00  | <b>6,2E+00</b> | 4,2E+00   | 3,9E+00   | 4,4E+01                   |
| 90       | 1,0E+01                          | 8,7E+00  | <b>6,6E+00</b> | 4,5E+00   | 4,0E+00   | 4,6E+01                   |
| 100      | 1,1E+01                          | 9,2E+00  | <b>6,9E+00</b> | 4,7E+00   | 4,1E+00   | 4,9E+01                   |
| 120      | 1,2E+01                          | 1,0E+01  | <b>7,5E+00</b> | 5,0E+00   | 4,3E+00   | 5,3E+01                   |
| 180      | 1,5E+01                          | 1,2E+01  | <b>8,8E+00</b> | 5,8E+00   | 4,7E+00   | 6,0E+01                   |
| 200      | 1,6E+01                          | 1,3E+01  | <b>9,1E+00</b> | 5,9E+00   | 4,8E+00   | 6,2E+01                   |
| 300      | 1,8E+01                          | 1,4E+01  | <b>1,0E+01</b> | 6,4E+00   | 5,0E+00   | 6,7E+01                   |
| 360      | 1,8E+01                          | 1,5E+01  | <b>1,0E+01</b> | 6,6E+00   | 5,1E+00   | 6,9E+01                   |
| 400      | 1,9E+01                          | 1,5E+01  | <b>1,1E+01</b> | 6,7E+00   | 5,1E+00   | 6,9E+01                   |
| 500      | 1,9E+01                          | 1,5E+01  | <b>1,1E+01</b> | 6,9E+00   | 5,2E+00   | 7,1E+01                   |
| 600      | 1,9E+01                          | 1,6E+01  |                | 6,9E+00   | 5,3E+00   | 7,2E+01                   |
| 700      | 2,0E+01                          | 1,6E+01  |                | 7,0E+00   | 5,3E+00   | 7,3E+01                   |
| 800      | 2,0E+01                          |          |                | 7,0E+00   | 5,3E+00   | 7,3E+01                   |
| 900      |                                  |          |                | 7,0E+00   | 5,3E+00   | 7,4E+01                   |
| 1000     |                                  |          |                | 7,1E+00   | 5,4E+00   | 7,4E+01                   |
| 2000     |                                  |          |                | 7,1E+00   | 5,4E+00   |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ag-110m**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 3,9E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00   | 4,8E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 5,7E+00                   |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 2,0E+00   | 6,6E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,0E+00   | 7,4E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,1E+00   | 8,3E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,1E+00   | 9,1E+00                   |
| 14       | 2,4E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 2,3E+00   | 1,2E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,3E+00   | 1,3E+01                   |
| 20       | 3,3E+00                          | 2,9E+00  | <b>2,5E+00</b> | 1,9E+00   | 2,5E+00   | 1,7E+01                   |
| 30       | 4,7E+00                          | 4,0E+00  | <b>3,2E+00</b> | 2,2E+00   | 2,8E+00   | 2,3E+01                   |
| 40       | 5,9E+00                          | 4,9E+00  | <b>3,7E+00</b> | 2,5E+00   | 3,1E+00   | 2,8E+01                   |
| 45       | 6,5E+00                          | 5,3E+00  | <b>4,0E+00</b> | 2,7E+00   | 3,2E+00   | 3,1E+01                   |
| 50       | 7,0E+00                          | 5,7E+00  | <b>4,2E+00</b> | 2,8E+00   | 3,3E+00   | 3,3E+01                   |
| 60       | 8,1E+00                          | 6,5E+00  | <b>4,7E+00</b> | 3,1E+00   | 3,5E+00   | 3,7E+01                   |
| 70       | 9,0E+00                          | 7,3E+00  | <b>5,1E+00</b> | 3,3E+00   | 3,7E+00   | 4,1E+01                   |
| 80       | 1,0E+01                          | 8,0E+00  | <b>5,5E+00</b> | 3,5E+00   | 3,9E+00   | 4,4E+01                   |
| 90       | 1,1E+01                          | 8,6E+00  | <b>5,9E+00</b> | 3,7E+00   | 4,0E+00   | 4,6E+01                   |
| 100      | 1,2E+01                          | 9,2E+00  | <b>6,2E+00</b> | 3,9E+00   | 4,1E+00   | 4,9E+01                   |
| 120      | 1,3E+01                          | 1,0E+01  | <b>6,9E+00</b> | 4,2E+00   | 4,3E+00   | 5,3E+01                   |
| 180      | 1,7E+01                          | 1,3E+01  | <b>8,4E+00</b> | 5,0E+00   | 4,7E+00   | 6,0E+01                   |
| 200      | 1,8E+01                          | 1,4E+01  | <b>8,8E+00</b> | 5,2E+00   | 4,8E+00   | 6,2E+01                   |
| 300      | 2,2E+01                          | 1,7E+01  | <b>1,0E+01</b> | 6,0E+00   | 5,0E+00   | 6,7E+01                   |
| 360      | 2,4E+01                          | 1,8E+01  | <b>1,1E+01</b> | 6,3E+00   | 5,1E+00   | 6,9E+01                   |
| 400      | 2,5E+01                          | 1,9E+01  | <b>1,2E+01</b> | 6,5E+00   | 5,1E+00   | 6,9E+01                   |
| 500      | 2,7E+01                          | 2,1E+01  | <b>1,2E+01</b> | 6,9E+00   | 5,2E+00   | 7,1E+01                   |
| 600      | 2,9E+01                          | 2,2E+01  | <b>1,3E+01</b> | 7,1E+00   | 5,3E+00   | 7,2E+01                   |
| 700      | 3,0E+01                          | 2,2E+01  | <b>1,3E+01</b> | 7,3E+00   | 5,3E+00   | 7,3E+01                   |
| 800      | 3,0E+01                          | 2,3E+01  | <b>1,3E+01</b> | 7,4E+00   | 5,3E+00   | 7,3E+01                   |
| 900      | 3,1E+01                          | 2,3E+01  | <b>1,4E+01</b> | 7,5E+00   | 5,3E+00   | 7,4E+01                   |
| 1000     | 3,1E+01                          | 2,3E+01  | <b>1,4E+01</b> | 7,5E+00   | 5,4E+00   | 7,4E+01                   |
| 2000     | 3,2E+01                          | 2,4E+01  |                | 7,7E+00   | 5,4E+00   |                           |
| 3000     | 3,2E+01                          | 2,4E+01  |                | 7,7E+00   |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,2E-01                          | 7,8E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 2,0E+00                   |
| 3        | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 9,6E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,8E+00   | 4,0E+00                   |
| 5        | 1,2E+00                          | 1,6E+00  | <b>2,1E+00</b> | 1,9E+00   | 1,9E+00   | 5,0E+00                   |
| 6        | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 2,0E+00   | 6,0E+00                   |
| 7        | 1,6E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 2,0E+00   | 7,0E+00                   |
| 8        | 1,8E+00                          | 2,3E+00  | <b>3,0E+00</b> | 2,6E+00   | 2,1E+00   | 8,0E+00                   |
| 9        | 2,0E+00                          | 2,5E+00  | <b>3,3E+00</b> | 2,8E+00   | 2,1E+00   | 8,9E+00                   |
| 10       | 2,2E+00                          | 2,8E+00  | <b>3,6E+00</b> | 3,1E+00   | 2,2E+00   | 9,9E+00                   |
| 14       | 3,1E+00                          | 3,8E+00  | <b>4,7E+00</b> | 4,0E+00   | 2,4E+00   | 1,4E+01                   |
| 15       | 3,3E+00                          | 4,0E+00  | <b>5,0E+00</b> | 4,3E+00   | 2,4E+00   | 1,5E+01                   |
| 20       | 4,4E+00                          | 5,2E+00  | <b>6,4E+00</b> | 5,5E+00   | 2,7E+00   | 2,0E+01                   |
| 30       | 6,4E+00                          | 7,6E+00  | <b>9,2E+00</b> | 7,8E+00   | 3,1E+00   | 2,9E+01                   |
| 40       | 8,5E+00                          | 9,9E+00  | <b>1,2E+01</b> | 1,0E+01   | 3,6E+00   | 3,9E+01                   |
| 45       | 9,5E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 3,8E+00   | 4,3E+01                   |
| 50       | 1,1E+01                          | 1,2E+01  | <b>1,5E+01</b> | 1,2E+01   | 4,1E+00   | 4,8E+01                   |
| 60       | 1,3E+01                          | 1,4E+01  | <b>1,7E+01</b> | 1,5E+01   | 4,5E+00   | 5,7E+01                   |
| 70       | 1,4E+01                          | 1,7E+01  | <b>2,0E+01</b> | 1,7E+01   | 5,0E+00   | 6,6E+01                   |
| 80       | 1,6E+01                          | 1,9E+01  | <b>2,3E+01</b> | 1,9E+01   | 5,4E+00   | 7,5E+01                   |
| 90       | 1,8E+01                          | 2,1E+01  | <b>2,5E+01</b> | 2,1E+01   | 5,9E+00   | 8,4E+01                   |
| 100      | 2,0E+01                          | 2,3E+01  | <b>2,8E+01</b> | 2,3E+01   | 6,3E+00   | 9,3E+01                   |
| 120      | 2,4E+01                          | 2,7E+01  | <b>3,3E+01</b> | 2,7E+01   | 7,1E+00   | 1,1E+02                   |
| 180      | 3,4E+01                          | 3,9E+01  | <b>4,6E+01</b> | 3,9E+01   | 9,5E+00   | 1,6E+02                   |
| 200      | 3,7E+01                          | 4,3E+01  | <b>5,1E+01</b> | 4,3E+01   | 1,0E+01   | 1,7E+02                   |
| 300      | 5,2E+01                          | 5,9E+01  | <b>7,0E+01</b> | 5,9E+01   | 1,4E+01   | 2,4E+02                   |
| 360      | 6,0E+01                          | 6,8E+01  | <b>8,1E+01</b> | 6,8E+01   | 1,5E+01   | 2,8E+02                   |
| 400      | 6,4E+01                          | 7,3E+01  | <b>8,7E+01</b> | 7,3E+01   | 1,7E+01   | 3,0E+02                   |
| 500      | 7,5E+01                          | 8,6E+01  | <b>1,0E+02</b> | 8,5E+01   | 1,9E+01   | 3,5E+02                   |
| 600      | 8,4E+01                          | 9,6E+01  | <b>1,1E+02</b> | 9,5E+01   | 2,1E+01   | 3,9E+02                   |
| 700      | 9,2E+01                          | 1,0E+02  | <b>1,2E+02</b> | 1,0E+02   | 2,3E+01   | 4,2E+02                   |
| 800      | 9,9E+01                          | 1,1E+02  | <b>1,3E+02</b> | 1,1E+02   | 2,4E+01   | 4,6E+02                   |
| 900      | 1,0E+02                          | 1,2E+02  | <b>1,4E+02</b> | 1,2E+02   | 2,6E+01   | 4,8E+02                   |
| 1000     | 1,1E+02                          | 1,2E+02  | <b>1,5E+02</b> | 1,2E+02   | 2,7E+01   | 5,0E+02                   |
| 2000     | 1,3E+02                          | 1,5E+02  | <b>1,8E+02</b> | 1,5E+02   | 3,2E+01   | 6,1E+02                   |
| 3000     | 1,4E+02                          | 1,6E+02  | <b>1,8E+02</b> | 1,5E+02   | 3,3E+01   | 6,3E+02                   |
| 4000     | 1,4E+02                          | 1,6E+02  | <b>1,9E+02</b> | 1,6E+02   | 3,3E+01   | 6,4E+02                   |
| 5000     |                                  |          | <b>1,9E+02</b> | 1,6E+02   | 3,4E+01   | 6,4E+02                   |
| 6000     |                                  |          |                |           | 3,4E+01   |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,7E-06                          | 1,9E-06        | <b>2,3E-06</b> | 1,9E-06         | 2,4E-07   | 8,1E-06                   |
| 2        | 8,7E-06                          | 9,8E-06        | <b>1,2E-05</b> | 9,7E-06         | 1,7E-06   | 4,0E-05                   |
| 3        | 1,7E-05                          | 1,9E-05        | <b>2,3E-05</b> | 1,9E-05         | 3,5E-06   | 7,8E-05                   |
| 4        | 2,5E-05                          | 2,8E-05        | <b>3,4E-05</b> | 2,8E-05         | 5,4E-06   | 1,2E-04                   |
| 5        | 3,3E-05                          | 3,8E-05        | <b>4,5E-05</b> | 3,7E-05         | 7,3E-06   | 1,5E-04                   |
| 6        | 4,1E-05                          | 4,7E-05        | <b>5,5E-05</b> | 4,6E-05         | 9,2E-06   | 1,9E-04                   |
| 7        | 4,9E-05                          | 5,6E-05        | <b>6,6E-05</b> | 5,6E-05         | 1,1E-05   | 2,3E-04                   |
| 8        | 5,8E-05                          | 6,5E-05        | <b>7,7E-05</b> | 6,5E-05         | 1,3E-05   | 2,7E-04                   |
| 9        | 6,6E-05                          | 7,5E-05        | <b>8,8E-05</b> | 7,4E-05         | 1,5E-05   | 3,0E-04                   |
| 10       | 7,4E-05                          | 8,4E-05        | <b>9,9E-05</b> | 8,3E-05         | 1,7E-05   | 3,4E-04                   |
| 14       | 1,1E-04                          | 1,2E-04        | <b>1,4E-04</b> | 1,2E-04         | 2,4E-05   | 4,9E-04                   |
| 15       | 1,1E-04                          | 1,3E-04        | <b>1,5E-04</b> | 1,3E-04         | 2,6E-05   | 5,3E-04                   |
| 20       | 1,5E-04                          | 1,8E-04        | <b>2,1E-04</b> | 1,7E-04         | 3,5E-05   | 7,1E-04                   |
| 30       | 2,3E-04                          | 2,7E-04        | <b>3,1E-04</b> | 2,6E-04         | 5,4E-05   | 1,1E-03                   |
| 40       | 3,1E-04                          | 3,5E-04        | <b>4,2E-04</b> | 3,5E-04         | 7,2E-05   | 1,4E-03                   |
| 45       | 3,5E-04                          | 4,0E-04        | <b>4,7E-04</b> | 3,9E-04         | 8,0E-05   | 1,6E-03                   |
| 50       | 3,9E-04                          | 4,4E-04        | <b>5,2E-04</b> | 4,4E-04         | 8,9E-05   | 1,8E-03                   |
| 60       | 4,6E-04                          | 5,3E-04        | <b>6,2E-04</b> | 5,2E-04         | 1,1E-04   | 2,1E-03                   |
| 70       | 5,4E-04                          | 6,1E-04        | <b>7,2E-04</b> | 6,1E-04         | 1,2E-04   | 2,5E-03                   |
| 80       | 6,1E-04                          | 6,9E-04        | <b>8,2E-04</b> | 6,9E-04         | 1,4E-04   | 2,8E-03                   |
| 90       | 6,8E-04                          | 7,8E-04        | <b>9,2E-04</b> | 7,7E-04         | 1,6E-04   | 3,2E-03                   |
| 100      | 7,5E-04                          | 8,6E-04        | <b>1,0E-03</b> | 8,5E-04         | 1,7E-04   | 3,5E-03                   |
| 120      | 8,9E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 2,1E-04   | 4,1E-03                   |
| 180      | 1,3E-03                          | 1,5E-03        | <b>1,7E-03</b> | 1,4E-03         | 3,0E-04   | 5,9E-03                   |
| 200      | 1,4E-03                          | 1,6E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-04   | 6,5E-03                   |
| 300      | 2,0E-03                          | 2,2E-03        | <b>2,6E-03</b> | 2,2E-03         | 4,5E-04   | 9,1E-03                   |
| 360      | 2,3E-03                          | 2,6E-03        | <b>3,0E-03</b> | 2,5E-03         | 5,2E-04   | 1,0E-02                   |
| 400      | 2,4E-03                          | 2,8E-03        | <b>3,3E-03</b> | 2,7E-03         | 5,6E-04   | 1,1E-02                   |
| 500      | 2,8E-03                          | 3,2E-03        | <b>3,8E-03</b> | 3,2E-03         | 6,6E-04   | 1,3E-02                   |
| 600      | 3,2E-03                          | 3,6E-03        | <b>4,3E-03</b> | 3,6E-03         | 7,4E-04   | 1,5E-02                   |
| 700      | 3,5E-03                          | 4,0E-03        | <b>4,7E-03</b> | 3,9E-03         | 8,1E-04   | 1,6E-02                   |
| 800      | 3,7E-03                          | 4,3E-03        | <b>5,0E-03</b> | 4,2E-03         | 8,6E-04   | 1,7E-02                   |
| 900      | 4,0E-03                          | 4,5E-03        | <b>5,3E-03</b> | 4,5E-03         | 9,1E-04   | 1,8E-02                   |
| 1000     | 4,1E-03                          | 4,7E-03        | <b>5,6E-03</b> | 4,7E-03         | 9,6E-04   | 1,9E-02                   |
| 2000     | 5,0E-03                          | 5,7E-03        | <b>6,7E-03</b> | 5,6E-03         | 1,2E-03   | 2,3E-02                   |
| 3000     | 5,2E-03                          | 5,9E-03        | <b>7,0E-03</b> | 5,8E-03         | 1,2E-03   | 2,4E-02                   |
| 4000     | 5,2E-03                          | 5,9E-03        | <b>7,0E-03</b> | 5,9E-03         |           | 2,4E-02                   |
| 5000     |                                  | 5,9E-03        |                | 5,9E-03         |           |                           |
| 6000     |                                  | 6,0E-03        |                |                 |           |                           |
| 8000     |                                  | 6,0E-03        |                |                 |           |                           |
| 10000    |                                  | 6,0E-03        |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 5,0E-01                          | 7,2E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,2E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 4,0E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,9E+00   | 5,0E+00                   |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,0E+00   | 6,0E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,0E+00   | 7,0E+00                   |
| 8        | 1,6E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,1E+00   | 8,0E+00                   |
| 9        | 1,7E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,1E+00   | 8,9E+00                   |
| 10       | 1,9E+00                          | 1,9E+00  | <b>2,0E+00</b> | 1,7E+00   | 2,2E+00   | 9,9E+00                   |
| 14       | 2,5E+00                          | 2,5E+00  | <b>2,4E+00</b> | 1,9E+00   | 2,4E+00   | 1,4E+01                   |
| 15       | 2,7E+00                          | 2,6E+00  | <b>2,5E+00</b> | 2,0E+00   | 2,4E+00   | 1,5E+01                   |
| 20       | 3,5E+00                          | 3,2E+00  | <b>3,0E+00</b> | 2,3E+00   | 2,7E+00   | 2,0E+01                   |
| 30       | 5,0E+00                          | 4,5E+00  | <b>3,9E+00</b> | 2,9E+00   | 3,1E+00   | 2,9E+01                   |
| 40       | 6,4E+00                          | 5,6E+00  | <b>4,8E+00</b> | 3,5E+00   | 3,6E+00   | 3,9E+01                   |
| 45       | 7,0E+00                          | 6,2E+00  | <b>5,2E+00</b> | 3,8E+00   | 3,8E+00   | 4,3E+01                   |
| 50       | 7,7E+00                          | 6,7E+00  | <b>5,7E+00</b> | 4,1E+00   | 4,1E+00   | 4,8E+01                   |
| 60       | 9,0E+00                          | 7,8E+00  | <b>6,5E+00</b> | 4,7E+00   | 4,5E+00   | 5,7E+01                   |
| 70       | 1,0E+01                          | 8,8E+00  | <b>7,3E+00</b> | 5,2E+00   | 5,0E+00   | 6,6E+01                   |
| 80       | 1,1E+01                          | 9,8E+00  | <b>8,1E+00</b> | 5,7E+00   | 5,4E+00   | 7,5E+01                   |
| 90       | 1,3E+01                          | 1,1E+01  | <b>8,8E+00</b> | 6,3E+00   | 5,9E+00   | 8,4E+01                   |
| 100      | 1,4E+01                          | 1,2E+01  | <b>9,6E+00</b> | 6,8E+00   | 6,3E+00   | 9,3E+01                   |
| 120      | 1,6E+01                          | 1,4E+01  | <b>1,1E+01</b> | 7,8E+00   | 7,1E+00   | 1,1E+02                   |
| 180      | 2,2E+01                          | 1,9E+01  | <b>1,5E+01</b> | 1,1E+01   | 9,5E+00   | 1,6E+02                   |
| 200      | 2,4E+01                          | 2,0E+01  | <b>1,6E+01</b> | 1,1E+01   | 1,0E+01   | 1,7E+02                   |
| 300      | 3,2E+01                          | 2,7E+01  | <b>2,2E+01</b> | 1,5E+01   | 1,4E+01   | 2,4E+02                   |
| 360      | 3,6E+01                          | 3,1E+01  | <b>2,5E+01</b> | 1,7E+01   | 1,5E+01   | 2,8E+02                   |
| 400      | 3,9E+01                          | 3,3E+01  | <b>2,7E+01</b> | 1,9E+01   | 1,7E+01   | 3,0E+02                   |
| 500      | 4,5E+01                          | 3,9E+01  | <b>3,1E+01</b> | 2,2E+01   | 1,9E+01   | 3,5E+02                   |
| 600      | 5,0E+01                          | 4,3E+01  | <b>3,4E+01</b> | 2,4E+01   | 2,1E+01   | 3,9E+02                   |
| 700      | 5,4E+01                          | 4,7E+01  | <b>3,7E+01</b> | 2,6E+01   | 2,3E+01   | 4,2E+02                   |
| 800      | 5,8E+01                          | 5,0E+01  | <b>4,0E+01</b> | 2,8E+01   | 2,4E+01   | 4,6E+02                   |
| 900      | 6,1E+01                          | 5,3E+01  | <b>4,2E+01</b> | 3,0E+01   | 2,6E+01   | 4,8E+02                   |
| 1000     | 6,4E+01                          | 5,5E+01  | <b>4,4E+01</b> | 3,1E+01   | 2,7E+01   | 5,0E+02                   |
| 2000     | 7,7E+01                          | 6,6E+01  | <b>5,3E+01</b> | 3,7E+01   | 3,2E+01   | 6,1E+02                   |
| 3000     | 7,9E+01                          | 6,8E+01  | <b>5,4E+01</b> | 3,8E+01   | 3,3E+01   | 6,3E+02                   |
| 4000     | 8,0E+01                          | 6,8E+01  | <b>5,5E+01</b> | 3,8E+01   | 3,3E+01   | 6,4E+02                   |
| 5000     | 8,0E+01                          | 6,8E+01  | <b>5,5E+01</b> | 3,9E+01   | 3,4E+01   | 6,4E+02                   |
| 6000     |                                  | 6,9E+01  |                | 3,9E+01   | 3,4E+01   |                           |
| 8000     |                                  | 6,9E+01  |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,8E-07                          | 2,4E-07        | <b>3,1E-07</b> | 2,7E-07         | 2,4E-07   | 8,1E-06                   |
| 2        | 9,9E-07                          | 1,3E-06        | <b>1,8E-06</b> | 1,6E-06         | 1,7E-06   | 4,0E-05                   |
| 3        | 2,0E-06                          | 2,7E-06        | <b>3,6E-06</b> | 3,1E-06         | 3,5E-06   | 7,8E-05                   |
| 4        | 3,0E-06                          | 4,0E-06        | <b>5,4E-06</b> | 4,8E-06         | 5,4E-06   | 1,2E-04                   |
| 5        | 4,1E-06                          | 5,4E-06        | <b>7,3E-06</b> | 6,4E-06         | 7,3E-06   | 1,5E-04                   |
| 6        | 5,1E-06                          | 6,8E-06        | <b>9,1E-06</b> | 8,0E-06         | 9,2E-06   | 1,9E-04                   |
| 7        | 6,2E-06                          | 8,3E-06        | <b>1,1E-05</b> | 9,6E-06         | 1,1E-05   | 2,3E-04                   |
| 8        | 7,4E-06                          | 9,7E-06        | <b>1,3E-05</b> | 1,1E-05         | 1,3E-05   | 2,7E-04                   |
| 9        | 8,5E-06                          | 1,1E-05        | <b>1,5E-05</b> | 1,3E-05         | 1,5E-05   | 3,0E-04                   |
| 10       | 9,7E-06                          | 1,3E-05        | <b>1,7E-05</b> | 1,4E-05         | 1,7E-05   | 3,4E-04                   |
| 14       | 1,5E-05                          | 1,9E-05        | <b>2,4E-05</b> | 2,1E-05         | 2,4E-05   | 4,9E-04                   |
| 15       | 1,6E-05                          | 2,0E-05        | <b>2,6E-05</b> | 2,3E-05         | 2,6E-05   | 5,3E-04                   |
| 20       | 2,3E-05                          | 2,8E-05        | <b>3,6E-05</b> | 3,1E-05         | 3,5E-05   | 7,1E-04                   |
| 30       | 3,8E-05                          | 4,5E-05        | <b>5,6E-05</b> | 4,7E-05         | 5,4E-05   | 1,1E-03                   |
| 40       | 5,5E-05                          | 6,4E-05        | <b>7,6E-05</b> | 6,4E-05         | 7,2E-05   | 1,4E-03                   |
| 45       | 6,4E-05                          | 7,3E-05        | <b>8,6E-05</b> | 7,2E-05         | 8,0E-05   | 1,6E-03                   |
| 50       | 7,4E-05                          | 8,3E-05        | <b>9,7E-05</b> | 8,1E-05         | 8,9E-05   | 1,8E-03                   |
| 60       | 9,4E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,7E-05         | 1,1E-04   | 2,1E-03                   |
| 70       | 1,1E-04                          | 1,2E-04        | <b>1,4E-04</b> | 1,1E-04         | 1,2E-04   | 2,5E-03                   |
| 80       | 1,4E-04                          | 1,5E-04        | <b>1,6E-04</b> | 1,3E-04         | 1,4E-04   | 2,8E-03                   |
| 90       | 1,6E-04                          | 1,7E-04        | <b>1,8E-04</b> | 1,5E-04         | 1,6E-04   | 3,2E-03                   |
| 100      | 1,8E-04                          | 1,9E-04        | <b>2,0E-04</b> | 1,6E-04         | 1,7E-04   | 3,5E-03                   |
| 120      | 2,3E-04                          | 2,4E-04        | <b>2,5E-04</b> | 2,0E-04         | 2,1E-04   | 4,1E-03                   |
| 180      | 3,8E-04                          | 3,8E-04        | <b>3,7E-04</b> | 2,9E-04         | 3,0E-04   | 5,9E-03                   |
| 200      | 4,4E-04                          | 4,2E-04        | <b>4,1E-04</b> | 3,2E-04         | 3,2E-04   | 6,5E-03                   |
| 300      | 6,9E-04                          | 6,5E-04        | <b>6,1E-04</b> | 4,6E-04         | 4,5E-04   | 9,1E-03                   |
| 360      | 8,4E-04                          | 7,8E-04        | <b>7,1E-04</b> | 5,4E-04         | 5,2E-04   | 1,0E-02                   |
| 400      | 9,3E-04                          | 8,6E-04        | <b>7,8E-04</b> | 5,8E-04         | 5,6E-04   | 1,1E-02                   |
| 500      | 1,1E-03                          | 1,0E-03        | <b>9,3E-04</b> | 6,9E-04         | 6,6E-04   | 1,3E-02                   |
| 600      | 1,3E-03                          | 1,2E-03        | <b>1,1E-03</b> | 7,8E-04         | 7,4E-04   | 1,5E-02                   |
| 700      | 1,5E-03                          | 1,3E-03        | <b>1,2E-03</b> | 8,6E-04         | 8,1E-04   | 1,6E-02                   |
| 800      | 1,6E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,3E-04         | 8,6E-04   | 1,7E-02                   |
| 900      | 1,8E-03                          | 1,6E-03        | <b>1,4E-03</b> | 9,9E-04         | 9,1E-04   | 1,8E-02                   |
| 1000     | 1,9E-03                          | 1,7E-03        | <b>1,4E-03</b> | 1,0E-03         | 9,6E-04   | 1,9E-02                   |
| 2000     | 2,3E-03                          | 2,1E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,2E-03   | 2,3E-02                   |
| 3000     | 2,4E-03                          | 2,2E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,2E-03   | 2,4E-02                   |
| 4000     | 2,5E-03                          | 2,2E-03        |                |                 |           | 2,4E-02                   |
| 5000     | 2,5E-03                          |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,1E-01   | 1,0E+00                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 3,0E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 4,0E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,9E+00   | 5,0E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 6,0E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,0E+00   | 7,0E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00   | 8,0E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,1E+00   | 8,9E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,5E+00   | 2,2E+00   | 9,9E+00                   |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 2,4E+00   | 1,4E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,3E+00</b> | 1,7E+00   | 2,4E+00   | 1,5E+01                   |
| 20       | 3,4E+00                          | 3,0E+00  | <b>2,6E+00</b> | 1,9E+00   | 2,7E+00   | 2,0E+01                   |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,4E+00   | 3,1E+00   | 2,9E+01                   |
| 40       | 6,1E+00                          | 5,1E+00  | <b>4,0E+00</b> | 2,8E+00   | 3,6E+00   | 3,9E+01                   |
| 45       | 6,7E+00                          | 5,6E+00  | <b>4,3E+00</b> | 3,0E+00   | 3,8E+00   | 4,3E+01                   |
| 50       | 7,3E+00                          | 6,1E+00  | <b>4,6E+00</b> | 3,2E+00   | 4,1E+00   | 4,8E+01                   |
| 60       | 8,5E+00                          | 7,0E+00  | <b>5,3E+00</b> | 3,5E+00   | 4,5E+00   | 5,7E+01                   |
| 70       | 9,6E+00                          | 7,9E+00  | <b>5,8E+00</b> | 3,9E+00   | 5,0E+00   | 6,6E+01                   |
| 80       | 1,1E+01                          | 8,7E+00  | <b>6,4E+00</b> | 4,2E+00   | 5,4E+00   | 7,5E+01                   |
| 90       | 1,2E+01                          | 9,5E+00  | <b>6,9E+00</b> | 4,6E+00   | 5,9E+00   | 8,4E+01                   |
| 100      | 1,3E+01                          | 1,0E+01  | <b>7,5E+00</b> | 4,9E+00   | 6,3E+00   | 9,3E+01                   |
| 120      | 1,4E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,5E+00   | 7,1E+00   | 1,1E+02                   |
| 180      | 1,9E+01                          | 1,6E+01  | <b>1,1E+01</b> | 7,2E+00   | 9,5E+00   | 1,6E+02                   |
| 200      | 2,1E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,8E+00   | 1,0E+01   | 1,7E+02                   |
| 300      | 2,7E+01                          | 2,2E+01  | <b>1,6E+01</b> | 1,0E+01   | 1,4E+01   | 2,4E+02                   |
| 360      | 3,0E+01                          | 2,5E+01  | <b>1,8E+01</b> | 1,1E+01   | 1,5E+01   | 2,8E+02                   |
| 400      | 3,2E+01                          | 2,6E+01  | <b>1,9E+01</b> | 1,2E+01   | 1,7E+01   | 3,0E+02                   |
| 500      | 3,7E+01                          | 3,0E+01  | <b>2,1E+01</b> | 1,4E+01   | 1,9E+01   | 3,5E+02                   |
| 600      | 4,0E+01                          | 3,2E+01  | <b>2,3E+01</b> | 1,5E+01   | 2,1E+01   | 3,9E+02                   |
| 700      | 4,3E+01                          | 3,5E+01  | <b>2,5E+01</b> | 1,6E+01   | 2,3E+01   | 4,2E+02                   |
| 800      | 4,5E+01                          | 3,7E+01  | <b>2,6E+01</b> | 1,7E+01   | 2,4E+01   | 4,6E+02                   |
| 900      | 4,7E+01                          | 3,8E+01  | <b>2,7E+01</b> | 1,8E+01   | 2,6E+01   | 4,8E+02                   |
| 1000     | 4,8E+01                          | 3,9E+01  | <b>2,8E+01</b> | 1,9E+01   | 2,7E+01   | 5,0E+02                   |
| 2000     | 5,4E+01                          | 4,4E+01  | <b>3,3E+01</b> | 2,2E+01   | 3,2E+01   | 6,1E+02                   |
| 3000     | 5,5E+01                          | 4,5E+01  | <b>3,3E+01</b> | 2,2E+01   | 3,3E+01   | 6,3E+02                   |
| 4000     | 5,5E+01                          | 4,5E+01  | <b>3,4E+01</b> |           | 3,3E+01   | 6,4E+02                   |
| 5000     |                                  |          | <b>3,4E+01</b> |           | 3,4E+01   | 6,4E+02                   |
| 6000     |                                  |          |                |           | 3,4E+01   |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cd-109**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,6E-08                          | 5,1E-08        | <b>9,5E-08</b> | 9,1E-08         | 2,4E-07   | 8,1E-06                   |
| 2        | 1,2E-07                          | 3,7E-07        | <b>6,9E-07</b> | 6,6E-07         | 1,7E-06   | 4,0E-05                   |
| 3        | 2,7E-07                          | 8,0E-07        | <b>1,5E-06</b> | 1,4E-06         | 3,5E-06   | 7,8E-05                   |
| 4        | 4,3E-07                          | 1,2E-06        | <b>2,3E-06</b> | 2,2E-06         | 5,4E-06   | 1,2E-04                   |
| 5        | 6,0E-07                          | 1,7E-06        | <b>3,1E-06</b> | 2,9E-06         | 7,3E-06   | 1,5E-04                   |
| 6        | 7,6E-07                          | 2,1E-06        | <b>3,9E-06</b> | 3,7E-06         | 9,2E-06   | 1,9E-04                   |
| 7        | 9,3E-07                          | 2,6E-06        | <b>4,7E-06</b> | 4,4E-06         | 1,1E-05   | 2,3E-04                   |
| 8        | 1,1E-06                          | 3,0E-06        | <b>5,5E-06</b> | 5,2E-06         | 1,3E-05   | 2,7E-04                   |
| 9        | 1,3E-06                          | 3,5E-06        | <b>6,3E-06</b> | 6,0E-06         | 1,5E-05   | 3,0E-04                   |
| 10       | 1,5E-06                          | 3,9E-06        | <b>7,1E-06</b> | 6,7E-06         | 1,7E-05   | 3,4E-04                   |
| 14       | 2,2E-06                          | 5,7E-06        | <b>1,0E-05</b> | 9,7E-06         | 2,4E-05   | 4,9E-04                   |
| 15       | 2,4E-06                          | 6,2E-06        | <b>1,1E-05</b> | 1,0E-05         | 2,6E-05   | 5,3E-04                   |
| 20       | 3,4E-06                          | 8,5E-06        | <b>1,5E-05</b> | 1,4E-05         | 3,5E-05   | 7,1E-04                   |
| 30       | 5,5E-06                          | 1,3E-05        | <b>2,3E-05</b> | 2,2E-05         | 5,4E-05   | 1,1E-03                   |
| 40       | 7,8E-06                          | 1,8E-05        | <b>3,1E-05</b> | 2,9E-05         | 7,2E-05   | 1,4E-03                   |
| 45       | 9,0E-06                          | 2,0E-05        | <b>3,5E-05</b> | 3,3E-05         | 8,0E-05   | 1,6E-03                   |
| 50       | 1,0E-05                          | 2,3E-05        | <b>3,9E-05</b> | 3,6E-05         | 8,9E-05   | 1,8E-03                   |
| 60       | 1,3E-05                          | 2,8E-05        | <b>4,7E-05</b> | 4,4E-05         | 1,1E-04   | 2,1E-03                   |
| 70       | 1,5E-05                          | 3,2E-05        | <b>5,4E-05</b> | 5,1E-05         | 1,2E-04   | 2,5E-03                   |
| 80       | 1,8E-05                          | 3,7E-05        | <b>6,2E-05</b> | 5,8E-05         | 1,4E-04   | 2,8E-03                   |
| 90       | 2,1E-05                          | 4,2E-05        | <b>7,0E-05</b> | 6,5E-05         | 1,6E-04   | 3,2E-03                   |
| 100      | 2,3E-05                          | 4,7E-05        | <b>7,7E-05</b> | 7,2E-05         | 1,7E-04   | 3,5E-03                   |
| 120      | 2,9E-05                          | 5,6E-05        | <b>9,2E-05</b> | 8,5E-05         | 2,1E-04   | 4,1E-03                   |
| 180      | 4,6E-05                          | 8,4E-05        | <b>1,3E-04</b> | 1,2E-04         | 3,0E-04   | 5,9E-03                   |
| 200      | 5,2E-05                          | 9,3E-05        | <b>1,5E-04</b> | 1,3E-04         | 3,2E-04   | 6,5E-03                   |
| 300      | 7,9E-05                          | 1,4E-04        | <b>2,1E-04</b> | 1,9E-04         | 4,5E-04   | 9,1E-03                   |
| 360      | 9,5E-05                          | 1,6E-04        | <b>2,4E-04</b> | 2,2E-04         | 5,2E-04   | 1,0E-02                   |
| 400      | 1,1E-04                          | 1,7E-04        | <b>2,6E-04</b> | 2,4E-04         | 5,6E-04   | 1,1E-02                   |
| 500      | 1,3E-04                          | 2,1E-04        | <b>3,1E-04</b> | 2,8E-04         | 6,6E-04   | 1,3E-02                   |
| 600      | 1,5E-04                          | 2,4E-04        | <b>3,5E-04</b> | 3,1E-04         | 7,4E-04   | 1,5E-02                   |
| 700      | 1,7E-04                          | 2,6E-04        | <b>3,8E-04</b> | 3,4E-04         | 8,1E-04   | 1,6E-02                   |
| 800      | 1,9E-04                          | 2,9E-04        | <b>4,1E-04</b> | 3,7E-04         | 8,6E-04   | 1,7E-02                   |
| 900      | 2,1E-04                          | 3,1E-04        | <b>4,4E-04</b> | 3,9E-04         | 9,1E-04   | 1,8E-02                   |
| 1000     | 2,2E-04                          | 3,2E-04        | <b>4,6E-04</b> | 4,1E-04         | 9,6E-04   | 1,9E-02                   |
| 2000     | 3,0E-04                          | 4,1E-04        | <b>5,7E-04</b> | 5,0E-04         | 1,2E-03   | 2,3E-02                   |
| 3000     | 3,2E-04                          | 4,4E-04        | <b>5,9E-04</b> | 5,2E-04         | 1,2E-03   | 2,4E-02                   |
| 4000     | 3,2E-04                          | 4,4E-04        | <b>5,9E-04</b> | 5,2E-04         |           | 2,4E-02                   |
| 5000     |                                  |                | <b>6,0E-04</b> |                 |           |                           |
| 6000     |                                  |                | <b>6,0E-04</b> |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**In-111**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 3,9E-01  | <b>6,0E-01</b> | 5,6E-01   | 8,1E-01   | 8,9E-01                   |
| 2        | 4,1E-01                          | 6,3E-01  | <b>9,3E-01</b> | 8,5E-01   | 1,2E+00   | 1,6E+00                   |
| 3        | 5,4E-01                          | 7,8E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,3E+00   | 2,1E+00                   |
| 4        | 6,3E-01                          | 8,9E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,3E+00   | 2,6E+00                   |
| 5        | 7,0E-01                          | 9,7E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,4E+00   | 2,9E+00                   |
| 6        | 7,6E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 1,4E+00   | 3,1E+00                   |
| 7        | 8,0E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   |           | 3,3E+00                   |
| 8        | 8,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   |           | 3,5E+00                   |
| 9        | 8,6E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,4E+00   |           | 3,6E+00                   |
| 10       | 8,8E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,4E+00   |           | 3,7E+00                   |
| 14       | 9,3E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   |           | 4,0E+00                   |
| 15       | 9,4E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   |           | 4,0E+00                   |
| 20       | 9,5E-01                          | 1,3E+00  |                |           |           | 4,1E+00                   |
| 30       | 9,6E-01                          | 1,3E+00  |                |           |           | 4,1E+00                   |
| 40       | 9,6E-01                          |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**In-111**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 3,9E-01  | <b>5,9E-01</b>  | 5,5E-01   | 8,1E-01   | 8,9E-01                   |
| 2        | 4,0E-01                          | 5,9E-01  | <b>8,5E-01</b>  | 7,8E-01   | 1,2E+00   | 1,6E+00                   |
| 3        | 5,0E-01                          | 6,9E-01  | <b>9,7E-01</b>  | 8,7E-01   | 1,3E+00   | 2,1E+00                   |
| 4        | 5,8E-01                          | 7,6E-01  | <b>1,0E+00</b>  | 9,1E-01   | 1,3E+00   | 2,6E+00                   |
| 5        | 6,4E-01                          | 8,1E-01  | <b>1,1E+00</b>  | 9,4E-01   | 1,4E+00   | 2,9E+00                   |
| 6        | 6,8E-01                          | 8,5E-01  | <b>1,1E+00</b>  | 9,5E-01   | 1,4E+00   | 3,1E+00                   |
| 7        | 7,2E-01                          | 8,7E-01  | <b>1,1E+00</b>  | 9,7E-01   |           | 3,3E+00                   |
| 8        | 7,5E-01                          | 8,9E-01  | <b>1,1E+00</b>  | 9,8E-01   |           | 3,5E+00                   |
| 9        | 7,7E-01                          | 9,1E-01  | <b>1,1E+00</b>  | 9,8E-01   |           | 3,6E+00                   |
| 10       | 7,8E-01                          | 9,2E-01  | <b>1,1E+00</b>  | 9,9E-01   |           | 3,7E+00                   |
| 14       | 8,2E-01                          | 9,5E-01  | <b>1,2E+00</b>  | 1,0E+00   |           | 4,0E+00                   |
| 15       | 8,2E-01                          | 9,5E-01  | <b>1,2E+00</b>  | 1,0E+00   |           | 4,0E+00                   |
| 20       | 8,3E-01                          | 9,6E-01  |                 |           |           | 4,1E+00                   |
| 30       | 8,4E-01                          | 9,7E-01  |                 |           |           | 4,1E+00                   |
| 40       | 8,4E-01                          | 9,7E-01  |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**In-113m**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,9E-02                          | 4,9E-02  | <b>7,9E-02</b>  | 7,4E-02   | 9,9E-02   | 1,0E-01                   |
| 2        | 2,9E-02                          | 4,9E-02  | <b>7,9E-02</b>  | 7,4E-02   | 9,9E-02   | 1,0E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**In-113m**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,9E-02                          | 4,9E-02  | <b>7,9E-02</b>  | 7,4E-02   | 9,9E-02   | 1,0E-01                   |
| 2        | 2,9E-02                          | 4,9E-02  | <b>7,9E-02</b>  | 7,4E-02   | 9,9E-02   | 1,0E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sn-113**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 4,0E-01  | <b>6,3E-01</b> | 5,9E-01   | 9,0E-01   | 8,3E-01                   |
| 2        | 4,0E-01                          | 6,4E-01  | <b>9,8E-01</b> | 9,1E-01   | 1,4E+00   | 1,5E+00                   |
| 3        | 5,3E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,0E+00                   |
| 4        | 6,3E-01                          | 9,4E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 5        | 7,3E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,8E+00   | 2,9E+00                   |
| 6        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,8E+00   | 3,3E+00                   |
| 7        | 9,1E-01                          | 1,3E+00  | <b>1,7E+00</b> | 1,6E+00   | 1,8E+00   | 3,7E+00                   |
| 8        | 1,0E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 1,8E+00   | 4,1E+00                   |
| 9        | 1,1E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 1,8E+00   | 4,5E+00                   |
| 10       | 1,2E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,8E+00   | 1,8E+00   | 4,9E+00                   |
| 14       | 1,5E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 1,8E+00   | 6,3E+00                   |
| 15       | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 1,8E+00   | 6,7E+00                   |
| 20       | 1,9E+00                          | 2,4E+00  | <b>3,0E+00</b> | 2,7E+00   | 1,9E+00   | 8,3E+00                   |
| 30       | 2,5E+00                          | 3,1E+00  | <b>3,9E+00</b> | 3,4E+00   | 1,9E+00   | 1,1E+01                   |
| 40       | 3,1E+00                          | 3,7E+00  | <b>4,6E+00</b> | 4,0E+00   | 2,0E+00   | 1,4E+01                   |
| 45       | 3,4E+00                          | 4,0E+00  | <b>5,0E+00</b> | 4,3E+00   | 2,0E+00   | 1,5E+01                   |
| 50       | 3,6E+00                          | 4,3E+00  | <b>5,3E+00</b> | 4,5E+00   | 2,0E+00   | 1,6E+01                   |
| 60       | 4,1E+00                          | 4,8E+00  | <b>5,9E+00</b> | 5,0E+00   | 2,1E+00   | 1,8E+01                   |
| 70       | 4,5E+00                          | 5,3E+00  | <b>6,5E+00</b> | 5,5E+00   | 2,1E+00   | 2,0E+01                   |
| 80       | 4,9E+00                          | 5,7E+00  | <b>7,0E+00</b> | 5,9E+00   | 2,2E+00   | 2,2E+01                   |
| 90       | 5,2E+00                          | 6,1E+00  | <b>7,4E+00</b> | 6,3E+00   | 2,2E+00   | 2,4E+01                   |
| 100      | 5,5E+00                          | 6,5E+00  | <b>7,8E+00</b> | 6,7E+00   | 2,2E+00   | 2,5E+01                   |
| 120      | 6,1E+00                          | 7,1E+00  | <b>8,6E+00</b> | 7,3E+00   | 2,3E+00   | 2,8E+01                   |
| 180      | 7,3E+00                          | 8,5E+00  | <b>1,0E+01</b> | 8,6E+00   | 2,4E+00   | 3,3E+01                   |
| 200      | 7,6E+00                          | 8,8E+00  | <b>1,1E+01</b> | 9,0E+00   | 2,4E+00   | 3,5E+01                   |
| 300      | 8,6E+00                          | 9,9E+00  | <b>1,2E+01</b> | 1,0E+01   | 2,5E+00   | 3,9E+01                   |
| 360      | 8,9E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,0E+01   | 2,5E+00   | 4,1E+01                   |
| 400      | 9,0E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,1E+01   | 2,5E+00   | 4,1E+01                   |
| 500      | 9,2E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 2,6E+00   | 4,2E+01                   |
| 600      | 9,3E+00                          | 1,1E+01  | <b>1,3E+01</b> |           | 2,6E+00   | 4,3E+01                   |
| 700      | 9,4E+00                          |          |                |           |           | 4,3E+01                   |
| 800      | 9,4E+00                          |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sn-113**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 8,3E-01                   |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,5E+00                   |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,0E+00                   |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 2,9E+00                   |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 3,3E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 3,7E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 4,1E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 4,5E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 4,9E+00                   |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 6,3E+00                   |
| 15       | 2,4E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,6E+00   | 1,8E+00   | 6,7E+00                   |
| 20       | 3,0E+00                          | 2,7E+00  | <b>2,3E+00</b> | 1,7E+00   | 1,9E+00   | 8,3E+00                   |
| 30       | 4,1E+00                          | 3,5E+00  | <b>2,8E+00</b> | 2,0E+00   | 1,9E+00   | 1,1E+01                   |
| 40       | 5,0E+00                          | 4,2E+00  | <b>3,2E+00</b> | 2,2E+00   | 2,0E+00   | 1,4E+01                   |
| 45       | 5,4E+00                          | 4,5E+00  | <b>3,4E+00</b> | 2,3E+00   | 2,0E+00   | 1,5E+01                   |
| 50       | 5,8E+00                          | 4,8E+00  | <b>3,6E+00</b> | 2,4E+00   | 2,0E+00   | 1,6E+01                   |
| 60       | 6,5E+00                          | 5,3E+00  | <b>3,9E+00</b> | 2,6E+00   | 2,1E+00   | 1,8E+01                   |
| 70       | 7,2E+00                          | 5,8E+00  | <b>4,2E+00</b> | 2,7E+00   | 2,1E+00   | 2,0E+01                   |
| 80       | 7,7E+00                          | 6,2E+00  | <b>4,4E+00</b> | 2,9E+00   | 2,2E+00   | 2,2E+01                   |
| 90       | 8,2E+00                          | 6,6E+00  | <b>4,7E+00</b> | 3,0E+00   | 2,2E+00   | 2,4E+01                   |
| 100      | 8,6E+00                          | 6,9E+00  | <b>4,9E+00</b> | 3,1E+00   | 2,2E+00   | 2,5E+01                   |
| 120      | 9,4E+00                          | 7,5E+00  | <b>5,2E+00</b> | 3,3E+00   | 2,3E+00   | 2,8E+01                   |
| 180      | 1,1E+01                          | 8,7E+00  | <b>5,9E+00</b> | 3,7E+00   | 2,4E+00   | 3,3E+01                   |
| 200      | 1,1E+01                          | 8,9E+00  | <b>6,1E+00</b> | 3,8E+00   | 2,4E+00   | 3,5E+01                   |
| 300      | 1,2E+01                          | 9,7E+00  | <b>6,6E+00</b> | 4,1E+00   | 2,5E+00   | 3,9E+01                   |
| 360      | 1,3E+01                          | 9,9E+00  | <b>6,7E+00</b> | 4,2E+00   | 2,5E+00   | 4,1E+01                   |
| 400      | 1,3E+01                          | 1,0E+01  | <b>6,8E+00</b> | 4,2E+00   | 2,5E+00   | 4,1E+01                   |
| 500      |                                  | 1,0E+01  | <b>6,9E+00</b> | 4,3E+00   | 2,6E+00   | 4,2E+01                   |
| 600      |                                  |          | <b>6,9E+00</b> | 4,3E+00   | 2,6E+00   | 4,3E+01                   |
| 700      |                                  |          |                |           |           | 4,3E+01                   |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-122**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,2E-01                          | 3,7E-01  | <b>5,7E-01</b>  | 5,4E-01   | 8,0E-01   | 7,9E-01                   |
| 2        | 3,5E-01                          | 5,6E-01  | <b>8,5E-01</b>  | 7,8E-01   | 1,2E+00   | 1,3E+00                   |
| 3        | 4,3E-01                          | 6,6E-01  | <b>9,9E-01</b>  | 9,1E-01   | 1,3E+00   | 1,6E+00                   |
| 4        | 4,9E-01                          | 7,3E-01  | <b>1,1E+00</b>  | 9,8E-01   | 1,4E+00   | 1,9E+00                   |
| 5        | 5,2E-01                          | 7,7E-01  | <b>1,1E+00</b>  | 1,0E+00   | 1,4E+00   | 2,1E+00                   |
| 6        | 5,5E-01                          | 8,0E-01  | <b>1,2E+00</b>  | 1,1E+00   |           | 2,2E+00                   |
| 7        | 5,7E-01                          | 8,2E-01  | <b>1,2E+00</b>  | 1,1E+00   |           | 2,3E+00                   |
| 8        | 5,8E-01                          | 8,4E-01  |                 |           |           | 2,3E+00                   |
| 9        | 5,9E-01                          | 8,5E-01  |                 |           |           | 2,3E+00                   |
| 10       | 5,9E-01                          | 8,6E-01  |                 |           |           | 2,4E+00                   |
| 14       | 6,1E-01                          | 8,7E-01  |                 |           |           | 2,4E+00                   |
| 15       | 6,1E-01                          | 8,7E-01  |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-122**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 3,8E-01  | <b>5,8E-01</b> | 5,4E-01   | 8,0E-01   | 7,9E-01                   |
| 2        | 3,9E-01                          | 5,7E-01  | <b>8,3E-01</b> | 7,6E-01   | 1,2E+00   | 1,3E+00                   |
| 3        | 4,9E-01                          | 6,7E-01  | <b>9,4E-01</b> | 8,5E-01   | 1,3E+00   | 1,6E+00                   |
| 4        | 5,6E-01                          | 7,3E-01  | <b>9,9E-01</b> | 8,8E-01   | 1,4E+00   | 1,9E+00                   |
| 5        | 6,1E-01                          | 7,7E-01  | <b>1,0E+00</b> | 9,0E-01   | 1,4E+00   | 2,1E+00                   |
| 6        | 6,5E-01                          | 8,0E-01  | <b>1,0E+00</b> | 9,1E-01   |           | 2,2E+00                   |
| 7        | 6,8E-01                          | 8,2E-01  | <b>1,0E+00</b> | 9,2E-01   |           | 2,3E+00                   |
| 8        | 7,0E-01                          | 8,4E-01  | <b>1,1E+00</b> | 9,2E-01   |           | 2,3E+00                   |
| 9        | 7,1E-01                          | 8,5E-01  | <b>1,1E+00</b> | 9,3E-01   |           | 2,3E+00                   |
| 10       | 7,3E-01                          | 8,6E-01  |                | 9,3E-01   |           | 2,4E+00                   |
| 14       | 7,5E-01                          | 8,8E-01  |                | 9,4E-01   |           | 2,4E+00                   |
| 15       | 7,6E-01                          | 8,8E-01  |                | 9,4E-01   |           |                           |
| 20       | 7,7E-01                          | 8,9E-01  |                |           |           |                           |
| 30       | 7,7E-01                          | 8,9E-01  |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-124**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,5E-01                          | 4,1E-01  | <b>6,4E-01</b> | 6,0E-01   | 9,0E-01   | 8,8E-01                         |
| 2        | 4,3E-01                          | 6,8E-01  | <b>1,0E+00</b> | 9,5E-01   | 1,4E+00   | 1,6E+00                         |
| 3        | 5,8E-01                          | 8,8E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,3E+00                         |
| 4        | 7,1E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 2,8E+00                         |
| 5        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,9E+00   | 3,3E+00                         |
| 6        | 9,2E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00   | 3,8E+00                         |
| 7        | 1,0E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 2,0E+00   | 4,2E+00                         |
| 8        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b> | 1,8E+00   | 2,0E+00   | 4,5E+00                         |
| 9        | 1,2E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,9E+00   | 2,0E+00   | 4,8E+00                         |
| 10       | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 2,1E+00   | 5,1E+00                         |
| 14       | 1,4E+00                          | 1,8E+00  | <b>2,5E+00</b> | 2,2E+00   | 2,2E+00   | 6,0E+00                         |
| 15       | 1,5E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 2,2E+00   | 6,2E+00                         |
| 20       | 1,6E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 2,3E+00   | 6,9E+00                         |
| 30       | 1,8E+00                          | 2,3E+00  | <b>3,0E+00</b> | 2,7E+00   | 2,4E+00   | 7,9E+00                         |
| 40       | 2,0E+00                          | 2,5E+00  | <b>3,3E+00</b> | 2,8E+00   | 2,4E+00   | 8,7E+00                         |
| 45       | 2,1E+00                          | 2,6E+00  | <b>3,4E+00</b> | 2,9E+00   | 2,5E+00   | 9,0E+00                         |
| 50       | 2,1E+00                          | 2,7E+00  | <b>3,4E+00</b> | 3,0E+00   | 2,5E+00   | 9,3E+00                         |
| 60       | 2,2E+00                          | 2,8E+00  | <b>3,6E+00</b> | 3,1E+00   | 2,5E+00   | 9,8E+00                         |
| 70       | 2,3E+00                          | 2,9E+00  | <b>3,7E+00</b> | 3,2E+00   | 2,6E+00   | 1,0E+01                         |
| 80       | 2,4E+00                          | 3,0E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,6E+00   | 1,1E+01                         |
| 90       | 2,5E+00                          | 3,1E+00  | <b>3,9E+00</b> | 3,4E+00   | 2,7E+00   | 1,1E+01                         |
| 100      | 2,5E+00                          | 3,1E+00  | <b>4,0E+00</b> | 3,5E+00   | 2,7E+00   | 1,1E+01                         |
| 120      | 2,6E+00                          | 3,2E+00  | <b>4,1E+00</b> | 3,6E+00   | 2,7E+00   | 1,2E+01                         |
| 180      | 2,8E+00                          | 3,4E+00  | <b>4,4E+00</b> | 3,8E+00   | 2,8E+00   | 1,2E+01                         |
| 200      | 2,8E+00                          | 3,5E+00  | <b>4,4E+00</b> | 3,8E+00   | 2,8E+00   | 1,2E+01                         |
| 300      | 2,9E+00                          | 3,6E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,8E+00   | 1,3E+01                         |
| 360      | 2,9E+00                          | 3,6E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,9E+00   | 1,3E+01                         |
| 400      |                                  |          |                |           | 2,9E+00   |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-124**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 8,8E-01                   |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 6,6E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 2,3E+00                   |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 2,8E+00                   |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00   | 3,3E+00                   |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,9E+00   | 3,8E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 4,2E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 2,0E+00   | 4,5E+00                   |
| 9        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,3E+00   | 2,0E+00   | 4,8E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00   | 5,1E+00                   |
| 14       | 2,2E+00                          | 2,0E+00  | <b>1,9E+00</b> | 1,5E+00   | 2,2E+00   | 6,0E+00                   |
| 15       | 2,3E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 2,2E+00   | 6,2E+00                   |
| 20       | 2,8E+00                          | 2,5E+00  | <b>2,2E+00</b> | 1,6E+00   | 2,3E+00   | 6,9E+00                   |
| 30       | 3,7E+00                          | 3,2E+00  | <b>2,5E+00</b> | 1,8E+00   | 2,4E+00   | 7,9E+00                   |
| 40       | 4,4E+00                          | 3,7E+00  | <b>2,8E+00</b> | 1,9E+00   | 2,4E+00   | 8,7E+00                   |
| 45       | 4,7E+00                          | 3,9E+00  | <b>2,9E+00</b> | 2,0E+00   | 2,5E+00   | 9,0E+00                   |
| 50       | 5,0E+00                          | 4,1E+00  | <b>3,1E+00</b> | 2,0E+00   | 2,5E+00   | 9,3E+00                   |
| 60       | 5,5E+00                          | 4,5E+00  | <b>3,2E+00</b> | 2,1E+00   | 2,5E+00   | 9,8E+00                   |
| 70       | 5,9E+00                          | 4,7E+00  | <b>3,4E+00</b> | 2,2E+00   | 2,6E+00   | 1,0E+01                   |
| 80       | 6,2E+00                          | 5,0E+00  | <b>3,5E+00</b> | 2,3E+00   | 2,6E+00   | 1,1E+01                   |
| 90       | 6,5E+00                          | 5,2E+00  | <b>3,6E+00</b> | 2,3E+00   | 2,7E+00   | 1,1E+01                   |
| 100      | 6,7E+00                          | 5,3E+00  | <b>3,7E+00</b> | 2,4E+00   | 2,7E+00   | 1,1E+01                   |
| 120      | 7,0E+00                          | 5,6E+00  | <b>3,8E+00</b> | 2,4E+00   | 2,7E+00   | 1,2E+01                   |
| 180      | 7,6E+00                          | 6,0E+00  | <b>4,1E+00</b> | 2,5E+00   | 2,8E+00   | 1,2E+01                   |
| 200      | 7,6E+00                          | 6,0E+00  | <b>4,1E+00</b> | 2,5E+00   | 2,8E+00   | 1,2E+01                   |
| 300      | 7,8E+00                          | 6,2E+00  | <b>4,2E+00</b> | 2,6E+00   | 2,8E+00   | 1,3E+01                   |
| 360      | 7,8E+00                          | 6,2E+00  | <b>4,2E+00</b> | 2,6E+00   | 2,9E+00   | 1,3E+01                   |
| 400      | 7,9E+00                          |          |                |           | 2,9E+00   |                           |
| 500      | 7,9E+00                          |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-125**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,1E-01  | <b>6,4E-01</b> | 6,0E-01   | 9,0E-01   | 8,9E-01                   |
| 2        | 4,4E-01                          | 6,9E-01  | <b>1,0E+00</b> | 9,6E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 5,9E-01                          | 8,9E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,3E+00                   |
| 4        | 7,3E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,8E+00   | 2,9E+00                   |
| 5        | 8,4E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,9E+00   | 3,4E+00                   |
| 6        | 9,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 2,0E+00   | 3,9E+00                   |
| 7        | 1,0E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,7E+00   | 2,0E+00   | 4,3E+00                   |
| 8        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,8E+00   | 2,1E+00   | 4,7E+00                   |
| 9        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 2,1E+00   | 5,0E+00                   |
| 10       | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 2,1E+00   | 5,3E+00                   |
| 14       | 1,5E+00                          | 1,9E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,2E+00   | 6,4E+00                   |
| 15       | 1,5E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 2,2E+00   | 6,6E+00                   |
| 20       | 1,7E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,5E+00   | 2,3E+00   | 7,5E+00                   |
| 30       | 2,0E+00                          | 2,5E+00  | <b>3,3E+00</b> | 2,9E+00   | 2,5E+00   | 8,8E+00                   |
| 40       | 2,2E+00                          | 2,8E+00  | <b>3,6E+00</b> | 3,2E+00   | 2,6E+00   | 9,9E+00                   |
| 45       | 2,4E+00                          | 2,9E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,6E+00   | 1,0E+01                   |
| 50       | 2,5E+00                          | 3,1E+00  | <b>3,9E+00</b> | 3,4E+00   | 2,7E+00   | 1,1E+01                   |
| 60       | 2,7E+00                          | 3,3E+00  | <b>4,2E+00</b> | 3,6E+00   | 2,8E+00   | 1,2E+01                   |
| 70       | 2,9E+00                          | 3,5E+00  | <b>4,5E+00</b> | 3,9E+00   | 2,9E+00   | 1,3E+01                   |
| 80       | 3,0E+00                          | 3,7E+00  | <b>4,7E+00</b> | 4,1E+00   | 2,9E+00   | 1,3E+01                   |
| 90       | 3,2E+00                          | 3,9E+00  | <b>4,9E+00</b> | 4,3E+00   | 3,0E+00   | 1,4E+01                   |
| 100      | 3,4E+00                          | 4,1E+00  | <b>5,2E+00</b> | 4,5E+00   | 3,1E+00   | 1,5E+01                   |
| 120      | 3,7E+00                          | 4,5E+00  | <b>5,6E+00</b> | 4,8E+00   | 3,2E+00   | 1,6E+01                   |
| 180      | 4,5E+00                          | 5,4E+00  | <b>6,7E+00</b> | 5,7E+00   | 3,6E+00   | 2,0E+01                   |
| 200      | 4,7E+00                          | 5,7E+00  | <b>7,0E+00</b> | 6,0E+00   | 3,7E+00   | 2,1E+01                   |
| 300      | 5,7E+00                          | 6,8E+00  | <b>8,4E+00</b> | 7,2E+00   | 4,2E+00   | 2,6E+01                   |
| 360      | 6,2E+00                          | 7,3E+00  | <b>9,0E+00</b> | 7,7E+00   | 4,4E+00   | 2,8E+01                   |
| 400      | 6,5E+00                          | 7,7E+00  | <b>9,5E+00</b> | 8,1E+00   | 4,5E+00   | 2,9E+01                   |
| 500      | 7,1E+00                          | 8,4E+00  | <b>1,0E+01</b> | 8,8E+00   | 4,8E+00   | 3,2E+01                   |
| 600      | 7,7E+00                          | 9,1E+00  | <b>1,1E+01</b> | 9,5E+00   | 5,1E+00   | 3,5E+01                   |
| 700      | 8,2E+00                          | 9,7E+00  | <b>1,2E+01</b> | 1,0E+01   | 5,3E+00   | 3,7E+01                   |
| 800      | 8,7E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 5,5E+00   | 4,0E+01                   |
| 900      | 9,1E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 5,7E+00   | 4,1E+01                   |
| 1000     | 9,5E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 5,9E+00   | 4,3E+01                   |
| 2000     | 1,2E+01                          | 1,4E+01  | <b>1,7E+01</b> | 1,5E+01   | 7,1E+00   | 5,5E+01                   |
| 3000     | 1,3E+01                          | 1,6E+01  | <b>1,9E+01</b> | 1,6E+01   | 7,6E+00   | 6,1E+01                   |
| 4000     | 1,4E+01                          | 1,6E+01  | <b>2,0E+01</b> | 1,7E+01   | 7,9E+00   | 6,3E+01                   |
| 5000     | 1,4E+01                          | 1,6E+01  | <b>2,0E+01</b> | 1,7E+01   | 8,0E+00   | 6,4E+01                   |
| 6000     |                                  | 1,7E+01  |                |           | 8,0E+00   | 6,4E+01                   |
| 8000     |                                  | 1,7E+01  |                |           | 8,0E+00   | 6,5E+01                   |
| 10000    |                                  |          |                |           | 8,1E+00   | 6,5E+01                   |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Sb-125**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 8,9E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 2,3E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 2,9E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,9E+00   | 3,4E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 3,9E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 2,0E+00   | 4,3E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 2,1E+00   | 4,7E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 2,1E+00   | 5,0E+00                   |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 2,1E+00   | 5,3E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,5E+00   | 2,2E+00   | 6,4E+00                   |
| 15       | 2,4E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,6E+00   | 2,2E+00   | 6,6E+00                   |
| 20       | 3,1E+00                          | 2,7E+00  | <b>2,3E+00</b> | 1,7E+00   | 2,3E+00   | 7,5E+00                   |
| 30       | 4,3E+00                          | 3,6E+00  | <b>2,8E+00</b> | 1,9E+00   | 2,5E+00   | 8,8E+00                   |
| 40       | 5,3E+00                          | 4,3E+00  | <b>3,2E+00</b> | 2,1E+00   | 2,6E+00   | 9,9E+00                   |
| 45       | 5,8E+00                          | 4,7E+00  | <b>3,4E+00</b> | 2,2E+00   | 2,6E+00   | 1,0E+01                   |
| 50       | 6,3E+00                          | 5,0E+00  | <b>3,6E+00</b> | 2,3E+00   | 2,7E+00   | 1,1E+01                   |
| 60       | 7,1E+00                          | 5,7E+00  | <b>3,9E+00</b> | 2,5E+00   | 2,8E+00   | 1,2E+01                   |
| 70       | 7,9E+00                          | 6,2E+00  | <b>4,2E+00</b> | 2,6E+00   | 2,9E+00   | 1,3E+01                   |
| 80       | 8,6E+00                          | 6,8E+00  | <b>4,5E+00</b> | 2,8E+00   | 2,9E+00   | 1,3E+01                   |
| 90       | 9,3E+00                          | 7,2E+00  | <b>4,8E+00</b> | 2,9E+00   | 3,0E+00   | 1,4E+01                   |
| 100      | 9,9E+00                          | 7,7E+00  | <b>5,0E+00</b> | 3,0E+00   | 3,1E+00   | 1,5E+01                   |
| 120      | 1,1E+01                          | 8,5E+00  | <b>5,4E+00</b> | 3,2E+00   | 3,2E+00   | 1,6E+01                   |
| 180      | 1,4E+01                          | 1,0E+01  | <b>6,5E+00</b> | 3,7E+00   | 3,6E+00   | 2,0E+01                   |
| 200      | 1,4E+01                          | 1,1E+01  | <b>6,7E+00</b> | 3,9E+00   | 3,7E+00   | 2,1E+01                   |
| 300      | 1,7E+01                          | 1,3E+01  | <b>7,7E+00</b> | 4,4E+00   | 4,2E+00   | 2,6E+01                   |
| 360      | 1,8E+01                          | 1,3E+01  | <b>8,1E+00</b> | 4,6E+00   | 4,4E+00   | 2,8E+01                   |
| 400      | 1,8E+01                          | 1,4E+01  | <b>8,3E+00</b> | 4,7E+00   | 4,5E+00   | 2,9E+01                   |
| 500      | 1,9E+01                          | 1,4E+01  | <b>8,7E+00</b> | 4,9E+00   | 4,8E+00   | 3,2E+01                   |
| 600      | 2,0E+01                          | 1,5E+01  | <b>9,0E+00</b> | 5,1E+00   | 5,1E+00   | 3,5E+01                   |
| 700      | 2,0E+01                          | 1,5E+01  | <b>9,3E+00</b> | 5,2E+00   | 5,3E+00   | 3,7E+01                   |
| 800      | 2,0E+01                          | 1,6E+01  | <b>9,4E+00</b> | 5,3E+00   | 5,5E+00   | 4,0E+01                   |
| 900      | 2,1E+01                          | 1,6E+01  | <b>9,6E+00</b> | 5,4E+00   | 5,7E+00   | 4,1E+01                   |
| 1000     | 2,1E+01                          | 1,6E+01  | <b>9,7E+00</b> | 5,5E+00   | 5,9E+00   | 4,3E+01                   |
| 2000     | 2,2E+01                          | 1,7E+01  | <b>1,1E+01</b> | 6,0E+00   | 7,1E+00   | 5,5E+01                   |
| 3000     | 2,3E+01                          | 1,8E+01  | <b>1,1E+01</b> | 6,2E+00   | 7,6E+00   | 6,1E+01                   |
| 4000     | 2,3E+01                          | 1,8E+01  |                | 6,3E+00   | 7,9E+00   | 6,3E+01                   |
| 5000     |                                  |          |                | 6,4E+00   | 8,0E+00   | 6,4E+01                   |
| 6000     |                                  |          |                | 6,4E+00   | 8,0E+00   | 6,4E+01                   |
| 8000     |                                  |          |                |           | 8,0E+00   | 6,5E+01                   |
| 10000    |                                  |          |                |           | 8,1E+00   | 6,5E+01                   |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Te-123m

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,1E-01  | <b>6,4E-01</b> | 6,0E-01   | 9,0E-01   | 8,8E-01                   |
| 2        | 4,2E-01                          | 6,7E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 5,6E-01                          | 8,6E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,8E+00   | 2,1E+00                   |
| 4        | 6,8E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,0E+00   | 2,7E+00                   |
| 5        | 7,9E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,1E+00   | 3,1E+00                   |
| 6        | 9,0E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 2,3E+00   | 3,6E+00                   |
| 7        | 1,0E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 2,4E+00   | 4,1E+00                   |
| 8        | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,9E+00   | 2,6E+00   | 4,5E+00                   |
| 9        | 1,2E+00                          | 1,6E+00  | <b>2,3E+00</b> | 2,0E+00   | 2,7E+00   | 4,9E+00                   |
| 10       | 1,3E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 2,8E+00   | 5,3E+00                   |
| 14       | 1,6E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,6E+00   | 3,3E+00   | 6,9E+00                   |
| 15       | 1,7E+00                          | 2,3E+00  | <b>3,1E+00</b> | 2,7E+00   | 3,4E+00   | 7,3E+00                   |
| 20       | 2,1E+00                          | 2,8E+00  | <b>3,7E+00</b> | 3,2E+00   | 3,9E+00   | 9,1E+00                   |
| 30       | 2,8E+00                          | 3,6E+00  | <b>4,7E+00</b> | 4,1E+00   | 4,9E+00   | 1,2E+01                   |
| 40       | 3,4E+00                          | 4,4E+00  | <b>5,7E+00</b> | 4,9E+00   | 5,7E+00   | 1,5E+01                   |
| 45       | 3,7E+00                          | 4,7E+00  | <b>6,1E+00</b> | 5,3E+00   | 6,1E+00   | 1,6E+01                   |
| 50       | 3,9E+00                          | 5,0E+00  | <b>6,5E+00</b> | 5,6E+00   | 6,4E+00   | 1,7E+01                   |
| 60       | 4,4E+00                          | 5,6E+00  | <b>7,2E+00</b> | 6,2E+00   | 7,0E+00   | 1,9E+01                   |
| 70       | 4,8E+00                          | 6,1E+00  | <b>7,8E+00</b> | 6,8E+00   | 7,6E+00   | 2,1E+01                   |
| 80       | 5,2E+00                          | 6,6E+00  | <b>8,4E+00</b> | 7,3E+00   | 8,1E+00   | 2,3E+01                   |
| 90       | 5,6E+00                          | 7,0E+00  | <b>9,0E+00</b> | 7,8E+00   | 8,6E+00   | 2,5E+01                   |
| 100      | 5,9E+00                          | 7,4E+00  | <b>9,5E+00</b> | 8,2E+00   | 9,0E+00   | 2,6E+01                   |
| 120      | 6,5E+00                          | 8,1E+00  | <b>1,0E+01</b> | 9,0E+00   | 9,9E+00   | 2,9E+01                   |
| 180      | 7,9E+00                          | 9,9E+00  | <b>1,3E+01</b> | 1,1E+01   | 1,2E+01   | 3,5E+01                   |
| 200      | 8,3E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 1,2E+01   | 3,7E+01                   |
| 300      | 9,6E+00                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 1,4E+01   | 4,3E+01                   |
| 360      | 1,0E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 1,5E+01   | 4,5E+01                   |
| 400      | 1,0E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 1,5E+01   | 4,6E+01                   |
| 500      | 1,1E+01                          | 1,3E+01  | <b>1,7E+01</b> | 1,4E+01   | 1,6E+01   | 4,8E+01                   |
| 600      | 1,1E+01                          | 1,4E+01  | <b>1,7E+01</b> | 1,5E+01   | 1,6E+01   | 4,9E+01                   |
| 700      |                                  | 1,4E+01  | <b>1,7E+01</b> | 1,5E+01   |           | 4,9E+01                   |
| 800      |                                  |          | <b>1,7E+01</b> |           |           | 5,0E+01                   |
| 900      |                                  |          | <b>1,8E+01</b> |           |           | 5,0E+01                   |
| 1000     |                                  |          | <b>1,8E+01</b> |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Te-123m**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 8,8E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 6,8E-01                          | 9,1E-01  | <b>1,3E+00</b> | 1,1E+00   | 1,8E+00   | 2,1E+00                   |
| 4        | 8,5E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,3E+00   | 2,0E+00   | 2,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,1E+00   | 3,1E+00                   |
| 6        | 1,2E+00                          | 1,4E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,3E+00   | 3,6E+00                   |
| 7        | 1,3E+00                          | 1,5E+00  | <b>1,8E+00</b> | 1,5E+00   | 2,4E+00   | 4,1E+00                   |
| 8        | 1,5E+00                          | 1,7E+00  | <b>1,9E+00</b> | 1,6E+00   | 2,6E+00   | 4,5E+00                   |
| 9        | 1,6E+00                          | 1,8E+00  | <b>2,0E+00</b> | 1,7E+00   | 2,7E+00   | 4,9E+00                   |
| 10       | 1,8E+00                          | 1,9E+00  | <b>2,1E+00</b> | 1,8E+00   | 2,8E+00   | 5,3E+00                   |
| 14       | 2,4E+00                          | 2,4E+00  | <b>2,6E+00</b> | 2,1E+00   | 3,3E+00   | 6,9E+00                   |
| 15       | 2,5E+00                          | 2,6E+00  | <b>2,7E+00</b> | 2,2E+00   | 3,4E+00   | 7,3E+00                   |
| 20       | 3,2E+00                          | 3,1E+00  | <b>3,2E+00</b> | 2,5E+00   | 3,9E+00   | 9,1E+00                   |
| 30       | 4,4E+00                          | 4,2E+00  | <b>4,0E+00</b> | 3,1E+00   | 4,9E+00   | 1,2E+01                   |
| 40       | 5,4E+00                          | 5,1E+00  | <b>4,7E+00</b> | 3,6E+00   | 5,7E+00   | 1,5E+01                   |
| 45       | 5,9E+00                          | 5,5E+00  | <b>5,1E+00</b> | 3,9E+00   | 6,1E+00   | 1,6E+01                   |
| 50       | 6,3E+00                          | 5,8E+00  | <b>5,4E+00</b> | 4,1E+00   | 6,4E+00   | 1,7E+01                   |
| 60       | 7,1E+00                          | 6,5E+00  | <b>6,0E+00</b> | 4,5E+00   | 7,0E+00   | 1,9E+01                   |
| 70       | 7,8E+00                          | 7,1E+00  | <b>6,5E+00</b> | 4,9E+00   | 7,6E+00   | 2,1E+01                   |
| 80       | 8,4E+00                          | 7,7E+00  | <b>6,9E+00</b> | 5,2E+00   | 8,1E+00   | 2,3E+01                   |
| 90       | 9,0E+00                          | 8,2E+00  | <b>7,3E+00</b> | 5,5E+00   | 8,6E+00   | 2,5E+01                   |
| 100      | 9,5E+00                          | 8,6E+00  | <b>7,7E+00</b> | 5,8E+00   | 9,0E+00   | 2,6E+01                   |
| 120      | 1,0E+01                          | 9,4E+00  | <b>8,4E+00</b> | 6,3E+00   | 9,9E+00   | 2,9E+01                   |
| 180      | 1,2E+01                          | 1,1E+01  | <b>9,9E+00</b> | 7,4E+00   | 1,2E+01   | 3,5E+01                   |
| 200      | 1,3E+01                          | 1,1E+01  | <b>1,0E+01</b> | 7,7E+00   | 1,2E+01   | 3,7E+01                   |
| 300      | 1,4E+01                          | 1,3E+01  | <b>1,2E+01</b> | 8,6E+00   | 1,4E+01   | 4,3E+01                   |
| 360      | 1,4E+01                          | 1,3E+01  | <b>1,2E+01</b> | 9,0E+00   | 1,5E+01   | 4,5E+01                   |
| 400      | 1,5E+01                          | 1,3E+01  | <b>1,2E+01</b> | 9,2E+00   | 1,5E+01   | 4,6E+01                   |
| 500      | 1,5E+01                          | 1,4E+01  | <b>1,3E+01</b> | 9,5E+00   | 1,6E+01   | 4,8E+01                   |
| 600      |                                  | 1,4E+01  | <b>1,3E+01</b> | 9,6E+00   | 1,6E+01   | 4,9E+01                   |
| 700      |                                  |          |                | 9,7E+00   |           | 4,9E+01                   |
| 800      |                                  |          |                | 9,7E+00   |           | 5,0E+01                   |
| 900      |                                  |          |                | 9,8E+00   |           | 5,0E+01                   |
| 1000     |                                  |          |                | 9,8E+00   |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Te-123m**

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | Dampf      |           |                                 |
| 1        | 8,6E-01    |           |                                 |
| 2        | 1,5E+00    |           |                                 |
| 3        | 2,0E+00    |           |                                 |
| 4        | 2,4E+00    |           |                                 |
| 5        | 2,8E+00    |           |                                 |
| 6        | 3,2E+00    |           |                                 |
| 7        | 3,6E+00    |           |                                 |
| 8        | 4,0E+00    |           |                                 |
| 9        | 4,3E+00    |           |                                 |
| 10       | 4,7E+00    |           |                                 |
| 14       | 6,0E+00    |           |                                 |
| 15       | 6,3E+00    |           |                                 |
| 20       | 7,8E+00    |           |                                 |
| 30       | 1,0E+01    |           |                                 |
| 40       | 1,3E+01    |           |                                 |
| 45       | 1,4E+01    |           |                                 |
| 50       | 1,5E+01    |           |                                 |
| 60       | 1,6E+01    |           |                                 |
| 70       | 1,8E+01    |           |                                 |
| 80       | 1,9E+01    |           |                                 |
| 90       | 2,1E+01    |           |                                 |
| 100      | 2,2E+01    |           |                                 |
| 120      | 2,4E+01    |           |                                 |
| 180      | 2,9E+01    |           |                                 |
| 200      | 3,1E+01    |           |                                 |
| 300      | 3,6E+01    |           |                                 |
| 360      | 3,7E+01    |           |                                 |
| 400      | 3,8E+01    |           |                                 |
| 500      | 4,0E+01    |           |                                 |
| 600      | 4,1E+01    |           |                                 |
| 700      | 4,1E+01    |           |                                 |
| 800      | 4,1E+01    |           |                                 |
| 900      | 4,1E+01    |           |                                 |
| 1000     | 4,1E+01    |           |                                 |
| 2000     | 4,2E+01    |           |                                 |
| 3000     | 4,2E+01    |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Te-132**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,3E-01                          | 3,7E-01  | <b>5,8E-01</b> | 5,5E-01   | 8,2E-01   | 8,0E-01                   |
| 2        | 3,6E-01                          | 5,7E-01  | <b>8,7E-01</b> | 8,0E-01   | 1,2E+00   | 1,3E+00                   |
| 3        | 4,4E-01                          | 6,8E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,7E+00                   |
| 4        | 5,0E-01                          | 7,6E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,5E+00   | 1,9E+00                   |
| 5        | 5,4E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,1E+00                   |
| 6        | 5,7E-01                          | 8,5E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,2E+00                   |
| 7        | 6,0E-01                          | 8,8E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,4E+00                   |
| 8        | 6,2E-01                          | 9,1E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 9        | 6,4E-01                          | 9,3E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 10       | 6,5E-01                          | 9,4E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 2,6E+00                   |
| 14       | 6,8E-01                          | 9,8E-01  | <b>1,4E+00</b> | 1,3E+00   | 1,8E+00   | 2,7E+00                   |
| 15       | 6,9E-01                          | 9,9E-01  |                | 1,3E+00   | 1,8E+00   | 2,7E+00                   |
| 20       | 7,0E-01                          | 1,0E+00  |                |           |           | 2,8E+00                   |
| 30       | 7,0E-01                          | 1,0E+00  |                |           |           | 2,8E+00                   |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Te-132**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,3E-01                          | 3,7E-01  | <b>5,8E-01</b> | 5,5E-01   | 8,2E-01   | 8,0E-01                   |
| 2        | 3,6E-01                          | 5,7E-01  | <b>8,7E-01</b> | 8,0E-01   | 1,2E+00   | 1,3E+00                   |
| 3        | 4,4E-01                          | 6,8E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,7E+00                   |
| 4        | 5,0E-01                          | 7,6E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,5E+00   | 1,9E+00                   |
| 5        | 5,4E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,1E+00                   |
| 6        | 5,7E-01                          | 8,5E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,2E+00                   |
| 7        | 6,0E-01                          | 8,8E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,4E+00                   |
| 8        | 6,2E-01                          | 9,1E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 9        | 6,4E-01                          | 9,3E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 10       | 6,5E-01                          | 9,4E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 2,6E+00                   |
| 14       | 6,8E-01                          | 9,8E-01  | <b>1,4E+00</b> | 1,3E+00   | 1,8E+00   | 2,7E+00                   |
| 15       | 6,9E-01                          | 9,9E-01  | <b>1,4E+00</b> | 1,3E+00   | 1,8E+00   | 2,7E+00                   |
| 20       | 7,0E-01                          | 1,0E+00  | <b>1,4E+00</b> |           |           | 2,8E+00                   |
| 30       | 7,0E-01                          | 1,0E+00  | <b>1,4E+00</b> |           |           | 2,8E+00                   |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Te-132**

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | Dampf      |           |                                 |
| 1        | 7,8E-01    |           |                                 |
| 2        | 1,2E+00    |           |                                 |
| 3        | 1,5E+00    |           |                                 |
| 4        | 1,8E+00    |           |                                 |
| 5        | 1,9E+00    |           |                                 |
| 6        | 2,0E+00    |           |                                 |
| 7        | 2,1E+00    |           |                                 |
| 8        | 2,2E+00    |           |                                 |
| 9        | 2,3E+00    |           |                                 |
| 10       | 2,3E+00    |           |                                 |
| 14       | 2,4E+00    |           |                                 |
| 15       | 2,5E+00    |           |                                 |
| 20       | 2,5E+00    |           |                                 |
| 30       |            |           |                                 |
| 40       |            |           |                                 |
| 45       |            |           |                                 |
| 50       |            |           |                                 |
| 60       |            |           |                                 |
| 70       |            |           |                                 |
| 80       |            |           |                                 |
| 90       |            |           |                                 |
| 100      |            |           |                                 |
| 120      |            |           |                                 |
| 180      |            |           |                                 |
| 200      |            |           |                                 |
| 300      |            |           |                                 |
| 360      |            |           |                                 |
| 400      |            |           |                                 |
| 500      |            |           |                                 |
| 600      |            |           |                                 |
| 700      |            |           |                                 |
| 800      |            |           |                                 |
| 900      |            |           |                                 |
| 1000     |            |           |                                 |
| 2000     |            |           |                                 |
| 3000     |            |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-123**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,3E-02                          | 3,2E-02  | <b>4,4E-02</b> | 3,9E-02   | 8,8E-02   | 9,7E-02                   |
| 2        | 3,4E-02                          | 4,8E-02  | <b>6,7E-02</b> | 5,9E-02   | 1,3E-01   | 1,4E-01                   |
| 3        | 3,8E-02                          | 5,3E-02  | <b>7,3E-02</b> | 6,5E-02   | 1,5E-01   | 1,6E-01                   |
| 4        | 3,9E-02                          | 5,4E-02  | <b>7,5E-02</b> | 6,6E-02   | 1,5E-01   | 1,6E-01                   |
| 5        | 3,9E-02                          | 5,5E-02  | <b>7,5E-02</b> | 6,7E-02   |           |                           |
| 6        |                                  | 5,5E-02  | <b>7,6E-02</b> | 6,7E-02   |           |                           |
| 7        |                                  |          | <b>7,6E-02</b> |           |           |                           |
| 8        |                                  |          |                |           |           |                           |
| 9        |                                  |          |                |           |           |                           |
| 10       |                                  |          |                |           |           |                           |
| 14       |                                  |          |                |           |           |                           |
| 15       |                                  |          |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-123**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,1E-01                          | 2,0E-01  | <b>3,2E-01</b>  | 3,0E-01   | 4,0E-01   | 3,8E-01                   |
| 2        | 1,3E-01                          | 2,2E-01  | <b>3,6E-01</b>  | 3,4E-01   | 4,5E-01   | 4,3E-01                   |
| 3        | 1,3E-01                          | 2,3E-01  | <b>3,7E-01</b>  | 3,5E-01   | 4,6E-01   | 4,4E-01                   |
| 4        |                                  | 2,3E-01  | <b>3,7E-01</b>  | 3,5E-01   | 4,7E-01   | 4,5E-01                   |
| 5        |                                  |          |                 |           | 4,7E-01   | 4,5E-01                   |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-123**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 8,4E-02    | 6,8E-02 |           |                           |
| 2        | 1,3E-01    | 1,0E-01 |           |                           |
| 3        | 1,4E-01    | 1,1E-01 |           |                           |
| 4        | 1,4E-01    | 1,1E-01 |           |                           |
| 5        |            |         |           |                           |
| 6        |            |         |           |                           |
| 7        |            |         |           |                           |
| 8        |            |         |           |                           |
| 9        |            |         |           |                           |
| 10       |            |         |           |                           |
| 14       |            |         |           |                           |
| 15       |            |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-123**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 3,9E-01    | 2,6E-01 |           |                           |
| 2        | 4,4E-01    | 3,0E-01 |           |                           |
| 3        | 4,5E-01    | 3,1E-01 |           |                           |
| 4        | 4,5E-01    | 3,1E-01 |           |                           |
| 5        |            |         |           |                           |
| 6        |            |         |           |                           |
| 7        |            |         |           |                           |
| 8        |            |         |           |                           |
| 9        |            |         |           |                           |
| 10       |            |         |           |                           |
| 14       |            |         |           |                           |
| 15       |            |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-124**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 4,3E-02                          | 6,0E-02  | <b>8,3E-02</b>  | 7,3E-02   | 1,7E-01   | 1,8E-01                   |
| 2        | 9,8E-02                          | 1,4E-01  | <b>1,9E-01</b>  | 1,7E-01   | 3,9E-01   | 4,1E-01                   |
| 3        | 1,5E-01                          | 2,1E-01  | <b>2,8E-01</b>  | 2,5E-01   | 5,8E-01   | 6,0E-01                   |
| 4        | 1,9E-01                          | 2,6E-01  | <b>3,6E-01</b>  | 3,2E-01   | 7,4E-01   | 7,6E-01                   |
| 5        | 2,2E-01                          | 3,1E-01  | <b>4,3E-01</b>  | 3,8E-01   | 8,8E-01   | 9,0E-01                   |
| 6        | 2,5E-01                          | 3,5E-01  | <b>4,8E-01</b>  | 4,3E-01   | 1,0E+00   | 1,0E+00                   |
| 7        | 2,7E-01                          | 3,8E-01  | <b>5,3E-01</b>  | 4,7E-01   | 1,1E+00   | 1,1E+00                   |
| 8        | 2,9E-01                          | 4,1E-01  | <b>5,7E-01</b>  | 5,0E-01   | 1,2E+00   | 1,2E+00                   |
| 9        | 3,1E-01                          | 4,4E-01  | <b>6,0E-01</b>  | 5,3E-01   | 1,2E+00   | 1,3E+00                   |
| 10       | 3,2E-01                          | 4,6E-01  | <b>6,3E-01</b>  | 5,6E-01   | 1,3E+00   | 1,3E+00                   |
| 14       | 3,6E-01                          | 5,1E-01  | <b>7,0E-01</b>  | 6,2E-01   | 1,4E+00   | 1,5E+00                   |
| 15       | 3,6E-01                          | 5,2E-01  | <b>7,2E-01</b>  | 6,3E-01   | 1,5E+00   | 1,5E+00                   |
| 20       | 3,8E-01                          | 5,4E-01  | <b>7,5E-01</b>  | 6,6E-01   | 1,5E+00   | 1,6E+00                   |
| 30       | 3,9E-01                          | 5,6E-01  | <b>7,7E-01</b>  | 6,8E-01   | 1,6E+00   | 1,6E+00                   |
| 40       | 4,0E-01                          | 5,6E-01  | <b>7,8E-01</b>  | 6,9E-01   | 1,6E+00   |                           |
| 45       | 4,0E-01                          |          | <b>7,8E-01</b>  | 6,9E-01   |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-124**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,7E-01                          | 2,9E-01  | <b>4,7E-01</b> | 4,5E-01   | 5,8E-01   | 5,5E-01                   |
| 2        | 2,4E-01                          | 4,1E-01  | <b>6,6E-01</b> | 6,2E-01   | 8,3E-01   | 8,0E-01                   |
| 3        | 2,9E-01                          | 4,9E-01  | <b>7,7E-01</b> | 7,2E-01   | 1,0E+00   | 1,0E+00                   |
| 4        | 3,3E-01                          | 5,5E-01  | <b>8,6E-01</b> | 8,0E-01   | 1,2E+00   | 1,2E+00                   |
| 5        | 3,7E-01                          | 6,0E-01  | <b>9,3E-01</b> | 8,6E-01   | 1,3E+00   | 1,3E+00                   |
| 6        | 4,0E-01                          | 6,4E-01  | <b>9,9E-01</b> | 9,1E-01   | 1,5E+00   | 1,4E+00                   |
| 7        | 4,2E-01                          | 6,8E-01  | <b>1,0E+00</b> | 9,6E-01   | 1,6E+00   | 1,5E+00                   |
| 8        | 4,4E-01                          | 7,1E-01  | <b>1,1E+00</b> | 9,9E-01   | 1,6E+00   | 1,6E+00                   |
| 9        | 4,6E-01                          | 7,3E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,7E+00   | 1,7E+00                   |
| 10       | 4,8E-01                          | 7,5E-01  | <b>1,1E+00</b> | 1,1E+00   | 1,8E+00   | 1,8E+00                   |
| 14       | 5,2E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 1,9E+00                   |
| 15       | 5,2E-01                          | 8,2E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,0E+00   | 1,9E+00                   |
| 20       | 5,4E-01                          | 8,5E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,0E+00   | 2,0E+00                   |
| 30       | 5,5E-01                          | 8,7E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,1E+00   | 2,1E+00                   |
| 40       | 5,6E-01                          | 8,7E-01  |                |           | 2,1E+00   | 2,1E+00                   |
| 45       | 5,6E-01                          |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-124**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,6E-01    | 1,3E-01 |           |                           |
| 2        | 3,6E-01    | 2,8E-01 |           |                           |
| 3        | 5,3E-01    | 4,2E-01 |           |                           |
| 4        | 6,8E-01    | 5,3E-01 |           |                           |
| 5        | 8,1E-01    | 6,3E-01 |           |                           |
| 6        | 9,1E-01    | 7,1E-01 |           |                           |
| 7        | 1,0E+00    | 7,8E-01 |           |                           |
| 8        | 1,1E+00    | 8,4E-01 |           |                           |
| 9        | 1,1E+00    | 8,9E-01 |           |                           |
| 10       | 1,2E+00    | 9,3E-01 |           |                           |
| 14       | 1,3E+00    | 1,0E+00 |           |                           |
| 15       | 1,3E+00    | 1,0E+00 |           |                           |
| 20       | 1,4E+00    | 1,1E+00 |           |                           |
| 30       | 1,4E+00    | 1,1E+00 |           |                           |
| 40       | 1,5E+00    |         |           |                           |
| 45       | 1,5E+00    |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-124**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 5,7E-01    | 3,9E-01 |           |                           |
| 2        | 8,1E-01    | 5,6E-01 |           |                           |
| 3        | 1,0E+00    | 7,0E-01 |           |                           |
| 4        | 1,1E+00    | 8,2E-01 |           |                           |
| 5        | 1,3E+00    | 9,2E-01 |           |                           |
| 6        | 1,4E+00    | 1,0E+00 |           |                           |
| 7        | 1,5E+00    | 1,1E+00 |           |                           |
| 8        | 1,6E+00    | 1,1E+00 |           |                           |
| 9        | 1,6E+00    | 1,2E+00 |           |                           |
| 10       | 1,7E+00    | 1,2E+00 |           |                           |
| 14       | 1,8E+00    | 1,3E+00 |           |                           |
| 15       | 1,8E+00    | 1,4E+00 |           |                           |
| 20       | 1,9E+00    | 1,4E+00 |           |                           |
| 30       | 2,0E+00    | 1,5E+00 |           |                           |
| 40       | 2,0E+00    | 1,5E+00 |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-125**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 4,7E-02                          | 6,6E-02  | <b>9,1E-02</b> | 8,0E-02   | 1,8E-01   | 2,0E-01                   |
| 2        | 1,2E-01                          | 1,6E-01  | <b>2,3E-01</b> | 2,0E-01   | 4,6E-01   | 4,8E-01                   |
| 3        | 1,9E-01                          | 2,6E-01  | <b>3,6E-01</b> | 3,2E-01   | 7,5E-01   | 7,7E-01                   |
| 4        | 2,5E-01                          | 3,6E-01  | <b>5,0E-01</b> | 4,4E-01   | 1,0E+00   | 1,0E+00                   |
| 5        | 3,2E-01                          | 4,6E-01  | <b>6,3E-01</b> | 5,6E-01   | 1,3E+00   | 1,3E+00                   |
| 6        | 3,9E-01                          | 5,5E-01  | <b>7,6E-01</b> | 6,7E-01   | 1,6E+00   | 1,6E+00                   |
| 7        | 4,5E-01                          | 6,4E-01  | <b>8,9E-01</b> | 7,9E-01   | 1,8E+00   | 1,9E+00                   |
| 8        | 5,2E-01                          | 7,3E-01  | <b>1,0E+00</b> | 9,0E-01   | 2,1E+00   | 2,1E+00                   |
| 9        | 5,8E-01                          | 8,2E-01  | <b>1,1E+00</b> | 1,0E+00   | 2,3E+00   | 2,4E+00                   |
| 10       | 6,4E-01                          | 9,0E-01  | <b>1,3E+00</b> | 1,1E+00   | 2,6E+00   | 2,6E+00                   |
| 14       | 8,7E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 3,5E+00   | 3,6E+00                   |
| 15       | 9,3E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 3,7E+00   | 3,8E+00                   |
| 20       | 1,2E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,1E+00   | 4,8E+00   | 4,9E+00                   |
| 30       | 1,6E+00                          | 2,3E+00  | <b>3,2E+00</b> | 2,9E+00   | 6,7E+00   | 6,7E+00                   |
| 40       | 2,0E+00                          | 2,9E+00  | <b>4,0E+00</b> | 3,5E+00   | 8,2E+00   | 8,3E+00                   |
| 45       | 2,2E+00                          | 3,1E+00  | <b>4,3E+00</b> | 3,8E+00   | 8,9E+00   | 9,0E+00                   |
| 50       | 2,3E+00                          | 3,3E+00  | <b>4,6E+00</b> | 4,1E+00   | 9,5E+00   | 9,6E+00                   |
| 60       | 2,6E+00                          | 3,7E+00  | <b>5,1E+00</b> | 4,5E+00   | 1,1E+01   | 1,1E+01                   |
| 70       | 2,8E+00                          | 4,0E+00  | <b>5,5E+00</b> | 4,9E+00   | 1,1E+01   | 1,2E+01                   |
| 80       | 3,0E+00                          | 4,3E+00  | <b>5,9E+00</b> | 5,2E+00   | 1,2E+01   | 1,2E+01                   |
| 90       | 3,2E+00                          | 4,5E+00  | <b>6,2E+00</b> | 5,5E+00   | 1,3E+01   | 1,3E+01                   |
| 100      | 3,3E+00                          | 4,7E+00  | <b>6,5E+00</b> | 5,7E+00   | 1,3E+01   | 1,3E+01                   |
| 120      | 3,5E+00                          | 4,9E+00  | <b>6,8E+00</b> | 6,1E+00   | 1,4E+01   | 1,4E+01                   |
| 180      | 3,8E+00                          | 5,4E+00  | <b>7,4E+00</b> | 6,6E+00   | 1,5E+01   | 1,6E+01                   |
| 200      | 3,8E+00                          | 5,4E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,6E+01   | 1,6E+01                   |
| 300      | 3,9E+00                          | 5,6E+00  | <b>7,7E+00</b> | 6,8E+00   | 1,6E+01   |                           |
| 360      | 3,9E+00                          | 5,6E+00  | <b>7,7E+00</b> | 6,9E+00   |           |                           |
| 400      |                                  |          | <b>7,7E+00</b> | 6,9E+00   |           |                           |
| 500      |                                  |          | <b>7,7E+00</b> |           |           |                           |
| 600      |                                  |          | <b>7,8E+00</b> |           |           |                           |
| 700      |                                  |          | <b>7,8E+00</b> |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**I-125**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 9,7E-02                          | 1,4E-01        | <b>1,9E-01</b> | 1,7E-01         | 3,8E-01   | 4,1E-01                   |
| 2        | 1,7E-01                          | 2,3E-01        | <b>3,2E-01</b> | 2,9E-01         | 6,7E-01   | 6,8E-01                   |
| 3        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 4        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 5        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 6        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 7        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 8        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 9        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 10       | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 14       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 15       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 20       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,1E-01                   |
| 30       | 1,7E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,1E-01                   |
| 40       | 1,8E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,1E-01         | 7,1E-01   | 7,2E-01                   |
| 45       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,2E-01   | 7,2E-01                   |
| 50       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,2E-01   | 7,3E-01                   |
| 60       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,2E-01   | 7,3E-01                   |
| 70       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,3E-01   | 7,4E-01                   |
| 80       | 1,8E-01                          | 2,6E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,3E-01   | 7,4E-01                   |
| 90       | 1,8E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,2E-01         | 7,4E-01   | 7,4E-01                   |
| 100      | 1,8E-01                          |                | <b>3,6E-01</b> | 3,2E-01         | 7,4E-01   | 7,5E-01                   |
| 120      | 1,8E-01                          |                |                |                 | 7,4E-01   | 7,5E-01                   |
| 180      | 1,8E-01                          |                |                |                 | 7,5E-01   | 7,6E-01                   |
| 200      | 1,9E-01                          |                |                |                 | 7,5E-01   | 7,6E-01                   |
| 300      | 1,9E-01                          |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-125**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,7E-01    | 1,4E-01 |           |                           |
| 2        | 4,3E-01    | 3,4E-01 |           |                           |
| 3        | 6,9E-01    | 5,4E-01 |           |                           |
| 4        | 9,4E-01    | 7,3E-01 |           |                           |
| 5        | 1,2E+00    | 9,3E-01 |           |                           |
| 6        | 1,4E+00    | 1,1E+00 |           |                           |
| 7        | 1,7E+00    | 1,3E+00 |           |                           |
| 8        | 1,9E+00    | 1,5E+00 |           |                           |
| 9        | 2,1E+00    | 1,7E+00 |           |                           |
| 10       | 2,3E+00    | 1,8E+00 |           |                           |
| 14       | 3,2E+00    | 2,5E+00 |           |                           |
| 15       | 3,4E+00    | 2,7E+00 |           |                           |
| 20       | 4,4E+00    | 3,4E+00 |           |                           |
| 30       | 6,0E+00    | 4,7E+00 |           |                           |
| 40       | 7,4E+00    | 5,8E+00 |           |                           |
| 45       | 8,0E+00    | 6,3E+00 |           |                           |
| 50       | 8,6E+00    | 6,7E+00 |           |                           |
| 60       | 9,6E+00    | 7,5E+00 |           |                           |
| 70       | 1,0E+01    | 8,1E+00 |           |                           |
| 80       | 1,1E+01    | 8,6E+00 |           |                           |
| 90       | 1,2E+01    | 9,1E+00 |           |                           |
| 100      | 1,2E+01    | 9,4E+00 |           |                           |
| 120      | 1,3E+01    | 1,0E+01 |           |                           |
| 180      | 1,4E+01    | 1,1E+01 |           |                           |
| 200      | 1,4E+01    | 1,1E+01 |           |                           |
| 300      | 1,4E+01    |         |           |                           |
| 360      | 1,5E+01    |         |           |                           |
| 400      | 1,5E+01    |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**I-125**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 3,6E-01    | 3,0E-01 |           |                           |
| 2        | 6,1E-01    | 4,8E-01 |           |                           |
| 3        | 6,2E-01    | 5,0E-01 |           |                           |
| 4        | 6,3E-01    | 5,0E-01 |           |                           |
| 5        | 6,3E-01    | 5,0E-01 |           |                           |
| 6        | 6,3E-01    | 5,0E-01 |           |                           |
| 7        | 6,3E-01    | 5,0E-01 |           |                           |
| 8        | 6,3E-01    | 5,0E-01 |           |                           |
| 9        | 6,3E-01    | 5,0E-01 |           |                           |
| 10       | 6,3E-01    | 5,0E-01 |           |                           |
| 14       | 6,3E-01    | 5,0E-01 |           |                           |
| 15       | 6,3E-01    | 5,0E-01 |           |                           |
| 20       | 6,3E-01    | 5,0E-01 |           |                           |
| 30       | 6,4E-01    | 5,1E-01 |           |                           |
| 40       | 6,5E-01    | 5,1E-01 |           |                           |
| 45       | 6,5E-01    | 5,2E-01 |           |                           |
| 50       | 6,5E-01    | 5,2E-01 |           |                           |
| 60       | 6,6E-01    | 5,2E-01 |           |                           |
| 70       | 6,6E-01    | 5,2E-01 |           |                           |
| 80       | 6,6E-01    | 5,3E-01 |           |                           |
| 90       | 6,7E-01    | 5,3E-01 |           |                           |
| 100      | 6,7E-01    | 5,3E-01 |           |                           |
| 120      | 6,7E-01    | 5,4E-01 |           |                           |
| 180      | 6,8E-01    | 5,4E-01 |           |                           |
| 200      | 6,8E-01    |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

Retention in der Schilddrüse R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

I-129

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 4,7E-02                          | 6,6E-02  | <b>9,2E-02</b> | 8,1E-02   | 1,8E-01   | 2,0E-01                         |
| 2        | 1,2E-01                          | 1,7E-01  | <b>2,3E-01</b> | 2,0E-01   | 4,7E-01   | 4,9E-01                         |
| 3        | 1,9E-01                          | 2,7E-01  | <b>3,7E-01</b> | 3,3E-01   | 7,6E-01   | 7,8E-01                         |
| 4        | 2,6E-01                          | 3,7E-01  | <b>5,1E-01</b> | 4,5E-01   | 1,1E+00   | 1,1E+00                         |
| 5        | 3,3E-01                          | 4,7E-01  | <b>6,5E-01</b> | 5,8E-01   | 1,3E+00   | 1,4E+00                         |
| 6        | 4,0E-01                          | 5,7E-01  | <b>7,9E-01</b> | 7,0E-01   | 1,6E+00   | 1,7E+00                         |
| 7        | 4,7E-01                          | 6,7E-01  | <b>9,2E-01</b> | 8,2E-01   | 1,9E+00   | 1,9E+00                         |
| 8        | 5,4E-01                          | 7,7E-01  | <b>1,1E+00</b> | 9,4E-01   | 2,2E+00   | 2,2E+00                         |
| 9        | 6,1E-01                          | 8,6E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,5E+00   | 2,5E+00                         |
| 10       | 6,8E-01                          | 9,6E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,7E+00   | 2,8E+00                         |
| 14       | 9,4E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,6E+00   | 3,8E+00   | 3,9E+00                         |
| 15       | 1,0E+00                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 4,1E+00   | 4,1E+00                         |
| 20       | 1,3E+00                          | 1,9E+00  | <b>2,6E+00</b> | 2,3E+00   | 5,4E+00   | 5,4E+00                         |
| 30       | 1,9E+00                          | 2,7E+00  | <b>3,8E+00</b> | 3,4E+00   | 7,8E+00   | 7,9E+00                         |
| 40       | 2,5E+00                          | 3,5E+00  | <b>4,9E+00</b> | 4,4E+00   | 1,0E+01   | 1,0E+01                         |
| 45       | 2,8E+00                          | 3,9E+00  | <b>5,4E+00</b> | 4,8E+00   | 1,1E+01   | 1,1E+01                         |
| 50       | 3,0E+00                          | 4,3E+00  | <b>6,0E+00</b> | 5,3E+00   | 1,2E+01   | 1,2E+01                         |
| 60       | 3,5E+00                          | 5,0E+00  | <b>6,9E+00</b> | 6,1E+00   | 1,4E+01   | 1,4E+01                         |
| 70       | 4,0E+00                          | 5,7E+00  | <b>7,8E+00</b> | 6,9E+00   | 1,6E+01   | 1,6E+01                         |
| 80       | 4,4E+00                          | 6,3E+00  | <b>8,7E+00</b> | 7,7E+00   | 1,8E+01   | 1,8E+01                         |
| 90       | 4,8E+00                          | 6,9E+00  | <b>9,5E+00</b> | 8,4E+00   | 2,0E+01   | 2,0E+01                         |
| 100      | 5,2E+00                          | 7,4E+00  | <b>1,0E+01</b> | 9,1E+00   | 2,1E+01   | 2,1E+01                         |
| 120      | 5,9E+00                          | 8,4E+00  | <b>1,2E+01</b> | 1,0E+01   | 2,4E+01   | 2,4E+01                         |
| 180      | 7,6E+00                          | 1,1E+01  | <b>1,5E+01</b> | 1,3E+01   | 3,1E+01   | 3,1E+01                         |
| 200      | 8,0E+00                          | 1,1E+01  | <b>1,6E+01</b> | 1,4E+01   | 3,2E+01   | 3,3E+01                         |
| 300      | 9,5E+00                          | 1,3E+01  | <b>1,9E+01</b> | 1,6E+01   | 3,8E+01   | 3,9E+01                         |
| 360      | 1,0E+01                          | 1,4E+01  | <b>2,0E+01</b> | 1,7E+01   | 4,0E+01   | 4,1E+01                         |
| 400      | 1,0E+01                          | 1,5E+01  | <b>2,0E+01</b> | 1,8E+01   | 4,2E+01   | 4,2E+01                         |
| 500      | 1,1E+01                          | 1,5E+01  | <b>2,1E+01</b> | 1,9E+01   | 4,3E+01   | 4,4E+01                         |
| 600      | 1,1E+01                          | 1,5E+01  | <b>2,1E+01</b> | 1,9E+01   | 4,4E+01   | 4,5E+01                         |
| 700      |                                  | 1,6E+01  | <b>2,2E+01</b> |           | 4,5E+01   | 4,5E+01                         |
| 800      |                                  | 1,6E+01  | <b>2,2E+01</b> |           | 4,5E+01   | 4,5E+01                         |
| 900      |                                  |          |                |           |           | 4,5E+01                         |
| 1000     |                                  |          |                |           |           | 4,5E+01                         |
| 2000     |                                  |          |                |           |           | 4,6E+01                         |
| 3000     |                                  |          |                |           |           | 4,6E+01                         |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**I-129**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 9,8E-02                          | 1,4E-01        | <b>1,9E-01</b> | 1,7E-01         | 3,8E-01   | 4,1E-01                   |
| 2        | 1,7E-01                          | 2,3E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,7E-01   | 6,8E-01                   |
| 3        | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 4        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 5        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 6        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 7        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 8        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 9        | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,0E-01                   |
| 10       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,0E-01                   |
| 14       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,1E-01                   |
| 15       | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,1E-01                   |
| 20       | 1,7E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,1E-01                   |
| 30       | 1,8E-01                          | 2,5E-01        | <b>3,4E-01</b> | 3,1E-01         | 7,1E-01   | 7,2E-01                   |
| 40       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,2E-01   | 7,3E-01                   |
| 45       | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,3E-01   | 7,4E-01                   |
| 50       | 1,8E-01                          | 2,6E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,3E-01   | 7,4E-01                   |
| 60       | 1,8E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,2E-01         | 7,4E-01   | 7,5E-01                   |
| 70       | 1,9E-01                          | 2,6E-01        | <b>3,6E-01</b> | 3,2E-01         | 7,5E-01   | 7,6E-01                   |
| 80       | 1,9E-01                          | 2,7E-01        | <b>3,7E-01</b> | 3,3E-01         | 7,6E-01   | 7,7E-01                   |
| 90       | 1,9E-01                          | 2,7E-01        | <b>3,7E-01</b> | 3,3E-01         | 7,7E-01   | 7,8E-01                   |
| 100      | 1,9E-01                          | 2,7E-01        | <b>3,8E-01</b> | 3,3E-01         | 7,8E-01   | 7,9E-01                   |
| 120      | 2,0E-01                          | 2,8E-01        | <b>3,9E-01</b> | 3,4E-01         | 8,0E-01   | 8,0E-01                   |
| 180      | 2,1E-01                          | 2,9E-01        | <b>4,0E-01</b> | 3,6E-01         | 8,3E-01   | 8,4E-01                   |
| 200      | 2,1E-01                          | 2,9E-01        | <b>4,1E-01</b> | 3,6E-01         | 8,4E-01   | 8,5E-01                   |
| 300      | 2,2E-01                          | 3,1E-01        | <b>4,2E-01</b> | 3,8E-01         | 8,7E-01   | 8,8E-01                   |
| 360      | 2,2E-01                          | 3,1E-01        | <b>4,3E-01</b> | 3,8E-01         | 8,9E-01   | 9,0E-01                   |
| 400      |                                  |                | <b>4,3E-01</b> | 3,8E-01         | 8,9E-01   | 9,0E-01                   |
| 500      |                                  |                | <b>4,4E-01</b> | 3,9E-01         | 9,0E-01   | 9,1E-01                   |
| 600      |                                  |                | <b>4,4E-01</b> | 3,9E-01         | 9,1E-01   | 9,2E-01                   |
| 700      |                                  |                |                |                 | 9,1E-01   | 9,2E-01                   |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |



**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-129**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,7E-01    | 1,4E-01 |           |                           |
| 2        | 4,3E-01    | 3,4E-01 |           |                           |
| 3        | 7,0E-01    | 5,5E-01 |           |                           |
| 4        | 9,6E-01    | 7,5E-01 |           |                           |
| 5        | 1,2E+00    | 9,6E-01 |           |                           |
| 6        | 1,5E+00    | 1,2E+00 |           |                           |
| 7        | 1,7E+00    | 1,4E+00 |           |                           |
| 8        | 2,0E+00    | 1,6E+00 |           |                           |
| 9        | 2,2E+00    | 1,8E+00 |           |                           |
| 10       | 2,5E+00    | 1,9E+00 |           |                           |
| 14       | 3,5E+00    | 2,7E+00 |           |                           |
| 15       | 3,7E+00    | 2,9E+00 |           |                           |
| 20       | 4,9E+00    | 3,8E+00 |           |                           |
| 30       | 7,1E+00    | 5,6E+00 |           |                           |
| 40       | 9,2E+00    | 7,2E+00 |           |                           |
| 45       | 1,0E+01    | 8,0E+00 |           |                           |
| 50       | 1,1E+01    | 8,7E+00 |           |                           |
| 60       | 1,3E+01    | 1,0E+01 |           |                           |
| 70       | 1,5E+01    | 1,1E+01 |           |                           |
| 80       | 1,6E+01    | 1,3E+01 |           |                           |
| 90       | 1,8E+01    | 1,4E+01 |           |                           |
| 100      | 1,9E+01    | 1,5E+01 |           |                           |
| 120      | 2,2E+01    | 1,7E+01 |           |                           |
| 180      | 2,8E+01    | 2,2E+01 |           |                           |
| 200      | 2,9E+01    | 2,3E+01 |           |                           |
| 300      | 3,5E+01    | 2,7E+01 |           |                           |
| 360      | 3,7E+01    | 2,9E+01 |           |                           |
| 400      | 3,8E+01    | 2,9E+01 |           |                           |
| 500      | 3,9E+01    | 3,1E+01 |           |                           |
| 600      | 4,0E+01    | 3,1E+01 |           |                           |
| 700      | 4,0E+01    | 3,2E+01 |           |                           |
| 800      | 4,1E+01    | 3,2E+01 |           |                           |
| 900      | 4,1E+01    |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**I-129**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 3,6E-01    | 2,9E-01 |           |                           |
| 2        | 6,1E-01    | 4,8E-01 |           |                           |
| 3        | 6,3E-01    | 4,9E-01 |           |                           |
| 4        | 6,3E-01    | 4,9E-01 |           |                           |
| 5        | 6,3E-01    | 4,9E-01 |           |                           |
| 6        | 6,3E-01    | 4,9E-01 |           |                           |
| 7        | 6,3E-01    | 4,9E-01 |           |                           |
| 8        | 6,3E-01    | 4,9E-01 |           |                           |
| 9        | 6,3E-01    | 4,9E-01 |           |                           |
| 10       | 6,3E-01    | 4,9E-01 |           |                           |
| 14       | 6,3E-01    | 4,9E-01 |           |                           |
| 15       | 6,3E-01    | 4,9E-01 |           |                           |
| 20       | 6,4E-01    | 5,0E-01 |           |                           |
| 30       | 6,5E-01    | 5,0E-01 |           |                           |
| 40       | 6,6E-01    | 5,1E-01 |           |                           |
| 45       | 6,6E-01    | 5,1E-01 |           |                           |
| 50       | 6,7E-01    | 5,2E-01 |           |                           |
| 60       | 6,7E-01    | 5,3E-01 |           |                           |
| 70       | 6,8E-01    | 5,3E-01 |           |                           |
| 80       | 6,9E-01    | 5,4E-01 |           |                           |
| 90       | 7,0E-01    | 5,5E-01 |           |                           |
| 100      | 7,1E-01    | 5,5E-01 |           |                           |
| 120      | 7,2E-01    | 5,6E-01 |           |                           |
| 180      | 7,6E-01    | 5,9E-01 |           |                           |
| 200      | 7,6E-01    | 6,0E-01 |           |                           |
| 300      | 7,9E-01    | 6,2E-01 |           |                           |
| 360      | 8,0E-01    | 6,3E-01 |           |                           |
| 400      | 8,1E-01    | 6,3E-01 |           |                           |
| 500      | 8,2E-01    | 6,4E-01 |           |                           |
| 600      | 8,2E-01    | 6,4E-01 |           |                           |
| 700      | 8,2E-01    |         |           |                           |
| 800      | 8,3E-01    |         |           |                           |
| 900      | 8,3E-01    |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-131**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 4,5E-02                          | 6,3E-02  | <b>8,7E-02</b> | 7,7E-02   | 1,7E-01   | 1,9E-01                   |
| 2        | 1,1E-01                          | 1,5E-01  | <b>2,1E-01</b> | 1,9E-01   | 4,3E-01   | 4,4E-01                   |
| 3        | 1,7E-01                          | 2,3E-01  | <b>3,2E-01</b> | 2,9E-01   | 6,6E-01   | 6,8E-01                   |
| 4        | 2,2E-01                          | 3,1E-01  | <b>4,3E-01</b> | 3,8E-01   | 8,8E-01   | 9,0E-01                   |
| 5        | 2,7E-01                          | 3,8E-01  | <b>5,2E-01</b> | 4,6E-01   | 1,1E+00   | 1,1E+00                   |
| 6        | 3,1E-01                          | 4,4E-01  | <b>6,1E-01</b> | 5,4E-01   | 1,2E+00   | 1,3E+00                   |
| 7        | 3,5E-01                          | 4,9E-01  | <b>6,8E-01</b> | 6,1E-01   | 1,4E+00   | 1,4E+00                   |
| 8        | 3,9E-01                          | 5,5E-01  | <b>7,6E-01</b> | 6,7E-01   | 1,6E+00   | 1,6E+00                   |
| 9        | 4,2E-01                          | 5,9E-01  | <b>8,2E-01</b> | 7,3E-01   | 1,7E+00   | 1,7E+00                   |
| 10       | 4,5E-01                          | 6,3E-01  | <b>8,8E-01</b> | 7,8E-01   | 1,8E+00   | 1,8E+00                   |
| 14       | 5,4E-01                          | 7,7E-01  | <b>1,1E+00</b> | 9,4E-01   | 2,2E+00   | 2,2E+00                   |
| 15       | 5,6E-01                          | 8,0E-01  | <b>1,1E+00</b> | 9,8E-01   | 2,3E+00   | 2,3E+00                   |
| 20       | 6,3E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,6E+00   | 2,6E+00                   |
| 30       | 7,1E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,2E+00   | 2,9E+00   | 2,9E+00                   |
| 40       | 7,4E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 3,0E+00   | 3,0E+00                   |
| 45       | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   | 3,0E+00   | 3,0E+00                   |
| 50       | 7,5E-01                          | 1,1E+00  | <b>1,5E+00</b> |           | 3,0E+00   | 3,1E+00                   |
| 60       | 7,5E-01                          |          |                |           | 3,0E+00   | 3,1E+00                   |
| 70       |                                  |          |                |           | 3,0E+00   |                           |
| 80       |                                  |          |                |           | 3,0E+00   |                           |
| 90       |                                  |          |                |           | 3,1E+00   |                           |
| 100      |                                  |          |                |           | 3,1E+00   |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-131**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,7E-01                          | 3,0E-01  | <b>4,9E-01</b> | 4,6E-01   | 6,0E-01   | 5,7E-01                   |
| 2        | 2,5E-01                          | 4,3E-01  | <b>6,9E-01</b> | 6,5E-01   | 8,8E-01   | 8,5E-01                   |
| 3        | 3,2E-01                          | 5,3E-01  | <b>8,3E-01</b> | 7,8E-01   | 1,1E+00   | 1,1E+00                   |
| 4        | 3,7E-01                          | 6,1E-01  | <b>9,5E-01</b> | 8,8E-01   | 1,3E+00   | 1,3E+00                   |
| 5        | 4,2E-01                          | 6,8E-01  | <b>1,0E+00</b> | 9,7E-01   | 1,5E+00   | 1,5E+00                   |
| 6        | 4,7E-01                          | 7,5E-01  | <b>1,1E+00</b> | 1,1E+00   | 1,7E+00   | 1,7E+00                   |
| 7        | 5,1E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 1,9E+00                   |
| 8        | 5,5E-01                          | 8,6E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,1E+00   | 2,0E+00                   |
| 9        | 5,8E-01                          | 9,1E-01  | <b>1,4E+00</b> | 1,3E+00   | 2,2E+00   | 2,2E+00                   |
| 10       | 6,1E-01                          | 9,6E-01  | <b>1,4E+00</b> | 1,3E+00   | 2,3E+00   | 2,3E+00                   |
| 14       | 7,2E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,5E+00   | 2,7E+00   | 2,7E+00                   |
| 15       | 7,4E-01                          | 1,1E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,8E+00   | 2,8E+00                   |
| 20       | 8,2E-01                          | 1,2E+00  | <b>1,8E+00</b> | 1,7E+00   | 3,1E+00   | 3,1E+00                   |
| 30       | 9,0E-01                          | 1,4E+00  | <b>2,0E+00</b> | 1,8E+00   | 3,5E+00   | 3,5E+00                   |
| 40       | 9,3E-01                          | 1,4E+00  | <b>2,0E+00</b> | 1,9E+00   | 3,6E+00   | 3,6E+00                   |
| 45       | 9,4E-01                          |          | <b>2,1E+00</b> | 1,9E+00   | 3,6E+00   | 3,6E+00                   |
| 50       | 9,4E-01                          |          | <b>2,1E+00</b> |           | 3,7E+00   | 3,7E+00                   |
| 60       | 9,5E-01                          |          |                |           | 3,7E+00   | 3,7E+00                   |
| 70       | 9,5E-01                          |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**I-131**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 9,5E-02                          | 1,3E-01        | <b>1,8E-01</b> | 1,6E-01         | 3,7E-01   | 4,0E-01                   |
| 2        | 1,6E-01                          | 2,3E-01        | <b>3,1E-01</b> | 2,8E-01         | 6,5E-01   | 6,6E-01                   |
| 3        | 1,6E-01                          | 2,3E-01        | <b>3,2E-01</b> | 2,9E-01         | 6,6E-01   | 6,7E-01                   |
| 4        | 1,6E-01                          |                | <b>3,2E-01</b> | 2,9E-01         | 6,7E-01   | 6,7E-01                   |
| 5        | 1,6E-01                          |                | <b>3,2E-01</b> |                 | 6,7E-01   | 6,7E-01                   |
| 6        | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           | 6,7E-01                   |
| 7        | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           | 6,7E-01                   |
| 8        | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           | 6,8E-01                   |
| 9        | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           | 6,8E-01                   |
| 10       | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           |                           |
| 14       | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           |                           |
| 15       | 1,6E-01                          |                | <b>3,2E-01</b> |                 |           |                           |
| 20       | 1,7E-01                          |                | <b>3,2E-01</b> |                 |           |                           |
| 30       | 1,7E-01                          |                | <b>3,2E-01</b> |                 |           |                           |
| 40       |                                  |                | <b>3,2E-01</b> |                 |           |                           |
| 45       |                                  |                | <b>3,2E-01</b> |                 |           |                           |
| 50       |                                  |                | <b>3,2E-01</b> |                 |           |                           |
| 60       |                                  |                | <b>3,3E-01</b> |                 |           |                           |
| 70       |                                  |                | <b>3,3E-01</b> |                 |           |                           |
| 80       |                                  |                |                |                 |           |                           |
| 90       |                                  |                |                |                 |           |                           |
| 100      |                                  |                |                |                 |           |                           |
| 120      |                                  |                |                |                 |           |                           |
| 180      |                                  |                |                |                 |           |                           |
| 200      |                                  |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-131**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,6E-01    | 1,3E-01 |           |                           |
| 2        | 3,9E-01    | 3,1E-01 |           |                           |
| 3        | 6,1E-01    | 4,8E-01 |           |                           |
| 4        | 8,0E-01    | 6,3E-01 |           |                           |
| 5        | 9,8E-01    | 7,7E-01 |           |                           |
| 6        | 1,1E+00    | 8,9E-01 |           |                           |
| 7        | 1,3E+00    | 1,0E+00 |           |                           |
| 8        | 1,4E+00    | 1,1E+00 |           |                           |
| 9        | 1,5E+00    | 1,2E+00 |           |                           |
| 10       | 1,6E+00    | 1,3E+00 |           |                           |
| 14       | 2,0E+00    | 1,6E+00 |           |                           |
| 15       | 2,1E+00    | 1,6E+00 |           |                           |
| 20       | 2,3E+00    | 1,8E+00 |           |                           |
| 30       | 2,6E+00    | 2,0E+00 |           |                           |
| 40       | 2,7E+00    | 2,1E+00 |           |                           |
| 45       | 2,7E+00    | 2,1E+00 |           |                           |
| 50       | 2,7E+00    | 2,1E+00 |           |                           |
| 60       | 2,8E+00    | 2,2E+00 |           |                           |
| 70       | 2,8E+00    | 2,2E+00 |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-131**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 5,8E-01    | 4,0E-01 |           |                           |
| 2        | 8,6E-01    | 6,0E-01 |           |                           |
| 3        | 1,1E+00    | 7,7E-01 |           |                           |
| 4        | 1,3E+00    | 9,2E-01 |           |                           |
| 5        | 1,5E+00    | 1,1E+00 |           |                           |
| 6        | 1,6E+00    | 1,2E+00 |           |                           |
| 7        | 1,8E+00    | 1,3E+00 |           |                           |
| 8        | 1,9E+00    | 1,4E+00 |           |                           |
| 9        | 2,1E+00    | 1,5E+00 |           |                           |
| 10       | 2,2E+00    | 1,6E+00 |           |                           |
| 14       | 2,6E+00    | 1,9E+00 |           |                           |
| 15       | 2,6E+00    | 2,0E+00 |           |                           |
| 20       | 2,9E+00    | 2,2E+00 |           |                           |
| 30       | 3,2E+00    | 2,4E+00 |           |                           |
| 40       | 3,3E+00    | 2,5E+00 |           |                           |
| 45       | 3,4E+00    | 2,5E+00 |           |                           |
| 50       | 3,4E+00    | 2,6E+00 |           |                           |
| 60       |            | 2,6E+00 |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**I-131**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 3,5E-01    | 2,8E-01 |           |                           |
| 2        | 5,9E-01    | 4,6E-01 |           |                           |
| 3        | 6,0E-01    | 4,7E-01 |           |                           |
| 4        | 6,0E-01    | 4,7E-01 |           |                           |
| 5        | 6,0E-01    | 4,7E-01 |           |                           |
| 6        | 6,0E-01    | 4,7E-01 |           |                           |
| 7        | 6,1E-01    | 4,7E-01 |           |                           |
| 8        | 6,1E-01    | 4,7E-01 |           |                           |
| 9        |            | 4,7E-01 |           |                           |
| 10       |            | 4,7E-01 |           |                           |
| 14       |            | 4,7E-01 |           |                           |
| 15       |            | 4,7E-01 |           |                           |
| 20       |            | 4,7E-01 |           |                           |
| 30       |            | 4,8E-01 |           |                           |
| 40       |            | 4,8E-01 |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |



**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-132**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,6E-03                          | 3,5E-03  | <b>4,7E-03</b>  | 4,2E-03   | 8,6E-03   | 1,1E-02                   |
| 2        | 2,6E-03                          | 3,5E-03  | <b>4,7E-03</b>  | 4,2E-03   | 8,6E-03   | 1,1E-02                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-132**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 3,6E-02                          | 6,3E-02  | <b>1,0E-01</b>  | 9,5E-02   | 1,3E-01   | 1,2E-01                   |
| 2        | 3,6E-02                          | 6,3E-02  | <b>1,0E-01</b>  | 9,5E-02   | 1,3E-01   | 1,2E-01                   |
| 3        |                                  |          |                 |           |           |                           |
| 4        |                                  |          |                 |           |           |                           |
| 5        |                                  |          |                 |           |           |                           |
| 6        |                                  |          |                 |           |           |                           |
| 7        |                                  |          |                 |           |           |                           |
| 8        |                                  |          |                 |           |           |                           |
| 9        |                                  |          |                 |           |           |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-132**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 9,2E-03    | 8,0E-03 |           |                           |
| 2        | 9,2E-03    | 8,0E-03 |           |                           |
| 3        |            |         |           |                           |
| 4        |            |         |           |                           |
| 5        |            |         |           |                           |
| 6        |            |         |           |                           |
| 7        |            |         |           |                           |
| 8        |            |         |           |                           |
| 9        |            |         |           |                           |
| 10       |            |         |           |                           |
| 14       |            |         |           |                           |
| 15       |            |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-132**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,2E-01    | 8,5E-02 |           |                           |
| 2        | 1,2E-01    | 8,5E-02 |           |                           |
| 3        |            |         |           |                           |
| 4        |            |         |           |                           |
| 5        |            |         |           |                           |
| 6        |            |         |           |                           |
| 7        |            |         |           |                           |
| 8        |            |         |           |                           |
| 9        |            |         |           |                           |
| 10       |            |         |           |                           |
| 14       |            |         |           |                           |
| 15       |            |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-133**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 3,0E-02                          | 4,2E-02  | <b>5,7E-02</b> | 5,1E-02   | 1,1E-01   | 1,2E-01                   |
| 2        | 5,1E-02                          | 7,2E-02  | <b>1,0E-01</b> | 8,9E-02   | 2,0E-01   | 2,1E-01                   |
| 3        | 6,1E-02                          | 8,7E-02  | <b>1,2E-01</b> | 1,1E-01   | 2,4E-01   | 2,6E-01                   |
| 4        | 6,6E-02                          | 9,3E-02  | <b>1,3E-01</b> | 1,1E-01   | 2,6E-01   | 2,7E-01                   |
| 5        | 6,8E-02                          | 9,6E-02  | <b>1,3E-01</b> | 1,2E-01   | 2,7E-01   | 2,8E-01                   |
| 6        | 6,9E-02                          | 9,7E-02  | <b>1,3E-01</b> | 1,2E-01   | 2,7E-01   | 2,9E-01                   |
| 7        | 6,9E-02                          | 9,8E-02  | <b>1,3E-01</b> |           | 2,7E-01   | 2,9E-01                   |
| 8        | 6,9E-02                          | 9,8E-02  | <b>1,4E-01</b> |           | 2,8E-01   |                           |
| 9        | 6,9E-02                          |          | <b>1,4E-01</b> |           | 2,8E-01   |                           |
| 10       | 6,9E-02                          |          |                |           |           |                           |
| 14       | 7,0E-02                          |          |                |           |           |                           |
| 15       | 7,0E-02                          |          |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-133**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 1,3E-01                          | 2,3E-01  | <b>3,7E-01</b>  | 3,5E-01   | 4,6E-01   | 4,4E-01                   |
| 2        | 1,6E-01                          | 2,8E-01  | <b>4,5E-01</b>  | 4,2E-01   | 5,6E-01   | 5,4E-01                   |
| 3        | 1,7E-01                          | 3,0E-01  | <b>4,7E-01</b>  | 4,4E-01   | 6,0E-01   | 5,8E-01                   |
| 4        | 1,8E-01                          | 3,0E-01  | <b>4,8E-01</b>  | 4,5E-01   | 6,2E-01   | 6,0E-01                   |
| 5        | 1,8E-01                          | 3,1E-01  | <b>4,9E-01</b>  | 4,6E-01   | 6,3E-01   | 6,1E-01                   |
| 6        |                                  | 3,1E-01  | <b>4,9E-01</b>  | 4,6E-01   | 6,3E-01   | 6,1E-01                   |
| 7        |                                  |          |                 |           | 6,3E-01   |                           |
| 8        |                                  |          |                 |           | 6,4E-01   |                           |
| 9        |                                  |          |                 |           | 6,4E-01   |                           |
| 10       |                                  |          |                 |           |           |                           |
| 14       |                                  |          |                 |           |           |                           |
| 15       |                                  |          |                 |           |           |                           |
| 20       |                                  |          |                 |           |           |                           |
| 30       |                                  |          |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Retention in der Schilddrüse R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-133**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 1,1E-01    | 8,7E-02 |           |                           |
| 2        | 1,9E-01    | 1,5E-01 |           |                           |
| 3        | 2,3E-01    | 1,8E-01 |           |                           |
| 4        | 2,4E-01    | 1,9E-01 |           |                           |
| 5        | 2,5E-01    | 2,0E-01 |           |                           |
| 6        | 2,5E-01    | 2,0E-01 |           |                           |
| 7        | 2,5E-01    |         |           |                           |
| 8        | 2,5E-01    |         |           |                           |
| 9        | 2,5E-01    |         |           |                           |
| 10       | 2,5E-01    |         |           |                           |
| 14       | 2,6E-01    |         |           |                           |
| 15       | 2,6E-01    |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**I-133**

| Zeit (d) | Inhalation |         | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|---------|-----------|---------------------------|
|          | Dampf      | Methyl  |           |                           |
| 1        | 4,5E-01    | 3,1E-01 |           |                           |
| 2        | 5,5E-01    | 3,8E-01 |           |                           |
| 3        | 5,9E-01    | 4,1E-01 |           |                           |
| 4        | 6,0E-01    | 4,2E-01 |           |                           |
| 5        | 6,1E-01    | 4,2E-01 |           |                           |
| 6        | 6,1E-01    | 4,3E-01 |           |                           |
| 7        | 6,1E-01    | 4,3E-01 |           |                           |
| 8        | 6,2E-01    |         |           |                           |
| 9        | 6,2E-01    |         |           |                           |
| 10       |            |         |           |                           |
| 14       |            |         |           |                           |
| 15       |            |         |           |                           |
| 20       |            |         |           |                           |
| 30       |            |         |           |                           |
| 40       |            |         |           |                           |
| 45       |            |         |           |                           |
| 50       |            |         |           |                           |
| 60       |            |         |           |                           |
| 70       |            |         |           |                           |
| 80       |            |         |           |                           |
| 90       |            |         |           |                           |
| 100      |            |         |           |                           |
| 120      |            |         |           |                           |
| 180      |            |         |           |                           |
| 200      |            |         |           |                           |
| 300      |            |         |           |                           |
| 360      |            |         |           |                           |
| 400      |            |         |           |                           |
| 500      |            |         |           |                           |
| 600      |            |         |           |                           |
| 700      |            |         |           |                           |
| 800      |            |         |           |                           |
| 900      |            |         |           |                           |
| 1000     |            |         |           |                           |
| 2000     |            |         |           |                           |
| 3000     |            |         |           |                           |
| 4000     |            |         |           |                           |
| 5000     |            |         |           |                           |
| 6000     |            |         |           |                           |
| 8000     |            |         |           |                           |
| 10000    |            |         |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cs-134**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,8E-01                          | 4,5E-01  | <b>6,9E-01</b> | 6,4E-01   | 9,9E-01   | 9,9E-01                   |
| 2        | 5,2E-01                          | 8,2E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,0E+00   | 2,0E+00                   |
| 3        | 7,6E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,6E+00   | 2,9E+00   | 2,9E+00                   |
| 4        | 9,9E-01                          | 1,5E+00  | <b>2,2E+00</b> | 2,0E+00   | 3,8E+00   | 3,8E+00                   |
| 5        | 1,2E+00                          | 1,8E+00  | <b>2,6E+00</b> | 2,4E+00   | 4,7E+00   | 4,7E+00                   |
| 6        | 1,4E+00                          | 2,1E+00  | <b>3,0E+00</b> | 2,7E+00   | 5,6E+00   | 5,6E+00                   |
| 7        | 1,6E+00                          | 2,4E+00  | <b>3,5E+00</b> | 3,1E+00   | 6,5E+00   | 6,5E+00                   |
| 8        | 1,8E+00                          | 2,7E+00  | <b>3,9E+00</b> | 3,5E+00   | 7,3E+00   | 7,4E+00                   |
| 9        | 2,1E+00                          | 3,0E+00  | <b>4,3E+00</b> | 3,8E+00   | 8,2E+00   | 8,2E+00                   |
| 10       | 2,3E+00                          | 3,3E+00  | <b>4,7E+00</b> | 4,2E+00   | 9,0E+00   | 9,1E+00                   |
| 14       | 3,1E+00                          | 4,5E+00  | <b>6,3E+00</b> | 5,6E+00   | 1,2E+01   | 1,2E+01                   |
| 15       | 3,3E+00                          | 4,7E+00  | <b>6,7E+00</b> | 6,0E+00   | 1,3E+01   | 1,3E+01                   |
| 20       | 4,2E+00                          | 6,1E+00  | <b>8,6E+00</b> | 7,7E+00   | 1,7E+01   | 1,7E+01                   |
| 30       | 6,1E+00                          | 8,7E+00  | <b>1,2E+01</b> | 1,1E+01   | 2,5E+01   | 2,5E+01                   |
| 40       | 7,8E+00                          | 1,1E+01  | <b>1,6E+01</b> | 1,4E+01   | 3,1E+01   | 3,2E+01                   |
| 45       | 8,6E+00                          | 1,2E+01  | <b>1,7E+01</b> | 1,5E+01   | 3,5E+01   | 3,5E+01                   |
| 50       | 9,4E+00                          | 1,3E+01  | <b>1,9E+01</b> | 1,7E+01   | 3,8E+01   | 3,8E+01                   |
| 60       | 1,1E+01                          | 1,6E+01  | <b>2,2E+01</b> | 1,9E+01   | 4,4E+01   | 4,4E+01                   |
| 70       | 1,2E+01                          | 1,7E+01  | <b>2,4E+01</b> | 2,2E+01   | 5,0E+01   | 5,0E+01                   |
| 80       | 1,4E+01                          | 1,9E+01  | <b>2,7E+01</b> | 2,4E+01   | 5,5E+01   | 5,5E+01                   |
| 90       | 1,5E+01                          | 2,1E+01  | <b>2,9E+01</b> | 2,6E+01   | 6,0E+01   | 6,0E+01                   |
| 100      | 1,6E+01                          | 2,3E+01  | <b>3,1E+01</b> | 2,8E+01   | 6,4E+01   | 6,5E+01                   |
| 120      | 1,8E+01                          | 2,5E+01  | <b>3,5E+01</b> | 3,1E+01   | 7,2E+01   | 7,3E+01                   |
| 180      | 2,2E+01                          | 3,2E+01  | <b>4,4E+01</b> | 3,9E+01   | 9,1E+01   | 9,1E+01                   |
| 200      | 2,3E+01                          | 3,3E+01  | <b>4,6E+01</b> | 4,1E+01   | 9,5E+01   | 9,6E+01                   |
| 300      | 2,7E+01                          | 3,9E+01  | <b>5,4E+01</b> | 4,8E+01   | 1,1E+02   | 1,1E+02                   |
| 360      | 2,8E+01                          | 4,0E+01  | <b>5,6E+01</b> | 5,0E+01   | 1,2E+02   | 1,2E+02                   |
| 400      | 2,9E+01                          | 4,1E+01  | <b>5,7E+01</b> | 5,1E+01   | 1,2E+02   | 1,2E+02                   |
| 500      | 3,0E+01                          | 4,2E+01  | <b>5,9E+01</b> | 5,2E+01   |           | 1,2E+02                   |
| 600      | 3,0E+01                          | 4,3E+01  | <b>6,0E+01</b> | 5,3E+01   |           | 1,2E+02                   |
| 700      | 3,1E+01                          | 4,3E+01  | <b>6,0E+01</b> | 5,3E+01   |           | 1,2E+02                   |
| 800      | 3,1E+01                          | 4,3E+01  | <b>6,0E+01</b> | 5,3E+01   |           | 1,3E+02                   |
| 900      |                                  | 4,4E+01  | <b>6,0E+01</b> | 5,4E+01   |           | 1,3E+02                   |
| 1000     |                                  | 4,4E+01  | <b>6,0E+01</b> | 5,4E+01   |           |                           |
| 2000     |                                  |          | <b>6,1E+01</b> |           |           |                           |
| 3000     |                                  |          | <b>6,1E+01</b> |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cs-134**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,5E-03                          | 2,1E-03        | <b>2,9E-03</b> | 2,5E-03         | 5,6E-03   | 6,4E-03                   |
| 2        | 7,0E-03                          | 9,8E-03        | <b>1,4E-02</b> | 1,2E-02         | 2,8E-02   | 2,9E-02                   |
| 3        | 1,2E-02                          | 1,7E-02        | <b>2,3E-02</b> | 2,1E-02         | 4,8E-02   | 4,9E-02                   |
| 4        | 1,6E-02                          | 2,3E-02        | <b>3,1E-02</b> | 2,8E-02         | 6,4E-02   | 6,5E-02                   |
| 5        | 1,9E-02                          | 2,7E-02        | <b>3,7E-02</b> | 3,3E-02         | 7,7E-02   | 7,8E-02                   |
| 6        | 2,2E-02                          | 3,0E-02        | <b>4,2E-02</b> | 3,7E-02         | 8,7E-02   | 8,8E-02                   |
| 7        | 2,4E-02                          | 3,3E-02        | <b>4,6E-02</b> | 4,1E-02         | 9,5E-02   | 9,7E-02                   |
| 8        | 2,5E-02                          | 3,6E-02        | <b>5,0E-02</b> | 4,4E-02         | 1,0E-01   | 1,0E-01                   |
| 9        | 2,7E-02                          | 3,8E-02        | <b>5,3E-02</b> | 4,7E-02         | 1,1E-01   | 1,1E-01                   |
| 10       | 2,8E-02                          | 4,0E-02        | <b>5,6E-02</b> | 4,9E-02         | 1,1E-01   | 1,2E-01                   |
| 14       | 3,3E-02                          | 4,7E-02        | <b>6,5E-02</b> | 5,7E-02         | 1,3E-01   | 1,4E-01                   |
| 15       | 3,4E-02                          | 4,8E-02        | <b>6,7E-02</b> | 5,9E-02         | 1,4E-01   | 1,4E-01                   |
| 20       | 3,9E-02                          | 5,5E-02        | <b>7,7E-02</b> | 6,8E-02         | 1,6E-01   | 1,6E-01                   |
| 30       | 4,8E-02                          | 6,9E-02        | <b>9,5E-02</b> | 8,4E-02         | 2,0E-01   | 2,0E-01                   |
| 40       | 5,7E-02                          | 8,1E-02        | <b>1,1E-01</b> | 9,9E-02         | 2,3E-01   | 2,3E-01                   |
| 45       | 6,1E-02                          | 8,7E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,5E-01   | 2,5E-01                   |
| 50       | 6,5E-02                          | 9,2E-02        | <b>1,3E-01</b> | 1,1E-01         | 2,6E-01   | 2,7E-01                   |
| 60       | 7,3E-02                          | 1,0E-01        | <b>1,4E-01</b> | 1,3E-01         | 2,9E-01   | 3,0E-01                   |
| 70       | 8,0E-02                          | 1,1E-01        | <b>1,6E-01</b> | 1,4E-01         | 3,2E-01   | 3,3E-01                   |
| 80       | 8,6E-02                          | 1,2E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,5E-01   | 3,5E-01                   |
| 90       | 9,2E-02                          | 1,3E-01        | <b>1,8E-01</b> | 1,6E-01         | 3,7E-01   | 3,8E-01                   |
| 100      | 9,8E-02                          | 1,4E-01        | <b>1,9E-01</b> | 1,7E-01         | 4,0E-01   | 4,0E-01                   |
| 120      | 1,1E-01                          | 1,5E-01        | <b>2,1E-01</b> | 1,9E-01         | 4,4E-01   | 4,4E-01                   |
| 180      | 1,3E-01                          | 1,9E-01        | <b>2,6E-01</b> | 2,3E-01         | 5,3E-01   | 5,4E-01                   |
| 200      | 1,4E-01                          | 1,9E-01        | <b>2,7E-01</b> | 2,4E-01         | 5,5E-01   | 5,6E-01                   |
| 300      | 1,6E-01                          | 2,2E-01        | <b>3,0E-01</b> | 2,7E-01         | 6,3E-01   | 6,4E-01                   |
| 360      | 1,6E-01                          | 2,3E-01        | <b>3,2E-01</b> | 2,8E-01         | 6,5E-01   | 6,6E-01                   |
| 400      | 1,6E-01                          | 2,3E-01        | <b>3,2E-01</b> | 2,9E-01         | 6,7E-01   | 6,7E-01                   |
| 500      | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,8E-01   | 6,9E-01                   |
| 600      | 1,7E-01                          | 2,4E-01        | <b>3,4E-01</b> | 3,0E-01         | 6,9E-01   | 7,0E-01                   |
| 700      |                                  |                | <b>3,4E-01</b> | 3,0E-01         | 7,0E-01   | 7,0E-01                   |
| 800      |                                  |                |                |                 | 7,0E-01   | 7,1E-01                   |
| 900      |                                  |                |                |                 |           | 7,1E-01                   |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Cs-137**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,8E-01                          | 4,5E-01  | <b>6,9E-01</b> | 6,4E-01   | 9,9E-01   | 9,9E-01                   |
| 2        | 5,2E-01                          | 8,2E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,0E+00   | 2,0E+00                   |
| 3        | 7,6E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,6E+00   | 2,9E+00   | 2,9E+00                   |
| 4        | 9,9E-01                          | 1,5E+00  | <b>2,2E+00</b> | 2,0E+00   | 3,8E+00   | 3,8E+00                   |
| 5        | 1,2E+00                          | 1,8E+00  | <b>2,6E+00</b> | 2,4E+00   | 4,7E+00   | 4,7E+00                   |
| 6        | 1,4E+00                          | 2,1E+00  | <b>3,0E+00</b> | 2,7E+00   | 5,6E+00   | 5,6E+00                   |
| 7        | 1,6E+00                          | 2,4E+00  | <b>3,5E+00</b> | 3,1E+00   | 6,5E+00   | 6,5E+00                   |
| 8        | 1,9E+00                          | 2,7E+00  | <b>3,9E+00</b> | 3,5E+00   | 7,3E+00   | 7,4E+00                   |
| 9        | 2,1E+00                          | 3,0E+00  | <b>4,3E+00</b> | 3,9E+00   | 8,2E+00   | 8,3E+00                   |
| 10       | 2,3E+00                          | 3,3E+00  | <b>4,7E+00</b> | 4,2E+00   | 9,0E+00   | 9,1E+00                   |
| 14       | 3,1E+00                          | 4,5E+00  | <b>6,3E+00</b> | 5,6E+00   | 1,2E+01   | 1,2E+01                   |
| 15       | 3,3E+00                          | 4,8E+00  | <b>6,7E+00</b> | 6,0E+00   | 1,3E+01   | 1,3E+01                   |
| 20       | 4,3E+00                          | 6,2E+00  | <b>8,7E+00</b> | 7,7E+00   | 1,7E+01   | 1,7E+01                   |
| 30       | 6,2E+00                          | 8,8E+00  | <b>1,2E+01</b> | 1,1E+01   | 2,5E+01   | 2,5E+01                   |
| 40       | 7,9E+00                          | 1,1E+01  | <b>1,6E+01</b> | 1,4E+01   | 3,2E+01   | 3,2E+01                   |
| 45       | 8,8E+00                          | 1,3E+01  | <b>1,7E+01</b> | 1,6E+01   | 3,5E+01   | 3,6E+01                   |
| 50       | 9,6E+00                          | 1,4E+01  | <b>1,9E+01</b> | 1,7E+01   | 3,9E+01   | 3,9E+01                   |
| 60       | 1,1E+01                          | 1,6E+01  | <b>2,2E+01</b> | 2,0E+01   | 4,5E+01   | 4,5E+01                   |
| 70       | 1,3E+01                          | 1,8E+01  | <b>2,5E+01</b> | 2,2E+01   | 5,1E+01   | 5,1E+01                   |
| 80       | 1,4E+01                          | 2,0E+01  | <b>2,8E+01</b> | 2,5E+01   | 5,7E+01   | 5,7E+01                   |
| 90       | 1,5E+01                          | 2,2E+01  | <b>3,0E+01</b> | 2,7E+01   | 6,2E+01   | 6,2E+01                   |
| 100      | 1,6E+01                          | 2,3E+01  | <b>3,3E+01</b> | 2,9E+01   | 6,7E+01   | 6,7E+01                   |
| 120      | 1,9E+01                          | 2,7E+01  | <b>3,7E+01</b> | 3,3E+01   | 7,6E+01   | 7,6E+01                   |
| 180      | 2,4E+01                          | 3,4E+01  | <b>4,7E+01</b> | 4,2E+01   | 9,6E+01   | 9,7E+01                   |
| 200      | 2,5E+01                          | 3,6E+01  | <b>5,0E+01</b> | 4,4E+01   | 1,0E+02   | 1,0E+02                   |
| 300      | 3,0E+01                          | 4,2E+01  | <b>5,9E+01</b> | 5,2E+01   | 1,2E+02   | 1,2E+02                   |
| 360      | 3,1E+01                          | 4,4E+01  | <b>6,2E+01</b> | 5,5E+01   | 1,3E+02   | 1,3E+02                   |
| 400      | 3,2E+01                          | 4,6E+01  | <b>6,3E+01</b> | 5,6E+01   | 1,3E+02   | 1,3E+02                   |
| 500      | 3,3E+01                          | 4,7E+01  | <b>6,6E+01</b> | 5,8E+01   | 1,4E+02   | 1,4E+02                   |
| 600      | 3,4E+01                          | 4,8E+01  | <b>6,7E+01</b> | 5,9E+01   | 1,4E+02   | 1,4E+02                   |
| 700      | 3,4E+01                          | 4,9E+01  | <b>6,8E+01</b> | 6,0E+01   |           |                           |
| 800      | 3,5E+01                          | 4,9E+01  | <b>6,8E+01</b> | 6,0E+01   |           |                           |
| 900      | 3,5E+01                          |          | <b>6,8E+01</b> | 6,1E+01   |           |                           |
| 1000     |                                  |          | <b>6,8E+01</b> | 6,1E+01   |           |                           |
| 2000     |                                  |          | <b>6,9E+01</b> |           |           |                           |
| 3000     |                                  |          | <b>6,9E+01</b> |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cs-137**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 1,5E-03                          | 2,1E-03        | <b>2,9E-03</b> | 2,5E-03         | 5,6E-03   | 6,4E-03                   |
| 2        | 7,0E-03                          | 9,8E-03        | <b>1,4E-02</b> | 1,2E-02         | 2,8E-02   | 2,9E-02                   |
| 3        | 1,2E-02                          | 1,7E-02        | <b>2,4E-02</b> | 2,1E-02         | 4,8E-02   | 5,0E-02                   |
| 4        | 1,6E-02                          | 2,3E-02        | <b>3,1E-02</b> | 2,8E-02         | 6,4E-02   | 6,6E-02                   |
| 5        | 1,9E-02                          | 2,7E-02        | <b>3,7E-02</b> | 3,3E-02         | 7,7E-02   | 7,8E-02                   |
| 6        | 2,2E-02                          | 3,1E-02        | <b>4,2E-02</b> | 3,7E-02         | 8,7E-02   | 8,8E-02                   |
| 7        | 2,4E-02                          | 3,3E-02        | <b>4,6E-02</b> | 4,1E-02         | 9,6E-02   | 9,7E-02                   |
| 8        | 2,5E-02                          | 3,6E-02        | <b>5,0E-02</b> | 4,4E-02         | 1,0E-01   | 1,0E-01                   |
| 9        | 2,7E-02                          | 3,8E-02        | <b>5,3E-02</b> | 4,7E-02         | 1,1E-01   | 1,1E-01                   |
| 10       | 2,8E-02                          | 4,0E-02        | <b>5,6E-02</b> | 4,9E-02         | 1,2E-01   | 1,2E-01                   |
| 14       | 3,3E-02                          | 4,7E-02        | <b>6,5E-02</b> | 5,8E-02         | 1,3E-01   | 1,4E-01                   |
| 15       | 3,4E-02                          | 4,8E-02        | <b>6,7E-02</b> | 6,0E-02         | 1,4E-01   | 1,4E-01                   |
| 20       | 3,9E-02                          | 5,6E-02        | <b>7,7E-02</b> | 6,8E-02         | 1,6E-01   | 1,6E-01                   |
| 30       | 4,9E-02                          | 6,9E-02        | <b>9,6E-02</b> | 8,5E-02         | 2,0E-01   | 2,0E-01                   |
| 40       | 5,8E-02                          | 8,2E-02        | <b>1,1E-01</b> | 1,0E-01         | 2,3E-01   | 2,4E-01                   |
| 45       | 6,2E-02                          | 8,8E-02        | <b>1,2E-01</b> | 1,1E-01         | 2,5E-01   | 2,5E-01                   |
| 50       | 6,6E-02                          | 9,4E-02        | <b>1,3E-01</b> | 1,2E-01         | 2,7E-01   | 2,7E-01                   |
| 60       | 7,4E-02                          | 1,0E-01        | <b>1,5E-01</b> | 1,3E-01         | 3,0E-01   | 3,0E-01                   |
| 70       | 8,1E-02                          | 1,2E-01        | <b>1,6E-01</b> | 1,4E-01         | 3,3E-01   | 3,3E-01                   |
| 80       | 8,8E-02                          | 1,3E-01        | <b>1,7E-01</b> | 1,5E-01         | 3,6E-01   | 3,6E-01                   |
| 90       | 9,5E-02                          | 1,3E-01        | <b>1,9E-01</b> | 1,6E-01         | 3,8E-01   | 3,9E-01                   |
| 100      | 1,0E-01                          | 1,4E-01        | <b>2,0E-01</b> | 1,8E-01         | 4,1E-01   | 4,1E-01                   |
| 120      | 1,1E-01                          | 1,6E-01        | <b>2,2E-01</b> | 1,9E-01         | 4,5E-01   | 4,6E-01                   |
| 180      | 1,4E-01                          | 2,0E-01        | <b>2,7E-01</b> | 2,4E-01         | 5,6E-01   | 5,6E-01                   |
| 200      | 1,4E-01                          | 2,0E-01        | <b>2,8E-01</b> | 2,5E-01         | 5,9E-01   | 5,9E-01                   |
| 300      | 1,7E-01                          | 2,4E-01        | <b>3,3E-01</b> | 2,9E-01         | 6,8E-01   | 6,9E-01                   |
| 360      | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,1E-01   | 7,2E-01                   |
| 400      | 1,8E-01                          | 2,5E-01        | <b>3,5E-01</b> | 3,1E-01         | 7,3E-01   | 7,4E-01                   |
| 500      | 1,9E-01                          | 2,6E-01        | <b>3,7E-01</b> | 3,2E-01         | 7,6E-01   | 7,6E-01                   |
| 600      | 1,9E-01                          | 2,7E-01        | <b>3,7E-01</b> | 3,3E-01         | 7,7E-01   | 7,8E-01                   |
| 700      |                                  | 2,7E-01        | <b>3,8E-01</b> | 3,3E-01         | 7,8E-01   | 7,8E-01                   |
| 800      |                                  |                | <b>3,8E-01</b> | 3,3E-01         | 7,8E-01   | 7,9E-01                   |
| 900      |                                  |                |                | 3,4E-01         |           | 7,9E-01                   |
| 1000     |                                  |                |                | 3,4E-01         |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ba-133**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,2E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 9,0E-01                   |
| 2        | 4,2E-01                          | 6,7E-01  | <b>1,0E+00</b> | 9,4E-01   | 1,4E+00   | 1,6E+00                   |
| 3        | 5,4E-01                          | 8,3E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,7E+00   | 2,0E+00                   |
| 4        | 6,2E-01                          | 9,3E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 2,4E+00                   |
| 5        | 6,9E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 2,7E+00                   |
| 6        | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,9E+00   | 2,9E+00                   |
| 7        | 7,8E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,9E+00   | 3,1E+00                   |
| 8        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,9E+00   | 3,3E+00                   |
| 9        | 8,5E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,9E+00   | 3,4E+00                   |
| 10       | 8,8E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,6E+00   | 1,9E+00   | 3,6E+00                   |
| 14       | 9,9E-01                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 2,0E+00   | 4,1E+00                   |
| 15       | 1,0E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 2,0E+00   | 4,2E+00                   |
| 20       | 1,1E+00                          | 1,5E+00  | <b>2,1E+00</b> | 1,9E+00   | 2,1E+00   | 4,8E+00                   |
| 30       | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 2,2E+00   | 5,8E+00                   |
| 40       | 1,6E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 2,3E+00   | 6,8E+00                   |
| 45       | 1,7E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,5E+00   | 2,3E+00   | 7,3E+00                   |
| 50       | 1,8E+00                          | 2,3E+00  | <b>3,0E+00</b> | 2,6E+00   | 2,4E+00   | 7,8E+00                   |
| 60       | 2,0E+00                          | 2,5E+00  | <b>3,3E+00</b> | 2,9E+00   | 2,5E+00   | 8,7E+00                   |
| 70       | 2,2E+00                          | 2,7E+00  | <b>3,5E+00</b> | 3,1E+00   | 2,5E+00   | 9,5E+00                   |
| 80       | 2,4E+00                          | 2,9E+00  | <b>3,8E+00</b> | 3,3E+00   | 2,6E+00   | 1,0E+01                   |
| 90       | 2,5E+00                          | 3,1E+00  | <b>4,0E+00</b> | 3,5E+00   | 2,7E+00   | 1,1E+01                   |
| 100      | 2,7E+00                          | 3,3E+00  | <b>4,2E+00</b> | 3,7E+00   | 2,8E+00   | 1,2E+01                   |
| 120      | 3,0E+00                          | 3,7E+00  | <b>4,6E+00</b> | 4,0E+00   | 2,9E+00   | 1,3E+01                   |
| 180      | 3,8E+00                          | 4,6E+00  | <b>5,7E+00</b> | 4,9E+00   | 3,3E+00   | 1,7E+01                   |
| 200      | 4,0E+00                          | 4,8E+00  | <b>6,1E+00</b> | 5,2E+00   | 3,4E+00   | 1,8E+01                   |
| 300      | 5,1E+00                          | 6,1E+00  | <b>7,5E+00</b> | 6,4E+00   | 3,9E+00   | 2,3E+01                   |
| 360      | 5,6E+00                          | 6,7E+00  | <b>8,3E+00</b> | 7,1E+00   | 4,1E+00   | 2,5E+01                   |
| 400      | 6,0E+00                          | 7,2E+00  | <b>8,8E+00</b> | 7,5E+00   | 4,3E+00   | 2,7E+01                   |
| 500      | 6,9E+00                          | 8,2E+00  | <b>1,0E+01</b> | 8,6E+00   | 4,7E+00   | 3,1E+01                   |
| 600      | 7,7E+00                          | 9,1E+00  | <b>1,1E+01</b> | 9,5E+00   | 5,1E+00   | 3,5E+01                   |
| 700      | 8,5E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,0E+01   | 5,5E+00   | 3,9E+01                   |
| 800      | 9,3E+00                          | 1,1E+01  | <b>1,3E+01</b> | 1,1E+01   | 5,8E+00   | 4,2E+01                   |
| 900      | 1,0E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 6,1E+00   | 4,6E+01                   |
| 1000     | 1,1E+01                          | 1,3E+01  | <b>1,5E+01</b> | 1,3E+01   | 6,5E+00   | 4,9E+01                   |
| 2000     | 1,6E+01                          | 1,9E+01  | <b>2,3E+01</b> | 1,9E+01   | 9,0E+00   | 7,4E+01                   |
| 3000     | 2,0E+01                          | 2,3E+01  | <b>2,8E+01</b> | 2,4E+01   | 1,1E+01   | 9,1E+01                   |
| 4000     | 2,2E+01                          | 2,6E+01  | <b>3,1E+01</b> | 2,7E+01   | 1,2E+01   | 1,0E+02                   |
| 5000     | 2,4E+01                          | 2,8E+01  | <b>3,4E+01</b> | 2,9E+01   | 1,3E+01   | 1,1E+02                   |
| 6000     | 2,5E+01                          | 3,0E+01  | <b>3,6E+01</b> | 3,0E+01   | 1,3E+01   | 1,2E+02                   |
| 8000     | 2,7E+01                          | 3,1E+01  | <b>3,8E+01</b> | 3,2E+01   | 1,4E+01   | 1,2E+02                   |
| 10000    | 2,8E+01                          | 3,2E+01  | <b>3,9E+01</b> | 3,3E+01   | 1,4E+01   | 1,3E+02                   |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ba-140**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,1E-01  | <b>6,3E-01</b> | 5,9E-01   | 8,8E-01   | 9,0E-01                   |
| 2        | 4,0E-01                          | 6,4E-01  | <b>9,8E-01</b> | 9,0E-01   | 1,4E+00   | 1,5E+00                   |
| 3        | 5,1E-01                          | 7,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,0E+00                   |
| 4        | 5,7E-01                          | 8,7E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,3E+00                   |
| 5        | 6,2E-01                          | 9,3E-01  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 2,5E+00                   |
| 6        | 6,6E-01                          | 9,7E-01  | <b>1,4E+00</b> | 1,3E+00   | 1,7E+00   | 2,7E+00                   |
| 7        | 6,9E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 1,8E+00   | 2,8E+00                   |
| 8        | 7,2E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 2,9E+00                   |
| 9        | 7,4E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,8E+00   | 3,0E+00                   |
| 10       | 7,6E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 1,8E+00   | 3,1E+00                   |
| 14       | 8,2E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,8E+00   | 3,4E+00                   |
| 15       | 8,3E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 1,8E+00   | 3,4E+00                   |
| 20       | 8,8E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,8E+00   | 3,7E+00                   |
| 30       | 9,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00   | 3,9E+00                   |
| 40       | 9,7E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,9E+00   | 4,1E+00                   |
| 45       | 9,8E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   |           | 4,2E+00                   |
| 50       | 9,9E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,7E+00   |           | 4,2E+00                   |
| 60       | 1,0E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   |           | 4,2E+00                   |
| 70       | 1,0E+00                          | 1,4E+00  |                |           |           | 4,3E+00                   |
| 80       |                                  |          |                |           |           | 4,3E+00                   |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**La-140**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,3E-01                          | 3,7E-01  | <b>5,6E-01</b> | 5,2E-01   | 7,5E-01   | 8,2E-01                   |
| 2        | 3,6E-01                          | 5,5E-01  | <b>8,1E-01</b> | 7,5E-01   | 1,0E+00   | 1,4E+00                   |
| 3        | 4,4E-01                          | 6,5E-01  | <b>9,4E-01</b> | 8,6E-01   | 1,1E+00   | 1,7E+00                   |
| 4        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,1E+00   | 2,0E+00                   |
| 5        | 5,2E-01                          | 7,5E-01  | <b>1,1E+00</b> | 9,6E-01   |           | 2,1E+00                   |
| 6        | 5,5E-01                          | 7,7E-01  | <b>1,1E+00</b> | 9,8E-01   |           | 2,2E+00                   |
| 7        | 5,6E-01                          | 7,9E-01  |                | 1,0E+00   |           | 2,3E+00                   |
| 8        | 5,7E-01                          | 8,0E-01  |                | 1,0E+00   |           | 2,3E+00                   |
| 9        | 5,8E-01                          | 8,1E-01  |                |           |           | 2,4E+00                   |
| 10       | 5,8E-01                          | 8,1E-01  |                |           |           | 2,4E+00                   |
| 14       | 5,9E-01                          | 8,2E-01  |                |           |           |                           |
| 15       | 5,9E-01                          | 8,2E-01  |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**La-140**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,2E-01                          | 3,6E-01  | <b>5,5E-01</b> | 5,1E-01   | 7,5E-01   | 8,2E-01                   |
| 2        | 3,5E-01                          | 5,1E-01  | <b>7,5E-01</b> | 6,9E-01   | 1,0E+00   | 1,4E+00                   |
| 3        | 4,2E-01                          | 5,8E-01  | <b>8,3E-01</b> | 7,5E-01   | 1,1E+00   | 1,7E+00                   |
| 4        | 4,6E-01                          | 6,2E-01  | <b>8,6E-01</b> | 7,7E-01   | 1,1E+00   | 2,0E+00                   |
| 5        | 4,9E-01                          | 6,4E-01  | <b>8,7E-01</b> | 7,8E-01   |           | 2,1E+00                   |
| 6        | 5,0E-01                          | 6,6E-01  | <b>8,8E-01</b> | 7,9E-01   |           | 2,2E+00                   |
| 7        | 5,1E-01                          | 6,7E-01  | <b>8,9E-01</b> | 7,9E-01   |           | 2,3E+00                   |
| 8        | 5,2E-01                          | 6,7E-01  | <b>8,9E-01</b> | 7,9E-01   |           | 2,3E+00                   |
| 9        | 5,3E-01                          | 6,8E-01  | <b>9,0E-01</b> | 8,0E-01   |           | 2,4E+00                   |
| 10       | 5,3E-01                          | 6,8E-01  | <b>9,0E-01</b> | 8,0E-01   |           | 2,4E+00                   |
| 14       | 5,4E-01                          |          |                |           |           |                           |
| 15       | 5,4E-01                          |          |                |           |           |                           |
| 20       |                                  |          |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ce-141**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 2,0E+00                         |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,9E+00                         |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,8E+00                         |
| 5        | 9,9E-01                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,7E+00                         |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   |           | 5,6E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 6,5E+00                         |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   |           | 7,4E+00                         |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   |           | 8,2E+00                         |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   |           | 9,0E+00                         |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,6E+00   |           | 1,2E+01                         |
| 15       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,3E+01                         |
| 20       | 2,8E+00                          | 2,6E+00  | <b>2,4E+00</b> | 1,8E+00   |           | 1,6E+01                         |
| 30       | 3,7E+00                          | 3,3E+00  | <b>2,8E+00</b> | 2,0E+00   |           | 2,2E+01                         |
| 40       | 4,4E+00                          | 3,8E+00  | <b>3,1E+00</b> | 2,3E+00   |           | 2,7E+01                         |
| 45       | 4,7E+00                          | 4,0E+00  | <b>3,3E+00</b> | 2,3E+00   |           | 2,9E+01                         |
| 50       | 4,9E+00                          | 4,2E+00  | <b>3,4E+00</b> | 2,4E+00   |           | 3,1E+01                         |
| 60       | 5,3E+00                          | 4,5E+00  | <b>3,6E+00</b> | 2,5E+00   |           | 3,4E+01                         |
| 70       | 5,7E+00                          | 4,8E+00  | <b>3,8E+00</b> | 2,6E+00   |           | 3,6E+01                         |
| 80       | 5,9E+00                          | 5,0E+00  | <b>3,9E+00</b> | 2,7E+00   |           | 3,8E+01                         |
| 90       | 6,1E+00                          | 5,2E+00  | <b>4,0E+00</b> | 2,8E+00   |           | 4,0E+01                         |
| 100      | 6,3E+00                          | 5,3E+00  | <b>4,1E+00</b> | 2,9E+00   |           | 4,1E+01                         |
| 120      | 6,5E+00                          | 5,5E+00  | <b>4,3E+00</b> | 2,9E+00   |           | 4,3E+01                         |
| 180      | 6,8E+00                          | 5,7E+00  | <b>4,4E+00</b> | 3,0E+00   |           | 4,6E+01                         |
| 200      | 6,9E+00                          | 5,7E+00  | <b>4,4E+00</b> | 3,0E+00   |           | 4,6E+01                         |
| 300      | 6,9E+00                          | 5,8E+00  | <b>4,5E+00</b> | 3,1E+00   |           |                                 |
| 360      |                                  | 5,8E+00  | <b>4,5E+00</b> | 3,1E+00   |           |                                 |
| 400      |                                  |          |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Ce-141

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 4,8E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00   | 2,0E+00                         |
| 3        | 6,6E-01                          | 8,7E-01  | <b>1,2E+00</b> | 1,0E+00   | 1,6E+00   | 2,9E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,8E+00                         |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 4,7E+00                         |
| 6        | 1,1E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 5,6E+00                         |
| 7        | 1,3E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 6,5E+00                         |
| 8        | 1,4E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 7,4E+00                         |
| 9        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 8,2E+00                         |
| 10       | 1,7E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 9,0E+00                         |
| 14       | 2,1E+00                          | 2,0E+00  | <b>1,8E+00</b> | 1,4E+00   |           | 1,2E+01                         |
| 15       | 2,3E+00                          | 2,0E+00  | <b>1,8E+00</b> | 1,4E+00   |           | 1,3E+01                         |
| 20       | 2,8E+00                          | 2,4E+00  | <b>2,0E+00</b> | 1,5E+00   |           | 1,6E+01                         |
| 30       | 3,6E+00                          | 3,0E+00  | <b>2,3E+00</b> | 1,6E+00   |           | 2,2E+01                         |
| 40       | 4,2E+00                          | 3,5E+00  | <b>2,6E+00</b> | 1,7E+00   |           | 2,7E+01                         |
| 45       | 4,5E+00                          | 3,6E+00  | <b>2,7E+00</b> | 1,8E+00   |           | 2,9E+01                         |
| 50       | 4,7E+00                          | 3,8E+00  | <b>2,8E+00</b> | 1,8E+00   |           | 3,1E+01                         |
| 60       | 5,1E+00                          | 4,1E+00  | <b>2,9E+00</b> | 1,9E+00   |           | 3,4E+01                         |
| 70       | 5,4E+00                          | 4,3E+00  | <b>3,0E+00</b> | 1,9E+00   |           | 3,6E+01                         |
| 80       | 5,6E+00                          | 4,4E+00  | <b>3,1E+00</b> | 2,0E+00   |           | 3,8E+01                         |
| 90       | 5,8E+00                          | 4,6E+00  | <b>3,1E+00</b> | 2,0E+00   |           | 4,0E+01                         |
| 100      | 5,9E+00                          | 4,7E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 4,1E+01                         |
| 120      | 6,1E+00                          | 4,8E+00  | <b>3,3E+00</b> | 2,0E+00   |           | 4,3E+01                         |
| 180      | 6,3E+00                          | 5,0E+00  | <b>3,4E+00</b> | 2,1E+00   |           | 4,6E+01                         |
| 200      | 6,4E+00                          | 5,0E+00  | <b>3,4E+00</b> | 2,1E+00   |           | 4,6E+01                         |
| 300      | 6,4E+00                          | 5,0E+00  |                |           |           |                                 |
| 360      |                                  | 5,1E+00  |                |           |           |                                 |
| 400      |                                  | 5,1E+00  |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ce-144**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 1,0E+00                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 2,0E+00                   |
| 3        | 6,9E-01                          | 9,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 3,0E+00                   |
| 4        | 8,7E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,0E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 5,0E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 6,0E+00                   |
| 7        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,8E+00   | 6,9E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 7,9E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,5E+00   | 1,8E+00   | 8,9E+00                   |
| 10       | 1,9E+00                          | 1,8E+00  | <b>1,9E+00</b> | 1,5E+00   | 1,8E+00   | 9,9E+00                   |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,8E+00   | 1,4E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,3E+00</b> | 1,7E+00   | 1,8E+00   | 1,5E+01                   |
| 20       | 3,4E+00                          | 3,0E+00  | <b>2,6E+00</b> | 2,0E+00   | 1,8E+00   | 1,9E+01                   |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,4E+00</b> | 2,4E+00   | 1,8E+00   | 2,9E+01                   |
| 40       | 6,1E+00                          | 5,1E+00  | <b>4,0E+00</b> | 2,8E+00   | 1,8E+00   | 3,8E+01                   |
| 45       | 6,7E+00                          | 5,6E+00  | <b>4,3E+00</b> | 3,0E+00   | 1,8E+00   | 4,2E+01                   |
| 50       | 7,3E+00                          | 6,1E+00  | <b>4,7E+00</b> | 3,2E+00   | 1,8E+00   | 4,7E+01                   |
| 60       | 8,5E+00                          | 7,0E+00  | <b>5,3E+00</b> | 3,5E+00   | 1,8E+00   | 5,6E+01                   |
| 70       | 9,6E+00                          | 7,9E+00  | <b>5,8E+00</b> | 3,9E+00   | 1,8E+00   | 6,4E+01                   |
| 80       | 1,1E+01                          | 8,7E+00  | <b>6,4E+00</b> | 4,2E+00   | 1,8E+00   | 7,2E+01                   |
| 90       | 1,2E+01                          | 9,5E+00  | <b>6,9E+00</b> | 4,6E+00   | 1,8E+00   | 8,0E+01                   |
| 100      | 1,3E+01                          | 1,0E+01  | <b>7,4E+00</b> | 4,9E+00   | 1,8E+00   | 8,8E+01                   |
| 120      | 1,4E+01                          | 1,2E+01  | <b>8,4E+00</b> | 5,5E+00   | 1,8E+00   | 1,0E+02                   |
| 180      | 1,9E+01                          | 1,6E+01  | <b>1,1E+01</b> | 7,1E+00   | 1,8E+00   | 1,4E+02                   |
| 200      | 2,1E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,6E+00   | 1,8E+00   | 1,6E+02                   |
| 300      | 2,7E+01                          | 2,2E+01  | <b>1,5E+01</b> | 9,6E+00   | 1,9E+00   | 2,1E+02                   |
| 360      | 3,0E+01                          | 2,4E+01  | <b>1,7E+01</b> | 1,1E+01   | 1,9E+00   | 2,3E+02                   |
| 400      | 3,2E+01                          | 2,5E+01  | <b>1,8E+01</b> | 1,1E+01   |           | 2,5E+02                   |
| 500      | 3,5E+01                          | 2,8E+01  | <b>2,0E+01</b> | 1,2E+01   |           | 2,8E+02                   |
| 600      | 3,8E+01                          | 3,0E+01  | <b>2,1E+01</b> | 1,3E+01   |           | 3,0E+02                   |
| 700      | 4,0E+01                          | 3,2E+01  | <b>2,2E+01</b> | 1,4E+01   |           | 3,2E+02                   |
| 800      | 4,2E+01                          | 3,3E+01  | <b>2,3E+01</b> | 1,5E+01   |           | 3,3E+02                   |
| 900      | 4,3E+01                          | 3,4E+01  | <b>2,4E+01</b> | 1,5E+01   |           | 3,4E+02                   |
| 1000     | 4,4E+01                          | 3,5E+01  | <b>2,4E+01</b> | 1,5E+01   |           | 3,5E+02                   |
| 2000     | 4,7E+01                          | 3,7E+01  | <b>2,6E+01</b> | 1,6E+01   |           | 3,8E+02                   |
| 3000     | 4,7E+01                          | 3,7E+01  | <b>2,6E+01</b> | 1,6E+01   |           | 3,8E+02                   |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ce-144**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 1,0E+00                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 2,0E+00                         |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 3,0E+00                         |
| 4        | 8,6E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 4,0E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 5,0E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00   | 6,0E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 6,9E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 7,9E+00                         |
| 9        | 1,7E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 8,9E+00                         |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 9,9E+00                         |
| 14       | 2,4E+00                          | 2,2E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00   | 1,4E+01                         |
| 15       | 2,6E+00                          | 2,3E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 1,5E+01                         |
| 20       | 3,3E+00                          | 2,8E+00  | <b>2,2E+00</b> | 1,6E+00   | 1,8E+00   | 1,9E+01                         |
| 30       | 4,6E+00                          | 3,7E+00  | <b>2,7E+00</b> | 1,8E+00   | 1,8E+00   | 2,9E+01                         |
| 40       | 5,8E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,0E+00   | 1,8E+00   | 3,8E+01                         |
| 45       | 6,4E+00                          | 5,0E+00  | <b>3,4E+00</b> | 2,1E+00   | 1,8E+00   | 4,2E+01                         |
| 50       | 6,9E+00                          | 5,4E+00  | <b>3,6E+00</b> | 2,2E+00   | 1,8E+00   | 4,7E+01                         |
| 60       | 8,0E+00                          | 6,2E+00  | <b>4,0E+00</b> | 2,4E+00   | 1,8E+00   | 5,6E+01                         |
| 70       | 8,9E+00                          | 6,9E+00  | <b>4,4E+00</b> | 2,6E+00   | 1,8E+00   | 6,4E+01                         |
| 80       | 9,9E+00                          | 7,5E+00  | <b>4,7E+00</b> | 2,7E+00   | 1,8E+00   | 7,2E+01                         |
| 90       | 1,1E+01                          | 8,2E+00  | <b>5,0E+00</b> | 2,9E+00   | 1,8E+00   | 8,0E+01                         |
| 100      | 1,2E+01                          | 8,8E+00  | <b>5,3E+00</b> | 3,0E+00   | 1,8E+00   | 8,8E+01                         |
| 120      | 1,3E+01                          | 9,9E+00  | <b>5,9E+00</b> | 3,3E+00   | 1,8E+00   | 1,0E+02                         |
| 180      | 1,7E+01                          | 1,3E+01  | <b>7,3E+00</b> | 3,9E+00   | 1,8E+00   | 1,4E+02                         |
| 200      | 1,8E+01                          | 1,4E+01  | <b>7,8E+00</b> | 4,1E+00   | 1,8E+00   | 1,6E+02                         |
| 300      | 2,3E+01                          | 1,7E+01  | <b>9,5E+00</b> | 4,9E+00   | 1,9E+00   | 2,1E+02                         |
| 360      | 2,5E+01                          | 1,8E+01  | <b>1,0E+01</b> | 5,2E+00   | 1,9E+00   | 2,3E+02                         |
| 400      | 2,6E+01                          | 1,9E+01  | <b>1,1E+01</b> | 5,4E+00   | 1,9E+00   | 2,5E+02                         |
| 500      | 2,9E+01                          | 2,1E+01  | <b>1,2E+01</b> | 5,9E+00   | 1,9E+00   | 2,8E+02                         |
| 600      | 3,0E+01                          | 2,2E+01  | <b>1,2E+01</b> | 6,2E+00   | 1,9E+00   | 3,0E+02                         |
| 700      | 3,2E+01                          | 2,3E+01  | <b>1,3E+01</b> | 6,4E+00   | 1,9E+00   | 3,2E+02                         |
| 800      | 3,3E+01                          | 2,4E+01  | <b>1,3E+01</b> | 6,5E+00   | 1,9E+00   | 3,3E+02                         |
| 900      | 3,3E+01                          | 2,4E+01  | <b>1,3E+01</b> | 6,6E+00   | 1,9E+00   | 3,4E+02                         |
| 1000     | 3,4E+01                          | 2,5E+01  | <b>1,3E+01</b> | 6,7E+00   | 1,9E+00   | 3,5E+02                         |
| 2000     | 3,5E+01                          | 2,6E+01  | <b>1,4E+01</b> | 7,0E+00   | 1,9E+00   | 3,8E+02                         |
| 3000     | 3,5E+01                          | 2,6E+01  | <b>1,4E+01</b> | 7,0E+00   | 1,9E+00   | 3,8E+02                         |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pm-147**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 6,3E-04                          | 7,0E-04        | <b>8,2E-04</b> | 6,8E-04         | 1,0E-05   | 2,9E-02                   |
| 2        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 2,4E-05   | 4,9E-02                   |
| 3        | 1,2E-03                          | 1,3E-03        | <b>1,4E-03</b> | 1,2E-03         | 2,5E-05   | 5,0E-02                   |
| 4        | 1,2E-03                          | 1,3E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,0E-02                   |
| 5        | 1,2E-03                          | 1,3E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,0E-02                   |
| 6        | 1,3E-03                          | 1,4E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,0E-02                   |
| 7        | 1,3E-03                          | 1,4E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,1E-02                   |
| 8        | 1,3E-03                          | 1,4E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,1E-02                   |
| 9        | 1,4E-03                          | 1,4E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05   | 5,1E-02                   |
| 10       | 1,4E-03                          | 1,5E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,5E-05   | 5,1E-02                   |
| 14       | 1,6E-03                          | 1,6E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,6E-05   | 5,1E-02                   |
| 15       | 1,6E-03                          | 1,6E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,6E-05   | 5,1E-02                   |
| 20       | 1,8E-03                          | 1,7E-03        | <b>1,7E-03</b> | 1,3E-03         | 2,6E-05   | 5,2E-02                   |
| 30       | 2,1E-03                          | 1,9E-03        | <b>1,8E-03</b> | 1,4E-03         | 2,6E-05   | 5,3E-02                   |
| 40       | 2,3E-03                          | 2,2E-03        | <b>2,0E-03</b> | 1,5E-03         | 2,7E-05   | 5,3E-02                   |
| 45       | 2,5E-03                          | 2,2E-03        | <b>2,0E-03</b> | 1,5E-03         | 2,7E-05   | 5,4E-02                   |
| 50       | 2,6E-03                          | 2,3E-03        | <b>2,1E-03</b> | 1,5E-03         | 2,7E-05   | 5,4E-02                   |
| 60       | 2,8E-03                          | 2,5E-03        | <b>2,2E-03</b> | 1,6E-03         | 2,8E-05   | 5,5E-02                   |
| 70       | 3,1E-03                          | 2,7E-03        | <b>2,3E-03</b> | 1,6E-03         | 2,8E-05   | 5,6E-02                   |
| 80       | 3,3E-03                          | 2,9E-03        | <b>2,4E-03</b> | 1,7E-03         | 2,8E-05   | 5,7E-02                   |
| 90       | 3,5E-03                          | 3,0E-03        | <b>2,5E-03</b> | 1,7E-03         | 2,9E-05   | 5,8E-02                   |
| 100      | 3,7E-03                          | 3,1E-03        | <b>2,5E-03</b> | 1,8E-03         | 2,9E-05   | 5,8E-02                   |
| 120      | 4,0E-03                          | 3,4E-03        | <b>2,7E-03</b> | 1,9E-03         | 3,0E-05   | 6,0E-02                   |
| 180      | 4,9E-03                          | 4,1E-03        | <b>3,1E-03</b> | 2,1E-03         | 3,2E-05   | 6,5E-02                   |
| 200      | 5,2E-03                          | 4,3E-03        | <b>3,3E-03</b> | 2,2E-03         | 3,3E-05   | 6,6E-02                   |
| 300      | 6,3E-03                          | 5,2E-03        | <b>3,8E-03</b> | 2,5E-03         | 3,7E-05   | 7,3E-02                   |
| 360      | 6,9E-03                          | 5,6E-03        | <b>4,1E-03</b> | 2,7E-03         | 3,9E-05   | 7,7E-02                   |
| 400      | 7,3E-03                          | 5,9E-03        | <b>4,3E-03</b> | 2,8E-03         | 4,0E-05   | 8,0E-02                   |
| 500      | 8,0E-03                          | 6,5E-03        | <b>4,7E-03</b> | 3,0E-03         | 4,3E-05   | 8,6E-02                   |
| 600      | 8,7E-03                          | 7,0E-03        | <b>5,0E-03</b> | 3,3E-03         | 4,5E-05   | 9,1E-02                   |
| 700      | 9,3E-03                          | 7,5E-03        | <b>5,4E-03</b> | 3,5E-03         | 4,8E-05   | 9,6E-02                   |
| 800      | 9,8E-03                          | 7,9E-03        | <b>5,6E-03</b> | 3,6E-03         | 5,0E-05   | 1,0E-01                   |
| 900      | 1,0E-02                          | 8,3E-03        | <b>5,9E-03</b> | 3,8E-03         | 5,2E-05   | 1,0E-01                   |
| 1000     | 1,1E-02                          | 8,6E-03        | <b>6,1E-03</b> | 3,9E-03         | 5,4E-05   | 1,1E-01                   |
| 2000     | 1,3E-02                          | 1,1E-02        | <b>7,6E-03</b> | 4,8E-03         | 6,6E-05   | 1,3E-01                   |
| 3000     | 1,4E-02                          | 1,2E-02        | <b>8,2E-03</b> | 5,2E-03         | 7,0E-05   | 1,4E-01                   |
| 4000     | 1,5E-02                          | 1,2E-02        | <b>8,4E-03</b> | 5,4E-03         | 7,2E-05   | 1,4E-01                   |
| 5000     | 1,5E-02                          |                | <b>8,5E-03</b> | 5,4E-03         | 7,3E-05   | 1,5E-01                   |
| 6000     |                                  |                | <b>8,5E-03</b> |                 | 7,3E-05   | 1,5E-01                   |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pm-147**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 3,7E-03                   |
| 2        | 3,3E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 2,2E-02                   |
| 3        | 5,6E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 3,7E-02                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,5E-01         | 9,1E-01   | 4,5E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 4,8E-02                   |
| 6        | 7,6E-02                          | 2,2E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 5,0E-02                   |
| 7        | 7,8E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,9E-01   | 5,0E-02                   |
| 8        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 5,0E-02                   |
| 9        | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 5,0E-02                   |
| 10       | 8,2E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 5,1E-02                   |
| 14       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 5,1E-02                   |
| 15       | 8,8E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 5,1E-02                   |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 5,1E-02                   |
| 30       | 1,0E-01                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 5,2E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 5,3E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 5,4E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 5,4E-02                   |
| 60       | 1,1E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 5,5E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 5,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 5,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 5,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 5,8E-02                   |
| 120      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 6,0E-02                   |
| 180      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 6,5E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 6,6E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,3E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,7E-02                   |
| 400      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,0E-02                   |
| 500      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,5E-02                   |
| 600      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 9,1E-02                   |
| 700      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 9,6E-02                   |
| 800      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 1,0E-01                   |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 1,0E-01                   |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 1,1E-01                   |
| 2000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 1,3E-01                   |
| 3000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 1,4E-01                   |
| 4000     |                                  |                |                |                 |           | 1,4E-01                   |
| 5000     |                                  |                |                |                 |           | 1,5E-01                   |
| 6000     |                                  |                |                |                 |           | 1,5E-01                   |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pm-147**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 7,1E-06                          | 9,3E-06        | <b>1,2E-05</b> | 1,1E-05         | 1,0E-05   | 2,9E-02                   |
| 2        | 1,3E-05                          | 1,8E-05        | <b>2,4E-05</b> | 2,1E-05         | 2,4E-05   | 4,9E-02                   |
| 3        | 1,4E-05                          | 1,9E-05        | <b>2,5E-05</b> | 2,2E-05         | 2,5E-05   | 5,0E-02                   |
| 4        | 1,5E-05                          | 2,0E-05        | <b>2,6E-05</b> | 2,2E-05         | 2,5E-05   | 5,0E-02                   |
| 5        | 1,6E-05                          | 2,0E-05        | <b>2,6E-05</b> | 2,2E-05         | 2,5E-05   | 5,0E-02                   |
| 6        | 1,7E-05                          | 2,1E-05        | <b>2,6E-05</b> | 2,3E-05         | 2,5E-05   | 5,0E-02                   |
| 7        | 1,8E-05                          | 2,2E-05        | <b>2,7E-05</b> | 2,3E-05         | 2,5E-05   | 5,1E-02                   |
| 8        | 1,9E-05                          | 2,2E-05        | <b>2,7E-05</b> | 2,3E-05         | 2,5E-05   | 5,1E-02                   |
| 9        | 2,0E-05                          | 2,3E-05        | <b>2,7E-05</b> | 2,3E-05         | 2,5E-05   | 5,1E-02                   |
| 10       | 2,1E-05                          | 2,4E-05        | <b>2,8E-05</b> | 2,3E-05         | 2,5E-05   | 5,1E-02                   |
| 14       | 2,4E-05                          | 2,6E-05        | <b>2,9E-05</b> | 2,4E-05         | 2,6E-05   | 5,1E-02                   |
| 15       | 2,5E-05                          | 2,7E-05        | <b>3,0E-05</b> | 2,4E-05         | 2,6E-05   | 5,1E-02                   |
| 20       | 2,9E-05                          | 2,9E-05        | <b>3,1E-05</b> | 2,5E-05         | 2,6E-05   | 5,2E-02                   |
| 30       | 3,6E-05                          | 3,5E-05        | <b>3,4E-05</b> | 2,7E-05         | 2,6E-05   | 5,3E-02                   |
| 40       | 4,3E-05                          | 4,0E-05        | <b>3,7E-05</b> | 2,8E-05         | 2,7E-05   | 5,3E-02                   |
| 45       | 4,7E-05                          | 4,3E-05        | <b>3,9E-05</b> | 2,9E-05         | 2,7E-05   | 5,4E-02                   |
| 50       | 5,0E-05                          | 4,6E-05        | <b>4,0E-05</b> | 3,0E-05         | 2,7E-05   | 5,4E-02                   |
| 60       | 5,7E-05                          | 5,1E-05        | <b>4,3E-05</b> | 3,1E-05         | 2,8E-05   | 5,5E-02                   |
| 70       | 6,4E-05                          | 5,5E-05        | <b>4,6E-05</b> | 3,3E-05         | 2,8E-05   | 5,6E-02                   |
| 80       | 7,0E-05                          | 6,0E-05        | <b>4,8E-05</b> | 3,4E-05         | 2,8E-05   | 5,7E-02                   |
| 90       | 7,6E-05                          | 6,5E-05        | <b>5,1E-05</b> | 3,5E-05         | 2,9E-05   | 5,8E-02                   |
| 100      | 8,2E-05                          | 6,9E-05        | <b>5,4E-05</b> | 3,7E-05         | 2,9E-05   | 5,8E-02                   |
| 120      | 9,4E-05                          | 7,8E-05        | <b>5,9E-05</b> | 3,9E-05         | 3,0E-05   | 6,0E-02                   |
| 180      | 1,3E-04                          | 1,0E-04        | <b>7,3E-05</b> | 4,7E-05         | 3,2E-05   | 6,5E-02                   |
| 200      | 1,4E-04                          | 1,1E-04        | <b>7,8E-05</b> | 4,9E-05         | 3,3E-05   | 6,6E-02                   |
| 300      | 2,0E-04                          | 1,5E-04        | <b>1,0E-04</b> | 6,1E-05         | 3,7E-05   | 7,3E-02                   |
| 360      | 2,3E-04                          | 1,8E-04        | <b>1,1E-04</b> | 6,8E-05         | 3,9E-05   | 7,7E-02                   |
| 400      | 2,5E-04                          | 1,9E-04        | <b>1,2E-04</b> | 7,2E-05         | 4,0E-05   | 8,0E-02                   |
| 500      | 3,0E-04                          | 2,3E-04        | <b>1,4E-04</b> | 8,3E-05         | 4,3E-05   | 8,6E-02                   |
| 600      | 3,5E-04                          | 2,7E-04        | <b>1,6E-04</b> | 9,3E-05         | 4,5E-05   | 9,1E-02                   |
| 700      | 4,0E-04                          | 3,0E-04        | <b>1,8E-04</b> | 1,0E-04         | 4,8E-05   | 9,6E-02                   |
| 800      | 4,4E-04                          | 3,3E-04        | <b>2,0E-04</b> | 1,1E-04         | 5,0E-05   | 1,0E-01                   |
| 900      | 4,8E-04                          | 3,7E-04        | <b>2,2E-04</b> | 1,2E-04         | 5,2E-05   | 1,0E-01                   |
| 1000     | 5,2E-04                          | 4,0E-04        | <b>2,3E-04</b> | 1,3E-04         | 5,4E-05   | 1,1E-01                   |
| 2000     | 8,0E-04                          | 6,0E-04        | <b>3,5E-04</b> | 1,8E-04         | 6,6E-05   | 1,3E-01                   |
| 3000     | 9,4E-04                          | 7,0E-04        | <b>4,0E-04</b> | 2,1E-04         | 7,0E-05   | 1,4E-01                   |
| 4000     | 1,0E-03                          | 7,4E-04        | <b>4,2E-04</b> | 2,2E-04         | 7,2E-05   | 1,4E-01                   |
| 5000     | 1,0E-03                          | 7,6E-04        | <b>4,3E-04</b> | 2,3E-04         | 7,3E-05   | 1,5E-01                   |
| 6000     |                                  | 7,7E-04        | <b>4,4E-04</b> | 2,3E-04         | 7,3E-05   | 1,5E-01                   |
| 8000     |                                  | 7,7E-04        | <b>4,4E-04</b> |                 |           |                           |
| 10000    |                                  | 7,8E-04        |                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pm-147**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02   | 3,7E-03                   |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01   | 2,2E-02                   |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01   | 3,7E-02                   |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01   | 4,5E-02                   |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01   | 4,8E-02                   |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01   | 5,0E-02                   |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01   | 5,0E-02                   |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00   | 5,0E-02                   |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00   | 5,0E-02                   |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |           | 5,1E-02                   |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |           | 5,1E-02                   |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |           | 5,1E-02                   |
| 20       | 9,8E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |           | 5,1E-02                   |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |           | 5,2E-02                   |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |           | 5,3E-02                   |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |           | 5,4E-02                   |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,4E-02                   |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,5E-02                   |
| 70       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,6E-02                   |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,7E-02                   |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,7E-02                   |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 5,8E-02                   |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |           | 6,0E-02                   |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 6,5E-02                   |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 6,6E-02                   |
| 300      | 1,6E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 7,3E-02                   |
| 360      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 7,7E-02                   |
| 400      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 8,0E-02                   |
| 500      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 8,5E-02                   |
| 600      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 9,1E-02                   |
| 700      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |           | 9,6E-02                   |
| 800      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |           | 1,0E-01                   |
| 900      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |           | 1,0E-01                   |
| 1000     | 1,8E-01                          | 3,0E-01        |                | 4,1E-01         |           | 1,1E-01                   |
| 2000     | 1,9E-01                          | 3,1E-01        |                | 4,2E-01         |           | 1,3E-01                   |
| 3000     | 1,9E-01                          | 3,1E-01        |                | 4,2E-01         |           | 1,4E-01                   |
| 4000     |                                  |                |                |                 |           | 1,4E-01                   |
| 5000     |                                  |                |                |                 |           | 1,5E-01                   |
| 6000     |                                  |                |                |                 |           | 1,5E-01                   |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |



**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Eu-152**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,5E-01                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                         |
| 3        | 6,8E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,7E+00                         |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,6E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,4E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 5,3E+00                         |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,1E+00                         |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 7,0E+00                         |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,8E+00                         |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 1,8E+00   | 8,6E+00                         |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,8E+00   | 1,2E+01                         |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,8E+00   | 1,3E+01                         |
| 20       | 3,4E+00                          | 3,0E+00  | <b>2,6E+00</b> | 1,9E+00   | 1,8E+00   | 1,7E+01                         |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,3E+00   | 1,8E+00   | 2,5E+01                         |
| 40       | 6,1E+00                          | 5,1E+00  | <b>3,9E+00</b> | 2,7E+00   | 1,8E+00   | 3,3E+01                         |
| 45       | 6,8E+00                          | 5,6E+00  | <b>4,2E+00</b> | 2,9E+00   | 1,8E+00   | 3,7E+01                         |
| 50       | 7,4E+00                          | 6,1E+00  | <b>4,6E+00</b> | 3,1E+00   | 1,8E+00   | 4,1E+01                         |
| 60       | 8,6E+00                          | 7,0E+00  | <b>5,2E+00</b> | 3,4E+00   | 1,8E+00   | 4,9E+01                         |
| 70       | 9,8E+00                          | 7,9E+00  | <b>5,8E+00</b> | 3,8E+00   | 1,8E+00   | 5,6E+01                         |
| 80       | 1,1E+01                          | 8,8E+00  | <b>6,3E+00</b> | 4,1E+00   | 1,8E+00   | 6,4E+01                         |
| 90       | 1,2E+01                          | 9,7E+00  | <b>6,9E+00</b> | 4,5E+00   | 1,8E+00   | 7,2E+01                         |
| 100      | 1,3E+01                          | 1,1E+01  | <b>7,5E+00</b> | 4,8E+00   | 1,8E+00   | 8,0E+01                         |
| 120      | 1,5E+01                          | 1,2E+01  | <b>8,6E+00</b> | 5,5E+00   | 1,8E+00   | 9,5E+01                         |
| 180      | 2,1E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,4E+00   | 1,8E+00   | 1,4E+02                         |
| 200      | 2,3E+01                          | 1,8E+01  | <b>1,3E+01</b> | 8,0E+00   | 1,8E+00   | 1,6E+02                         |
| 300      | 3,2E+01                          | 2,6E+01  | <b>1,8E+01</b> | 1,1E+01   | 1,9E+00   | 2,3E+02                         |
| 360      | 3,7E+01                          | 3,0E+01  | <b>2,0E+01</b> | 1,3E+01   | 1,9E+00   | 2,7E+02                         |
| 400      | 4,1E+01                          | 3,2E+01  | <b>2,2E+01</b> | 1,4E+01   | 1,9E+00   | 3,0E+02                         |
| 500      | 4,9E+01                          | 3,9E+01  | <b>2,6E+01</b> | 1,7E+01   | 1,9E+00   | 3,7E+02                         |
| 600      | 5,7E+01                          | 4,5E+01  | <b>3,1E+01</b> | 1,9E+01   | 2,0E+00   | 4,4E+02                         |
| 700      | 6,4E+01                          | 5,1E+01  | <b>3,5E+01</b> | 2,2E+01   | 2,0E+00   | 5,0E+02                         |
| 800      | 7,1E+01                          | 5,7E+01  | <b>3,9E+01</b> | 2,4E+01   | 2,0E+00   | 5,6E+02                         |
| 900      | 7,8E+01                          | 6,2E+01  | <b>4,2E+01</b> | 2,6E+01   | 2,1E+00   | 6,2E+02                         |
| 1000     | 8,5E+01                          | 6,7E+01  | <b>4,6E+01</b> | 2,9E+01   | 2,1E+00   | 6,8E+02                         |
| 2000     | 1,4E+02                          | 1,1E+02  | <b>7,6E+01</b> | 4,8E+01   | 2,3E+00   | 1,2E+03                         |
| 3000     | 1,8E+02                          | 1,4E+02  | <b>9,8E+01</b> | 6,1E+01   | 2,5E+00   | 1,5E+03                         |
| 4000     | 2,1E+02                          | 1,7E+02  | <b>1,1E+02</b> | 7,1E+01   | 2,6E+00   | 1,7E+03                         |
| 5000     | 2,3E+02                          | 1,8E+02  | <b>1,2E+02</b> | 7,7E+01   | 2,7E+00   | 1,9E+03                         |
| 6000     | 2,4E+02                          | 1,9E+02  | <b>1,3E+02</b> | 8,2E+01   | 2,8E+00   | 2,0E+03                         |
| 8000     | 2,6E+02                          | 2,1E+02  | <b>1,4E+02</b> | 8,8E+01   | 2,9E+00   | 2,2E+03                         |
| 10000    | 2,7E+02                          | 2,1E+02  | <b>1,5E+02</b> | 9,1E+01   | 2,9E+00   | 2,3E+03                         |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Eu-154**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,5E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,8E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,7E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,6E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,4E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,1E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 7,0E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,8E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 1,8E+00   | 8,6E+00                   |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,8E+00   | 1,2E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,8E+00   | 1,3E+01                   |
| 20       | 3,4E+00                          | 3,0E+00  | <b>2,6E+00</b> | 1,9E+00   | 1,8E+00   | 1,7E+01                   |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,3E+00   | 1,8E+00   | 2,5E+01                   |
| 40       | 6,1E+00                          | 5,1E+00  | <b>3,9E+00</b> | 2,7E+00   | 1,8E+00   | 3,3E+01                   |
| 45       | 6,7E+00                          | 5,6E+00  | <b>4,2E+00</b> | 2,9E+00   | 1,8E+00   | 3,7E+01                   |
| 50       | 7,4E+00                          | 6,1E+00  | <b>4,6E+00</b> | 3,1E+00   | 1,8E+00   | 4,1E+01                   |
| 60       | 8,6E+00                          | 7,0E+00  | <b>5,2E+00</b> | 3,4E+00   | 1,8E+00   | 4,9E+01                   |
| 70       | 9,8E+00                          | 7,9E+00  | <b>5,8E+00</b> | 3,8E+00   | 1,8E+00   | 5,6E+01                   |
| 80       | 1,1E+01                          | 8,8E+00  | <b>6,3E+00</b> | 4,1E+00   | 1,8E+00   | 6,4E+01                   |
| 90       | 1,2E+01                          | 9,7E+00  | <b>6,9E+00</b> | 4,4E+00   | 1,8E+00   | 7,2E+01                   |
| 100      | 1,3E+01                          | 1,1E+01  | <b>7,4E+00</b> | 4,8E+00   | 1,8E+00   | 7,9E+01                   |
| 120      | 1,5E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,4E+00   | 1,8E+00   | 9,5E+01                   |
| 180      | 2,1E+01                          | 1,7E+01  | <b>1,2E+01</b> | 7,3E+00   | 1,8E+00   | 1,4E+02                   |
| 200      | 2,3E+01                          | 1,8E+01  | <b>1,3E+01</b> | 7,9E+00   | 1,8E+00   | 1,5E+02                   |
| 300      | 3,2E+01                          | 2,5E+01  | <b>1,7E+01</b> | 1,1E+01   | 1,9E+00   | 2,3E+02                   |
| 360      | 3,7E+01                          | 2,9E+01  | <b>2,0E+01</b> | 1,3E+01   | 1,9E+00   | 2,7E+02                   |
| 400      | 4,0E+01                          | 3,2E+01  | <b>2,2E+01</b> | 1,4E+01   | 1,9E+00   | 3,0E+02                   |
| 500      | 4,8E+01                          | 3,8E+01  | <b>2,6E+01</b> | 1,6E+01   | 1,9E+00   | 3,6E+02                   |
| 600      | 5,6E+01                          | 4,4E+01  | <b>3,0E+01</b> | 1,9E+01   | 2,0E+00   | 4,3E+02                   |
| 700      | 6,3E+01                          | 5,0E+01  | <b>3,4E+01</b> | 2,1E+01   | 2,0E+00   | 4,9E+02                   |
| 800      | 6,9E+01                          | 5,5E+01  | <b>3,8E+01</b> | 2,3E+01   | 2,0E+00   | 5,5E+02                   |
| 900      | 7,6E+01                          | 6,0E+01  | <b>4,1E+01</b> | 2,6E+01   | 2,1E+00   | 6,0E+02                   |
| 1000     | 8,2E+01                          | 6,5E+01  | <b>4,5E+01</b> | 2,8E+01   | 2,1E+00   | 6,6E+02                   |
| 2000     | 1,3E+02                          | 1,1E+02  | <b>7,2E+01</b> | 4,5E+01   | 2,3E+00   | 1,1E+03                   |
| 3000     | 1,7E+02                          | 1,3E+02  | <b>9,0E+01</b> | 5,6E+01   | 2,5E+00   | 1,4E+03                   |
| 4000     | 1,9E+02                          | 1,5E+02  | <b>1,0E+02</b> | 6,3E+01   | 2,5E+00   | 1,6E+03                   |
| 5000     | 2,0E+02                          | 1,6E+02  | <b>1,1E+02</b> | 6,8E+01   | 2,6E+00   | 1,7E+03                   |
| 6000     | 2,1E+02                          | 1,7E+02  | <b>1,1E+02</b> | 7,1E+01   | 2,6E+00   | 1,8E+03                   |
| 8000     | 2,2E+02                          | 1,8E+02  | <b>1,2E+02</b> | 7,5E+01   | 2,7E+00   | 1,9E+03                   |
| 10000    | 2,3E+02                          | 1,8E+02  | <b>1,2E+02</b> | 7,7E+01   | 2,7E+00   | 1,9E+03                   |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Eu-155**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,5E-01                   |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,8E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,7E+00                   |
| 4        | 8,6E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,6E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,4E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 5,3E+00                   |
| 7        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,1E+00                   |
| 8        | 1,5E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,9E+00                   |
| 9        | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,8E+00                   |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 1,8E+00   | 8,6E+00                   |
| 14       | 2,5E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,8E+00   | 1,2E+01                   |
| 15       | 2,6E+00                          | 2,4E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,8E+00   | 1,3E+01                   |
| 20       | 3,3E+00                          | 3,0E+00  | <b>2,6E+00</b> | 1,9E+00   | 1,8E+00   | 1,7E+01                   |
| 30       | 4,8E+00                          | 4,1E+00  | <b>3,3E+00</b> | 2,3E+00   | 1,8E+00   | 2,5E+01                   |
| 40       | 6,1E+00                          | 5,1E+00  | <b>3,9E+00</b> | 2,7E+00   | 1,8E+00   | 3,3E+01                   |
| 45       | 6,7E+00                          | 5,6E+00  | <b>4,2E+00</b> | 2,9E+00   | 1,8E+00   | 3,7E+01                   |
| 50       | 7,3E+00                          | 6,1E+00  | <b>4,5E+00</b> | 3,0E+00   | 1,8E+00   | 4,1E+01                   |
| 60       | 8,5E+00                          | 7,0E+00  | <b>5,1E+00</b> | 3,4E+00   | 1,8E+00   | 4,8E+01                   |
| 70       | 9,7E+00                          | 7,9E+00  | <b>5,7E+00</b> | 3,7E+00   | 1,8E+00   | 5,6E+01                   |
| 80       | 1,1E+01                          | 8,8E+00  | <b>6,3E+00</b> | 4,1E+00   | 1,8E+00   | 6,4E+01                   |
| 90       | 1,2E+01                          | 9,6E+00  | <b>6,9E+00</b> | 4,4E+00   | 1,8E+00   | 7,1E+01                   |
| 100      | 1,3E+01                          | 1,0E+01  | <b>7,4E+00</b> | 4,7E+00   | 1,8E+00   | 7,9E+01                   |
| 120      | 1,5E+01                          | 1,2E+01  | <b>8,5E+00</b> | 5,4E+00   | 1,8E+00   | 9,4E+01                   |
| 180      | 2,1E+01                          | 1,7E+01  | <b>1,1E+01</b> | 7,2E+00   | 1,8E+00   | 1,4E+02                   |
| 200      | 2,3E+01                          | 1,8E+01  | <b>1,2E+01</b> | 7,8E+00   | 1,8E+00   | 1,5E+02                   |
| 300      | 3,1E+01                          | 2,5E+01  | <b>1,7E+01</b> | 1,1E+01   | 1,9E+00   | 2,2E+02                   |
| 360      | 3,6E+01                          | 2,9E+01  | <b>2,0E+01</b> | 1,2E+01   | 1,9E+00   | 2,6E+02                   |
| 400      | 3,9E+01                          | 3,1E+01  | <b>2,1E+01</b> | 1,3E+01   | 1,9E+00   | 2,9E+02                   |
| 500      | 4,6E+01                          | 3,7E+01  | <b>2,5E+01</b> | 1,6E+01   | 1,9E+00   | 3,5E+02                   |
| 600      | 5,3E+01                          | 4,2E+01  | <b>2,9E+01</b> | 1,8E+01   | 2,0E+00   | 4,1E+02                   |
| 700      | 6,0E+01                          | 4,7E+01  | <b>3,2E+01</b> | 2,0E+01   | 2,0E+00   | 4,6E+02                   |
| 800      | 6,6E+01                          | 5,2E+01  | <b>3,5E+01</b> | 2,2E+01   | 2,0E+00   | 5,1E+02                   |
| 900      | 7,1E+01                          | 5,7E+01  | <b>3,9E+01</b> | 2,4E+01   | 2,0E+00   | 5,6E+02                   |
| 1000     | 7,7E+01                          | 6,1E+01  | <b>4,1E+01</b> | 2,6E+01   | 2,1E+00   | 6,1E+02                   |
| 2000     | 1,2E+02                          | 9,2E+01  | <b>6,3E+01</b> | 3,9E+01   | 2,2E+00   | 9,5E+02                   |
| 3000     | 1,4E+02                          | 1,1E+02  | <b>7,5E+01</b> | 4,7E+01   | 2,3E+00   | 1,1E+03                   |
| 4000     | 1,5E+02                          | 1,2E+02  | <b>8,1E+01</b> | 5,1E+01   | 2,4E+00   | 1,2E+03                   |
| 5000     | 1,6E+02                          | 1,2E+02  | <b>8,5E+01</b> | 5,3E+01   | 2,4E+00   | 1,3E+03                   |
| 6000     | 1,6E+02                          | 1,3E+02  | <b>8,7E+01</b> | 5,4E+01   | 2,4E+00   | 1,3E+03                   |
| 8000     |                                  | 1,3E+02  | <b>8,9E+01</b> | 5,6E+01   | 2,4E+00   | 1,4E+03                   |
| 10000    |                                  |          | <b>8,9E+01</b> | 5,6E+01   | 2,5E+00   | 1,4E+03                   |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Yb-169

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,2E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 8,4E-01                         |
| 2        | 4,8E-01                          | 6,9E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00   | 1,5E+00                         |
| 3        | 6,5E-01                          | 8,7E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,1E+00                         |
| 4        | 8,1E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,6E+00                         |
| 5        | 9,6E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 3,1E+00                         |
| 6        | 1,1E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 3,6E+00                         |
| 7        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   |           | 4,1E+00                         |
| 8        | 1,4E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 4,6E+00                         |
| 9        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 5,0E+00                         |
| 10       | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,3E+00   |           | 5,5E+00                         |
| 14       | 2,1E+00                          | 2,0E+00  | <b>1,9E+00</b> | 1,5E+00   |           | 7,1E+00                         |
| 15       | 2,2E+00                          | 2,0E+00  | <b>1,9E+00</b> | 1,5E+00   |           | 7,5E+00                         |
| 20       | 2,7E+00                          | 2,4E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 9,4E+00                         |
| 30       | 3,4E+00                          | 3,0E+00  | <b>2,5E+00</b> | 1,8E+00   |           | 1,3E+01                         |
| 40       | 4,0E+00                          | 3,4E+00  | <b>2,8E+00</b> | 1,9E+00   |           | 1,5E+01                         |
| 45       | 4,2E+00                          | 3,6E+00  | <b>2,9E+00</b> | 2,0E+00   |           | 1,6E+01                         |
| 50       | 4,4E+00                          | 3,7E+00  | <b>3,0E+00</b> | 2,1E+00   |           | 1,7E+01                         |
| 60       | 4,8E+00                          | 4,0E+00  | <b>3,1E+00</b> | 2,1E+00   |           | 1,9E+01                         |
| 70       | 5,0E+00                          | 4,2E+00  | <b>3,2E+00</b> | 2,2E+00   |           | 2,0E+01                         |
| 80       | 5,2E+00                          | 4,3E+00  | <b>3,3E+00</b> | 2,3E+00   |           | 2,1E+01                         |
| 90       | 5,4E+00                          | 4,5E+00  | <b>3,4E+00</b> | 2,3E+00   |           | 2,2E+01                         |
| 100      | 5,5E+00                          | 4,6E+00  | <b>3,5E+00</b> | 2,3E+00   |           | 2,2E+01                         |
| 120      | 5,7E+00                          | 4,7E+00  | <b>3,5E+00</b> | 2,4E+00   |           | 2,3E+01                         |
| 180      | 5,9E+00                          | 4,8E+00  | <b>3,6E+00</b> | 2,5E+00   |           | 2,5E+01                         |
| 200      | 5,9E+00                          | 4,9E+00  | <b>3,7E+00</b> | 2,5E+00   |           | 2,5E+01                         |
| 300      |                                  | 4,9E+00  | <b>3,7E+00</b> |           |           |                                 |
| 360      |                                  |          |                |           |           |                                 |
| 400      |                                  |          |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Yb-169

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,0E-01   | 9,0E-01   | 8,4E-01                         |
| 2        | 4,8E-01                          | 6,9E-01  | <b>1,0E+00</b> | 9,1E-01   | 1,4E+00   | 1,5E+00                         |
| 3        | 6,6E-01                          | 8,7E-01  | <b>1,2E+00</b> | 1,0E+00   | 1,6E+00   | 2,1E+00                         |
| 4        | 8,3E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 2,6E+00                         |
| 5        | 9,8E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,1E+00                         |
| 6        | 1,1E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 3,6E+00                         |
| 7        | 1,3E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 4,1E+00                         |
| 8        | 1,4E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 4,6E+00                         |
| 9        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 5,0E+00                         |
| 10       | 1,7E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 5,5E+00                         |
| 14       | 2,1E+00                          | 2,0E+00  | <b>1,8E+00</b> | 1,4E+00   |           | 7,1E+00                         |
| 15       | 2,2E+00                          | 2,0E+00  | <b>1,8E+00</b> | 1,4E+00   |           | 7,5E+00                         |
| 20       | 2,8E+00                          | 2,4E+00  | <b>2,0E+00</b> | 1,5E+00   |           | 9,4E+00                         |
| 30       | 3,6E+00                          | 3,0E+00  | <b>2,3E+00</b> | 1,6E+00   |           | 1,3E+01                         |
| 40       | 4,2E+00                          | 3,4E+00  | <b>2,6E+00</b> | 1,7E+00   |           | 1,5E+01                         |
| 45       | 4,4E+00                          | 3,6E+00  | <b>2,7E+00</b> | 1,8E+00   |           | 1,6E+01                         |
| 50       | 4,7E+00                          | 3,8E+00  | <b>2,7E+00</b> | 1,8E+00   |           | 1,7E+01                         |
| 60       | 5,0E+00                          | 4,0E+00  | <b>2,9E+00</b> | 1,9E+00   |           | 1,9E+01                         |
| 70       | 5,3E+00                          | 4,2E+00  | <b>3,0E+00</b> | 1,9E+00   |           | 2,0E+01                         |
| 80       | 5,5E+00                          | 4,4E+00  | <b>3,1E+00</b> | 1,9E+00   |           | 2,1E+01                         |
| 90       | 5,7E+00                          | 4,5E+00  | <b>3,1E+00</b> | 2,0E+00   |           | 2,2E+01                         |
| 100      | 5,8E+00                          | 4,6E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 2,2E+01                         |
| 120      | 6,0E+00                          | 4,7E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 2,3E+01                         |
| 180      | 6,2E+00                          | 4,9E+00  | <b>3,3E+00</b> | 2,1E+00   |           | 2,5E+01                         |
| 200      | 6,3E+00                          | 4,9E+00  | <b>3,3E+00</b> | 2,1E+00   |           | 2,5E+01                         |
| 300      | 6,3E+00                          | 5,0E+00  |                |           |           |                                 |
| 360      |                                  | 5,0E+00  |                |           |           |                                 |
| 400      |                                  |          |                |           |           |                                 |
| 500      |                                  |          |                |           |           |                                 |
| 600      |                                  |          |                |           |           |                                 |
| 700      |                                  |          |                |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Lu-177**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,6E-01                          | 4,1E-01  | <b>6,3E-01</b> | 5,8E-01   | 8,6E-01   | 8,3E-01                   |
| 2        | 4,4E-01                          | 6,5E-01  | <b>9,4E-01</b> | 8,6E-01   | 1,3E+00   | 1,5E+00                   |
| 3        | 5,9E-01                          | 7,9E-01  | <b>1,1E+00</b> | 9,8E-01   | 1,5E+00   | 2,0E+00                   |
| 4        | 7,1E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,0E+00   | 1,5E+00   | 2,4E+00                   |
| 5        | 8,1E-01                          | 9,7E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,5E+00   | 2,8E+00                   |
| 6        | 9,0E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,6E+00   | 3,2E+00                   |
| 7        | 9,8E-01                          | 1,1E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,6E+00   | 3,5E+00                   |
| 8        | 1,1E+00                          | 1,2E+00  | <b>1,3E+00</b> | 1,1E+00   |           | 3,8E+00                   |
| 9        | 1,1E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 4,1E+00                   |
| 10       | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 4,3E+00                   |
| 14       | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 5,0E+00                   |
| 15       | 1,4E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 5,1E+00                   |
| 20       | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 5,7E+00                   |
| 30       | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 6,1E+00                   |
| 40       | 1,6E+00                          | 1,6E+00  |                |           |           | 6,3E+00                   |
| 45       | 1,7E+00                          |          |                |           |           | 6,4E+00                   |
| 50       | 1,7E+00                          |          |                |           |           | 6,4E+00                   |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Lu-177**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,6E-03                          | 1,8E-02        | <b>3,4E-02</b>                 | 3,3E-02         | 9,0E-02   | 1,3E-02                   |
| 2        | 3,1E-02                          | 9,5E-02        | <b>1,8E-01</b>                 | 1,7E-01         | 4,5E-01   | 7,3E-02                   |
| 3        | 5,0E-02                          | 1,5E-01        | <b>2,7E-01</b>                 | 2,6E-01         | 6,9E-01   | 1,2E-01                   |
| 4        | 6,0E-02                          | 1,7E-01        | <b>3,1E-01</b>                 | 3,0E-01         | 7,8E-01   | 1,4E-01                   |
| 5        | 6,4E-02                          | 1,8E-01        | <b>3,3E-01</b>                 | 3,1E-01         | 8,2E-01   | 1,5E-01                   |
| 6        | 6,6E-02                          | 1,8E-01        | <b>3,3E-01</b>                 | 3,2E-01         | 8,3E-01   | 1,5E-01                   |
| 7        | 6,7E-02                          | 1,9E-01        | <b>3,4E-01</b>                 | 3,2E-01         | 8,4E-01   | 1,6E-01                   |
| 8        | 6,8E-02                          | 1,9E-01        | <b>3,4E-01</b>                 |                 | 8,4E-01   | 1,6E-01                   |
| 9        | 6,8E-02                          |                |                                |                 |           |                           |
| 10       | 6,9E-02                          |                |                                |                 |           |                           |
| 14       | 7,0E-02                          |                |                                |                 |           |                           |
| 15       | 7,1E-02                          |                |                                |                 |           |                           |
| 20       | 7,1E-02                          |                |                                |                 |           |                           |
| 30       | 7,2E-02                          |                |                                |                 |           |                           |
| 40       | 7,2E-02                          |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Lu-177**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,6E-01                          | 4,1E-01  | <b>6,3E-01</b> | 5,8E-01   | 8,6E-01   | 8,3E-01                   |
| 2        | 4,5E-01                          | 6,5E-01  | <b>9,4E-01</b> | 8,5E-01   | 1,3E+00   | 1,5E+00                   |
| 3        | 6,0E-01                          | 7,9E-01  | <b>1,1E+00</b> | 9,7E-01   | 1,5E+00   | 2,0E+00                   |
| 4        | 7,2E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,0E+00   | 1,5E+00   | 2,4E+00                   |
| 5        | 8,2E-01                          | 9,7E-01  | <b>1,2E+00</b> | 1,0E+00   | 1,5E+00   | 2,8E+00                   |
| 6        | 9,2E-01                          | 1,0E+00  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 3,2E+00                   |
| 7        | 1,0E+00                          | 1,1E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,6E+00   | 3,5E+00                   |
| 8        | 1,1E+00                          | 1,2E+00  | <b>1,3E+00</b> | 1,1E+00   |           | 3,8E+00                   |
| 9        | 1,1E+00                          | 1,2E+00  | <b>1,3E+00</b> | 1,1E+00   |           | 4,1E+00                   |
| 10       | 1,2E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,1E+00   |           | 4,3E+00                   |
| 14       | 1,4E+00                          | 1,4E+00  | <b>1,4E+00</b> | 1,1E+00   |           | 5,0E+00                   |
| 15       | 1,4E+00                          | 1,4E+00  | <b>1,4E+00</b> | 1,2E+00   |           | 5,1E+00                   |
| 20       | 1,5E+00                          | 1,5E+00  | <b>1,5E+00</b> | 1,2E+00   |           | 5,7E+00                   |
| 30       | 1,6E+00                          | 1,6E+00  | <b>1,5E+00</b> |           |           | 6,1E+00                   |
| 40       | 1,7E+00                          | 1,6E+00  |                |           |           | 6,3E+00                   |
| 45       | 1,7E+00                          |          |                |           |           | 6,4E+00                   |
| 50       |                                  |          |                |           |           | 6,4E+00                   |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Lu-177**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b>                 | 3,4E-02         | 9,0E-02   | 1,3E-02                   |
| 2        | 3,1E-02                          | 9,8E-02        | <b>1,8E-01</b>                 | 1,7E-01         | 4,5E-01   | 7,3E-02                   |
| 3        | 5,1E-02                          | 1,5E-01        | <b>2,8E-01</b>                 | 2,7E-01         | 6,9E-01   | 1,2E-01                   |
| 4        | 6,0E-02                          | 1,8E-01        | <b>3,3E-01</b>                 | 3,1E-01         | 7,8E-01   | 1,4E-01                   |
| 5        | 6,4E-02                          | 1,9E-01        | <b>3,4E-01</b>                 | 3,3E-01         | 8,2E-01   | 1,5E-01                   |
| 6        | 6,6E-02                          | 1,9E-01        | <b>3,5E-01</b>                 | 3,3E-01         | 8,3E-01   | 1,5E-01                   |
| 7        | 6,7E-02                          | 1,9E-01        | <b>3,5E-01</b>                 |                 | 8,4E-01   | 1,6E-01                   |
| 8        | 6,8E-02                          | 1,9E-01        |                                |                 | 8,4E-01   | 1,6E-01                   |
| 9        | 6,9E-02                          | 1,9E-01        |                                |                 |           |                           |
| 10       | 6,9E-02                          | 1,9E-01        |                                |                 |           |                           |
| 14       | 7,1E-02                          | 1,9E-01        |                                |                 |           |                           |
| 15       | 7,1E-02                          | 1,9E-01        |                                |                 |           |                           |
| 20       | 7,2E-02                          | 2,0E-01        |                                |                 |           |                           |
| 30       | 7,3E-02                          | 2,0E-01        |                                |                 |           |                           |
| 40       | 7,3E-02                          |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Hf-181**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b> | 6,2E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 5,0E-01                          | 7,5E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00   | 1,9E+00                   |
| 3        | 7,0E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,9E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,1E+00                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 1,7E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 1,9E+00   | 1,7E+00   | 5,2E+00                   |
| 7        | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 1,7E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 1,7E+00   | 6,6E+00                   |
| 9        | 1,7E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 1,7E+00   | 7,3E+00                   |
| 10       | 1,8E+00                          | 2,2E+00  | <b>2,9E+00</b> | 2,5E+00   | 1,7E+00   | 7,9E+00                   |
| 14       | 2,3E+00                          | 2,8E+00  | <b>3,5E+00</b> | 3,0E+00   | 1,7E+00   | 1,0E+01                   |
| 15       | 2,4E+00                          | 2,9E+00  | <b>3,7E+00</b> | 3,2E+00   | 1,7E+00   | 1,1E+01                   |
| 20       | 2,9E+00                          | 3,4E+00  | <b>4,3E+00</b> | 3,7E+00   | 1,8E+00   | 1,3E+01                   |
| 30       | 3,7E+00                          | 4,3E+00  | <b>5,3E+00</b> | 4,5E+00   | 1,8E+00   | 1,7E+01                   |
| 40       | 4,3E+00                          | 5,0E+00  | <b>6,2E+00</b> | 5,2E+00   |           | 1,9E+01                   |
| 45       | 4,6E+00                          | 5,3E+00  | <b>6,5E+00</b> | 5,5E+00   |           | 2,1E+01                   |
| 50       | 4,8E+00                          | 5,6E+00  | <b>6,8E+00</b> | 5,8E+00   |           | 2,2E+01                   |
| 60       | 5,2E+00                          | 6,1E+00  | <b>7,4E+00</b> | 6,3E+00   |           | 2,4E+01                   |
| 70       | 5,6E+00                          | 6,5E+00  | <b>7,9E+00</b> | 6,7E+00   |           | 2,6E+01                   |
| 80       | 5,9E+00                          | 6,9E+00  | <b>8,3E+00</b> | 7,0E+00   |           | 2,7E+01                   |
| 90       | 6,2E+00                          | 7,2E+00  | <b>8,7E+00</b> | 7,3E+00   |           | 2,8E+01                   |
| 100      | 6,4E+00                          | 7,4E+00  | <b>8,9E+00</b> | 7,6E+00   |           | 2,9E+01                   |
| 120      | 6,8E+00                          | 7,8E+00  | <b>9,4E+00</b> | 8,0E+00   |           | 3,1E+01                   |
| 180      | 7,3E+00                          | 8,5E+00  | <b>1,0E+01</b> | 8,6E+00   |           | 3,4E+01                   |
| 200      | 7,4E+00                          | 8,6E+00  | <b>1,0E+01</b> | 8,7E+00   |           | 3,4E+01                   |
| 300      | 7,6E+00                          | 8,8E+00  | <b>1,1E+01</b> | 8,9E+00   |           | 3,5E+01                   |
| 360      | 7,7E+00                          | 8,8E+00  | <b>1,1E+01</b> | 8,9E+00   |           | 3,5E+01                   |
| 400      | 7,7E+00                          |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Hf-181**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,5E+00                   |
| 6        | 1,1E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 5,2E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,7E+00   | 6,0E+00                   |
| 8        | 1,4E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,7E+00   | 6,6E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,7E+00   | 7,3E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,7E+00   | 7,9E+00                   |
| 14       | 2,2E+00                          | 2,1E+00  | <b>2,0E+00</b> | 1,6E+00   | 1,7E+00   | 1,0E+01                   |
| 15       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,7E+00   | 1,1E+01                   |
| 20       | 2,9E+00                          | 2,6E+00  | <b>2,3E+00</b> | 1,7E+00   | 1,8E+00   | 1,3E+01                   |
| 30       | 3,8E+00                          | 3,3E+00  | <b>2,7E+00</b> | 2,0E+00   | 1,8E+00   | 1,7E+01                   |
| 40       | 4,5E+00                          | 3,8E+00  | <b>3,0E+00</b> | 2,1E+00   |           | 1,9E+01                   |
| 45       | 4,8E+00                          | 4,0E+00  | <b>3,2E+00</b> | 2,2E+00   |           | 2,1E+01                   |
| 50       | 5,0E+00                          | 4,2E+00  | <b>3,3E+00</b> | 2,3E+00   |           | 2,2E+01                   |
| 60       | 5,5E+00                          | 4,6E+00  | <b>3,5E+00</b> | 2,4E+00   |           | 2,4E+01                   |
| 70       | 5,8E+00                          | 4,8E+00  | <b>3,7E+00</b> | 2,5E+00   |           | 2,6E+01                   |
| 80       | 6,1E+00                          | 5,1E+00  | <b>3,8E+00</b> | 2,6E+00   |           | 2,7E+01                   |
| 90       | 6,4E+00                          | 5,2E+00  | <b>3,9E+00</b> | 2,6E+00   |           | 2,8E+01                   |
| 100      | 6,6E+00                          | 5,4E+00  | <b>4,0E+00</b> | 2,7E+00   |           | 2,9E+01                   |
| 120      | 6,9E+00                          | 5,6E+00  | <b>4,2E+00</b> | 2,8E+00   |           | 3,1E+01                   |
| 180      | 7,3E+00                          | 6,0E+00  | <b>4,4E+00</b> | 2,9E+00   |           | 3,4E+01                   |
| 200      | 7,4E+00                          | 6,0E+00  | <b>4,4E+00</b> | 2,9E+00   |           | 3,4E+01                   |
| 300      | 7,5E+00                          | 6,1E+00  | <b>4,5E+00</b> | 3,0E+00   |           | 3,5E+01                   |
| 360      | 7,5E+00                          | 6,1E+00  | <b>4,5E+00</b> | 3,0E+00   |           | 3,5E+01                   |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

Ta-182

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                                 |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                         |
| 2        | 4,9E-01                          | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,9E+00                         |
| 3        | 6,8E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                         |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,7E+00                         |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,5E+00                         |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,7E+00   | 5,3E+00                         |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,0E+00                         |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,7E+00                         |
| 9        | 1,6E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,4E+00   |           | 7,4E+00                         |
| 10       | 1,8E+00                          | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   |           | 8,1E+00                         |
| 14       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,1E+01                         |
| 15       | 2,5E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   |           | 1,1E+01                         |
| 20       | 3,1E+00                          | 2,8E+00  | <b>2,4E+00</b> | 1,8E+00   |           | 1,4E+01                         |
| 30       | 4,3E+00                          | 3,7E+00  | <b>3,0E+00</b> | 2,1E+00   |           | 1,9E+01                         |
| 40       | 5,3E+00                          | 4,4E+00  | <b>3,4E+00</b> | 2,3E+00   |           | 2,3E+01                         |
| 45       | 5,7E+00                          | 4,8E+00  | <b>3,6E+00</b> | 2,5E+00   |           | 2,5E+01                         |
| 50       | 6,2E+00                          | 5,1E+00  | <b>3,8E+00</b> | 2,6E+00   |           | 2,6E+01                         |
| 60       | 7,0E+00                          | 5,7E+00  | <b>4,2E+00</b> | 2,8E+00   |           | 3,0E+01                         |
| 70       | 7,6E+00                          | 6,2E+00  | <b>4,5E+00</b> | 2,9E+00   |           | 3,3E+01                         |
| 80       | 8,3E+00                          | 6,7E+00  | <b>4,8E+00</b> | 3,1E+00   |           | 3,5E+01                         |
| 90       | 8,8E+00                          | 7,1E+00  | <b>5,0E+00</b> | 3,2E+00   |           | 3,7E+01                         |
| 100      | 9,3E+00                          | 7,4E+00  | <b>5,2E+00</b> | 3,3E+00   |           | 3,9E+01                         |
| 120      | 1,0E+01                          | 8,1E+00  | <b>5,6E+00</b> | 3,5E+00   |           | 4,2E+01                         |
| 180      | 1,2E+01                          | 9,3E+00  | <b>6,3E+00</b> | 3,9E+00   |           | 4,8E+01                         |
| 200      | 1,2E+01                          | 9,6E+00  | <b>6,5E+00</b> | 4,0E+00   |           | 4,9E+01                         |
| 300      | 1,3E+01                          | 1,0E+01  | <b>6,9E+00</b> | 4,2E+00   |           | 5,2E+01                         |
| 360      | 1,3E+01                          | 1,0E+01  | <b>7,0E+00</b> | 4,3E+00   |           | 5,2E+01                         |
| 400      | 1,3E+01                          | 1,1E+01  | <b>7,0E+00</b> | 4,3E+00   |           | 5,3E+01                         |
| 500      | 1,4E+01                          | 1,1E+01  | <b>7,0E+00</b> |           |           | 5,3E+01                         |
| 600      | 1,4E+01                          |          | <b>7,1E+00</b> |           |           |                                 |
| 700      |                                  |          | <b>7,1E+00</b> |           |           |                                 |
| 800      |                                  |          |                |           |           |                                 |
| 900      |                                  |          |                |           |           |                                 |
| 1000     |                                  |          |                |           |           |                                 |
| 2000     |                                  |          |                |           |           |                                 |
| 3000     |                                  |          |                |           |           |                                 |
| 4000     |                                  |          |                |           |           |                                 |
| 5000     |                                  |          |                |           |           |                                 |
| 6000     |                                  |          |                |           |           |                                 |
| 8000     |                                  |          |                |           |           |                                 |
| 10000    |                                  |          |                |           |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ta-182**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,9E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,9E+00                   |
| 3        | 6,8E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,8E+00                   |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,7E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,5E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 5,3E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,2E+00   | 1,8E+00   | 6,0E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,7E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   |           | 7,4E+00                   |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   |           | 8,1E+00                   |
| 14       | 2,4E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   |           | 1,1E+01                   |
| 15       | 2,5E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   |           | 1,1E+01                   |
| 20       | 3,2E+00                          | 2,7E+00  | <b>2,2E+00</b> | 1,6E+00   |           | 1,4E+01                   |
| 30       | 4,4E+00                          | 3,6E+00  | <b>2,7E+00</b> | 1,8E+00   |           | 1,9E+01                   |
| 40       | 5,4E+00                          | 4,3E+00  | <b>3,1E+00</b> | 2,0E+00   |           | 2,3E+01                   |
| 45       | 5,9E+00                          | 4,7E+00  | <b>3,2E+00</b> | 2,0E+00   |           | 2,5E+01                   |
| 50       | 6,4E+00                          | 5,0E+00  | <b>3,4E+00</b> | 2,1E+00   |           | 2,6E+01                   |
| 60       | 7,2E+00                          | 5,6E+00  | <b>3,7E+00</b> | 2,3E+00   |           | 3,0E+01                   |
| 70       | 8,0E+00                          | 6,2E+00  | <b>4,0E+00</b> | 2,4E+00   |           | 3,3E+01                   |
| 80       | 8,7E+00                          | 6,7E+00  | <b>4,3E+00</b> | 2,5E+00   |           | 3,5E+01                   |
| 90       | 9,3E+00                          | 7,2E+00  | <b>4,5E+00</b> | 2,6E+00   |           | 3,7E+01                   |
| 100      | 9,9E+00                          | 7,6E+00  | <b>4,7E+00</b> | 2,7E+00   |           | 3,9E+01                   |
| 120      | 1,1E+01                          | 8,3E+00  | <b>5,1E+00</b> | 2,9E+00   |           | 4,2E+01                   |
| 180      | 1,3E+01                          | 1,0E+01  | <b>5,9E+00</b> | 3,3E+00   |           | 4,8E+01                   |
| 200      | 1,4E+01                          | 1,0E+01  | <b>6,1E+00</b> | 3,3E+00   |           | 4,9E+01                   |
| 300      | 1,6E+01                          | 1,2E+01  | <b>6,8E+00</b> | 3,7E+00   |           | 5,2E+01                   |
| 360      | 1,6E+01                          | 1,2E+01  | <b>7,0E+00</b> | 3,8E+00   |           | 5,2E+01                   |
| 400      | 1,7E+01                          | 1,2E+01  | <b>7,1E+00</b> | 3,8E+00   |           | 5,3E+01                   |
| 500      | 1,7E+01                          | 1,3E+01  | <b>7,3E+00</b> | 3,9E+00   |           | 5,3E+01                   |
| 600      | 1,7E+01                          | 1,3E+01  | <b>7,4E+00</b> | 3,9E+00   |           |                           |
| 700      | 1,7E+01                          |          | <b>7,4E+00</b> | 3,9E+00   |           |                           |
| 800      | 1,8E+01                          |          | <b>7,5E+00</b> | 4,0E+00   |           |                           |
| 900      | 1,8E+01                          |          | <b>7,5E+00</b> | 4,0E+00   |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Re-186**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,4E-01                          | 3,9E-01  | <b>6,1E-01</b> | 5,6E-01   | 8,5E-01   | 8,5E-01                   |
| 2        | 3,8E-01                          | 6,1E-01  | <b>9,3E-01</b> | 8,6E-01   | 1,4E+00   | 1,4E+00                   |
| 3        | 4,7E-01                          | 7,4E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,7E+00   | 1,8E+00                   |
| 4        | 5,3E-01                          | 8,2E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 2,0E+00                   |
| 5        | 5,6E-01                          | 8,6E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,0E+00   | 2,1E+00                   |
| 6        | 5,8E-01                          | 8,9E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,1E+00   | 2,2E+00                   |
| 7        | 5,9E-01                          | 9,1E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,1E+00   | 2,3E+00                   |
| 8        | 6,0E-01                          | 9,2E-01  | <b>1,4E+00</b> | 1,2E+00   | 2,1E+00   | 2,3E+00                   |
| 9        | 6,1E-01                          | 9,3E-01  | <b>1,4E+00</b> | 1,3E+00   | 2,2E+00   | 2,3E+00                   |
| 10       | 6,1E-01                          | 9,3E-01  |                | 1,3E+00   | 2,2E+00   | 2,3E+00                   |
| 14       | 6,2E-01                          | 9,4E-01  |                |           |           | 2,4E+00                   |
| 15       | 6,2E-01                          | 9,5E-01  |                |           |           | 2,4E+00                   |
| 20       |                                  | 9,5E-01  |                |           |           |                           |
| 30       |                                  |          |                |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Re-186**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,5E-02                          | 2,0E-02        | <b>2,7E-02</b>                 | 2,3E-02         | 4,4E-02   | 6,5E-02                   |
| 2        | 4,1E-02                          | 5,6E-02        | <b>7,6E-02</b>                 | 6,7E-02         | 1,3E-01   | 1,8E-01                   |
| 3        | 5,6E-02                          | 7,6E-02        | <b>1,0E-01</b>                 | 9,0E-02         | 1,8E-01   | 2,4E-01                   |
| 4        | 6,4E-02                          | 8,7E-02        | <b>1,2E-01</b>                 | 1,0E-01         | 2,1E-01   | 2,7E-01                   |
| 5        | 6,9E-02                          | 9,3E-02        | <b>1,3E-01</b>                 | 1,1E-01         | 2,3E-01   | 2,9E-01                   |
| 6        | 7,1E-02                          | 9,7E-02        | <b>1,3E-01</b>                 | 1,2E-01         | 2,4E-01   | 3,0E-01                   |
| 7        | 7,3E-02                          | 9,9E-02        | <b>1,3E-01</b>                 | 1,2E-01         | 2,4E-01   | 3,1E-01                   |
| 8        | 7,4E-02                          | 1,0E-01        | <b>1,4E-01</b>                 |                 | 2,4E-01   | 3,1E-01                   |
| 9        | 7,4E-02                          | 1,0E-01        | <b>1,4E-01</b>                 |                 | 2,5E-01   | 3,1E-01                   |
| 10       | 7,4E-02                          |                |                                |                 | 2,5E-01   | 3,1E-01                   |
| 14       | 7,5E-02                          |                |                                |                 |           | 3,2E-01                   |
| 15       | 7,5E-02                          |                |                                |                 |           | 3,2E-01                   |
| 20       |                                  |                |                                |                 |           |                           |
| 30       |                                  |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Re-186**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,0E-01  | <b>6,1E-01</b> | 5,7E-01   | 8,5E-01   | 8,5E-01                   |
| 2        | 4,2E-01                          | 6,4E-01  | <b>9,4E-01</b> | 8,6E-01   | 1,4E+00   | 1,4E+00                   |
| 3        | 5,5E-01                          | 7,9E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,7E+00   | 1,8E+00                   |
| 4        | 6,5E-01                          | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 2,0E+00                   |
| 5        | 7,3E-01                          | 9,7E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,0E+00   | 2,1E+00                   |
| 6        | 7,9E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,2E+00   | 2,1E+00   | 2,2E+00                   |
| 7        | 8,4E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,2E+00   | 2,1E+00   | 2,3E+00                   |
| 8        | 8,8E-01                          | 1,1E+00  | <b>1,4E+00</b> | 1,3E+00   | 2,1E+00   | 2,3E+00                   |
| 9        | 9,1E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,3E+00   | 2,2E+00   | 2,3E+00                   |
| 10       | 9,3E-01                          | 1,2E+00  | <b>1,5E+00</b> |           | 2,2E+00   | 2,3E+00                   |
| 14       | 1,0E+00                          | 1,2E+00  |                |           |           | 2,4E+00                   |
| 15       | 1,0E+00                          |          |                |           |           | 2,4E+00                   |
| 20       | 1,0E+00                          |          |                |           |           |                           |
| 30       | 1,0E+00                          |          |                |           |           |                           |
| 40       | 1,1E+00                          |          |                |           |           |                           |
| 45       | 1,1E+00                          |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |



**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Re-186**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 4,0E-03                          | 1,0E-02        | <b>1,8E-02</b>                 | 1,7E-02         | 4,4E-02   | 6,5E-02                   |
| 2        | 1,3E-02                          | 3,2E-02        | <b>5,7E-02</b>                 | 5,4E-02         | 1,3E-01   | 1,8E-01                   |
| 3        | 1,8E-02                          | 4,5E-02        | <b>7,9E-02</b>                 | 7,4E-02         | 1,8E-01   | 2,4E-01                   |
| 4        | 2,1E-02                          | 5,2E-02        | <b>9,1E-02</b>                 | 8,6E-02         | 2,1E-01   | 2,7E-01                   |
| 5        | 2,3E-02                          | 5,6E-02        | <b>9,8E-02</b>                 | 9,2E-02         | 2,3E-01   | 2,9E-01                   |
| 6        | 2,4E-02                          | 5,8E-02        | <b>1,0E-01</b>                 | 9,6E-02         | 2,4E-01   | 3,0E-01                   |
| 7        | 2,5E-02                          | 6,0E-02        | <b>1,0E-01</b>                 | 9,8E-02         | 2,4E-01   | 3,1E-01                   |
| 8        | 2,6E-02                          | 6,1E-02        | <b>1,1E-01</b>                 | 9,9E-02         | 2,4E-01   | 3,1E-01                   |
| 9        | 2,6E-02                          | 6,1E-02        | <b>1,1E-01</b>                 | 1,0E-01         | 2,5E-01   | 3,1E-01                   |
| 10       | 2,6E-02                          | 6,2E-02        |                                | 1,0E-01         | 2,5E-01   | 3,1E-01                   |
| 14       | 2,7E-02                          | 6,2E-02        |                                |                 |           | 3,2E-01                   |
| 15       | 2,7E-02                          | 6,2E-02        |                                |                 |           | 3,2E-01                   |
| 20       |                                  | 6,3E-02        |                                |                 |           |                           |
| 30       |                                  | 6,3E-02        |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ir-192**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,6E-01                          | 4,2E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,7E-01                          | 7,2E-01  | <b>1,1E+00</b> | 9,9E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,5E-01                          | 9,5E-01  | <b>1,4E+00</b> | 1,2E+00   | 1,6E+00   | 2,6E+00                   |
| 4        | 8,1E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,7E+00   | 3,3E+00                   |
| 5        | 9,7E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 1,7E+00   | 4,0E+00                   |
| 6        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b> | 1,8E+00   | 1,8E+00   | 4,8E+00                   |
| 7        | 1,3E+00                          | 1,7E+00  | <b>2,2E+00</b> | 2,0E+00   | 1,8E+00   | 5,4E+00                   |
| 8        | 1,4E+00                          | 1,8E+00  | <b>2,4E+00</b> | 2,1E+00   | 1,8E+00   | 6,1E+00                   |
| 9        | 1,6E+00                          | 2,0E+00  | <b>2,6E+00</b> | 2,3E+00   | 1,8E+00   | 6,8E+00                   |
| 10       | 1,7E+00                          | 2,1E+00  | <b>2,8E+00</b> | 2,4E+00   | 1,8E+00   | 7,4E+00                   |
| 14       | 2,2E+00                          | 2,7E+00  | <b>3,5E+00</b> | 3,0E+00   | 1,8E+00   | 9,8E+00                   |
| 15       | 2,3E+00                          | 2,9E+00  | <b>3,6E+00</b> | 3,1E+00   | 1,8E+00   | 1,0E+01                   |
| 20       | 2,9E+00                          | 3,5E+00  | <b>4,4E+00</b> | 3,8E+00   | 1,9E+00   | 1,3E+01                   |
| 30       | 4,0E+00                          | 4,7E+00  | <b>5,8E+00</b> | 4,9E+00   | 1,9E+00   | 1,8E+01                   |
| 40       | 4,9E+00                          | 5,7E+00  | <b>7,0E+00</b> | 5,9E+00   | 1,9E+00   | 2,2E+01                   |
| 45       | 5,3E+00                          | 6,2E+00  | <b>7,5E+00</b> | 6,4E+00   | 2,0E+00   | 2,4E+01                   |
| 50       | 5,7E+00                          | 6,6E+00  | <b>8,0E+00</b> | 6,8E+00   | 2,0E+00   | 2,6E+01                   |
| 60       | 6,3E+00                          | 7,4E+00  | <b>8,9E+00</b> | 7,5E+00   | 2,0E+00   | 2,9E+01                   |
| 70       | 6,9E+00                          | 8,0E+00  | <b>9,7E+00</b> | 8,2E+00   | 2,0E+00   | 3,2E+01                   |
| 80       | 7,5E+00                          | 8,6E+00  | <b>1,0E+01</b> | 8,8E+00   | 2,1E+00   | 3,4E+01                   |
| 90       | 7,9E+00                          | 9,2E+00  | <b>1,1E+01</b> | 9,3E+00   | 2,1E+00   | 3,6E+01                   |
| 100      | 8,4E+00                          | 9,6E+00  | <b>1,2E+01</b> | 9,7E+00   | 2,1E+00   | 3,8E+01                   |
| 120      | 9,0E+00                          | 1,0E+01  | <b>1,2E+01</b> | 1,0E+01   | 2,1E+00   | 4,1E+01                   |
| 180      | 1,0E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 2,2E+00   | 4,7E+01                   |
| 200      | 1,1E+01                          | 1,2E+01  | <b>1,4E+01</b> | 1,2E+01   | 2,2E+00   | 4,8E+01                   |
| 300      | 1,1E+01                          | 1,3E+01  | <b>1,5E+01</b> | 1,3E+01   | 2,2E+00   | 5,1E+01                   |
| 360      |                                  | 1,3E+01  | <b>1,5E+01</b> | 1,3E+01   |           | 5,2E+01                   |
| 400      |                                  |          |                |           |           | 5,2E+01                   |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ir-192**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,7E-01                          | 8,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,6E+00                   |
| 4        | 8,4E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00   | 3,3E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,0E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 4,8E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 5,4E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,1E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00   | 6,8E+00                   |
| 10       | 1,7E+00                          | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,8E+00   | 7,4E+00                   |
| 14       | 2,3E+00                          | 2,2E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,8E+00   | 9,8E+00                   |
| 15       | 2,4E+00                          | 2,3E+00  | <b>2,1E+00</b> | 1,6E+00   | 1,8E+00   | 1,0E+01                   |
| 20       | 3,0E+00                          | 2,7E+00  | <b>2,4E+00</b> | 1,8E+00   | 1,9E+00   | 1,3E+01                   |
| 30       | 4,1E+00                          | 3,6E+00  | <b>2,9E+00</b> | 2,1E+00   | 1,9E+00   | 1,8E+01                   |
| 40       | 5,0E+00                          | 4,3E+00  | <b>3,4E+00</b> | 2,3E+00   | 1,9E+00   | 2,2E+01                   |
| 45       | 5,4E+00                          | 4,6E+00  | <b>3,6E+00</b> | 2,5E+00   | 2,0E+00   | 2,4E+01                   |
| 50       | 5,8E+00                          | 4,9E+00  | <b>3,7E+00</b> | 2,6E+00   | 2,0E+00   | 2,6E+01                   |
| 60       | 6,5E+00                          | 5,4E+00  | <b>4,1E+00</b> | 2,8E+00   | 2,0E+00   | 2,9E+01                   |
| 70       | 7,1E+00                          | 5,8E+00  | <b>4,3E+00</b> | 2,9E+00   | 2,0E+00   | 3,2E+01                   |
| 80       | 7,6E+00                          | 6,2E+00  | <b>4,6E+00</b> | 3,1E+00   | 2,1E+00   | 3,4E+01                   |
| 90       | 8,0E+00                          | 6,5E+00  | <b>4,8E+00</b> | 3,2E+00   | 2,1E+00   | 3,6E+01                   |
| 100      | 8,4E+00                          | 6,8E+00  | <b>5,0E+00</b> | 3,3E+00   | 2,1E+00   | 3,8E+01                   |
| 120      | 9,0E+00                          | 7,3E+00  | <b>5,3E+00</b> | 3,5E+00   | 2,1E+00   | 4,1E+01                   |
| 180      | 1,0E+01                          | 8,2E+00  | <b>5,9E+00</b> | 3,8E+00   | 2,2E+00   | 4,7E+01                   |
| 200      | 1,0E+01                          | 8,4E+00  | <b>6,0E+00</b> | 3,9E+00   | 2,2E+00   | 4,8E+01                   |
| 300      | 1,1E+01                          | 8,8E+00  | <b>6,2E+00</b> | 4,0E+00   | 2,2E+00   | 5,1E+01                   |
| 360      | 1,1E+01                          | 8,9E+00  | <b>6,3E+00</b> | 4,0E+00   |           | 5,2E+01                   |
| 400      |                                  | 8,9E+00  | <b>6,3E+00</b> | 4,1E+00   |           | 5,2E+01                   |
| 500      |                                  | 9,0E+00  |                | 4,1E+00   |           |                           |
| 600      |                                  | 9,0E+00  |                | 4,1E+00   |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Ir-192**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,3E-01  | <b>6,5E-01</b> | 6,1E-01   | 9,0E-01   | 9,3E-01                   |
| 2        | 4,9E-01                          | 7,0E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,4E+00   | 1,8E+00                   |
| 3        | 6,8E-01                          | 8,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00   | 2,6E+00                   |
| 4        | 8,5E-01                          | 1,0E+00  | <b>1,3E+00</b> | 1,1E+00   | 1,7E+00   | 3,3E+00                   |
| 5        | 1,0E+00                          | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,7E+00   | 4,0E+00                   |
| 6        | 1,2E+00                          | 1,3E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00   | 4,8E+00                   |
| 7        | 1,3E+00                          | 1,4E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00   | 5,4E+00                   |
| 8        | 1,5E+00                          | 1,5E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,1E+00                   |
| 9        | 1,6E+00                          | 1,6E+00  | <b>1,6E+00</b> | 1,3E+00   | 1,8E+00   | 6,8E+00                   |
| 10       | 1,8E+00                          | 1,7E+00  | <b>1,7E+00</b> | 1,3E+00   | 1,8E+00   | 7,4E+00                   |
| 14       | 2,3E+00                          | 2,1E+00  | <b>1,9E+00</b> | 1,4E+00   | 1,8E+00   | 9,8E+00                   |
| 15       | 2,4E+00                          | 2,2E+00  | <b>2,0E+00</b> | 1,5E+00   | 1,8E+00   | 1,0E+01                   |
| 20       | 3,1E+00                          | 2,7E+00  | <b>2,2E+00</b> | 1,6E+00   | 1,9E+00   | 1,3E+01                   |
| 30       | 4,2E+00                          | 3,5E+00  | <b>2,6E+00</b> | 1,8E+00   | 1,9E+00   | 1,8E+01                   |
| 40       | 5,1E+00                          | 4,2E+00  | <b>3,0E+00</b> | 2,0E+00   | 1,9E+00   | 2,2E+01                   |
| 45       | 5,6E+00                          | 4,5E+00  | <b>3,2E+00</b> | 2,0E+00   | 2,0E+00   | 2,4E+01                   |
| 50       | 6,0E+00                          | 4,8E+00  | <b>3,3E+00</b> | 2,1E+00   | 2,0E+00   | 2,6E+01                   |
| 60       | 6,7E+00                          | 5,3E+00  | <b>3,6E+00</b> | 2,3E+00   | 2,0E+00   | 2,9E+01                   |
| 70       | 7,3E+00                          | 5,7E+00  | <b>3,8E+00</b> | 2,4E+00   | 2,0E+00   | 3,2E+01                   |
| 80       | 7,9E+00                          | 6,1E+00  | <b>4,1E+00</b> | 2,5E+00   | 2,1E+00   | 3,4E+01                   |
| 90       | 8,3E+00                          | 6,5E+00  | <b>4,2E+00</b> | 2,6E+00   | 2,1E+00   | 3,6E+01                   |
| 100      | 8,8E+00                          | 6,8E+00  | <b>4,4E+00</b> | 2,6E+00   | 2,1E+00   | 3,8E+01                   |
| 120      | 9,5E+00                          | 7,3E+00  | <b>4,7E+00</b> | 2,8E+00   | 2,1E+00   | 4,1E+01                   |
| 180      | 1,1E+01                          | 8,4E+00  | <b>5,2E+00</b> | 3,0E+00   | 2,2E+00   | 4,7E+01                   |
| 200      | 1,1E+01                          | 8,6E+00  | <b>5,3E+00</b> | 3,1E+00   | 2,2E+00   | 4,8E+01                   |
| 300      | 1,2E+01                          | 9,2E+00  | <b>5,6E+00</b> | 3,2E+00   |           | 5,1E+01                   |
| 360      | 1,2E+01                          | 9,3E+00  | <b>5,7E+00</b> | 3,3E+00   |           | 5,2E+01                   |
| 400      | 1,2E+01                          | 9,4E+00  | <b>5,8E+00</b> | 3,3E+00   |           | 5,2E+01                   |
| 500      | 1,2E+01                          | 9,5E+00  | <b>5,8E+00</b> |           |           |                           |
| 600      | 1,3E+01                          | 9,5E+00  |                |           |           |                           |
| 700      | 1,3E+01                          |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>i</sub> =1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|--------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                |                                 |
| 1        | 2,4E-01                          | 3,9E-01  | <b>6,1E-01</b> | 5,6E-01   | 8,8E-01                        | 8,8E-01                         |
| 2        | 4,1E-01                          | 6,3E-01  | <b>9,4E-01</b> | 8,7E-01   | 1,6E+00                        | 1,6E+00                         |
| 3        | 5,3E-01                          | 7,9E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,1E+00                        | 2,1E+00                         |
| 4        | 6,2E-01                          | 9,1E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,5E+00                        | 2,5E+00                         |
| 5        | 6,9E-01                          | 1,0E+00  | <b>1,4E+00</b> | 1,3E+00   | 2,8E+00                        | 2,8E+00                         |
| 6        | 7,5E-01                          | 1,1E+00  | <b>1,5E+00</b> | 1,4E+00   | 3,0E+00                        | 3,0E+00                         |
| 7        | 7,9E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 3,2E+00                        | 3,2E+00                         |
| 8        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b> | 1,5E+00   | 3,3E+00                        | 3,3E+00                         |
| 9        | 8,4E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 3,4E+00                        | 3,4E+00                         |
| 10       | 8,6E-01                          | 1,2E+00  | <b>1,7E+00</b> | 1,5E+00   | 3,5E+00                        | 3,5E+00                         |
| 14       | 9,0E-01                          | 1,3E+00  | <b>1,7E+00</b> | 1,6E+00   | 3,7E+00                        | 3,7E+00                         |
| 15       | 9,0E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,6E+00   | 3,7E+00                        | 3,7E+00                         |
| 20       | 9,1E-01                          |          | <b>1,8E+00</b> |           |                                | 3,7E+00                         |
| 30       | 9,2E-01                          |          |                |           |                                | 3,8E+00                         |
| 40       | 9,2E-01                          |          |                |           |                                | 3,8E+00                         |
| 45       |                                  |          |                |           |                                |                                 |
| 50       |                                  |          |                |           |                                |                                 |
| 60       |                                  |          |                |           |                                |                                 |
| 70       |                                  |          |                |           |                                |                                 |
| 80       |                                  |          |                |           |                                |                                 |
| 90       |                                  |          |                |           |                                |                                 |
| 100      |                                  |          |                |           |                                |                                 |
| 120      |                                  |          |                |           |                                |                                 |
| 180      |                                  |          |                |           |                                |                                 |
| 200      |                                  |          |                |           |                                |                                 |
| 300      |                                  |          |                |           |                                |                                 |
| 360      |                                  |          |                |           |                                |                                 |
| 400      |                                  |          |                |           |                                |                                 |
| 500      |                                  |          |                |           |                                |                                 |
| 600      |                                  |          |                |           |                                |                                 |
| 700      |                                  |          |                |           |                                |                                 |
| 800      |                                  |          |                |           |                                |                                 |
| 900      |                                  |          |                |           |                                |                                 |
| 1000     |                                  |          |                |           |                                |                                 |
| 2000     |                                  |          |                |           |                                |                                 |
| 3000     |                                  |          |                |           |                                |                                 |
| 4000     |                                  |          |                |           |                                |                                 |
| 5000     |                                  |          |                |           |                                |                                 |
| 6000     |                                  |          |                |           |                                |                                 |
| 8000     |                                  |          |                |           |                                |                                 |
| 10000    |                                  |          |                |           |                                |                                 |

## Hg-197 org.

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_i=1$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                      |                                 |
| 1        | 1,7E-04                          | 2,0E-04        | <b>2,5E-04</b> | 2,2E-04         | 6,7E-04              | 7,7E-04                         |
| 2        | 7,6E-04                          | 9,4E-04        | <b>1,2E-03</b> | 1,0E-03         | 3,2E-03              | 3,4E-03                         |
| 3        | 1,3E-03                          | 1,6E-03        | <b>2,1E-03</b> | 1,8E-03         | 5,6E-03              | 5,8E-03                         |
| 4        | 1,7E-03                          | 2,2E-03        | <b>2,7E-03</b> | 2,3E-03         | 7,5E-03              | 7,7E-03                         |
| 5        | 2,1E-03                          | 2,6E-03        | <b>3,2E-03</b> | 2,8E-03         | 8,9E-03              | 9,1E-03                         |
| 6        | 2,3E-03                          | 2,9E-03        | <b>3,6E-03</b> | 3,1E-03         | 1,0E-02              | 1,0E-02                         |
| 7        | 2,5E-03                          | 3,1E-03        | <b>3,9E-03</b> | 3,4E-03         | 1,1E-02              | 1,1E-02                         |
| 8        | 2,6E-03                          | 3,3E-03        | <b>4,2E-03</b> | 3,6E-03         | 1,1E-02              | 1,2E-02                         |
| 9        | 2,7E-03                          | 3,4E-03        | <b>4,3E-03</b> | 3,7E-03         | 1,2E-02              | 1,2E-02                         |
| 10       | 2,8E-03                          | 3,5E-03        | <b>4,5E-03</b> | 3,9E-03         | 1,2E-02              | 1,3E-02                         |
| 14       | 3,0E-03                          | 3,7E-03        | <b>4,8E-03</b> | 4,1E-03         | 1,3E-02              | 1,3E-02                         |
| 15       | 3,0E-03                          | 3,8E-03        | <b>4,8E-03</b> | 4,1E-03         | 1,3E-02              | 1,3E-02                         |
| 20       | 3,1E-03                          | 3,8E-03        | <b>4,9E-03</b> | 4,2E-03         |                      | 1,4E-02                         |
| 30       | 3,1E-03                          | 3,9E-03        | <b>4,9E-03</b> | 4,2E-03         |                      | 1,4E-02                         |
| 40       |                                  | 3,9E-03        |                |                 |                      |                                 |
| 45       |                                  |                |                |                 |                      |                                 |
| 50       |                                  |                |                |                 |                      |                                 |
| 60       |                                  |                |                |                 |                      |                                 |
| 70       |                                  |                |                |                 |                      |                                 |
| 80       |                                  |                |                |                 |                      |                                 |
| 90       |                                  |                |                |                 |                      |                                 |
| 100      |                                  |                |                |                 |                      |                                 |
| 120      |                                  |                |                |                 |                      |                                 |
| 180      |                                  |                |                |                 |                      |                                 |
| 200      |                                  |                |                |                 |                      |                                 |
| 300      |                                  |                |                |                 |                      |                                 |
| 360      |                                  |                |                |                 |                      |                                 |
| 400      |                                  |                |                |                 |                      |                                 |
| 500      |                                  |                |                |                 |                      |                                 |
| 600      |                                  |                |                |                 |                      |                                 |
| 700      |                                  |                |                |                 |                      |                                 |
| 800      |                                  |                |                |                 |                      |                                 |
| 900      |                                  |                |                |                 |                      |                                 |
| 1000     |                                  |                |                |                 |                      |                                 |
| 2000     |                                  |                |                |                 |                      |                                 |
| 3000     |                                  |                |                |                 |                      |                                 |
| 4000     |                                  |                |                |                 |                      |                                 |
| 5000     |                                  |                |                |                 |                      |                                 |
| 6000     |                                  |                |                |                 |                      |                                 |
| 8000     |                                  |                |                |                 |                      |                                 |
| 10000    |                                  |                |                |                 |                      |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                 |           | Ingestion<br>f <sub>i</sub> =0,4 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |                                  |                                 |
| 1        | 2,4E-01                          | 3,9E-01  | <b>6,1E-01</b>  | 5,6E-01   | 8,3E-01                          | 8,8E-01                         |
| 2        | 4,1E-01                          | 6,3E-01  | <b>9,4E-01</b>  | 8,7E-01   | 1,3E+00                          | 1,6E+00                         |
| 3        | 5,3E-01                          | 7,9E-01  | <b>1,2E+00</b>  | 1,1E+00   | 1,6E+00                          | 2,1E+00                         |
| 4        | 6,2E-01                          | 9,1E-01  | <b>1,3E+00</b>  | 1,2E+00   | 1,7E+00                          | 2,5E+00                         |
| 5        | 6,9E-01                          | 1,0E+00  | <b>1,4E+00</b>  | 1,3E+00   | 1,9E+00                          | 2,8E+00                         |
| 6        | 7,5E-01                          | 1,1E+00  | <b>1,5E+00</b>  | 1,4E+00   | 2,0E+00                          | 3,0E+00                         |
| 7        | 7,9E-01                          | 1,1E+00  | <b>1,6E+00</b>  | 1,4E+00   | 2,0E+00                          | 3,2E+00                         |
| 8        | 8,2E-01                          | 1,2E+00  | <b>1,6E+00</b>  | 1,5E+00   | 2,1E+00                          | 3,3E+00                         |
| 9        | 8,4E-01                          | 1,2E+00  | <b>1,7E+00</b>  | 1,5E+00   | 2,1E+00                          | 3,4E+00                         |
| 10       | 8,6E-01                          | 1,2E+00  | <b>1,7E+00</b>  | 1,5E+00   | 2,2E+00                          | 3,5E+00                         |
| 14       | 9,0E-01                          | 1,3E+00  | <b>1,7E+00</b>  | 1,6E+00   | 2,2E+00                          | 3,7E+00                         |
| 15       | 9,0E-01                          | 1,3E+00  | <b>1,8E+00</b>  | 1,6E+00   | 2,2E+00                          | 3,7E+00                         |
| 20       | 9,1E-01                          |          | <b>1,8E+00</b>  |           | 2,3E+00                          | 3,7E+00                         |
| 30       | 9,2E-01                          |          |                 |           | 2,3E+00                          | 3,8E+00                         |
| 40       | 9,2E-01                          |          |                 |           |                                  | 3,8E+00                         |
| 45       |                                  |          |                 |           |                                  |                                 |
| 50       |                                  |          |                 |           |                                  |                                 |
| 60       |                                  |          |                 |           |                                  |                                 |
| 70       |                                  |          |                 |           |                                  |                                 |
| 80       |                                  |          |                 |           |                                  |                                 |
| 90       |                                  |          |                 |           |                                  |                                 |
| 100      |                                  |          |                 |           |                                  |                                 |
| 120      |                                  |          |                 |           |                                  |                                 |
| 180      |                                  |          |                 |           |                                  |                                 |
| 200      |                                  |          |                 |           |                                  |                                 |
| 300      |                                  |          |                 |           |                                  |                                 |
| 360      |                                  |          |                 |           |                                  |                                 |
| 400      |                                  |          |                 |           |                                  |                                 |
| 500      |                                  |          |                 |           |                                  |                                 |
| 600      |                                  |          |                 |           |                                  |                                 |
| 700      |                                  |          |                 |           |                                  |                                 |
| 800      |                                  |          |                 |           |                                  |                                 |
| 900      |                                  |          |                 |           |                                  |                                 |
| 1000     |                                  |          |                 |           |                                  |                                 |
| 2000     |                                  |          |                 |           |                                  |                                 |
| 3000     |                                  |          |                 |           |                                  |                                 |
| 4000     |                                  |          |                 |           |                                  |                                 |
| 5000     |                                  |          |                 |           |                                  |                                 |
| 6000     |                                  |          |                 |           |                                  |                                 |
| 8000     |                                  |          |                 |           |                                  |                                 |
| 10000    |                                  |          |                 |           |                                  |                                 |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_i=0,4$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                        |                                 |
| 1        | 1,7E-04                          | 2,0E-04        | <b>2,5E-04</b> | 2,2E-04         | 2,0E-04                | 7,7E-04                         |
| 2        | 7,6E-04                          | 9,4E-04        | <b>1,2E-03</b> | 1,0E-03         | 1,2E-03                | 3,4E-03                         |
| 3        | 1,3E-03                          | 1,6E-03        | <b>2,1E-03</b> | 1,8E-03         | 2,1E-03                | 5,8E-03                         |
| 4        | 1,7E-03                          | 2,2E-03        | <b>2,7E-03</b> | 2,3E-03         | 2,9E-03                | 7,7E-03                         |
| 5        | 2,1E-03                          | 2,6E-03        | <b>3,2E-03</b> | 2,8E-03         | 3,4E-03                | 9,1E-03                         |
| 6        | 2,3E-03                          | 2,9E-03        | <b>3,6E-03</b> | 3,1E-03         | 3,9E-03                | 1,0E-02                         |
| 7        | 2,5E-03                          | 3,1E-03        | <b>3,9E-03</b> | 3,4E-03         | 4,2E-03                | 1,1E-02                         |
| 8        | 2,6E-03                          | 3,3E-03        | <b>4,2E-03</b> | 3,6E-03         | 4,5E-03                | 1,2E-02                         |
| 9        | 2,7E-03                          | 3,4E-03        | <b>4,3E-03</b> | 3,7E-03         | 4,7E-03                | 1,2E-02                         |
| 10       | 2,8E-03                          | 3,5E-03        | <b>4,5E-03</b> | 3,9E-03         | 4,8E-03                | 1,3E-02                         |
| 14       | 3,0E-03                          | 3,7E-03        | <b>4,8E-03</b> | 4,1E-03         | 5,1E-03                | 1,3E-02                         |
| 15       | 3,0E-03                          | 3,8E-03        | <b>4,8E-03</b> | 4,1E-03         | 5,2E-03                | 1,3E-02                         |
| 20       | 3,1E-03                          | 3,8E-03        | <b>4,9E-03</b> | 4,2E-03         | 5,3E-03                | 1,4E-02                         |
| 30       | 3,1E-03                          | 3,9E-03        | <b>4,9E-03</b> | 4,2E-03         | 5,3E-03                | 1,4E-02                         |
| 40       |                                  | 3,9E-03        |                |                 |                        |                                 |
| 45       |                                  |                |                |                 |                        |                                 |
| 50       |                                  |                |                |                 |                        |                                 |
| 60       |                                  |                |                |                 |                        |                                 |
| 70       |                                  |                |                |                 |                        |                                 |
| 80       |                                  |                |                |                 |                        |                                 |
| 90       |                                  |                |                |                 |                        |                                 |
| 100      |                                  |                |                |                 |                        |                                 |
| 120      |                                  |                |                |                 |                        |                                 |
| 180      |                                  |                |                |                 |                        |                                 |
| 200      |                                  |                |                |                 |                        |                                 |
| 300      |                                  |                |                |                 |                        |                                 |
| 360      |                                  |                |                |                 |                        |                                 |
| 400      |                                  |                |                |                 |                        |                                 |
| 500      |                                  |                |                |                 |                        |                                 |
| 600      |                                  |                |                |                 |                        |                                 |
| 700      |                                  |                |                |                 |                        |                                 |
| 800      |                                  |                |                |                 |                        |                                 |
| 900      |                                  |                |                |                 |                        |                                 |
| 1000     |                                  |                |                |                 |                        |                                 |
| 2000     |                                  |                |                |                 |                        |                                 |
| 3000     |                                  |                |                |                 |                        |                                 |
| 4000     |                                  |                |                |                 |                        |                                 |
| 5000     |                                  |                |                |                 |                        |                                 |
| 6000     |                                  |                |                |                 |                        |                                 |
| 8000     |                                  |                |                |                 |                        |                                 |
| 10000    |                                  |                |                |                 |                        |                                 |



## Hg-197 anorg.

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F anorg.) |          |                 |           | Ingestion<br>f <sub>i</sub> =0,02 | direkte<br>Aufnahme<br>ins Blut |
|----------|---|----------|-----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                             | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |                                   |                                 |
| 1        | 2,4E-01                                 | 3,9E-01  | <b>6,0E-01</b>  | 5,6E-01   | 8,0E-01                           | 8,8E-01                         |
| 2        | 4,1E-01                                 | 6,2E-01  | <b>9,2E-01</b>  | 8,4E-01   | 1,2E+00                           | 1,6E+00                         |
| 3        | 5,2E-01                                 | 7,6E-01  | <b>1,1E+00</b>  | 1,0E+00   | 1,3E+00                           | 2,1E+00                         |
| 4        | 6,1E-01                                 | 8,6E-01  | <b>1,2E+00</b>  | 1,1E+00   | 1,3E+00                           | 2,5E+00                         |
| 5        | 6,7E-01                                 | 9,4E-01  | <b>1,3E+00</b>  | 1,2E+00   | 1,3E+00                           | 2,7E+00                         |
| 6        | 7,2E-01                                 | 9,9E-01  | <b>1,4E+00</b>  | 1,2E+00   | 1,3E+00                           | 3,0E+00                         |
| 7        | 7,6E-01                                 | 1,0E+00  | <b>1,4E+00</b>  | 1,3E+00   | 1,4E+00                           | 3,1E+00                         |
| 8        | 7,8E-01                                 | 1,1E+00  | <b>1,5E+00</b>  | 1,3E+00   | 1,4E+00                           | 3,3E+00                         |
| 9        | 8,1E-01                                 | 1,1E+00  | <b>1,5E+00</b>  | 1,3E+00   |                                   | 3,4E+00                         |
| 10       | 8,2E-01                                 | 1,1E+00  | <b>1,5E+00</b>  | 1,3E+00   |                                   | 3,4E+00                         |
| 14       | 8,6E-01                                 | 1,1E+00  | <b>1,6E+00</b>  | 1,4E+00   |                                   | 3,6E+00                         |
| 15       | 8,6E-01                                 | 1,1E+00  | <b>1,6E+00</b>  | 1,4E+00   |                                   | 3,6E+00                         |
| 20       | 8,7E-01                                 | 1,2E+00  |                 |           |                                   | 3,7E+00                         |
| 30       | 8,7E-01                                 | 1,2E+00  |                 |           |                                   | 3,7E+00                         |
| 40       |   |          |                 |           |                                   |                                 |
| 45       |   |          |                 |           |                                   |                                 |
| 50       |   |          |                 |           |                                   |                                 |
| 60       |   |          |                 |           |                                   |                                 |
| 70       |   |          |                 |           |                                   |                                 |
| 80       |   |          |                 |           |                                   |                                 |
| 90       |   |          |                 |           |                                   |                                 |
| 100      |   |          |                 |           |                                   |                                 |
| 120      |   |          |                 |           |                                   |                                 |
| 180      |   |          |                 |           |                                   |                                 |
| 200      |   |          |                 |           |                                   |                                 |
| 300      |   |          |                 |           |                                   |                                 |
| 360      |   |          |                 |           |                                   |                                 |
| 400      |   |          |                 |           |                                   |                                 |
| 500      |   |          |                 |           |                                   |                                 |
| 600      |   |          |                 |           |                                   |                                 |
| 700      |   |          |                 |           |                                   |                                 |
| 800      |   |          |                 |           |                                   |                                 |
| 900      |   |          |                 |           |                                   |                                 |
| 1000     |   |          |                 |           |                                   |                                 |
| 2000     |   |          |                 |           |                                   |                                 |
| 3000     |   |          |                 |           |                                   |                                 |
| 4000     |   |          |                 |           |                                   |                                 |
| 5000     |   |          |                 |           |                                   |                                 |
| 6000     |   |          |                 |           |                                   |                                 |
| 8000     |   |          |                 |           |                                   |                                 |
| 10000    |   |          |                 |           |                                   |                                 |

## Hg-197 anorg.

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_i=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 3,2E-04                          | 3,6E-04        | <b>4,3E-04</b> | 3,6E-04         | 1,7E-05                 | 1,5E-03                         |
| 2        | 1,5E-03                          | 1,6E-03        | <b>1,9E-03</b> | 1,6E-03         | 1,1E-04                 | 6,8E-03                         |
| 3        | 2,5E-03                          | 2,8E-03        | <b>3,3E-03</b> | 2,7E-03         | 2,0E-04                 | 1,2E-02                         |
| 4        | 3,3E-03                          | 3,7E-03        | <b>4,3E-03</b> | 3,6E-03         | 2,8E-04                 | 1,5E-02                         |
| 5        | 3,9E-03                          | 4,3E-03        | <b>5,1E-03</b> | 4,3E-03         | 3,3E-04                 | 1,8E-02                         |
| 6        | 4,3E-03                          | 4,9E-03        | <b>5,7E-03</b> | 4,8E-03         | 3,7E-04                 | 2,0E-02                         |
| 7        | 4,7E-03                          | 5,2E-03        | <b>6,2E-03</b> | 5,1E-03         | 4,1E-04                 | 2,2E-02                         |
| 8        | 4,9E-03                          | 5,5E-03        | <b>6,5E-03</b> | 5,4E-03         | 4,3E-04                 | 2,3E-02                         |
| 9        | 5,1E-03                          | 5,8E-03        | <b>6,8E-03</b> | 5,6E-03         | 4,5E-04                 | 2,4E-02                         |
| 10       | 5,3E-03                          | 5,9E-03        | <b>7,0E-03</b> | 5,8E-03         | 4,6E-04                 | 2,4E-02                         |
| 14       | 5,6E-03                          | 6,3E-03        | <b>7,4E-03</b> | 6,1E-03         | 4,9E-04                 | 2,6E-02                         |
| 15       | 5,6E-03                          | 6,3E-03        | <b>7,4E-03</b> | 6,2E-03         | 4,9E-04                 | 2,6E-02                         |
| 20       | 5,7E-03                          | 6,4E-03        | <b>7,5E-03</b> | 6,3E-03         | 5,0E-04                 | 2,6E-02                         |
| 30       | 5,7E-03                          | 6,4E-03        | <b>7,6E-03</b> | 6,3E-03         | 5,1E-04                 | 2,7E-02                         |
| 40       |                                  | 6,5E-03        | <b>7,6E-03</b> |                 | 5,1E-04                 | 2,7E-02                         |
| 45       |                                  | 6,5E-03        |                |                 |                         |                                 |
| 50       |                                  |                |                |                 |                         |                                 |
| 60       |                                  |                |                |                 |                         |                                 |
| 70       |                                  |                |                |                 |                         |                                 |
| 80       |                                  |                |                |                 |                         |                                 |
| 90       |                                  |                |                |                 |                         |                                 |
| 100      |                                  |                |                |                 |                         |                                 |
| 120      |                                  |                |                |                 |                         |                                 |
| 180      |                                  |                |                |                 |                         |                                 |
| 200      |                                  |                |                |                 |                         |                                 |
| 300      |                                  |                |                |                 |                         |                                 |
| 360      |                                  |                |                |                 |                         |                                 |
| 400      |                                  |                |                |                 |                         |                                 |
| 500      |                                  |                |                |                 |                         |                                 |
| 600      |                                  |                |                |                 |                         |                                 |
| 700      |                                  |                |                |                 |                         |                                 |
| 800      |                                  |                |                |                 |                         |                                 |
| 900      |                                  |                |                |                 |                         |                                 |
| 1000     |                                  |                |                |                 |                         |                                 |
| 2000     |                                  |                |                |                 |                         |                                 |
| 3000     |                                  |                |                |                 |                         |                                 |
| 4000     |                                  |                |                |                 |                         |                                 |
| 5000     |                                  |                |                |                 |                         |                                 |
| 6000     |                                  |                |                |                 |                         |                                 |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

## Hg-197 anorg.

Retention im Ganzkörper R'(t) bei chronischer Zufuhr  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion<br>f <sub>i</sub> =0,02 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,4E-01                          | 3,8E-01  | <b>5,9E-01</b> | 5,5E-01   | 8,0E-01                           | 8,8E-01                         |
| 2        | 3,9E-01                          | 5,8E-01  | <b>8,4E-01</b> | 7,7E-01   | 1,2E+00                           | 1,6E+00                         |
| 3        | 5,0E-01                          | 6,8E-01  | <b>9,5E-01</b> | 8,6E-01   | 1,3E+00                           | 2,1E+00                         |
| 4        | 5,7E-01                          | 7,5E-01  | <b>1,0E+00</b> | 9,0E-01   | 1,3E+00                           | 2,5E+00                         |
| 5        | 6,2E-01                          | 7,9E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,3E+00                           | 2,7E+00                         |
| 6        | 6,6E-01                          | 8,2E-01  | <b>1,1E+00</b> | 9,4E-01   | 1,3E+00                           | 3,0E+00                         |
| 7        | 6,9E-01                          | 8,5E-01  | <b>1,1E+00</b> | 9,5E-01   | 1,4E+00                           | 3,1E+00                         |
| 8        | 7,2E-01                          | 8,7E-01  |                | 9,5E-01   | 1,4E+00                           | 3,3E+00                         |
| 9        | 7,4E-01                          | 8,8E-01  |                | 9,6E-01   |                                   | 3,4E+00                         |
| 10       | 7,5E-01                          | 8,9E-01  |                | 9,6E-01   |                                   | 3,4E+00                         |
| 14       | 7,8E-01                          | 9,1E-01  |                | 9,7E-01   |                                   | 3,6E+00                         |
| 15       | 7,8E-01                          | 9,2E-01  |                | 9,8E-01   |                                   | 3,6E+00                         |
| 20       | 7,9E-01                          | 9,2E-01  |                | 9,8E-01   |                                   | 3,7E+00                         |
| 30       | 7,9E-01                          | 9,3E-01  |                |           |                                   | 3,7E+00                         |
| 40       |                                  | 9,3E-01  |                |           |                                   |                                 |
| 45       |                                  |          |                |           |                                   |                                 |
| 50       |                                  |          |                |           |                                   |                                 |
| 60       |                                  |          |                |           |                                   |                                 |
| 70       |                                  |          |                |           |                                   |                                 |
| 80       |                                  |          |                |           |                                   |                                 |
| 90       |                                  |          |                |           |                                   |                                 |
| 100      |                                  |          |                |           |                                   |                                 |
| 120      |                                  |          |                |           |                                   |                                 |
| 180      |                                  |          |                |           |                                   |                                 |
| 200      |                                  |          |                |           |                                   |                                 |
| 300      |                                  |          |                |           |                                   |                                 |
| 360      |                                  |          |                |           |                                   |                                 |
| 400      |                                  |          |                |           |                                   |                                 |
| 500      |                                  |          |                |           |                                   |                                 |
| 600      |                                  |          |                |           |                                   |                                 |
| 700      |                                  |          |                |           |                                   |                                 |
| 800      |                                  |          |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

## Hg-197 anorg.

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation (Absorptionsklasse M anorg.) |                |                                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|---|----------------|--------------------------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu$ m                        | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |                         |                                 |
| 1        | 3,4E-05                                 | 4,0E-05        | <b>4,9E-05</b>                 | 4,2E-05         | 1,7E-05                 | 1,5E-03                         |
| 2        | 1,6E-04                                 | 1,9E-04        | <b>2,3E-04</b>                 | 2,0E-04         | 1,1E-04                 | 6,8E-03                         |
| 3        | 2,7E-04                                 | 3,3E-04        | <b>4,1E-04</b>                 | 3,5E-04         | 2,0E-04                 | 1,2E-02                         |
| 4        | 3,6E-04                                 | 4,3E-04        | <b>5,4E-04</b>                 | 4,6E-04         | 2,8E-04                 | 1,5E-02                         |
| 5        | 4,3E-04                                 | 5,2E-04        | <b>6,4E-04</b>                 | 5,5E-04         | 3,3E-04                 | 1,8E-02                         |
| 6        | 4,9E-04                                 | 5,8E-04        | <b>7,2E-04</b>                 | 6,1E-04         | 3,7E-04                 | 2,0E-02                         |
| 7        | 5,3E-04                                 | 6,3E-04        | <b>7,8E-04</b>                 | 6,6E-04         | 4,1E-04                 | 2,2E-02                         |
| 8        | 5,6E-04                                 | 6,7E-04        | <b>8,3E-04</b>                 | 7,0E-04         | 4,3E-04                 | 2,3E-02                         |
| 9        | 5,9E-04                                 | 7,0E-04        | <b>8,6E-04</b>                 | 7,3E-04         | 4,5E-04                 | 2,4E-02                         |
| 10       | 6,1E-04                                 | 7,2E-04        | <b>8,9E-04</b>                 | 7,5E-04         | 4,6E-04                 | 2,4E-02                         |
| 14       | 6,6E-04                                 | 7,8E-04        | <b>9,5E-04</b>                 | 8,0E-04         | 4,9E-04                 | 2,6E-02                         |
| 15       | 6,6E-04                                 | 7,8E-04        | <b>9,5E-04</b>                 | 8,1E-04         | 4,9E-04                 | 2,6E-02                         |
| 20       | 6,8E-04                                 | 8,0E-04        | <b>9,7E-04</b>                 | 8,2E-04         | 5,0E-04                 | 2,6E-02                         |
| 30       | 6,8E-04                                 | 8,0E-04        | <b>9,7E-04</b>                 | 8,3E-04         | 5,1E-04                 | 2,7E-02                         |
| 40       |   |                | <b>9,8E-04</b>                 | 8,3E-04         | 5,1E-04                 | 2,7E-02                         |
| 45       |   |                |                                |                 |                         |                                 |
| 50       |   |                |                                |                 |                         |                                 |
| 60       |   |                |                                |                 |                         |                                 |
| 70       |   |                |                                |                 |                         |                                 |
| 80       |   |                |                                |                 |                         |                                 |
| 90       |   |                |                                |                 |                         |                                 |
| 100      |   |                |                                |                 |                         |                                 |
| 120      |   |                |                                |                 |                         |                                 |
| 180      |   |                |                                |                 |                         |                                 |
| 200      |   |                |                                |                 |                         |                                 |
| 300      |   |                |                                |                 |                         |                                 |
| 360      |   |                |                                |                 |                         |                                 |
| 400      |   |                |                                |                 |                         |                                 |
| 500      |   |                |                                |                 |                         |                                 |
| 600      |   |                |                                |                 |                         |                                 |
| 700      |   |                |                                |                 |                         |                                 |
| 800      |   |                |                                |                 |                         |                                 |
| 900      |   |                |                                |                 |                         |                                 |
| 1000     |   |                |                                |                 |                         |                                 |
| 2000     |   |                |                                |                 |                         |                                 |
| 3000     |   |                |                                |                 |                         |                                 |
| 4000     |   |                |                                |                 |                         |                                 |
| 5000     |   |                |                                |                 |                         |                                 |
| 6000     |   |                |                                |                 |                         |                                 |
| 8000     |   |                |                                |                 |                         |                                 |
| 10000    |   |                |                                |                 |                         |                                 |

# Hg-197 Dampf

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | Dampf      |           |                                 |
| 1        | 6,2E-01    |           |                                 |
| 2        | 1,1E+00    |           |                                 |
| 3        | 1,5E+00    |           |                                 |
| 4        | 1,7E+00    |           |                                 |
| 5        | 1,9E+00    |           |                                 |
| 6        | 2,1E+00    |           |                                 |
| 7        | 2,2E+00    |           |                                 |
| 8        | 2,3E+00    |           |                                 |
| 9        | 2,4E+00    |           |                                 |
| 10       | 2,5E+00    |           |                                 |
| 14       | 2,6E+00    |           |                                 |
| 15       | 2,6E+00    |           |                                 |
| 20       |            |           |                                 |
| 30       |            |           |                                 |
| 40       |            |           |                                 |
| 45       |            |           |                                 |
| 50       |            |           |                                 |
| 60       |            |           |                                 |
| 70       |            |           |                                 |
| 80       |            |           |                                 |
| 90       |            |           |                                 |
| 100      |            |           |                                 |
| 120      |            |           |                                 |
| 180      |            |           |                                 |
| 200      |            |           |                                 |
| 300      |            |           |                                 |
| 360      |            |           |                                 |
| 400      |            |           |                                 |
| 500      |            |           |                                 |
| 600      |            |           |                                 |
| 700      |            |           |                                 |
| 800      |            |           |                                 |
| 900      |            |           |                                 |
| 1000     |            |           |                                 |
| 2000     |            |           |                                 |
| 3000     |            |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |

# Hg-197 Dampf

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

| Zeit (d) | Inhalation | Ingestion | direkte Aufnahme ins Blut |
|----------|------------|-----------|---------------------------|
|          | Dampf      |           |                           |
| 1        | 1,0E-04    |           |                           |
| 2        | 9,7E-04    |           |                           |
| 3        | 2,5E-03    |           |                           |
| 4        | 4,1E-03    |           |                           |
| 5        | 5,6E-03    |           |                           |
| 6        | 6,9E-03    |           |                           |
| 7        | 7,9E-03    |           |                           |
| 8        | 8,7E-03    |           |                           |
| 9        | 9,3E-03    |           |                           |
| 10       | 9,8E-03    |           |                           |
| 14       | 1,1E-02    |           |                           |
| 15       | 1,1E-02    |           |                           |
| 20       |            |           |                           |
| 30       |            |           |                           |
| 40       |            |           |                           |
| 45       |            |           |                           |
| 50       |            |           |                           |
| 60       |            |           |                           |
| 70       |            |           |                           |
| 80       |            |           |                           |
| 90       |            |           |                           |
| 100      |            |           |                           |
| 120      |            |           |                           |
| 180      |            |           |                           |
| 200      |            |           |                           |
| 300      |            |           |                           |
| 360      |            |           |                           |
| 400      |            |           |                           |
| 500      |            |           |                           |
| 600      |            |           |                           |
| 700      |            |           |                           |
| 800      |            |           |                           |
| 900      |            |           |                           |
| 1000     |            |           |                           |
| 2000     |            |           |                           |
| 3000     |            |           |                           |
| 4000     |            |           |                           |
| 5000     |            |           |                           |
| 6000     |            |           |                           |
| 8000     |            |           |                           |
| 10000    |            |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>i</sub> =1 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|--------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,9E-01                        | 9,9E-01                         |
| 2        | 5,1E-01                          | 7,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 2,0E+00                        | 2,0E+00                         |
| 3        | 7,4E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,9E+00                        | 2,9E+00                         |
| 4        | 9,5E-01                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 3,8E+00                        | 3,8E+00                         |
| 5        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 2,0E+00   | 4,7E+00                        | 4,8E+00                         |
| 6        | 1,4E+00                          | 1,9E+00  | <b>2,6E+00</b> | 2,3E+00   | 5,6E+00                        | 5,6E+00                         |
| 7        | 1,6E+00                          | 2,1E+00  | <b>2,9E+00</b> | 2,6E+00   | 6,5E+00                        | 6,5E+00                         |
| 8        | 1,8E+00                          | 2,4E+00  | <b>3,2E+00</b> | 2,8E+00   | 7,3E+00                        | 7,4E+00                         |
| 9        | 1,9E+00                          | 2,6E+00  | <b>3,5E+00</b> | 3,1E+00   | 8,1E+00                        | 8,2E+00                         |
| 10       | 2,1E+00                          | 2,8E+00  | <b>3,8E+00</b> | 3,3E+00   | 8,9E+00                        | 9,0E+00                         |
| 14       | 2,8E+00                          | 3,7E+00  | <b>4,9E+00</b> | 4,3E+00   | 1,2E+01                        | 1,2E+01                         |
| 15       | 3,0E+00                          | 3,9E+00  | <b>5,2E+00</b> | 4,5E+00   | 1,3E+01                        | 1,3E+01                         |
| 20       | 3,7E+00                          | 4,8E+00  | <b>6,4E+00</b> | 5,6E+00   | 1,6E+01                        | 1,6E+01                         |
| 30       | 5,0E+00                          | 6,5E+00  | <b>8,4E+00</b> | 7,3E+00   | 2,2E+01                        | 2,2E+01                         |
| 40       | 6,1E+00                          | 7,7E+00  | <b>1,0E+01</b> | 8,7E+00   | 2,6E+01                        | 2,6E+01                         |
| 45       | 6,5E+00                          | 8,3E+00  | <b>1,1E+01</b> | 9,3E+00   | 2,8E+01                        | 2,8E+01                         |
| 50       | 6,9E+00                          | 8,8E+00  | <b>1,1E+01</b> | 9,9E+00   | 3,0E+01                        | 3,0E+01                         |
| 60       | 7,5E+00                          | 9,6E+00  | <b>1,2E+01</b> | 1,1E+01   | 3,3E+01                        | 3,3E+01                         |
| 70       | 8,0E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 3,5E+01                        | 3,5E+01                         |
| 80       | 8,4E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 3,7E+01                        | 3,7E+01                         |
| 90       | 8,8E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 3,8E+01                        | 3,8E+01                         |
| 100      | 9,0E+00                          | 1,1E+01  | <b>1,5E+01</b> | 1,3E+01   | 3,9E+01                        | 3,9E+01                         |
| 120      | 9,4E+00                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 4,1E+01                        | 4,1E+01                         |
| 180      | 9,9E+00                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 4,3E+01                        | 4,3E+01                         |
| 200      | 1,0E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 4,3E+01                        | 4,4E+01                         |
| 300      | 1,0E+01                          |          |                |           | 4,4E+01                        | 4,4E+01                         |
| 360      |                                  |          |                |           | 4,4E+01                        |                                 |
| 400      |                                  |          |                |           |                                |                                 |
| 500      |                                  |          |                |           |                                |                                 |
| 600      |                                  |          |                |           |                                |                                 |
| 700      |                                  |          |                |           |                                |                                 |
| 800      |                                  |          |                |           |                                |                                 |
| 900      |                                  |          |                |           |                                |                                 |
| 1000     |                                  |          |                |           |                                |                                 |
| 2000     |                                  |          |                |           |                                |                                 |
| 3000     |                                  |          |                |           |                                |                                 |
| 4000     |                                  |          |                |           |                                |                                 |
| 5000     |                                  |          |                |           |                                |                                 |
| 6000     |                                  |          |                |           |                                |                                 |
| 8000     |                                  |          |                |           |                                |                                 |
| 10000    |                                  |          |                |           |                                |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>i</sub> =0,4 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                  |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,8E-01</b> | 6,3E-01   | 9,3E-01                          | 9,9E-01                         |
| 2        | 5,1E-01                          | 7,8E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                          | 2,0E+00                         |
| 3        | 7,4E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,1E+00                          | 2,9E+00                         |
| 4        | 9,5E-01                          | 1,4E+00  | <b>1,9E+00</b> | 1,7E+00   | 2,5E+00                          | 3,8E+00                         |
| 5        | 1,2E+00                          | 1,6E+00  | <b>2,2E+00</b> | 2,0E+00   | 2,9E+00                          | 4,8E+00                         |
| 6        | 1,4E+00                          | 1,9E+00  | <b>2,6E+00</b> | 2,3E+00   | 3,3E+00                          | 5,6E+00                         |
| 7        | 1,6E+00                          | 2,1E+00  | <b>2,9E+00</b> | 2,6E+00   | 3,6E+00                          | 6,5E+00                         |
| 8        | 1,8E+00                          | 2,4E+00  | <b>3,2E+00</b> | 2,8E+00   | 3,9E+00                          | 7,4E+00                         |
| 9        | 1,9E+00                          | 2,6E+00  | <b>3,5E+00</b> | 3,1E+00   | 4,3E+00                          | 8,2E+00                         |
| 10       | 2,1E+00                          | 2,8E+00  | <b>3,8E+00</b> | 3,3E+00   | 4,6E+00                          | 9,0E+00                         |
| 14       | 2,8E+00                          | 3,7E+00  | <b>4,9E+00</b> | 4,3E+00   | 5,8E+00                          | 1,2E+01                         |
| 15       | 3,0E+00                          | 3,9E+00  | <b>5,2E+00</b> | 4,5E+00   | 6,1E+00                          | 1,3E+01                         |
| 20       | 3,7E+00                          | 4,8E+00  | <b>6,4E+00</b> | 5,6E+00   | 7,5E+00                          | 1,6E+01                         |
| 30       | 5,0E+00                          | 6,5E+00  | <b>8,4E+00</b> | 7,3E+00   | 9,7E+00                          | 2,2E+01                         |
| 40       | 6,1E+00                          | 7,7E+00  | <b>1,0E+01</b> | 8,7E+00   | 1,2E+01                          | 2,6E+01                         |
| 45       | 6,5E+00                          | 8,3E+00  | <b>1,1E+01</b> | 9,3E+00   | 1,2E+01                          | 2,8E+01                         |
| 50       | 6,9E+00                          | 8,8E+00  | <b>1,1E+01</b> | 9,9E+00   | 1,3E+01                          | 3,0E+01                         |
| 60       | 7,5E+00                          | 9,6E+00  | <b>1,2E+01</b> | 1,1E+01   | 1,4E+01                          | 3,3E+01                         |
| 70       | 8,0E+00                          | 1,0E+01  | <b>1,3E+01</b> | 1,1E+01   | 1,5E+01                          | 3,5E+01                         |
| 80       | 8,4E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 1,6E+01                          | 3,7E+01                         |
| 90       | 8,8E+00                          | 1,1E+01  | <b>1,4E+01</b> | 1,2E+01   | 1,6E+01                          | 3,8E+01                         |
| 100      | 9,0E+00                          | 1,1E+01  | <b>1,5E+01</b> | 1,3E+01   | 1,7E+01                          | 3,9E+01                         |
| 120      | 9,4E+00                          | 1,2E+01  | <b>1,5E+01</b> | 1,3E+01   | 1,7E+01                          | 4,1E+01                         |
| 180      | 9,9E+00                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 1,8E+01                          | 4,3E+01                         |
| 200      | 1,0E+01                          | 1,3E+01  | <b>1,6E+01</b> | 1,4E+01   | 1,8E+01                          | 4,4E+01                         |
| 300      | 1,0E+01                          |          |                |           | 1,9E+01                          | 4,4E+01                         |
| 360      |                                  |          |                |           | 1,9E+01                          |                                 |
| 400      |                                  |          |                |           |                                  |                                 |
| 500      |                                  |          |                |           |                                  |                                 |
| 600      |                                  |          |                |           |                                  |                                 |
| 700      |                                  |          |                |           |                                  |                                 |
| 800      |                                  |          |                |           |                                  |                                 |
| 900      |                                  |          |                |           |                                  |                                 |
| 1000     |                                  |          |                |           |                                  |                                 |
| 2000     |                                  |          |                |           |                                  |                                 |
| 3000     |                                  |          |                |           |                                  |                                 |
| 4000     |                                  |          |                |           |                                  |                                 |
| 5000     |                                  |          |                |           |                                  |                                 |
| 6000     |                                  |          |                |           |                                  |                                 |
| 8000     |                                  |          |                |           |                                  |                                 |
| 10000    |                                  |          |                |           |                                  |                                 |



## Hg-203 anorg.

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion<br>f <sub>i</sub> =0,02 | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                          | 4,4E-01  | <b>6,7E-01</b> | 6,2E-01   | 9,0E-01                           | 9,9E-01                         |
| 2        | 5,1E-01                          | 7,6E-01  | <b>1,1E+00</b> | 1,0E+00   | 1,4E+00                           | 2,0E+00                         |
| 3        | 7,2E-01                          | 1,0E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,6E+00                           | 2,9E+00                         |
| 4        | 9,2E-01                          | 1,3E+00  | <b>1,7E+00</b> | 1,6E+00   | 1,7E+00                           | 3,8E+00                         |
| 5        | 1,1E+00                          | 1,5E+00  | <b>2,0E+00</b> | 1,8E+00   | 1,8E+00                           | 4,7E+00                         |
| 6        | 1,3E+00                          | 1,7E+00  | <b>2,3E+00</b> | 2,0E+00   | 1,8E+00                           | 5,6E+00                         |
| 7        | 1,5E+00                          | 1,9E+00  | <b>2,5E+00</b> | 2,2E+00   | 1,8E+00                           | 6,4E+00                         |
| 8        | 1,7E+00                          | 2,1E+00  | <b>2,7E+00</b> | 2,4E+00   | 1,8E+00                           | 7,2E+00                         |
| 9        | 1,8E+00                          | 2,3E+00  | <b>2,9E+00</b> | 2,6E+00   | 1,9E+00                           | 8,0E+00                         |
| 10       | 2,0E+00                          | 2,5E+00  | <b>3,2E+00</b> | 2,7E+00   | 1,9E+00                           | 8,7E+00                         |
| 14       | 2,6E+00                          | 3,1E+00  | <b>4,0E+00</b> | 3,4E+00   | 1,9E+00                           | 1,2E+01                         |
| 15       | 2,7E+00                          | 3,3E+00  | <b>4,1E+00</b> | 3,6E+00   | 1,9E+00                           | 1,2E+01                         |
| 20       | 3,4E+00                          | 4,0E+00  | <b>5,0E+00</b> | 4,3E+00   | 2,0E+00                           | 1,5E+01                         |
| 30       | 4,4E+00                          | 5,2E+00  | <b>6,3E+00</b> | 5,4E+00   | 2,1E+00                           | 2,0E+01                         |
| 40       | 5,1E+00                          | 6,0E+00  | <b>7,3E+00</b> | 6,2E+00   | 2,2E+00                           | 2,3E+01                         |
| 45       | 5,4E+00                          | 6,3E+00  | <b>7,7E+00</b> | 6,5E+00   | 2,2E+00                           | 2,5E+01                         |
| 50       | 5,7E+00                          | 6,6E+00  | <b>8,0E+00</b> | 6,8E+00   | 2,2E+00                           | 2,6E+01                         |
| 60       | 6,1E+00                          | 7,1E+00  | <b>8,6E+00</b> | 7,3E+00   | 2,3E+00                           | 2,8E+01                         |
| 70       | 6,4E+00                          | 7,4E+00  | <b>9,0E+00</b> | 7,6E+00   | 2,3E+00                           | 2,9E+01                         |
| 80       | 6,6E+00                          | 7,7E+00  | <b>9,3E+00</b> | 7,8E+00   | 2,3E+00                           | 3,0E+01                         |
| 90       | 6,8E+00                          | 7,9E+00  | <b>9,5E+00</b> | 8,0E+00   | 2,3E+00                           | 3,1E+01                         |
| 100      | 6,9E+00                          | 8,0E+00  | <b>9,7E+00</b> | 8,2E+00   | 2,3E+00                           | 3,1E+01                         |
| 120      | 7,1E+00                          | 8,2E+00  | <b>9,9E+00</b> | 8,3E+00   | 2,3E+00                           | 3,2E+01                         |
| 180      | 7,2E+00                          | 8,4E+00  | <b>1,0E+01</b> | 8,6E+00   | 2,4E+00                           | 3,3E+01                         |
| 200      | 7,3E+00                          | 8,4E+00  | <b>1,0E+01</b> | 8,6E+00   | 2,4E+00                           | 3,3E+01                         |
| 300      | 7,3E+00                          | 8,5E+00  |                |           |                                   |                                 |
| 360      |                                  | 8,5E+00  |                |           |                                   |                                 |
| 400      |                                  |          |                |           |                                   |                                 |
| 500      |                                  |          |                |           |                                   |                                 |
| 600      |                                  |          |                |           |                                   |                                 |
| 700      |                                  |          |                |           |                                   |                                 |
| 800      |                                  |          |                |           |                                   |                                 |
| 900      |                                  |          |                |           |                                   |                                 |
| 1000     |                                  |          |                |           |                                   |                                 |
| 2000     |                                  |          |                |           |                                   |                                 |
| 3000     |                                  |          |                |           |                                   |                                 |
| 4000     |                                  |          |                |           |                                   |                                 |
| 5000     |                                  |          |                |           |                                   |                                 |
| 6000     |                                  |          |                |           |                                   |                                 |
| 8000     |                                  |          |                |           |                                   |                                 |
| 10000    |                                  |          |                |           |                                   |                                 |

## Hg-203 anorg.

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation (Absorptionsklasse M anorg.) |          |                |           | Ingestion<br>f <sub>i</sub> =0,02 | direkte<br>Aufnahme<br>ins Blut |
|----------|---|----------|----------------|-----------|-----------------------------------|---------------------------------|
|          | AMAD=0,3 µm                             | AMAD=1µm | AMAD=5µm       | AMAD=10µm |                                   |                                 |
| 1        | 2,7E-01                                 | 4,3E-01  | <b>6,6E-01</b> | 6,1E-01   | 9,0E-01                           | 9,9E-01                         |
| 2        | 4,9E-01                                 | 7,1E-01  | <b>1,0E+00</b> | 9,3E-01   | 1,4E+00                           | 2,0E+00                         |
| 3        | 6,8E-01                                 | 9,0E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,6E+00                           | 2,9E+00                         |
| 4        | 8,5E-01                                 | 1,0E+00  | <b>1,3E+00</b> | 1,2E+00   | 1,7E+00                           | 3,8E+00                         |
| 5        | 1,0E+00                                 | 1,2E+00  | <b>1,4E+00</b> | 1,2E+00   | 1,8E+00                           | 4,7E+00                         |
| 6        | 1,2E+00                                 | 1,3E+00  | <b>1,5E+00</b> | 1,3E+00   | 1,8E+00                           | 5,6E+00                         |
| 7        | 1,3E+00                                 | 1,4E+00  | <b>1,6E+00</b> | 1,4E+00   | 1,8E+00                           | 6,4E+00                         |
| 8        | 1,5E+00                                 | 1,5E+00  | <b>1,7E+00</b> | 1,4E+00   | 1,8E+00                           | 7,2E+00                         |
| 9        | 1,6E+00                                 | 1,7E+00  | <b>1,8E+00</b> | 1,4E+00   | 1,9E+00                           | 8,0E+00                         |
| 10       | 1,7E+00                                 | 1,8E+00  | <b>1,8E+00</b> | 1,5E+00   | 1,9E+00                           | 8,7E+00                         |
| 14       | 2,3E+00                                 | 2,2E+00  | <b>2,1E+00</b> | 1,7E+00   | 1,9E+00                           | 1,2E+01                         |
| 15       | 2,4E+00                                 | 2,3E+00  | <b>2,2E+00</b> | 1,7E+00   | 1,9E+00                           | 1,2E+01                         |
| 20       | 3,0E+00                                 | 2,7E+00  | <b>2,5E+00</b> | 1,9E+00   | 2,0E+00                           | 1,5E+01                         |
| 30       | 4,0E+00                                 | 3,5E+00  | <b>3,0E+00</b> | 2,2E+00   | 2,1E+00                           | 2,0E+01                         |
| 40       | 4,7E+00                                 | 4,1E+00  | <b>3,4E+00</b> | 2,4E+00   | 2,2E+00                           | 2,3E+01                         |
| 45       | 5,0E+00                                 | 4,3E+00  | <b>3,5E+00</b> | 2,5E+00   | 2,2E+00                           | 2,5E+01                         |
| 50       | 5,3E+00                                 | 4,5E+00  | <b>3,7E+00</b> | 2,6E+00   | 2,2E+00                           | 2,6E+01                         |
| 60       | 5,8E+00                                 | 4,9E+00  | <b>3,9E+00</b> | 2,7E+00   | 2,3E+00                           | 2,8E+01                         |
| 70       | 6,2E+00                                 | 5,2E+00  | <b>4,1E+00</b> | 2,8E+00   | 2,3E+00                           | 2,9E+01                         |
| 80       | 6,5E+00                                 | 5,5E+00  | <b>4,2E+00</b> | 2,9E+00   | 2,3E+00                           | 3,0E+01                         |
| 90       | 6,8E+00                                 | 5,7E+00  | <b>4,3E+00</b> | 2,9E+00   | 2,3E+00                           | 3,1E+01                         |
| 100      | 7,0E+00                                 | 5,8E+00  | <b>4,4E+00</b> | 3,0E+00   | 2,3E+00                           | 3,1E+01                         |
| 120      | 7,3E+00                                 | 6,0E+00  | <b>4,6E+00</b> | 3,1E+00   | 2,3E+00                           | 3,2E+01                         |
| 180      | 7,7E+00                                 | 6,4E+00  | <b>4,7E+00</b> | 3,2E+00   | 2,4E+00                           | 3,3E+01                         |
| 200      | 7,8E+00                                 | 6,4E+00  | <b>4,8E+00</b> | 3,2E+00   | 2,4E+00                           | 3,3E+01                         |
| 300      | 7,9E+00                                 | 6,5E+00  | <b>4,8E+00</b> |           |                                   |                                 |
| 360      | 7,9E+00                                 | 6,5E+00  |                |           |                                   |                                 |
| 400      |   |          |                |           |                                   |                                 |
| 500      |   |          |                |           |                                   |                                 |
| 600      |   |          |                |           |                                   |                                 |
| 700      |   |          |                |           |                                   |                                 |
| 800      |   |          |                |           |                                   |                                 |
| 900      |   |          |                |           |                                   |                                 |
| 1000     |   |          |                |           |                                   |                                 |
| 2000     |   |          |                |           |                                   |                                 |
| 3000     |   |          |                |           |                                   |                                 |
| 4000     |   |          |                |           |                                   |                                 |
| 5000     |   |          |                |           |                                   |                                 |
| 6000     |   |          |                |           |                                   |                                 |
| 8000     |   |          |                |           |                                   |                                 |
| 10000    |   |          |                |           |                                   |                                 |

# Hg-203 Dampf

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

| Zeit (d) | Inhalation | Ingestion | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|-----------|---------------------------------|
|          | Dampf      |           |                                 |
| 1        | 6,9E-01    |           |                                 |
| 2        | 1,4E+00    |           |                                 |
| 3        | 2,0E+00    |           |                                 |
| 4        | 2,7E+00    |           |                                 |
| 5        | 3,3E+00    |           |                                 |
| 6        | 4,0E+00    |           |                                 |
| 7        | 4,6E+00    |           |                                 |
| 8        | 5,1E+00    |           |                                 |
| 9        | 5,7E+00    |           |                                 |
| 10       | 6,3E+00    |           |                                 |
| 14       | 8,3E+00    |           |                                 |
| 15       | 8,8E+00    |           |                                 |
| 20       | 1,1E+01    |           |                                 |
| 30       | 1,4E+01    |           |                                 |
| 40       | 1,7E+01    |           |                                 |
| 45       | 1,8E+01    |           |                                 |
| 50       | 1,9E+01    |           |                                 |
| 60       | 2,0E+01    |           |                                 |
| 70       | 2,1E+01    |           |                                 |
| 80       | 2,2E+01    |           |                                 |
| 90       | 2,2E+01    |           |                                 |
| 100      | 2,3E+01    |           |                                 |
| 120      | 2,3E+01    |           |                                 |
| 180      | 2,4E+01    |           |                                 |
| 200      | 2,4E+01    |           |                                 |
| 300      |            |           |                                 |
| 360      |            |           |                                 |
| 400      |            |           |                                 |
| 500      |            |           |                                 |
| 600      |            |           |                                 |
| 700      |            |           |                                 |
| 800      |            |           |                                 |
| 900      |            |           |                                 |
| 1000     |            |           |                                 |
| 2000     |            |           |                                 |
| 3000     |            |           |                                 |
| 4000     |            |           |                                 |
| 5000     |            |           |                                 |
| 6000     |            |           |                                 |
| 8000     |            |           |                                 |
| 10000    |            |           |                                 |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**TI-201**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,5E-01                          | 4,0E-01  | <b>6,2E-01</b> | 5,8E-01   | 8,8E-01   | 8,8E-01                   |
| 2        | 4,2E-01                          | 6,6E-01  | <b>1,0E+00</b> | 9,2E-01   | 1,5E+00   | 1,6E+00                   |
| 3        | 5,4E-01                          | 8,4E-01  | <b>1,3E+00</b> | 1,2E+00   | 2,0E+00   | 2,1E+00                   |
| 4        | 6,4E-01                          | 9,8E-01  | <b>1,4E+00</b> | 1,3E+00   | 2,4E+00   | 2,4E+00                   |
| 5        | 7,0E-01                          | 1,1E+00  | <b>1,6E+00</b> | 1,4E+00   | 2,7E+00   | 2,7E+00                   |
| 6        | 7,6E-01                          | 1,1E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,9E+00   | 2,9E+00                   |
| 7        | 7,9E-01                          | 1,2E+00  | <b>1,8E+00</b> | 1,6E+00   | 3,1E+00   | 3,1E+00                   |
| 8        | 8,2E-01                          | 1,2E+00  | <b>1,8E+00</b> | 1,6E+00   | 3,2E+00   | 3,2E+00                   |
| 9        | 8,4E-01                          | 1,3E+00  | <b>1,8E+00</b> | 1,7E+00   | 3,3E+00   | 3,3E+00                   |
| 10       | 8,6E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,7E+00   | 3,3E+00   | 3,3E+00                   |
| 14       | 8,9E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,8E+00   | 3,4E+00   | 3,5E+00                   |
| 15       | 8,9E-01                          | 1,3E+00  | <b>1,9E+00</b> | 1,8E+00   | 3,5E+00   | 3,5E+00                   |
| 20       | 9,0E-01                          | 1,4E+00  | <b>2,0E+00</b> |           | 3,5E+00   |                           |
| 30       | 9,0E-01                          | 1,4E+00  | <b>2,0E+00</b> |           |           |                           |
| 40       |                                  |          |                |           |           |                           |
| 45       |                                  |          |                |           |           |                           |
| 50       |                                  |          |                |           |           |                           |
| 60       |                                  |          |                |           |           |                           |
| 70       |                                  |          |                |           |           |                           |
| 80       |                                  |          |                |           |           |                           |
| 90       |                                  |          |                |           |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**TI-204**

| Zeit (d) | Inhalation (Absorptionsklasse F) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 2,7E-01                          | 4,5E-01  | <b>6,9E-01</b> | 6,4E-01   | 9,8E-01   | 9,8E-01                   |
| 2        | 5,1E-01                          | 8,1E-01  | <b>1,2E+00</b> | 1,1E+00   | 1,9E+00   | 1,9E+00                   |
| 3        | 7,4E-01                          | 1,1E+00  | <b>1,7E+00</b> | 1,5E+00   | 2,8E+00   | 2,8E+00                   |
| 4        | 9,4E-01                          | 1,4E+00  | <b>2,1E+00</b> | 1,9E+00   | 3,6E+00   | 3,6E+00                   |
| 5        | 1,1E+00                          | 1,7E+00  | <b>2,5E+00</b> | 2,2E+00   | 4,4E+00   | 4,4E+00                   |
| 6        | 1,3E+00                          | 1,9E+00  | <b>2,8E+00</b> | 2,5E+00   | 5,1E+00   | 5,1E+00                   |
| 7        | 1,5E+00                          | 2,2E+00  | <b>3,1E+00</b> | 2,8E+00   | 5,8E+00   | 5,8E+00                   |
| 8        | 1,6E+00                          | 2,4E+00  | <b>3,4E+00</b> | 3,1E+00   | 6,4E+00   | 6,4E+00                   |
| 9        | 1,8E+00                          | 2,6E+00  | <b>3,7E+00</b> | 3,3E+00   | 7,0E+00   | 7,0E+00                   |
| 10       | 1,9E+00                          | 2,8E+00  | <b>4,0E+00</b> | 3,6E+00   | 7,5E+00   | 7,6E+00                   |
| 14       | 2,4E+00                          | 3,4E+00  | <b>4,9E+00</b> | 4,4E+00   | 9,4E+00   | 9,4E+00                   |
| 15       | 2,4E+00                          | 3,6E+00  | <b>5,0E+00</b> | 4,5E+00   | 9,7E+00   | 9,8E+00                   |
| 20       | 2,8E+00                          | 4,1E+00  | <b>5,8E+00</b> | 5,2E+00   | 1,1E+01   | 1,1E+01                   |
| 30       | 3,3E+00                          | 4,8E+00  | <b>6,7E+00</b> | 6,0E+00   | 1,3E+01   | 1,3E+01                   |
| 40       | 3,5E+00                          | 5,1E+00  | <b>7,2E+00</b> | 6,4E+00   | 1,4E+01   | 1,4E+01                   |
| 45       | 3,6E+00                          | 5,2E+00  | <b>7,3E+00</b> | 6,5E+00   | 1,4E+01   | 1,4E+01                   |
| 50       | 3,6E+00                          | 5,2E+00  | <b>7,4E+00</b> | 6,6E+00   | 1,5E+01   | 1,5E+01                   |
| 60       | 3,7E+00                          | 5,3E+00  | <b>7,5E+00</b> | 6,7E+00   | 1,5E+01   | 1,5E+01                   |
| 70       | 3,7E+00                          | 5,4E+00  | <b>7,5E+00</b> | 6,7E+00   |           |                           |
| 80       |                                  | 5,4E+00  | <b>7,6E+00</b> | 6,8E+00   |           |                           |
| 90       |                                  |          | <b>7,6E+00</b> | 6,8E+00   |           |                           |
| 100      |                                  |          |                |           |           |                           |
| 120      |                                  |          |                |           |           |                           |
| 180      |                                  |          |                |           |           |                           |
| 200      |                                  |          |                |           |           |                           |
| 300      |                                  |          |                |           |           |                           |
| 360      |                                  |          |                |           |           |                           |
| 400      |                                  |          |                |           |           |                           |
| 500      |                                  |          |                |           |           |                           |
| 600      |                                  |          |                |           |           |                           |
| 700      |                                  |          |                |           |           |                           |
| 800      |                                  |          |                |           |           |                           |
| 900      |                                  |          |                |           |           |                           |
| 1000     |                                  |          |                |           |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**TI-204**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,4E-03                          | 4,8E-03        | <b>6,5E-03</b> | 5,8E-03         | 1,3E-02   | 1,4E-02                   |
| 2        | 1,1E-02                          | 1,6E-02        | <b>2,2E-02</b> | 1,9E-02         | 4,5E-02   | 4,7E-02                   |
| 3        | 1,9E-02                          | 2,6E-02        | <b>3,7E-02</b> | 3,2E-02         | 7,5E-02   | 7,7E-02                   |
| 4        | 2,6E-02                          | 3,6E-02        | <b>5,0E-02</b> | 4,4E-02         | 1,0E-01   | 1,1E-01                   |
| 5        | 3,2E-02                          | 4,5E-02        | <b>6,3E-02</b> | 5,6E-02         | 1,3E-01   | 1,3E-01                   |
| 6        | 3,8E-02                          | 5,4E-02        | <b>7,5E-02</b> | 6,6E-02         | 1,5E-01   | 1,6E-01                   |
| 7        | 4,4E-02                          | 6,2E-02        | <b>8,6E-02</b> | 7,6E-02         | 1,8E-01   | 1,8E-01                   |
| 8        | 4,9E-02                          | 6,9E-02        | <b>9,6E-02</b> | 8,5E-02         | 2,0E-01   | 2,0E-01                   |
| 9        | 5,4E-02                          | 7,6E-02        | <b>1,1E-01</b> | 9,3E-02         | 2,2E-01   | 2,2E-01                   |
| 10       | 5,8E-02                          | 8,3E-02        | <b>1,1E-01</b> | 1,0E-01         | 2,4E-01   | 2,4E-01                   |
| 14       | 7,4E-02                          | 1,0E-01        | <b>1,4E-01</b> | 1,3E-01         | 3,0E-01   | 3,0E-01                   |
| 15       | 7,7E-02                          | 1,1E-01        | <b>1,5E-01</b> | 1,3E-01         | 3,1E-01   | 3,1E-01                   |
| 20       | 9,0E-02                          | 1,3E-01        | <b>1,8E-01</b> | 1,6E-01         | 3,6E-01   | 3,7E-01                   |
| 30       | 1,1E-01                          | 1,5E-01        | <b>2,1E-01</b> | 1,8E-01         | 4,3E-01   | 4,3E-01                   |
| 40       | 1,1E-01                          | 1,6E-01        | <b>2,2E-01</b> | 2,0E-01         | 4,6E-01   | 4,6E-01                   |
| 45       | 1,2E-01                          | 1,6E-01        | <b>2,3E-01</b> | 2,0E-01         | 4,7E-01   | 4,7E-01                   |
| 50       | 1,2E-01                          | 1,7E-01        | <b>2,3E-01</b> | 2,0E-01         | 4,8E-01   | 4,8E-01                   |
| 60       |                                  | 1,7E-01        | <b>2,3E-01</b> | 2,1E-01         | 4,8E-01   | 4,9E-01                   |
| 70       |                                  |                | <b>2,4E-01</b> | 2,1E-01         | 4,9E-01   | 4,9E-01                   |
| 80       |                                  |                | <b>2,4E-01</b> |                 | 4,9E-01   | 4,9E-01                   |
| 90       |                                  |                |                |                 |           | 5,0E-01                   |
| 100      |                                  |                |                |                 |           | 5,0E-01                   |
| 120      |                                  |                |                |                 |           |                           |
| 180      |                                  |                |                |                 |           |                           |
| 200      |                                  |                |                |                 |           |                           |
| 300      |                                  |                |                |                 |           |                           |
| 360      |                                  |                |                |                 |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pb-210**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 7,6E-03                          | 9,0E-03        | <b>1,1E-02</b> | 9,2E-03         | 5,5E-03   | 3,5E-02                   |
| 2        | 1,2E-02                          | 1,4E-02        | <b>1,7E-02</b> | 1,4E-02         | 1,0E-02   | 5,3E-02                   |
| 3        | 1,4E-02                          | 1,7E-02        | <b>2,1E-02</b> | 1,7E-02         | 1,2E-02   | 6,4E-02                   |
| 4        | 1,6E-02                          | 2,0E-02        | <b>2,4E-02</b> | 2,0E-02         | 1,5E-02   | 7,5E-02                   |
| 5        | 1,9E-02                          | 2,2E-02        | <b>2,7E-02</b> | 2,3E-02         | 1,7E-02   | 8,5E-02                   |
| 6        | 2,1E-02                          | 2,5E-02        | <b>3,0E-02</b> | 2,6E-02         | 1,9E-02   | 9,4E-02                   |
| 7        | 2,3E-02                          | 2,7E-02        | <b>3,3E-02</b> | 2,8E-02         | 2,0E-02   | 1,0E-01                   |
| 8        | 2,5E-02                          | 2,9E-02        | <b>3,6E-02</b> | 3,1E-02         | 2,2E-02   | 1,1E-01                   |
| 9        | 2,7E-02                          | 3,2E-02        | <b>3,9E-02</b> | 3,3E-02         | 2,4E-02   | 1,2E-01                   |
| 10       | 2,9E-02                          | 3,4E-02        | <b>4,1E-02</b> | 3,5E-02         | 2,6E-02   | 1,3E-01                   |
| 14       | 3,5E-02                          | 4,2E-02        | <b>5,1E-02</b> | 4,3E-02         | 3,2E-02   | 1,6E-01                   |
| 15       | 3,7E-02                          | 4,3E-02        | <b>5,3E-02</b> | 4,5E-02         | 3,3E-02   | 1,7E-01                   |
| 20       | 4,3E-02                          | 5,1E-02        | <b>6,3E-02</b> | 5,4E-02         | 3,9E-02   | 2,0E-01                   |
| 30       | 5,4E-02                          | 6,4E-02        | <b>7,8E-02</b> | 6,7E-02         | 4,9E-02   | 2,4E-01                   |
| 40       | 6,2E-02                          | 7,3E-02        | <b>9,0E-02</b> | 7,6E-02         | 5,6E-02   | 2,8E-01                   |
| 45       | 6,5E-02                          | 7,7E-02        | <b>9,4E-02</b> | 8,0E-02         | 5,9E-02   | 2,9E-01                   |
| 50       | 6,8E-02                          | 8,0E-02        | <b>9,8E-02</b> | 8,3E-02         | 6,1E-02   | 3,1E-01                   |
| 60       | 7,2E-02                          | 8,6E-02        | <b>1,0E-01</b> | 8,9E-02         | 6,5E-02   | 3,3E-01                   |
| 70       | 7,6E-02                          | 9,0E-02        | <b>1,1E-01</b> | 9,3E-02         | 6,9E-02   | 3,4E-01                   |
| 80       | 7,9E-02                          | 9,3E-02        | <b>1,1E-01</b> | 9,7E-02         | 7,1E-02   | 3,6E-01                   |
| 90       | 8,1E-02                          | 9,6E-02        | <b>1,2E-01</b> | 1,0E-01         | 7,4E-02   | 3,7E-01                   |
| 100      | 8,3E-02                          | 9,9E-02        | <b>1,2E-01</b> | 1,0E-01         | 7,5E-02   | 3,8E-01                   |
| 120      | 8,7E-02                          | 1,0E-01        | <b>1,3E-01</b> | 1,1E-01         | 7,9E-02   | 3,9E-01                   |
| 180      | 9,4E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,2E-01         | 8,5E-02   | 4,2E-01                   |
| 200      | 9,5E-02                          | 1,1E-01        | <b>1,4E-01</b> | 1,2E-01         | 8,6E-02   | 4,3E-01                   |
| 300      | 1,0E-01                          | 1,2E-01        | <b>1,5E-01</b> | 1,2E-01         | 9,1E-02   | 4,6E-01                   |
| 360      | 1,0E-01                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 9,3E-02   | 4,7E-01                   |
| 400      | 1,0E-01                          | 1,2E-01        | <b>1,5E-01</b> | 1,3E-01         | 9,4E-02   | 4,7E-01                   |
| 500      | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,3E-01         | 9,6E-02   | 4,8E-01                   |
| 600      | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,3E-01         | 9,7E-02   | 4,8E-01                   |
| 700      | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,3E-01         | 9,8E-02   | 4,9E-01                   |
| 800      | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,3E-01         | 9,9E-02   | 4,9E-01                   |
| 900      | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,4E-01         | 9,9E-02   | 5,0E-01                   |
| 1000     | 1,1E-01                          | 1,3E-01        | <b>1,6E-01</b> | 1,4E-01         | 1,0E-01   | 5,0E-01                   |
| 2000     | 1,2E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,4E-01         | 1,0E-01   | 5,2E-01                   |
| 3000     | 1,2E-01                          | 1,4E-01        | <b>1,7E-01</b> | 1,5E-01         | 1,1E-01   | 5,3E-01                   |
| 4000     |                                  |                | <b>1,7E-01</b> | 1,5E-01         | 1,1E-01   | 5,4E-01                   |
| 5000     |                                  |                | <b>1,7E-01</b> |                 |           | 5,4E-01                   |
| 6000     |                                  |                | <b>1,8E-01</b> |                 |           | 5,5E-01                   |
| 8000     |                                  |                | <b>1,8E-01</b> |                 |           | 5,5E-01                   |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pb-210**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 2,8E-03                          | 9,1E-03        | <b>1,7E-02</b> | 1,6E-02         | 8,2E-02   | 2,1E-03                   |
| 2        | 1,4E-02                          | 4,5E-02        | <b>8,4E-02</b> | 8,0E-02         | 4,1E-01   | 9,5E-03                   |
| 3        | 2,2E-02                          | 7,1E-02        | <b>1,3E-01</b> | 1,3E-01         | 6,4E-01   | 1,7E-02                   |
| 4        | 2,6E-02                          | 8,4E-02        | <b>1,5E-01</b> | 1,5E-01         | 7,4E-01   | 2,2E-02                   |
| 5        | 2,9E-02                          | 8,9E-02        | <b>1,6E-01</b> | 1,6E-01         | 7,8E-01   | 2,7E-02                   |
| 6        | 3,0E-02                          | 9,2E-02        | <b>1,7E-01</b> | 1,6E-01         | 8,0E-01   | 3,2E-02                   |
| 7        | 3,1E-02                          | 9,4E-02        | <b>1,7E-01</b> | 1,6E-01         | 8,0E-01   | 3,6E-02                   |
| 8        | 3,2E-02                          | 9,5E-02        | <b>1,7E-01</b> | 1,6E-01         | 8,1E-01   | 4,0E-02                   |
| 9        | 3,3E-02                          | 9,6E-02        | <b>1,7E-01</b> | 1,7E-01         | 8,1E-01   | 4,5E-02                   |
| 10       | 3,4E-02                          | 9,8E-02        | <b>1,8E-01</b> | 1,7E-01         | 8,1E-01   | 4,9E-02                   |
| 14       | 3,8E-02                          | 1,0E-01        | <b>1,8E-01</b> | 1,7E-01         | 8,1E-01   | 6,5E-02                   |
| 15       | 3,9E-02                          | 1,0E-01        | <b>1,8E-01</b> | 1,7E-01         | 8,1E-01   | 6,9E-02                   |
| 20       | 4,3E-02                          | 1,1E-01        | <b>1,9E-01</b> | 1,8E-01         | 8,2E-01   | 8,7E-02                   |
| 30       | 5,0E-02                          | 1,2E-01        | <b>2,0E-01</b> | 1,9E-01         | 8,2E-01   | 1,2E-01                   |
| 40       | 5,6E-02                          | 1,2E-01        | <b>2,1E-01</b> | 1,9E-01         | 8,3E-01   | 1,4E-01                   |
| 45       | 5,8E-02                          | 1,3E-01        | <b>2,1E-01</b> | 2,0E-01         | 8,3E-01   | 1,5E-01                   |
| 50       | 6,1E-02                          | 1,3E-01        | <b>2,1E-01</b> | 2,0E-01         | 8,3E-01   | 1,6E-01                   |
| 60       | 6,4E-02                          | 1,3E-01        | <b>2,2E-01</b> | 2,0E-01         | 8,4E-01   | 1,8E-01                   |
| 70       | 6,7E-02                          | 1,4E-01        | <b>2,2E-01</b> | 2,1E-01         | 8,4E-01   | 1,9E-01                   |
| 80       | 7,0E-02                          | 1,4E-01        | <b>2,3E-01</b> | 2,1E-01         | 8,4E-01   | 2,0E-01                   |
| 90       | 7,2E-02                          | 1,4E-01        | <b>2,3E-01</b> | 2,1E-01         | 8,4E-01   | 2,1E-01                   |
| 100      | 7,3E-02                          | 1,4E-01        | <b>2,3E-01</b> | 2,2E-01         | 8,4E-01   | 2,2E-01                   |
| 120      | 7,6E-02                          | 1,5E-01        | <b>2,4E-01</b> | 2,2E-01         | 8,5E-01   | 2,3E-01                   |
| 180      | 8,2E-02                          | 1,5E-01        | <b>2,4E-01</b> | 2,3E-01         | 8,5E-01   | 2,5E-01                   |
| 200      | 8,3E-02                          | 1,6E-01        | <b>2,5E-01</b> | 2,3E-01         | 8,5E-01   | 2,5E-01                   |
| 300      | 8,8E-02                          | 1,6E-01        | <b>2,5E-01</b> | 2,3E-01         | 8,5E-01   | 2,7E-01                   |
| 360      | 8,9E-02                          | 1,6E-01        | <b>2,6E-01</b> | 2,4E-01         | 8,5E-01   | 2,7E-01                   |
| 400      | 9,0E-02                          | 1,6E-01        | <b>2,6E-01</b> | 2,4E-01         | 8,5E-01   | 2,8E-01                   |
| 500      | 9,2E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         | 8,6E-01   | 2,8E-01                   |
| 600      | 9,3E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         | 8,6E-01   | 2,8E-01                   |
| 700      | 9,4E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         |           | 2,9E-01                   |
| 800      | 9,4E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         |           | 2,9E-01                   |
| 900      | 9,5E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         |           | 2,9E-01                   |
| 1000     | 9,5E-02                          | 1,7E-01        | <b>2,6E-01</b> | 2,4E-01         |           | 2,9E-01                   |
| 2000     | 9,8E-02                          | 1,7E-01        | <b>2,7E-01</b> | 2,5E-01         |           | 3,1E-01                   |
| 3000     | 1,0E-01                          | 1,8E-01        | <b>2,7E-01</b> | 2,5E-01         |           | 3,1E-01                   |
| 4000     | 1,0E-01                          | 1,8E-01        | <b>2,7E-01</b> |                 |           | 3,2E-01                   |
| 5000     |                                  |                | <b>2,7E-01</b> |                 |           | 3,2E-01                   |
| 6000     |                                  |                | <b>2,7E-01</b> |                 |           | 3,2E-01                   |
| 8000     |                                  |                | <b>2,8E-01</b> |                 |           | 3,2E-01                   |
| 10000    |                                  |                | <b>2,8E-01</b> |                 |           | 3,3E-01                   |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Po-210**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 2,0E-04                          | 2,3E-04        | <b>2,8E-04</b> | 2,3E-04         | 5,7E-05   | 9,7E-04                   |
| 2        | 1,0E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 4,0E-04   | 4,8E-03                   |
| 3        | 2,0E-03                          | 2,3E-03        | <b>2,7E-03</b> | 2,3E-03         | 8,4E-04   | 9,2E-03                   |
| 4        | 2,9E-03                          | 3,4E-03        | <b>4,1E-03</b> | 3,4E-03         | 1,3E-03   | 1,4E-02                   |
| 5        | 3,9E-03                          | 4,5E-03        | <b>5,3E-03</b> | 4,5E-03         | 1,7E-03   | 1,8E-02                   |
| 6        | 4,8E-03                          | 5,5E-03        | <b>6,6E-03</b> | 5,6E-03         | 2,1E-03   | 2,2E-02                   |
| 7        | 5,7E-03                          | 6,6E-03        | <b>7,8E-03</b> | 6,6E-03         | 2,5E-03   | 2,6E-02                   |
| 8        | 6,6E-03                          | 7,6E-03        | <b>9,1E-03</b> | 7,6E-03         | 2,9E-03   | 3,0E-02                   |
| 9        | 7,4E-03                          | 8,6E-03        | <b>1,0E-02</b> | 8,6E-03         | 3,3E-03   | 3,4E-02                   |
| 10       | 8,3E-03                          | 9,5E-03        | <b>1,1E-02</b> | 9,6E-03         | 3,7E-03   | 3,8E-02                   |
| 14       | 1,2E-02                          | 1,3E-02        | <b>1,6E-02</b> | 1,3E-02         | 5,2E-03   | 5,3E-02                   |
| 15       | 1,2E-02                          | 1,4E-02        | <b>1,7E-02</b> | 1,4E-02         | 5,6E-03   | 5,6E-02                   |
| 20       | 1,6E-02                          | 1,8E-02        | <b>2,2E-02</b> | 1,8E-02         | 7,2E-03   | 7,3E-02                   |
| 30       | 2,2E-02                          | 2,6E-02        | <b>3,1E-02</b> | 2,6E-02         | 1,0E-02   | 1,0E-01                   |
| 40       | 2,7E-02                          | 3,2E-02        | <b>3,8E-02</b> | 3,2E-02         | 1,3E-02   | 1,3E-01                   |
| 45       | 3,0E-02                          | 3,4E-02        | <b>4,1E-02</b> | 3,5E-02         | 1,4E-02   | 1,4E-01                   |
| 50       | 3,2E-02                          | 3,7E-02        | <b>4,4E-02</b> | 3,7E-02         | 1,5E-02   | 1,5E-01                   |
| 60       | 3,5E-02                          | 4,1E-02        | <b>4,9E-02</b> | 4,1E-02         | 1,6E-02   | 1,6E-01                   |
| 70       | 3,8E-02                          | 4,4E-02        | <b>5,3E-02</b> | 4,5E-02         | 1,8E-02   | 1,8E-01                   |
| 80       | 4,1E-02                          | 4,7E-02        | <b>5,6E-02</b> | 4,7E-02         | 1,9E-02   | 1,9E-01                   |
| 90       | 4,3E-02                          | 4,9E-02        | <b>5,9E-02</b> | 5,0E-02         | 2,0E-02   | 2,0E-01                   |
| 100      | 4,5E-02                          | 5,1E-02        | <b>6,2E-02</b> | 5,2E-02         | 2,0E-02   | 2,0E-01                   |
| 120      | 4,7E-02                          | 5,4E-02        | <b>6,5E-02</b> | 5,5E-02         | 2,2E-02   | 2,2E-01                   |
| 180      | 5,1E-02                          | 5,9E-02        | <b>7,0E-02</b> | 5,9E-02         | 2,3E-02   | 2,3E-01                   |
| 200      | 5,1E-02                          | 5,9E-02        | <b>7,1E-02</b> | 6,0E-02         | 2,4E-02   | 2,4E-01                   |
| 300      | 5,3E-02                          | 6,1E-02        | <b>7,3E-02</b> | 6,1E-02         | 2,4E-02   | 2,4E-01                   |
| 360      | 5,3E-02                          | 6,1E-02        | <b>7,3E-02</b> | 6,1E-02         |           |                           |
| 400      |                                  |                |                |                 |           |                           |
| 500      |                                  |                |                |                 |           |                           |
| 600      |                                  |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Po-210**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 2,4E-05                          | 3,4E-05        | <b>4,8E-05</b> | 4,3E-05         | 5,7E-05   | 9,7E-04                   |
| 2        | 1,3E-04                          | 2,0E-04        | <b>2,9E-04</b> | 2,6E-04         | 4,0E-04   | 4,8E-03                   |
| 3        | 2,6E-04                          | 4,0E-04        | <b>5,9E-04</b> | 5,3E-04         | 8,4E-04   | 9,2E-03                   |
| 4        | 4,0E-04                          | 6,1E-04        | <b>8,9E-04</b> | 8,0E-04         | 1,3E-03   | 1,4E-02                   |
| 5        | 5,3E-04                          | 8,1E-04        | <b>1,2E-03</b> | 1,1E-03         | 1,7E-03   | 1,8E-02                   |
| 6        | 6,7E-04                          | 1,0E-03        | <b>1,5E-03</b> | 1,3E-03         | 2,1E-03   | 2,2E-02                   |
| 7        | 8,1E-04                          | 1,2E-03        | <b>1,8E-03</b> | 1,6E-03         | 2,5E-03   | 2,6E-02                   |
| 8        | 9,5E-04                          | 1,4E-03        | <b>2,0E-03</b> | 1,8E-03         | 2,9E-03   | 3,0E-02                   |
| 9        | 1,1E-03                          | 1,6E-03        | <b>2,3E-03</b> | 2,1E-03         | 3,3E-03   | 3,4E-02                   |
| 10       | 1,2E-03                          | 1,8E-03        | <b>2,6E-03</b> | 2,3E-03         | 3,7E-03   | 3,8E-02                   |
| 14       | 1,8E-03                          | 2,6E-03        | <b>3,7E-03</b> | 3,2E-03         | 5,2E-03   | 5,3E-02                   |
| 15       | 1,9E-03                          | 2,8E-03        | <b>3,9E-03</b> | 3,5E-03         | 5,6E-03   | 5,6E-02                   |
| 20       | 2,7E-03                          | 3,7E-03        | <b>5,1E-03</b> | 4,5E-03         | 7,2E-03   | 7,3E-02                   |
| 30       | 4,1E-03                          | 5,5E-03        | <b>7,3E-03</b> | 6,4E-03         | 1,0E-02   | 1,0E-01                   |
| 40       | 5,5E-03                          | 7,1E-03        | <b>9,2E-03</b> | 8,0E-03         | 1,3E-02   | 1,3E-01                   |
| 45       | 6,2E-03                          | 7,8E-03        | <b>1,0E-02</b> | 8,7E-03         | 1,4E-02   | 1,4E-01                   |
| 50       | 6,9E-03                          | 8,6E-03        | <b>1,1E-02</b> | 9,4E-03         | 1,5E-02   | 1,5E-01                   |
| 60       | 8,1E-03                          | 9,9E-03        | <b>1,2E-02</b> | 1,1E-02         | 1,6E-02   | 1,6E-01                   |
| 70       | 9,3E-03                          | 1,1E-02        | <b>1,4E-02</b> | 1,1E-02         | 1,8E-02   | 1,8E-01                   |
| 80       | 1,0E-02                          | 1,2E-02        | <b>1,5E-02</b> | 1,2E-02         | 1,9E-02   | 1,9E-01                   |
| 90       | 1,1E-02                          | 1,3E-02        | <b>1,5E-02</b> | 1,3E-02         | 2,0E-02   | 2,0E-01                   |
| 100      | 1,2E-02                          | 1,4E-02        | <b>1,6E-02</b> | 1,4E-02         | 2,0E-02   | 2,0E-01                   |
| 120      | 1,4E-02                          | 1,5E-02        | <b>1,8E-02</b> | 1,5E-02         | 2,2E-02   | 2,2E-01                   |
| 180      | 1,7E-02                          | 1,8E-02        | <b>2,0E-02</b> | 1,6E-02         | 2,3E-02   | 2,3E-01                   |
| 200      | 1,8E-02                          | 1,9E-02        | <b>2,0E-02</b> | 1,6E-02         | 2,4E-02   | 2,4E-01                   |
| 300      | 2,0E-02                          | 2,0E-02        | <b>2,1E-02</b> | 1,7E-02         | 2,4E-02   | 2,4E-01                   |
| 360      | 2,0E-02                          | 2,1E-02        | <b>2,1E-02</b> | 1,7E-02         |           |                           |
| 400      | 2,0E-02                          | 2,1E-02        |                |                 |           |                           |
| 500      | 2,1E-02                          |                |                |                 |           |                           |
| 600      | 2,1E-02                          |                |                |                 |           |                           |
| 700      |                                  |                |                |                 |           |                           |
| 800      |                                  |                |                |                 |           |                           |
| 900      |                                  |                |                |                 |           |                           |
| 1000     |                                  |                |                |                 |           |                           |
| 2000     |                                  |                |                |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ra-224**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,5E-04                          | 6,3E-04        | <b>9,9E-04</b>                 | 9,0E-04         | 1,7E-03   | 1,1E-02                   |
| 2        | 5,6E-04                          | 1,0E-03        | <b>1,6E-03</b>                 | 1,5E-03         | 3,0E-03   | 1,6E-02                   |
| 3        | 6,3E-04                          | 1,1E-03        | <b>1,8E-03</b>                 | 1,6E-03         | 3,3E-03   | 1,7E-02                   |
| 4        | 6,7E-04                          | 1,2E-03        | <b>1,9E-03</b>                 | 1,7E-03         | 3,5E-03   | 1,8E-02                   |
| 5        | 7,0E-04                          | 1,2E-03        | <b>1,9E-03</b>                 | 1,8E-03         | 3,6E-03   | 1,9E-02                   |
| 6        | 7,2E-04                          | 1,3E-03        | <b>2,0E-03</b>                 | 1,8E-03         | 3,6E-03   | 1,9E-02                   |
| 7        | 7,3E-04                          | 1,3E-03        | <b>2,0E-03</b>                 | 1,8E-03         | 3,7E-03   |                           |
| 8        | 7,4E-04                          |                |                                | 1,8E-03         | 3,7E-03   |                           |
| 9        | 7,5E-04                          |                |                                | 1,9E-03         |           |                           |
| 10       | 7,5E-04                          |                |                                | 1,9E-03         |           |                           |
| 14       | 7,6E-04                          |                |                                |                 |           |                           |
| 15       | 7,6E-04                          |                |                                |                 |           |                           |
| 20       | 7,7E-04                          |                |                                |                 |           |                           |
| 30       | 7,7E-04                          |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ra-226**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,7E-04                          | 6,6E-04        | <b>1,0E-03</b> | 9,5E-04         | 1,8E-03   | 1,2E-02                   |
| 2        | 6,0E-04                          | 1,1E-03        | <b>1,8E-03</b> | 1,6E-03         | 3,2E-03   | 1,7E-02                   |
| 3        | 7,0E-04                          | 1,3E-03        | <b>2,0E-03</b> | 1,8E-03         | 3,7E-03   | 1,9E-02                   |
| 4        | 7,8E-04                          | 1,4E-03        | <b>2,2E-03</b> | 2,0E-03         | 4,0E-03   | 2,0E-02                   |
| 5        | 8,4E-04                          | 1,5E-03        | <b>2,3E-03</b> | 2,1E-03         | 4,2E-03   | 2,1E-02                   |
| 6        | 8,8E-04                          | 1,5E-03        | <b>2,4E-03</b> | 2,2E-03         | 4,4E-03   | 2,2E-02                   |
| 7        | 9,2E-04                          | 1,6E-03        | <b>2,5E-03</b> | 2,2E-03         | 4,5E-03   | 2,3E-02                   |
| 8        | 9,6E-04                          | 1,6E-03        | <b>2,5E-03</b> | 2,3E-03         | 4,6E-03   | 2,3E-02                   |
| 9        | 9,9E-04                          | 1,7E-03        | <b>2,5E-03</b> | 2,3E-03         | 4,6E-03   | 2,3E-02                   |
| 10       | 1,0E-03                          | 1,7E-03        | <b>2,6E-03</b> | 2,3E-03         | 4,7E-03   | 2,3E-02                   |
| 14       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 15       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 20       | 1,2E-03                          | 1,9E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 30       | 1,4E-03                          | 2,0E-03        | <b>2,8E-03</b> | 2,5E-03         | 4,9E-03   | 2,4E-02                   |
| 40       | 1,6E-03                          | 2,2E-03        | <b>2,9E-03</b> | 2,6E-03         | 4,9E-03   | 2,5E-02                   |
| 45       | 1,7E-03                          | 2,2E-03        | <b>3,0E-03</b> | 2,6E-03         | 5,0E-03   | 2,5E-02                   |
| 50       | 1,7E-03                          | 2,3E-03        | <b>3,0E-03</b> | 2,6E-03         | 5,0E-03   | 2,5E-02                   |
| 60       | 1,9E-03                          | 2,4E-03        | <b>3,1E-03</b> | 2,7E-03         | 5,0E-03   | 2,5E-02                   |
| 70       | 2,0E-03                          | 2,5E-03        | <b>3,1E-03</b> | 2,7E-03         | 5,1E-03   | 2,5E-02                   |
| 80       | 2,1E-03                          | 2,6E-03        | <b>3,2E-03</b> | 2,7E-03         | 5,1E-03   | 2,5E-02                   |
| 90       | 2,2E-03                          | 2,6E-03        | <b>3,2E-03</b> | 2,7E-03         | 5,1E-03   | 2,6E-02                   |
| 100      | 2,3E-03                          | 2,7E-03        | <b>3,3E-03</b> | 2,8E-03         | 5,1E-03   | 2,6E-02                   |
| 120      | 2,4E-03                          | 2,8E-03        | <b>3,3E-03</b> | 2,8E-03         | 5,2E-03   | 2,6E-02                   |
| 180      | 2,8E-03                          | 3,1E-03        | <b>3,5E-03</b> | 2,9E-03         | 5,2E-03   | 2,6E-02                   |
| 200      | 2,9E-03                          | 3,2E-03        | <b>3,5E-03</b> | 2,9E-03         | 5,2E-03   | 2,6E-02                   |
| 300      | 3,2E-03                          | 3,4E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,2E-03   | 2,6E-02                   |
| 360      | 3,4E-03                          | 3,5E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,3E-03   | 2,6E-02                   |
| 400      | 3,4E-03                          | 3,5E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,3E-03   | 2,6E-02                   |
| 500      | 3,5E-03                          | 3,6E-03        | <b>3,8E-03</b> | 3,0E-03         | 5,3E-03   | 2,6E-02                   |
| 600      | 3,6E-03                          | 3,7E-03        | <b>3,8E-03</b> | 3,0E-03         | 5,3E-03   | 2,6E-02                   |
| 700      | 3,6E-03                          | 3,7E-03        | <b>3,8E-03</b> | 3,1E-03         | 5,3E-03   | 2,6E-02                   |
| 800      | 3,6E-03                          | 3,7E-03        | <b>3,8E-03</b> | 3,1E-03         | 5,3E-03   | 2,6E-02                   |
| 900      | 3,6E-03                          | 3,7E-03        | <b>3,8E-03</b> |                 | 5,3E-03   | 2,6E-02                   |
| 1000     | 3,7E-03                          | 3,7E-03        | <b>3,8E-03</b> |                 | 5,3E-03   | 2,6E-02                   |
| 2000     | 3,7E-03                          | 3,7E-03        | <b>3,9E-03</b> |                 | 5,3E-03   | 2,7E-02                   |
| 3000     |                                  | 3,8E-03        | <b>3,9E-03</b> |                 | 5,3E-03   | 2,7E-02                   |
| 4000     |                                  | 3,8E-03        |                |                 | 5,3E-03   |                           |
| 5000     |                                  |                |                |                 | 5,4E-03   |                           |
| 6000     |                                  |                |                |                 | 5,4E-03   |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Ra-228**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 3,7E-04                          | 6,6E-04        | <b>1,0E-03</b> | 9,5E-04         | 1,8E-03   | 1,2E-02                   |
| 2        | 6,0E-04                          | 1,1E-03        | <b>1,8E-03</b> | 1,6E-03         | 3,2E-03   | 1,7E-02                   |
| 3        | 7,0E-04                          | 1,3E-03        | <b>2,0E-03</b> | 1,8E-03         | 3,7E-03   | 1,9E-02                   |
| 4        | 7,8E-04                          | 1,4E-03        | <b>2,2E-03</b> | 2,0E-03         | 4,0E-03   | 2,0E-02                   |
| 5        | 8,4E-04                          | 1,5E-03        | <b>2,3E-03</b> | 2,1E-03         | 4,2E-03   | 2,1E-02                   |
| 6        | 8,8E-04                          | 1,5E-03        | <b>2,4E-03</b> | 2,2E-03         | 4,4E-03   | 2,2E-02                   |
| 7        | 9,2E-04                          | 1,6E-03        | <b>2,5E-03</b> | 2,2E-03         | 4,5E-03   | 2,3E-02                   |
| 8        | 9,6E-04                          | 1,6E-03        | <b>2,5E-03</b> | 2,3E-03         | 4,6E-03   | 2,3E-02                   |
| 9        | 9,9E-04                          | 1,7E-03        | <b>2,5E-03</b> | 2,3E-03         | 4,6E-03   | 2,3E-02                   |
| 10       | 1,0E-03                          | 1,7E-03        | <b>2,6E-03</b> | 2,3E-03         | 4,7E-03   | 2,3E-02                   |
| 14       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 15       | 1,1E-03                          | 1,8E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 20       | 1,2E-03                          | 1,9E-03        | <b>2,7E-03</b> | 2,4E-03         | 4,8E-03   | 2,4E-02                   |
| 30       | 1,4E-03                          | 2,0E-03        | <b>2,8E-03</b> | 2,5E-03         | 4,9E-03   | 2,4E-02                   |
| 40       | 1,6E-03                          | 2,2E-03        | <b>2,9E-03</b> | 2,6E-03         | 4,9E-03   | 2,5E-02                   |
| 45       | 1,7E-03                          | 2,2E-03        | <b>3,0E-03</b> | 2,6E-03         | 5,0E-03   | 2,5E-02                   |
| 50       | 1,7E-03                          | 2,3E-03        | <b>3,0E-03</b> | 2,6E-03         | 5,0E-03   | 2,5E-02                   |
| 60       | 1,9E-03                          | 2,4E-03        | <b>3,1E-03</b> | 2,6E-03         | 5,0E-03   | 2,5E-02                   |
| 70       | 2,0E-03                          | 2,5E-03        | <b>3,1E-03</b> | 2,7E-03         | 5,1E-03   | 2,5E-02                   |
| 80       | 2,1E-03                          | 2,5E-03        | <b>3,2E-03</b> | 2,7E-03         | 5,1E-03   | 2,5E-02                   |
| 90       | 2,2E-03                          | 2,6E-03        | <b>3,2E-03</b> | 2,7E-03         | 5,1E-03   | 2,6E-02                   |
| 100      | 2,3E-03                          | 2,7E-03        | <b>3,3E-03</b> | 2,8E-03         | 5,1E-03   | 2,6E-02                   |
| 120      | 2,4E-03                          | 2,8E-03        | <b>3,3E-03</b> | 2,8E-03         | 5,2E-03   |                           |
| 180      | 2,8E-03                          | 3,1E-03        | <b>3,5E-03</b> | 2,9E-03         | 5,2E-03   |                           |
| 200      | 2,9E-03                          | 3,1E-03        | <b>3,5E-03</b> | 2,9E-03         | 5,2E-03   |                           |
| 300      | 3,2E-03                          | 3,3E-03        | <b>3,6E-03</b> | 3,0E-03         | 5,2E-03   |                           |
| 360      | 3,3E-03                          | 3,4E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,2E-03   |                           |
| 400      | 3,3E-03                          | 3,5E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,2E-03   |                           |
| 500      | 3,4E-03                          | 3,5E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,2E-03   |                           |
| 600      | 3,5E-03                          | 3,6E-03        | <b>3,7E-03</b> | 3,0E-03         | 5,2E-03   |                           |
| 700      | 3,5E-03                          | 3,6E-03        | <b>3,8E-03</b> | 3,0E-03         | 5,3E-03   |                           |
| 800      | 3,5E-03                          |                | <b>3,8E-03</b> | 3,0E-03         | 5,3E-03   |                           |
| 900      | 3,5E-03                          |                |                | 3,0E-03         |           |                           |
| 1000     | 3,5E-03                          |                |                | 3,0E-03         |           |                           |
| 2000     | 3,5E-03                          |                |                | 3,0E-03         |           |                           |
| 3000     | 3,5E-03                          |                |                | 3,0E-03         |           |                           |
| 4000     | 3,5E-03                          |                |                | 3,1E-03         |           |                           |
| 5000     | 3,5E-03                          |                |                | 3,1E-03         |           |                           |
| 6000     | 3,6E-03                          |                |                |                 |           |                           |
| 8000     | 3,6E-03                          |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-228**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,0E-04                          | 5,6E-04        | <b>6,5E-04</b> | 5,4E-04         | 8,0E-06                   | 2,3E-02                         |
| 2        | 9,3E-04                          | 1,0E-03        | <b>1,2E-03</b> | 9,9E-04         | 2,0E-05                   | 4,2E-02                         |
| 3        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,1E-03         | 2,3E-05                   | 4,7E-02                         |
| 4        | 1,2E-03                          | 1,3E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05                   | 5,1E-02                         |
| 5        | 1,3E-03                          | 1,4E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,7E-05                   | 5,4E-02                         |
| 6        | 1,4E-03                          | 1,5E-03        | <b>1,7E-03</b> | 1,4E-03         | 2,8E-05                   | 5,7E-02                         |
| 7        | 1,5E-03                          | 1,6E-03        | <b>1,8E-03</b> | 1,4E-03         | 2,9E-05                   | 5,9E-02                         |
| 8        | 1,6E-03                          | 1,7E-03        | <b>1,8E-03</b> | 1,5E-03         | 3,0E-05                   | 6,1E-02                         |
| 9        | 1,7E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,5E-03         | 3,1E-05                   | 6,3E-02                         |
| 10       | 1,7E-03                          | 1,8E-03        | <b>2,0E-03</b> | 1,6E-03         | 3,2E-05                   | 6,4E-02                         |
| 14       | 2,0E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,7E-03         | 3,5E-05                   | 6,9E-02                         |
| 15       | 2,1E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,5E-05                   | 7,0E-02                         |
| 20       | 2,4E-03                          | 2,4E-03        | <b>2,4E-03</b> | 1,9E-03         | 3,7E-05                   | 7,4E-02                         |
| 30       | 3,0E-03                          | 2,8E-03        | <b>2,7E-03</b> | 2,1E-03         | 4,0E-05                   | 8,0E-02                         |
| 40       | 3,5E-03                          | 3,2E-03        | <b>3,0E-03</b> | 2,3E-03         | 4,2E-05                   | 8,4E-02                         |
| 45       | 3,7E-03                          | 3,4E-03        | <b>3,1E-03</b> | 2,3E-03         | 4,2E-05                   | 8,5E-02                         |
| 50       | 3,9E-03                          | 3,6E-03        | <b>3,2E-03</b> | 2,4E-03         | 4,3E-05                   | 8,6E-02                         |
| 60       | 4,3E-03                          | 3,9E-03        | <b>3,4E-03</b> | 2,5E-03         | 4,4E-05                   | 8,8E-02                         |
| 70       | 4,7E-03                          | 4,1E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,4E-05                   | 8,9E-02                         |
| 80       | 5,0E-03                          | 4,4E-03        | <b>3,7E-03</b> | 2,6E-03         | 4,5E-05                   | 8,9E-02                         |
| 90       | 5,3E-03                          | 4,6E-03        | <b>3,8E-03</b> | 2,7E-03         | 4,5E-05                   | 9,0E-02                         |
| 100      | 5,6E-03                          | 4,8E-03        | <b>3,9E-03</b> | 2,7E-03         | 4,5E-05                   | 9,0E-02                         |
| 120      | 6,1E-03                          | 5,2E-03        | <b>4,1E-03</b> | 2,8E-03         | 4,5E-05                   | 9,1E-02                         |
| 180      | 7,2E-03                          | 6,0E-03        | <b>4,5E-03</b> | 3,0E-03         | 4,6E-05                   | 9,2E-02                         |
| 200      | 7,5E-03                          | 6,2E-03        | <b>4,6E-03</b> | 3,1E-03         | 4,6E-05                   | 9,3E-02                         |
| 300      | 8,5E-03                          | 6,9E-03        | <b>5,0E-03</b> | 3,3E-03         | 4,7E-05                   | 9,5E-02                         |
| 360      | 8,9E-03                          | 7,2E-03        | <b>5,2E-03</b> | 3,4E-03         | 4,8E-05                   | 9,6E-02                         |
| 400      | 9,1E-03                          | 7,4E-03        | <b>5,3E-03</b> | 3,4E-03         | 4,8E-05                   | 9,7E-02                         |
| 500      | 9,4E-03                          | 7,6E-03        | <b>5,5E-03</b> | 3,5E-03         | 4,9E-05                   | 9,9E-02                         |
| 600      | 9,7E-03                          | 7,9E-03        | <b>5,6E-03</b> | 3,6E-03         | 5,0E-05                   | 1,0E-01                         |
| 700      | 9,9E-03                          | 8,0E-03        | <b>5,7E-03</b> | 3,7E-03         | 5,0E-05                   | 1,0E-01                         |
| 800      | 1,0E-02                          | 8,1E-03        | <b>5,8E-03</b> | 3,7E-03         | 5,1E-05                   | 1,0E-01                         |
| 900      | 1,0E-02                          | 8,2E-03        | <b>5,9E-03</b> | 3,8E-03         | 5,2E-05                   | 1,0E-01                         |
| 1000     | 1,0E-02                          | 8,3E-03        | <b>5,9E-03</b> | 3,8E-03         | 5,2E-05                   | 1,0E-01                         |
| 2000     | 1,1E-02                          | 8,8E-03        | <b>6,2E-03</b> | 4,0E-03         | 5,5E-05                   | 1,1E-01                         |
| 3000     | 1,1E-02                          | 8,9E-03        | <b>6,3E-03</b> | 4,1E-03         | 5,5E-05                   | 1,1E-01                         |
| 4000     |                                  | 9,0E-03        | <b>6,4E-03</b> | 4,1E-03         | 5,6E-05                   |                                 |
| 5000     |                                  | 9,0E-03        | <b>6,4E-03</b> |                 | 5,6E-05                   |                                 |
| 6000     |                                  |                |                |                 |                           |                                 |
| 8000     |                                  |                |                |                 |                           |                                 |
| 10000    |                                  |                |                |                 |                           |                                 |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-228**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 2,6E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 1,6E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 2,8E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 3,6E-03                         |
| 5        | 7,2E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,7E-01                   | 4,1E-03                         |
| 6        | 7,5E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 4,4E-03                         |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,9E-01                   | 4,6E-03                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 4,8E-03                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 4,9E-03                         |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 5,0E-03                         |
| 14       | 8,5E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 5,2E-03                         |
| 15       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 5,2E-03                         |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 5,4E-03                         |
| 30       | 9,8E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 5,6E-03                         |
| 40       | 1,0E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 5,8E-03                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 5,9E-03                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 6,0E-03                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 6,3E-03                         |
| 70       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 6,5E-03                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 6,7E-03                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 6,9E-03                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 7,1E-03                         |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 7,5E-03                         |
| 180      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 8,5E-03                         |
| 200      | 1,3E-01                          | 2,5E-01        |                |                 |                           | 8,8E-03                         |
| 300      |                                  | 2,5E-01        |                |                 |                           | 1,0E-02                         |
| 360      |                                  | 2,5E-01        |                |                 |                           | 1,1E-02                         |
| 400      |                                  | 2,5E-01        |                |                 |                           | 1,1E-02                         |
| 500      |                                  | 2,5E-01        |                |                 |                           | 1,2E-02                         |
| 600      |                                  | 2,6E-01        |                |                 |                           | 1,3E-02                         |
| 700      |                                  | 2,6E-01        |                |                 |                           | 1,3E-02                         |
| 800      |                                  |                |                |                 |                           | 1,4E-02                         |
| 900      |                                  |                |                |                 |                           | 1,4E-02                         |
| 1000     |                                  |                |                |                 |                           | 1,5E-02                         |
| 2000     |                                  |                |                |                 |                           | 1,6E-02                         |
| 3000     |                                  |                |                |                 |                           | 1,6E-02                         |
| 4000     |                                  |                |                |                 |                           |                                 |
| 5000     |                                  |                |                |                 |                           |                                 |
| 6000     |                                  |                |                |                 |                           |                                 |
| 8000     |                                  |                |                |                 |                           |                                 |
| 10000    |                                  |                |                |                 |                           |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-228**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,3E-06                          | 6,3E-06        | <b>7,8E-06</b> | 6,7E-06         | 3,2E-06                   | 2,3E-02                         |
| 2        | 1,0E-05                          | 1,2E-05        | <b>1,5E-05</b> | 1,3E-05         | 8,0E-06                   | 4,2E-02                         |
| 3        | 1,2E-05                          | 1,5E-05        | <b>1,8E-05</b> | 1,5E-05         | 9,3E-06                   | 4,7E-02                         |
| 4        | 1,4E-05                          | 1,6E-05        | <b>2,0E-05</b> | 1,6E-05         | 1,0E-05                   | 5,1E-02                         |
| 5        | 1,6E-05                          | 1,8E-05        | <b>2,1E-05</b> | 1,8E-05         | 1,1E-05                   | 5,4E-02                         |
| 6        | 1,7E-05                          | 1,9E-05        | <b>2,2E-05</b> | 1,9E-05         | 1,1E-05                   | 5,7E-02                         |
| 7        | 1,9E-05                          | 2,1E-05        | <b>2,4E-05</b> | 1,9E-05         | 1,2E-05                   | 5,9E-02                         |
| 8        | 2,0E-05                          | 2,2E-05        | <b>2,5E-05</b> | 2,0E-05         | 1,2E-05                   | 6,1E-02                         |
| 9        | 2,2E-05                          | 2,3E-05        | <b>2,6E-05</b> | 2,1E-05         | 1,3E-05                   | 6,3E-02                         |
| 10       | 2,3E-05                          | 2,4E-05        | <b>2,7E-05</b> | 2,2E-05         | 1,3E-05                   | 6,4E-02                         |
| 14       | 2,8E-05                          | 2,9E-05        | <b>3,0E-05</b> | 2,4E-05         | 1,4E-05                   | 6,9E-02                         |
| 15       | 3,0E-05                          | 3,0E-05        | <b>3,1E-05</b> | 2,4E-05         | 1,4E-05                   | 7,0E-02                         |
| 20       | 3,6E-05                          | 3,5E-05        | <b>3,4E-05</b> | 2,7E-05         | 1,5E-05                   | 7,4E-02                         |
| 30       | 4,8E-05                          | 4,4E-05        | <b>4,0E-05</b> | 3,0E-05         | 1,6E-05                   | 8,0E-02                         |
| 40       | 6,0E-05                          | 5,3E-05        | <b>4,6E-05</b> | 3,3E-05         | 1,7E-05                   | 8,4E-02                         |
| 45       | 6,6E-05                          | 5,8E-05        | <b>4,8E-05</b> | 3,5E-05         | 1,7E-05                   | 8,5E-02                         |
| 50       | 7,1E-05                          | 6,2E-05        | <b>5,1E-05</b> | 3,6E-05         | 1,7E-05                   | 8,6E-02                         |
| 60       | 8,2E-05                          | 6,9E-05        | <b>5,5E-05</b> | 3,8E-05         | 1,8E-05                   | 8,8E-02                         |
| 70       | 9,2E-05                          | 7,7E-05        | <b>5,9E-05</b> | 4,0E-05         | 1,8E-05                   | 8,9E-02                         |
| 80       | 1,0E-04                          | 8,4E-05        | <b>6,3E-05</b> | 4,2E-05         | 1,8E-05                   | 8,9E-02                         |
| 90       | 1,1E-04                          | 9,1E-05        | <b>6,6E-05</b> | 4,3E-05         | 1,8E-05                   | 9,0E-02                         |
| 100      | 1,2E-04                          | 9,7E-05        | <b>7,0E-05</b> | 4,5E-05         | 1,8E-05                   | 9,0E-02                         |
| 120      | 1,4E-04                          | 1,1E-04        | <b>7,6E-05</b> | 4,8E-05         | 1,8E-05                   | 9,1E-02                         |
| 180      | 1,8E-04                          | 1,4E-04        | <b>9,3E-05</b> | 5,6E-05         | 1,8E-05                   | 9,2E-02                         |
| 200      | 2,0E-04                          | 1,5E-04        | <b>9,8E-05</b> | 5,8E-05         | 1,9E-05                   | 9,3E-02                         |
| 300      | 2,6E-04                          | 2,0E-04        | <b>1,2E-04</b> | 6,9E-05         | 1,9E-05                   | 9,5E-02                         |
| 360      | 2,9E-04                          | 2,2E-04        | <b>1,3E-04</b> | 7,5E-05         | 1,9E-05                   | 9,6E-02                         |
| 400      | 3,2E-04                          | 2,4E-04        | <b>1,4E-04</b> | 7,8E-05         | 1,9E-05                   | 9,7E-02                         |
| 500      | 3,6E-04                          | 2,7E-04        | <b>1,6E-04</b> | 8,7E-05         | 2,0E-05                   | 9,9E-02                         |
| 600      | 4,0E-04                          | 3,0E-04        | <b>1,7E-04</b> | 9,3E-05         | 2,0E-05                   | 1,0E-01                         |
| 700      | 4,4E-04                          | 3,3E-04        | <b>1,9E-04</b> | 9,9E-05         | 2,0E-05                   | 1,0E-01                         |
| 800      | 4,7E-04                          | 3,5E-04        | <b>2,0E-04</b> | 1,0E-04         | 2,0E-05                   | 1,0E-01                         |
| 900      | 4,9E-04                          | 3,7E-04        | <b>2,1E-04</b> | 1,1E-04         | 2,1E-05                   | 1,0E-01                         |
| 1000     | 5,1E-04                          | 3,8E-04        | <b>2,2E-04</b> | 1,1E-04         | 2,1E-05                   | 1,0E-01                         |
| 2000     | 6,3E-04                          | 4,6E-04        | <b>2,6E-04</b> | 1,3E-04         | 2,2E-05                   | 1,1E-01                         |
| 3000     | 6,6E-04                          | 4,9E-04        | <b>2,7E-04</b> | 1,4E-04         | 2,2E-05                   | 1,1E-01                         |
| 4000     | 6,7E-04                          | 5,0E-04        | <b>2,8E-04</b> | 1,4E-04         |                           |                                 |
| 5000     | 6,7E-04                          | 5,0E-04        | <b>2,8E-04</b> |                 |                           |                                 |
| 6000     | 6,7E-04                          |                |                |                 |                           |                                 |
| 8000     | 6,8E-04                          |                |                |                 |                           |                                 |
| 10000    | 6,8E-04                          |                |                |                 |                           |                                 |



**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-228**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                   | 2,6E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                   | 1,6E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                   | 2,8E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                   | 3,6E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                   | 4,1E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                   | 4,4E-03                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01                   | 4,6E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 4,8E-03                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 4,9E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,0E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,2E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,2E-03                         |
| 20       | 9,8E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,4E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,6E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,8E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,9E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 6,0E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,3E-03                         |
| 70       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,5E-03                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> |                 |                           | 6,7E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> |                 |                           | 6,9E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> |                 |                           | 7,1E-03                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> |                 |                           | 7,5E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> |                 |                           | 8,5E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> |                 |                           | 8,8E-03                         |
| 300      | 1,6E-01                          | 2,8E-01        | <b>4,5E-01</b> |                 |                           | 1,0E-02                         |
| 360      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,1E-02                         |
| 400      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,1E-02                         |
| 500      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,2E-02                         |
| 600      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,3E-02                         |
| 700      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,3E-02                         |
| 800      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> |                 |                           | 1,4E-02                         |
| 900      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> |                 |                           | 1,4E-02                         |
| 1000     | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> |                 |                           | 1,5E-02                         |
| 2000     | 1,8E-01                          |                | <b>4,6E-01</b> |                 |                           | 1,6E-02                         |
| 3000     | 1,8E-01                          |                | <b>4,6E-01</b> |                 |                           | 1,6E-02                         |
| 4000     |                                  |                |                |                 |                           |                                 |
| 5000     |                                  |                |                |                 |                           |                                 |
| 6000     |                                  |                |                |                 |                           |                                 |
| 8000     |                                  |                |                |                 |                           |                                 |
| 10000    |                                  |                |                |                 |                           |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-230**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,0E-04                          | 5,6E-04        | <b>6,5E-04</b> | 5,4E-04         | 8,0E-06                   | 2,3E-02                         |
| 2        | 9,4E-04                          | 1,0E-03        | <b>1,2E-03</b> | 9,9E-04         | 2,0E-05                   | 4,2E-02                         |
| 3        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,1E-03         | 2,3E-05                   | 4,7E-02                         |
| 4        | 1,2E-03                          | 1,3E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05                   | 5,1E-02                         |
| 5        | 1,3E-03                          | 1,4E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,7E-05                   | 5,4E-02                         |
| 6        | 1,4E-03                          | 1,5E-03        | <b>1,7E-03</b> | 1,4E-03         | 2,8E-05                   | 5,7E-02                         |
| 7        | 1,5E-03                          | 1,6E-03        | <b>1,8E-03</b> | 1,4E-03         | 2,9E-05                   | 5,9E-02                         |
| 8        | 1,6E-03                          | 1,7E-03        | <b>1,8E-03</b> | 1,5E-03         | 3,0E-05                   | 6,1E-02                         |
| 9        | 1,7E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,5E-03         | 3,1E-05                   | 6,3E-02                         |
| 10       | 1,7E-03                          | 1,8E-03        | <b>2,0E-03</b> | 1,6E-03         | 3,2E-05                   | 6,5E-02                         |
| 14       | 2,0E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,7E-03         | 3,5E-05                   | 6,9E-02                         |
| 15       | 2,1E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,5E-05                   | 7,0E-02                         |
| 20       | 2,4E-03                          | 2,4E-03        | <b>2,4E-03</b> | 1,9E-03         | 3,7E-05                   | 7,5E-02                         |
| 30       | 3,0E-03                          | 2,9E-03        | <b>2,8E-03</b> | 2,1E-03         | 4,0E-05                   | 8,1E-02                         |
| 40       | 3,5E-03                          | 3,3E-03        | <b>3,0E-03</b> | 2,3E-03         | 4,2E-05                   | 8,4E-02                         |
| 45       | 3,8E-03                          | 3,4E-03        | <b>3,1E-03</b> | 2,3E-03         | 4,3E-05                   | 8,6E-02                         |
| 50       | 4,0E-03                          | 3,6E-03        | <b>3,2E-03</b> | 2,4E-03         | 4,3E-05                   | 8,7E-02                         |
| 60       | 4,4E-03                          | 3,9E-03        | <b>3,4E-03</b> | 2,5E-03         | 4,4E-05                   | 8,8E-02                         |
| 70       | 4,8E-03                          | 4,2E-03        | <b>3,6E-03</b> | 2,6E-03         | 4,5E-05                   | 8,9E-02                         |
| 80       | 5,1E-03                          | 4,5E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,5E-05                   | 9,0E-02                         |
| 90       | 5,5E-03                          | 4,7E-03        | <b>3,9E-03</b> | 2,7E-03         | 4,5E-05                   | 9,1E-02                         |
| 100      | 5,8E-03                          | 4,9E-03        | <b>4,0E-03</b> | 2,8E-03         | 4,6E-05                   | 9,1E-02                         |
| 120      | 6,3E-03                          | 5,3E-03        | <b>4,2E-03</b> | 2,9E-03         | 4,6E-05                   | 9,2E-02                         |
| 180      | 7,6E-03                          | 6,3E-03        | <b>4,7E-03</b> | 3,1E-03         | 4,7E-05                   | 9,4E-02                         |
| 200      | 7,9E-03                          | 6,5E-03        | <b>4,8E-03</b> | 3,2E-03         | 4,7E-05                   | 9,4E-02                         |
| 300      | 9,2E-03                          | 7,5E-03        | <b>5,3E-03</b> | 3,5E-03         | 4,8E-05                   | 9,7E-02                         |
| 360      | 9,8E-03                          | 7,9E-03        | <b>5,6E-03</b> | 3,6E-03         | 4,9E-05                   | 9,9E-02                         |
| 400      | 1,0E-02                          | 8,1E-03        | <b>5,7E-03</b> | 3,7E-03         | 4,9E-05                   | 1,0E-01                         |
| 500      | 1,1E-02                          | 8,6E-03        | <b>6,0E-03</b> | 3,8E-03         | 5,1E-05                   | 1,0E-01                         |
| 600      | 1,1E-02                          | 8,9E-03        | <b>6,2E-03</b> | 3,9E-03         | 5,2E-05                   | 1,1E-01                         |
| 700      | 1,2E-02                          | 9,2E-03        | <b>6,4E-03</b> | 4,0E-03         | 5,3E-05                   | 1,1E-01                         |
| 800      | 1,2E-02                          | 9,5E-03        | <b>6,6E-03</b> | 4,2E-03         | 5,5E-05                   | 1,1E-01                         |
| 900      | 1,2E-02                          | 9,7E-03        | <b>6,7E-03</b> | 4,3E-03         | 5,6E-05                   | 1,1E-01                         |
| 1000     | 1,2E-02                          | 9,9E-03        | <b>6,9E-03</b> | 4,3E-03         | 5,7E-05                   | 1,2E-01                         |
| 2000     | 1,5E-02                          | 1,2E-02        | <b>8,2E-03</b> | 5,2E-03         | 6,8E-05                   | 1,4E-01                         |
| 3000     | 1,7E-02                          | 1,4E-02        | <b>9,4E-03</b> | 5,9E-03         | 7,7E-05                   | 1,6E-01                         |
| 4000     | 1,9E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,5E-05                   | 1,7E-01                         |
| 5000     | 2,0E-02                          | 1,6E-02        | <b>1,1E-02</b> | 7,0E-03         | 9,2E-05                   | 1,9E-01                         |
| 6000     | 2,2E-02                          | 1,7E-02        | <b>1,2E-02</b> | 7,5E-03         | 9,8E-05                   | 2,0E-01                         |
| 8000     | 2,4E-02                          | 2,0E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04                   | 2,2E-01                         |
| 10000    | 2,7E-02                          | 2,1E-02        | <b>1,5E-02</b> | 9,2E-03         | 1,2E-04                   | 2,5E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-230**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                 |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b>                  | 3,4E-02         | 9,5E-02                   | 2,3E-02                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b>                  | 1,8E-01         | 4,9E-01                   | 4,2E-02                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b>                  | 2,9E-01         | 7,8E-01                   | 4,7E-02                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b>                  | 3,4E-01         | 9,1E-01                   | 5,1E-02                         |
| 5        | 7,2E-02                          | 2,1E-01        | <b>3,8E-01</b>                  | 3,6E-01         | 9,7E-01                   | 5,4E-02                         |
| 6        | 7,5E-02                          | 2,1E-01        | <b>3,9E-01</b>                  | 3,7E-01         | 9,9E-01                   | 5,7E-02                         |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         | 1,0E+00                   | 5,9E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         | 1,0E+00                   | 6,1E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 6,3E-02                         |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 6,5E-02                         |
| 14       | 8,5E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 6,9E-02                         |
| 15       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 7,0E-02                         |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 7,5E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 8,1E-02                         |
| 40       | 1,0E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 8,4E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 8,6E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 8,7E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 8,8E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b>                  | 3,9E-01         |                           | 8,9E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b>                  | 3,9E-01         |                           | 9,0E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b>                  |                 |                           | 9,1E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b>                  |                 |                           | 9,1E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        |                                 |                 |                           | 9,2E-02                         |
| 180      | 1,3E-01                          | 2,5E-01        |                                 |                 |                           | 9,3E-02                         |
| 200      | 1,3E-01                          | 2,5E-01        |                                 |                 |                           | 9,4E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        |                                 |                 |                           | 9,6E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        |                                 |                 |                           | 9,8E-02                         |
| 400      | 1,3E-01                          |                |                                 |                 |                           | 9,9E-02                         |
| 500      | 1,3E-01                          |                |                                 |                 |                           | 1,0E-01                         |
| 600      | 1,3E-01                          |                |                                 |                 |                           | 1,0E-01                         |
| 700      | 1,3E-01                          |                |                                 |                 |                           | 1,1E-01                         |
| 800      | 1,3E-01                          |                |                                 |                 |                           | 1,1E-01                         |
| 900      | 1,3E-01                          |                |                                 |                 |                           | 1,1E-01                         |
| 1000     | 1,3E-01                          |                |                                 |                 |                           | 1,1E-01                         |
| 2000     | 1,3E-01                          |                |                                 |                 |                           | 1,4E-01                         |
| 3000     | 1,4E-01                          |                |                                 |                 |                           | 1,5E-01                         |
| 4000     | 1,4E-01                          |                |                                 |                 |                           | 1,7E-01                         |
| 5000     |                                  |                |                                 |                 |                           | 1,8E-01                         |
| 6000     |                                  |                |                                 |                 |                           | 2,0E-01                         |
| 8000     |                                  |                |                                 |                 |                           | 2,2E-01                         |
| 10000    |                                  |                |                                 |                 |                           | 2,4E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-230**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,3E-06                          | 6,3E-06        | <b>7,8E-06</b> | 6,7E-06         | 3,2E-06                   | 2,3E-02                         |
| 2        | 1,0E-05                          | 1,2E-05        | <b>1,5E-05</b> | 1,3E-05         | 8,0E-06                   | 4,2E-02                         |
| 3        | 1,2E-05                          | 1,5E-05        | <b>1,8E-05</b> | 1,5E-05         | 9,3E-06                   | 4,7E-02                         |
| 4        | 1,4E-05                          | 1,6E-05        | <b>2,0E-05</b> | 1,6E-05         | 1,0E-05                   | 5,1E-02                         |
| 5        | 1,6E-05                          | 1,8E-05        | <b>2,1E-05</b> | 1,8E-05         | 1,1E-05                   | 5,4E-02                         |
| 6        | 1,7E-05                          | 1,9E-05        | <b>2,2E-05</b> | 1,9E-05         | 1,1E-05                   | 5,7E-02                         |
| 7        | 1,9E-05                          | 2,1E-05        | <b>2,4E-05</b> | 1,9E-05         | 1,2E-05                   | 5,9E-02                         |
| 8        | 2,0E-05                          | 2,2E-05        | <b>2,5E-05</b> | 2,0E-05         | 1,2E-05                   | 6,1E-02                         |
| 9        | 2,2E-05                          | 2,3E-05        | <b>2,6E-05</b> | 2,1E-05         | 1,3E-05                   | 6,3E-02                         |
| 10       | 2,3E-05                          | 2,4E-05        | <b>2,7E-05</b> | 2,2E-05         | 1,3E-05                   | 6,5E-02                         |
| 14       | 2,8E-05                          | 2,9E-05        | <b>3,0E-05</b> | 2,4E-05         | 1,4E-05                   | 6,9E-02                         |
| 15       | 3,0E-05                          | 3,0E-05        | <b>3,1E-05</b> | 2,4E-05         | 1,4E-05                   | 7,0E-02                         |
| 20       | 3,6E-05                          | 3,5E-05        | <b>3,4E-05</b> | 2,7E-05         | 1,5E-05                   | 7,5E-02                         |
| 30       | 4,9E-05                          | 4,5E-05        | <b>4,1E-05</b> | 3,0E-05         | 1,6E-05                   | 8,1E-02                         |
| 40       | 6,1E-05                          | 5,4E-05        | <b>4,6E-05</b> | 3,4E-05         | 1,7E-05                   | 8,4E-02                         |
| 45       | 6,7E-05                          | 5,8E-05        | <b>4,9E-05</b> | 3,5E-05         | 1,7E-05                   | 8,6E-02                         |
| 50       | 7,3E-05                          | 6,3E-05        | <b>5,1E-05</b> | 3,6E-05         | 1,7E-05                   | 8,7E-02                         |
| 60       | 8,4E-05                          | 7,1E-05        | <b>5,6E-05</b> | 3,8E-05         | 1,8E-05                   | 8,8E-02                         |
| 70       | 9,5E-05                          | 7,9E-05        | <b>6,0E-05</b> | 4,1E-05         | 1,8E-05                   | 8,9E-02                         |
| 80       | 1,1E-04                          | 8,7E-05        | <b>6,4E-05</b> | 4,3E-05         | 1,8E-05                   | 9,0E-02                         |
| 90       | 1,2E-04                          | 9,4E-05        | <b>6,8E-05</b> | 4,4E-05         | 1,8E-05                   | 9,1E-02                         |
| 100      | 1,3E-04                          | 1,0E-04        | <b>7,2E-05</b> | 4,6E-05         | 1,8E-05                   | 9,1E-02                         |
| 120      | 1,4E-04                          | 1,1E-04        | <b>7,9E-05</b> | 4,9E-05         | 1,8E-05                   | 9,2E-02                         |
| 180      | 2,0E-04                          | 1,5E-04        | <b>9,9E-05</b> | 5,9E-05         | 1,9E-05                   | 9,4E-02                         |
| 200      | 2,1E-04                          | 1,7E-04        | <b>1,1E-04</b> | 6,1E-05         | 1,9E-05                   | 9,4E-02                         |
| 300      | 3,0E-04                          | 2,2E-04        | <b>1,4E-04</b> | 7,5E-05         | 1,9E-05                   | 9,7E-02                         |
| 360      | 3,4E-04                          | 2,6E-04        | <b>1,5E-04</b> | 8,3E-05         | 2,0E-05                   | 9,9E-02                         |
| 400      | 3,7E-04                          | 2,8E-04        | <b>1,6E-04</b> | 8,9E-05         | 2,0E-05                   | 1,0E-01                         |
| 500      | 4,5E-04                          | 3,3E-04        | <b>1,9E-04</b> | 1,0E-04         | 2,0E-05                   | 1,0E-01                         |
| 600      | 5,1E-04                          | 3,8E-04        | <b>2,2E-04</b> | 1,1E-04         | 2,1E-05                   | 1,1E-01                         |
| 700      | 5,8E-04                          | 4,3E-04        | <b>2,4E-04</b> | 1,2E-04         | 2,1E-05                   | 1,1E-01                         |
| 800      | 6,4E-04                          | 4,7E-04        | <b>2,6E-04</b> | 1,4E-04         | 2,2E-05                   | 1,1E-01                         |
| 900      | 7,0E-04                          | 5,2E-04        | <b>2,9E-04</b> | 1,5E-04         | 2,2E-05                   | 1,1E-01                         |
| 1000     | 7,6E-04                          | 5,6E-04        | <b>3,1E-04</b> | 1,6E-04         | 2,3E-05                   | 1,2E-01                         |
| 2000     | 1,2E-03                          | 9,0E-04        | <b>4,9E-04</b> | 2,4E-04         | 2,7E-05                   | 1,4E-01                         |
| 3000     | 1,6E-03                          | 1,2E-03        | <b>6,3E-04</b> | 3,1E-04         | 3,1E-05                   | 1,6E-01                         |
| 4000     | 1,9E-03                          | 1,4E-03        | <b>7,5E-04</b> | 3,7E-04         | 3,4E-05                   | 1,7E-01                         |
| 5000     | 2,2E-03                          | 1,6E-03        | <b>8,6E-04</b> | 4,2E-04         | 3,7E-05                   | 1,9E-01                         |
| 6000     | 2,5E-03                          | 1,8E-03        | <b>9,6E-04</b> | 4,7E-04         | 3,9E-05                   | 2,0E-01                         |
| 8000     | 2,9E-03                          | 2,1E-03        | <b>1,1E-03</b> | 5,5E-04         | 4,4E-05                   | 2,2E-01                         |
| 10000    | 3,3E-03                          | 2,4E-03        | <b>1,3E-03</b> | 6,3E-04         | 4,8E-05                   | 2,5E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-230**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                   | 2,3E-02                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                   | 4,2E-02                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                   | 4,7E-02                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                   | 5,1E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                   | 5,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                   | 5,7E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 5,9E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 6,1E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 6,3E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 6,5E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 6,9E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 7,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 7,5E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 8,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 8,4E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                           | 8,6E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 8,7E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 8,8E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 8,9E-02                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 9,0E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 9,1E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 9,1E-02                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 9,2E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,3E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,4E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,6E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,8E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,9E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                           | 1,0E-01                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                           | 1,0E-01                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                           | 1,1E-01                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,1E-01                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,1E-01                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,1E-01                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                           | 1,4E-01                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                           | 1,5E-01                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                           | 1,7E-01                         |
| 5000     | 2,3E-01                          |                |                |                 |                           | 1,8E-01                         |
| 6000     | 2,3E-01                          |                |                |                 |                           | 2,0E-01                         |
| 8000     |                                  |                |                |                 |                           | 2,2E-01                         |
| 10000    |                                  |                |                |                 |                           | 2,4E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-232**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,0E-04                          | 5,6E-04        | <b>6,5E-04</b> | 5,4E-04         | 8,0E-06                   | 2,3E-02                         |
| 2        | 9,4E-04                          | 1,0E-03        | <b>1,2E-03</b> | 9,9E-04         | 2,0E-05                   | 4,2E-02                         |
| 3        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,1E-03         | 2,3E-05                   | 4,7E-02                         |
| 4        | 1,2E-03                          | 1,3E-03        | <b>1,5E-03</b> | 1,2E-03         | 2,5E-05                   | 5,1E-02                         |
| 5        | 1,3E-03                          | 1,4E-03        | <b>1,6E-03</b> | 1,3E-03         | 2,7E-05                   | 5,4E-02                         |
| 6        | 1,4E-03                          | 1,5E-03        | <b>1,7E-03</b> | 1,4E-03         | 2,8E-05                   | 5,7E-02                         |
| 7        | 1,5E-03                          | 1,6E-03        | <b>1,8E-03</b> | 1,4E-03         | 2,9E-05                   | 5,9E-02                         |
| 8        | 1,6E-03                          | 1,7E-03        | <b>1,8E-03</b> | 1,5E-03         | 3,0E-05                   | 6,1E-02                         |
| 9        | 1,7E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,5E-03         | 3,1E-05                   | 6,3E-02                         |
| 10       | 1,7E-03                          | 1,8E-03        | <b>2,0E-03</b> | 1,6E-03         | 3,2E-05                   | 6,5E-02                         |
| 14       | 2,0E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,7E-03         | 3,5E-05                   | 6,9E-02                         |
| 15       | 2,1E-03                          | 2,1E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,5E-05                   | 7,0E-02                         |
| 20       | 2,4E-03                          | 2,4E-03        | <b>2,4E-03</b> | 1,9E-03         | 3,7E-05                   | 7,5E-02                         |
| 30       | 3,0E-03                          | 2,9E-03        | <b>2,8E-03</b> | 2,1E-03         | 4,0E-05                   | 8,1E-02                         |
| 40       | 3,5E-03                          | 3,3E-03        | <b>3,0E-03</b> | 2,3E-03         | 4,2E-05                   | 8,4E-02                         |
| 45       | 3,8E-03                          | 3,4E-03        | <b>3,1E-03</b> | 2,3E-03         | 4,3E-05                   | 8,6E-02                         |
| 50       | 4,0E-03                          | 3,6E-03        | <b>3,2E-03</b> | 2,4E-03         | 4,3E-05                   | 8,7E-02                         |
| 60       | 4,4E-03                          | 3,9E-03        | <b>3,4E-03</b> | 2,5E-03         | 4,4E-05                   | 8,8E-02                         |
| 70       | 4,8E-03                          | 4,2E-03        | <b>3,6E-03</b> | 2,6E-03         | 4,5E-05                   | 8,9E-02                         |
| 80       | 5,1E-03                          | 4,5E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,5E-05                   | 9,0E-02                         |
| 90       | 5,5E-03                          | 4,7E-03        | <b>3,9E-03</b> | 2,7E-03         | 4,5E-05                   | 9,1E-02                         |
| 100      | 5,8E-03                          | 4,9E-03        | <b>4,0E-03</b> | 2,8E-03         | 4,6E-05                   | 9,1E-02                         |
| 120      | 6,3E-03                          | 5,3E-03        | <b>4,2E-03</b> | 2,9E-03         | 4,6E-05                   | 9,2E-02                         |
| 180      | 7,6E-03                          | 6,3E-03        | <b>4,7E-03</b> | 3,1E-03         | 4,7E-05                   | 9,4E-02                         |
| 200      | 7,9E-03                          | 6,5E-03        | <b>4,8E-03</b> | 3,2E-03         | 4,7E-05                   | 9,4E-02                         |
| 300      | 9,2E-03                          | 7,5E-03        | <b>5,3E-03</b> | 3,5E-03         | 4,8E-05                   | 9,7E-02                         |
| 360      | 9,8E-03                          | 7,9E-03        | <b>5,6E-03</b> | 3,6E-03         | 4,9E-05                   | 9,9E-02                         |
| 400      | 1,0E-02                          | 8,1E-03        | <b>5,7E-03</b> | 3,7E-03         | 4,9E-05                   | 1,0E-01                         |
| 500      | 1,1E-02                          | 8,6E-03        | <b>6,0E-03</b> | 3,8E-03         | 5,1E-05                   | 1,0E-01                         |
| 600      | 1,1E-02                          | 8,9E-03        | <b>6,2E-03</b> | 3,9E-03         | 5,2E-05                   | 1,1E-01                         |
| 700      | 1,2E-02                          | 9,2E-03        | <b>6,4E-03</b> | 4,0E-03         | 5,3E-05                   | 1,1E-01                         |
| 800      | 1,2E-02                          | 9,5E-03        | <b>6,6E-03</b> | 4,2E-03         | 5,5E-05                   | 1,1E-01                         |
| 900      | 1,2E-02                          | 9,7E-03        | <b>6,7E-03</b> | 4,3E-03         | 5,6E-05                   | 1,1E-01                         |
| 1000     | 1,2E-02                          | 9,9E-03        | <b>6,9E-03</b> | 4,3E-03         | 5,7E-05                   | 1,2E-01                         |
| 2000     | 1,5E-02                          | 1,2E-02        | <b>8,2E-03</b> | 5,2E-03         | 6,8E-05                   | 1,4E-01                         |
| 3000     | 1,7E-02                          | 1,4E-02        | <b>9,4E-03</b> | 5,9E-03         | 7,7E-05                   | 1,6E-01                         |
| 4000     | 1,9E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,5E-05                   | 1,7E-01                         |
| 5000     | 2,0E-02                          | 1,6E-02        | <b>1,1E-02</b> | 7,0E-03         | 9,2E-05                   | 1,9E-01                         |
| 6000     | 2,2E-02                          | 1,7E-02        | <b>1,2E-02</b> | 7,5E-03         | 9,8E-05                   | 2,0E-01                         |
| 8000     | 2,4E-02                          | 2,0E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04                   | 2,2E-01                         |
| 10000    | 2,7E-02                          | 2,1E-02        | <b>1,5E-02</b> | 9,2E-03         | 1,2E-04                   | 2,5E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-232**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                 |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b>                  | 3,4E-02         | 9,5E-02                   | 2,6E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b>                  | 1,8E-01         | 4,9E-01                   | 1,6E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b>                  | 2,9E-01         | 7,8E-01                   | 2,9E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b>                  | 3,4E-01         | 9,1E-01                   | 3,6E-03                         |
| 5        | 7,2E-02                          | 2,1E-01        | <b>3,8E-01</b>                  | 3,6E-01         | 9,7E-01                   | 4,1E-03                         |
| 6        | 7,5E-02                          | 2,1E-01        | <b>3,9E-01</b>                  | 3,7E-01         | 9,9E-01                   | 4,4E-03                         |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         | 1,0E+00                   | 4,6E-03                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         | 1,0E+00                   | 4,8E-03                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 4,9E-03                         |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 5,0E-03                         |
| 14       | 8,5E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 5,2E-03                         |
| 15       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 5,2E-03                         |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b>                  | 3,8E-01         |                           | 5,4E-03                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 5,6E-03                         |
| 40       | 1,0E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 5,9E-03                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 6,0E-03                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 6,1E-03                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b>                  | 3,8E-01         |                           | 6,3E-03                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b>                  | 3,9E-01         |                           | 6,5E-03                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b>                  | 3,9E-01         |                           | 6,8E-03                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b>                  |                 |                           | 7,0E-03                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b>                  |                 |                           | 7,2E-03                         |
| 120      | 1,2E-01                          | 2,5E-01        |                                 |                 |                           | 7,6E-03                         |
| 180      | 1,3E-01                          | 2,5E-01        |                                 |                 |                           | 8,8E-03                         |
| 200      | 1,3E-01                          | 2,5E-01        |                                 |                 |                           | 9,2E-03                         |
| 300      | 1,3E-01                          | 2,6E-01        |                                 |                 |                           | 1,1E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        |                                 |                 |                           | 1,2E-02                         |
| 400      | 1,3E-01                          |                |                                 |                 |                           | 1,2E-02                         |
| 500      | 1,3E-01                          |                |                                 |                 |                           | 1,4E-02                         |
| 600      | 1,3E-01                          |                |                                 |                 |                           | 1,5E-02                         |
| 700      | 1,3E-01                          |                |                                 |                 |                           | 1,6E-02                         |
| 800      | 1,3E-01                          |                |                                 |                 |                           | 1,7E-02                         |
| 900      | 1,3E-01                          |                |                                 |                 |                           | 1,8E-02                         |
| 1000     | 1,3E-01                          |                |                                 |                 |                           | 1,9E-02                         |
| 2000     | 1,3E-01                          |                |                                 |                 |                           | 2,5E-02                         |
| 3000     | 1,4E-01                          |                |                                 |                 |                           | 2,8E-02                         |
| 4000     | 1,4E-01                          |                |                                 |                 |                           | 3,2E-02                         |
| 5000     |                                  |                |                                 |                 |                           | 3,5E-02                         |
| 6000     |                                  |                |                                 |                 |                           | 3,7E-02                         |
| 8000     |                                  |                |                                 |                 |                           | 4,2E-02                         |
| 10000    |                                  |                |                                 |                 |                           | 4,6E-02                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-232**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,3E-06                          | 6,3E-06        | <b>7,8E-06</b> | 6,7E-06         | 3,2E-06                   | 2,3E-02                         |
| 2        | 1,0E-05                          | 1,2E-05        | <b>1,5E-05</b> | 1,3E-05         | 8,0E-06                   | 4,2E-02                         |
| 3        | 1,2E-05                          | 1,5E-05        | <b>1,8E-05</b> | 1,5E-05         | 9,3E-06                   | 4,7E-02                         |
| 4        | 1,4E-05                          | 1,6E-05        | <b>2,0E-05</b> | 1,6E-05         | 1,0E-05                   | 5,1E-02                         |
| 5        | 1,6E-05                          | 1,8E-05        | <b>2,1E-05</b> | 1,8E-05         | 1,1E-05                   | 5,4E-02                         |
| 6        | 1,7E-05                          | 1,9E-05        | <b>2,2E-05</b> | 1,9E-05         | 1,1E-05                   | 5,7E-02                         |
| 7        | 1,9E-05                          | 2,1E-05        | <b>2,4E-05</b> | 1,9E-05         | 1,2E-05                   | 5,9E-02                         |
| 8        | 2,0E-05                          | 2,2E-05        | <b>2,5E-05</b> | 2,0E-05         | 1,2E-05                   | 6,1E-02                         |
| 9        | 2,2E-05                          | 2,3E-05        | <b>2,6E-05</b> | 2,1E-05         | 1,3E-05                   | 6,3E-02                         |
| 10       | 2,3E-05                          | 2,4E-05        | <b>2,7E-05</b> | 2,2E-05         | 1,3E-05                   | 6,5E-02                         |
| 14       | 2,8E-05                          | 2,9E-05        | <b>3,0E-05</b> | 2,4E-05         | 1,4E-05                   | 6,9E-02                         |
| 15       | 3,0E-05                          | 3,0E-05        | <b>3,1E-05</b> | 2,4E-05         | 1,4E-05                   | 7,0E-02                         |
| 20       | 3,6E-05                          | 3,5E-05        | <b>3,4E-05</b> | 2,7E-05         | 1,5E-05                   | 7,5E-02                         |
| 30       | 4,9E-05                          | 4,5E-05        | <b>4,1E-05</b> | 3,0E-05         | 1,6E-05                   | 8,1E-02                         |
| 40       | 6,1E-05                          | 5,4E-05        | <b>4,6E-05</b> | 3,4E-05         | 1,7E-05                   | 8,4E-02                         |
| 45       | 6,7E-05                          | 5,8E-05        | <b>4,9E-05</b> | 3,5E-05         | 1,7E-05                   | 8,6E-02                         |
| 50       | 7,3E-05                          | 6,3E-05        | <b>5,1E-05</b> | 3,6E-05         | 1,7E-05                   | 8,7E-02                         |
| 60       | 8,4E-05                          | 7,1E-05        | <b>5,6E-05</b> | 3,8E-05         | 1,8E-05                   | 8,8E-02                         |
| 70       | 9,5E-05                          | 7,9E-05        | <b>6,0E-05</b> | 4,1E-05         | 1,8E-05                   | 8,9E-02                         |
| 80       | 1,1E-04                          | 8,7E-05        | <b>6,4E-05</b> | 4,3E-05         | 1,8E-05                   | 9,0E-02                         |
| 90       | 1,2E-04                          | 9,4E-05        | <b>6,8E-05</b> | 4,4E-05         | 1,8E-05                   | 9,1E-02                         |
| 100      | 1,3E-04                          | 1,0E-04        | <b>7,2E-05</b> | 4,6E-05         | 1,8E-05                   | 9,1E-02                         |
| 120      | 1,4E-04                          | 1,1E-04        | <b>7,9E-05</b> | 4,9E-05         | 1,8E-05                   | 9,2E-02                         |
| 180      | 2,0E-04                          | 1,5E-04        | <b>9,9E-05</b> | 5,9E-05         | 1,9E-05                   | 9,4E-02                         |
| 200      | 2,1E-04                          | 1,7E-04        | <b>1,1E-04</b> | 6,1E-05         | 1,9E-05                   | 9,4E-02                         |
| 300      | 3,0E-04                          | 2,2E-04        | <b>1,4E-04</b> | 7,5E-05         | 1,9E-05                   | 9,7E-02                         |
| 360      | 3,4E-04                          | 2,6E-04        | <b>1,5E-04</b> | 8,3E-05         | 2,0E-05                   | 9,9E-02                         |
| 400      | 3,7E-04                          | 2,8E-04        | <b>1,6E-04</b> | 8,9E-05         | 2,0E-05                   | 1,0E-01                         |
| 500      | 4,5E-04                          | 3,3E-04        | <b>1,9E-04</b> | 1,0E-04         | 2,0E-05                   | 1,0E-01                         |
| 600      | 5,1E-04                          | 3,8E-04        | <b>2,2E-04</b> | 1,1E-04         | 2,1E-05                   | 1,1E-01                         |
| 700      | 5,8E-04                          | 4,3E-04        | <b>2,4E-04</b> | 1,2E-04         | 2,1E-05                   | 1,1E-01                         |
| 800      | 6,4E-04                          | 4,7E-04        | <b>2,6E-04</b> | 1,4E-04         | 2,2E-05                   | 1,1E-01                         |
| 900      | 7,0E-04                          | 5,2E-04        | <b>2,9E-04</b> | 1,5E-04         | 2,2E-05                   | 1,1E-01                         |
| 1000     | 7,6E-04                          | 5,6E-04        | <b>3,1E-04</b> | 1,6E-04         | 2,3E-05                   | 1,2E-01                         |
| 2000     | 1,2E-03                          | 9,0E-04        | <b>4,9E-04</b> | 2,4E-04         | 2,7E-05                   | 1,4E-01                         |
| 3000     | 1,6E-03                          | 1,2E-03        | <b>6,3E-04</b> | 3,1E-04         | 3,1E-05                   | 1,6E-01                         |
| 4000     | 1,9E-03                          | 1,4E-03        | <b>7,5E-04</b> | 3,7E-04         | 3,4E-05                   | 1,7E-01                         |
| 5000     | 2,2E-03                          | 1,6E-03        | <b>8,6E-04</b> | 4,2E-04         | 3,7E-05                   | 1,9E-01                         |
| 6000     | 2,5E-03                          | 1,8E-03        | <b>9,6E-04</b> | 4,7E-04         | 3,9E-05                   | 2,0E-01                         |
| 8000     | 2,9E-03                          | 2,1E-03        | <b>1,1E-03</b> | 5,5E-04         | 4,4E-05                   | 2,2E-01                         |
| 10000    | 3,3E-03                          | 2,4E-03        | <b>1,3E-03</b> | 6,3E-04         | 4,8E-05                   | 2,5E-01                         |



**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Th-232**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,0002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                   | 2,6E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                   | 1,6E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                   | 2,9E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                   | 3,6E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                   | 4,1E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                   | 4,4E-03                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 4,6E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                   | 4,8E-03                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 4,9E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,0E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,2E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                           | 5,2E-03                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,4E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,6E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                           | 5,9E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                           | 6,0E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,1E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,3E-03                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,5E-03                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 6,8E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 7,0E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 7,2E-03                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                           | 7,6E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 8,8E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 9,2E-03                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 1,1E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 1,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                           | 1,2E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                           | 1,4E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                           | 1,5E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                           | 1,6E-02                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,7E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,8E-02                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                           | 1,9E-02                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                           | 2,5E-02                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                           | 2,8E-02                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                           | 3,2E-02                         |
| 5000     | 2,3E-01                          |                |                |                 |                           | 3,5E-02                         |
| 6000     | 2,3E-01                          |                |                |                 |                           | 3,7E-02                         |
| 8000     |                                  |                |                |                 |                           | 4,2E-02                         |
| 10000    |                                  |                |                |                 |                           | 4,6E-02                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-233**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,2E-01         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 1,4E-02                 | 7,2E-01                         |
| 7        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,4E-01                         |
| 8        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,5E-01                         |
| 9        | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,6E-01                         |
| 10       | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,7E-01                         |
| 14       | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,0E-01                         |
| 15       | 1,7E-01                          | 2,0E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,1E-01                         |
| 20       | 1,8E-01                          | 2,0E-01        | <b>2,4E-01</b> | 2,0E-01         | 1,7E-02                 | 8,3E-01                         |
| 30       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,7E-02                 | 8,7E-01                         |
| 40       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,8E-01                         |
| 45       | 1,9E-01                          | 2,2E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,9E-01                         |
| 50       | 1,9E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,1E-01         | 1,8E-02                 | 9,0E-01                         |
| 60       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 70       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 80       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 90       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 100      | 2,0E-01                          | 2,3E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 120      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 180      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,4E-01                         |
| 200      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 300      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 360      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 400      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 500      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 600      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 2,3E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 2,4E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 2,4E-01        |                |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-233**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,2E-02                          | 1,4E-02        | <b>1,8E-02</b> | 1,5E-02         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,6E-02                          | 1,9E-02        | <b>2,4E-02</b> | 2,0E-02         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,7E-02                          | 2,0E-02        | <b>2,5E-02</b> | 2,1E-02         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,8E-02                          | 2,1E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,8E-02                          | 2,2E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,9E-02                          | 2,2E-02        | <b>2,7E-02</b> | 2,3E-02         | 1,4E-02                 | 7,2E-01                         |
| 7        | 2,0E-02                          | 2,3E-02        | <b>2,8E-02</b> | 2,3E-02         | 1,5E-02                 | 7,4E-01                         |
| 8        | 2,1E-02                          | 2,4E-02        | <b>2,8E-02</b> | 2,4E-02         | 1,5E-02                 | 7,5E-01                         |
| 9        | 2,2E-02                          | 2,5E-02        | <b>2,9E-02</b> | 2,4E-02         | 1,5E-02                 | 7,6E-01                         |
| 10       | 2,3E-02                          | 2,5E-02        | <b>3,0E-02</b> | 2,5E-02         | 1,5E-02                 | 7,7E-01                         |
| 14       | 2,5E-02                          | 2,8E-02        | <b>3,1E-02</b> | 2,6E-02         | 1,6E-02                 | 8,0E-01                         |
| 15       | 2,6E-02                          | 2,8E-02        | <b>3,2E-02</b> | 2,6E-02         | 1,6E-02                 | 8,1E-01                         |
| 20       | 2,9E-02                          | 3,1E-02        | <b>3,4E-02</b> | 2,8E-02         | 1,7E-02                 | 8,3E-01                         |
| 30       | 3,5E-02                          | 3,5E-02        | <b>3,7E-02</b> | 2,9E-02         | 1,7E-02                 | 8,7E-01                         |
| 40       | 4,0E-02                          | 3,9E-02        | <b>3,9E-02</b> | 3,1E-02         | 1,8E-02                 | 8,8E-01                         |
| 45       | 4,2E-02                          | 4,1E-02        | <b>4,0E-02</b> | 3,1E-02         | 1,8E-02                 | 8,9E-01                         |
| 50       | 4,5E-02                          | 4,3E-02        | <b>4,1E-02</b> | 3,2E-02         | 1,8E-02                 | 9,0E-01                         |
| 60       | 4,9E-02                          | 4,6E-02        | <b>4,3E-02</b> | 3,3E-02         | 1,8E-02                 | 9,1E-01                         |
| 70       | 5,2E-02                          | 4,9E-02        | <b>4,5E-02</b> | 3,4E-02         | 1,8E-02                 | 9,1E-01                         |
| 80       | 5,6E-02                          | 5,1E-02        | <b>4,6E-02</b> | 3,4E-02         | 1,8E-02                 | 9,2E-01                         |
| 90       | 5,9E-02                          | 5,4E-02        | <b>4,7E-02</b> | 3,5E-02         | 1,8E-02                 | 9,2E-01                         |
| 100      | 6,2E-02                          | 5,6E-02        | <b>4,9E-02</b> | 3,6E-02         | 1,9E-02                 | 9,3E-01                         |
| 120      | 6,8E-02                          | 6,0E-02        | <b>5,1E-02</b> | 3,7E-02         | 1,9E-02                 | 9,3E-01                         |
| 180      | 8,0E-02                          | 6,9E-02        | <b>5,6E-02</b> | 3,9E-02         | 1,9E-02                 | 9,4E-01                         |
| 200      | 8,3E-02                          | 7,1E-02        | <b>5,7E-02</b> | 4,0E-02         | 1,9E-02                 | 9,5E-01                         |
| 300      | 9,5E-02                          | 8,0E-02        | <b>6,1E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 360      | 9,9E-02                          | 8,3E-02        | <b>6,3E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 400      | 1,0E-01                          | 8,4E-02        | <b>6,4E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 500      | 1,1E-01                          | 8,7E-02        | <b>6,5E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 600      | 1,1E-01                          | 8,8E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 8,9E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 9,0E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 9,1E-02        | <b>6,7E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 9,2E-02        | <b>6,8E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  | 9,3E-02        | <b>6,8E-02</b> |                 |                         |                                 |
| 10000    |                                  | 9,3E-02        | <b>6,9E-02</b> |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-233**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 1,7E-04                          | 3,0E-04        | <b>4,7E-04</b> | 4,3E-04         | 7,9E-04                  | 5,3E-01                         |
| 2        | 2,5E-04                          | 4,6E-04        | <b>7,3E-04</b> | 6,7E-04         | 1,3E-03                  | 6,6E-01                         |
| 3        | 2,8E-04                          | 4,9E-04        | <b>7,6E-04</b> | 7,0E-04         | 1,3E-03                  | 6,8E-01                         |
| 4        | 3,0E-04                          | 5,1E-04        | <b>7,9E-04</b> | 7,2E-04         | 1,4E-03                  | 6,9E-01                         |
| 5        | 3,2E-04                          | 5,3E-04        | <b>8,1E-04</b> | 7,4E-04         | 1,4E-03                  | 7,1E-01                         |
| 6        | 3,4E-04                          | 5,5E-04        | <b>8,3E-04</b> | 7,5E-04         | 1,4E-03                  | 7,2E-01                         |
| 7        | 3,5E-04                          | 5,7E-04        | <b>8,5E-04</b> | 7,7E-04         | 1,5E-03                  | 7,4E-01                         |
| 8        | 3,7E-04                          | 5,9E-04        | <b>8,7E-04</b> | 7,8E-04         | 1,5E-03                  | 7,5E-01                         |
| 9        | 3,9E-04                          | 6,0E-04        | <b>8,9E-04</b> | 8,0E-04         | 1,5E-03                  | 7,6E-01                         |
| 10       | 4,1E-04                          | 6,2E-04        | <b>9,0E-04</b> | 8,1E-04         | 1,5E-03                  | 7,7E-01                         |
| 14       | 4,8E-04                          | 6,8E-04        | <b>9,6E-04</b> | 8,5E-04         | 1,6E-03                  | 8,0E-01                         |
| 15       | 4,9E-04                          | 7,0E-04        | <b>9,7E-04</b> | 8,6E-04         | 1,6E-03                  | 8,1E-01                         |
| 20       | 5,7E-04                          | 7,7E-04        | <b>1,0E-03</b> | 9,0E-04         | 1,7E-03                  | 8,3E-01                         |
| 30       | 7,2E-04                          | 8,9E-04        | <b>1,1E-03</b> | 9,6E-04         | 1,7E-03                  | 8,7E-01                         |
| 40       | 8,6E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,8E-01                         |
| 45       | 9,2E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,9E-01                         |
| 50       | 9,9E-04                          | 1,1E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 9,0E-01                         |
| 60       | 1,1E-03                          | 1,2E-03        | <b>1,3E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 70       | 1,2E-03                          | 1,3E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 80       | 1,3E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 90       | 1,4E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 100      | 1,5E-03                          | 1,5E-03        | <b>1,5E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 120      | 1,7E-03                          | 1,7E-03        | <b>1,6E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 180      | 2,3E-03                          | 2,1E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,4E-01                         |
| 200      | 2,5E-03                          | 2,2E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,5E-01                         |
| 300      | 3,3E-03                          | 2,8E-03        | <b>2,1E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 360      | 3,7E-03                          | 3,1E-03        | <b>2,3E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 400      | 4,0E-03                          | 3,3E-03        | <b>2,4E-03</b> | 1,6E-03         | 1,9E-03                  | 9,5E-01                         |
| 500      | 4,7E-03                          | 3,8E-03        | <b>2,6E-03</b> | 1,7E-03         | 1,9E-03                  | 9,5E-01                         |
| 600      | 5,3E-03                          | 4,2E-03        | <b>2,9E-03</b> | 1,8E-03         | 1,9E-03                  | 9,6E-01                         |
| 700      | 5,9E-03                          | 4,6E-03        | <b>3,1E-03</b> | 1,9E-03         | 1,9E-03                  | 9,6E-01                         |
| 800      | 6,4E-03                          | 5,0E-03        | <b>3,3E-03</b> | 2,0E-03         | 1,9E-03                  | 9,6E-01                         |
| 900      | 6,9E-03                          | 5,3E-03        | <b>3,4E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 1000     | 7,3E-03                          | 5,6E-03        | <b>3,6E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 2000     | 1,0E-02                          | 7,8E-03        | <b>4,7E-03</b> | 2,6E-03         | 1,9E-03                  | 9,7E-01                         |
| 3000     | 1,2E-02                          | 8,9E-03        | <b>5,3E-03</b> | 2,9E-03         | 1,9E-03                  | 9,7E-01                         |
| 4000     | 1,3E-02                          | 9,6E-03        | <b>5,6E-03</b> | 3,1E-03         | 1,9E-03                  | 9,7E-01                         |
| 5000     | 1,3E-02                          | 1,0E-02        | <b>5,9E-03</b> | 3,2E-03         | 2,0E-03                  | 9,8E-01                         |
| 6000     | 1,4E-02                          | 1,1E-02        | <b>6,1E-03</b> | 3,3E-03         | 2,0E-03                  | 9,8E-01                         |
| 8000     | 1,5E-02                          | 1,1E-02        | <b>6,5E-03</b> | 3,5E-03         |                          |                                 |
| 10000    | 1,5E-02                          | 1,2E-02        | <b>6,7E-03</b> | 3,6E-03         |                          |                                 |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-233**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                  | 6,5E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                  | 2,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                  | 4,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                  | 4,7E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                  | 5,0E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                  | 5,2E-03                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01                  | 5,3E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,3E-03                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,4E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,4E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,5E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,6E-03                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,7E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,8E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                          | 6,5E-03                         |
| 5000     | 2,2E-01                          |                |                |                 |                          | 6,5E-03                         |
| 6000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 8000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 10000    |                                  |                |                |                 |                          |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-234**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,2E-01         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 1,4E-02                 | 7,2E-01                         |
| 7        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,4E-01                         |
| 8        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,5E-01                         |
| 9        | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,6E-01                         |
| 10       | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,7E-01                         |
| 14       | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,0E-01                         |
| 15       | 1,7E-01                          | 2,0E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,1E-01                         |
| 20       | 1,8E-01                          | 2,0E-01        | <b>2,4E-01</b> | 2,0E-01         | 1,7E-02                 | 8,3E-01                         |
| 30       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,7E-02                 | 8,7E-01                         |
| 40       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,8E-01                         |
| 45       | 1,9E-01                          | 2,2E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,9E-01                         |
| 50       | 1,9E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,1E-01         | 1,8E-02                 | 9,0E-01                         |
| 60       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 70       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 80       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 90       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 100      | 2,0E-01                          | 2,3E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 120      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 180      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,4E-01                         |
| 200      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 300      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 360      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 400      |                                  | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 500      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 600      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 2,3E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 2,4E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 2,4E-01        |                |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-234**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,2E-02                          | 1,4E-02        | <b>1,8E-02</b> | 1,5E-02         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,6E-02                          | 1,9E-02        | <b>2,4E-02</b> | 2,0E-02         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,7E-02                          | 2,0E-02        | <b>2,5E-02</b> | 2,1E-02         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,8E-02                          | 2,1E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,8E-02                          | 2,2E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,9E-02                          | 2,2E-02        | <b>2,7E-02</b> | 2,3E-02         | 1,4E-02                 | 7,2E-01                         |
| 7        | 2,0E-02                          | 2,3E-02        | <b>2,8E-02</b> | 2,3E-02         | 1,5E-02                 | 7,4E-01                         |
| 8        | 2,1E-02                          | 2,4E-02        | <b>2,8E-02</b> | 2,4E-02         | 1,5E-02                 | 7,5E-01                         |
| 9        | 2,2E-02                          | 2,5E-02        | <b>2,9E-02</b> | 2,4E-02         | 1,5E-02                 | 7,6E-01                         |
| 10       | 2,3E-02                          | 2,5E-02        | <b>3,0E-02</b> | 2,5E-02         | 1,5E-02                 | 7,7E-01                         |
| 14       | 2,5E-02                          | 2,8E-02        | <b>3,1E-02</b> | 2,6E-02         | 1,6E-02                 | 8,0E-01                         |
| 15       | 2,6E-02                          | 2,8E-02        | <b>3,2E-02</b> | 2,6E-02         | 1,6E-02                 | 8,1E-01                         |
| 20       | 2,9E-02                          | 3,1E-02        | <b>3,4E-02</b> | 2,8E-02         | 1,7E-02                 | 8,3E-01                         |
| 30       | 3,5E-02                          | 3,5E-02        | <b>3,7E-02</b> | 2,9E-02         | 1,7E-02                 | 8,7E-01                         |
| 40       | 4,0E-02                          | 3,9E-02        | <b>3,9E-02</b> | 3,1E-02         | 1,8E-02                 | 8,8E-01                         |
| 45       | 4,2E-02                          | 4,1E-02        | <b>4,0E-02</b> | 3,1E-02         | 1,8E-02                 | 8,9E-01                         |
| 50       | 4,5E-02                          | 4,3E-02        | <b>4,1E-02</b> | 3,2E-02         | 1,8E-02                 | 9,0E-01                         |
| 60       | 4,9E-02                          | 4,6E-02        | <b>4,3E-02</b> | 3,3E-02         | 1,8E-02                 | 9,1E-01                         |
| 70       | 5,2E-02                          | 4,9E-02        | <b>4,5E-02</b> | 3,4E-02         | 1,8E-02                 | 9,1E-01                         |
| 80       | 5,6E-02                          | 5,1E-02        | <b>4,6E-02</b> | 3,4E-02         | 1,8E-02                 | 9,2E-01                         |
| 90       | 5,9E-02                          | 5,4E-02        | <b>4,7E-02</b> | 3,5E-02         | 1,8E-02                 | 9,2E-01                         |
| 100      | 6,2E-02                          | 5,6E-02        | <b>4,9E-02</b> | 3,6E-02         | 1,9E-02                 | 9,3E-01                         |
| 120      | 6,8E-02                          | 6,0E-02        | <b>5,1E-02</b> | 3,7E-02         | 1,9E-02                 | 9,3E-01                         |
| 180      | 8,0E-02                          | 6,9E-02        | <b>5,6E-02</b> | 3,9E-02         | 1,9E-02                 | 9,4E-01                         |
| 200      | 8,3E-02                          | 7,1E-02        | <b>5,7E-02</b> | 4,0E-02         | 1,9E-02                 | 9,5E-01                         |
| 300      | 9,5E-02                          | 8,0E-02        | <b>6,1E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 360      | 9,9E-02                          | 8,3E-02        | <b>6,3E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 400      | 1,0E-01                          | 8,4E-02        | <b>6,4E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 500      | 1,1E-01                          | 8,7E-02        | <b>6,5E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 600      | 1,1E-01                          | 8,8E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 8,9E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 9,0E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 9,1E-02        | <b>6,7E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 9,2E-02        | <b>6,8E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  | 9,3E-02        | <b>6,8E-02</b> |                 |                         |                                 |
| 10000    |                                  | 9,3E-02        | <b>6,9E-02</b> |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-234**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 1,7E-04                          | 3,0E-04        | <b>4,7E-04</b> | 4,3E-04         | 7,9E-04                  | 5,3E-01                         |
| 2        | 2,5E-04                          | 4,6E-04        | <b>7,3E-04</b> | 6,7E-04         | 1,3E-03                  | 6,6E-01                         |
| 3        | 2,8E-04                          | 4,9E-04        | <b>7,6E-04</b> | 7,0E-04         | 1,3E-03                  | 6,8E-01                         |
| 4        | 3,0E-04                          | 5,1E-04        | <b>7,9E-04</b> | 7,2E-04         | 1,4E-03                  | 6,9E-01                         |
| 5        | 3,2E-04                          | 5,3E-04        | <b>8,1E-04</b> | 7,4E-04         | 1,4E-03                  | 7,1E-01                         |
| 6        | 3,4E-04                          | 5,5E-04        | <b>8,3E-04</b> | 7,5E-04         | 1,4E-03                  | 7,2E-01                         |
| 7        | 3,5E-04                          | 5,7E-04        | <b>8,5E-04</b> | 7,7E-04         | 1,5E-03                  | 7,4E-01                         |
| 8        | 3,7E-04                          | 5,9E-04        | <b>8,7E-04</b> | 7,8E-04         | 1,5E-03                  | 7,5E-01                         |
| 9        | 3,9E-04                          | 6,0E-04        | <b>8,9E-04</b> | 8,0E-04         | 1,5E-03                  | 7,6E-01                         |
| 10       | 4,1E-04                          | 6,2E-04        | <b>9,0E-04</b> | 8,1E-04         | 1,5E-03                  | 7,7E-01                         |
| 14       | 4,8E-04                          | 6,8E-04        | <b>9,6E-04</b> | 8,5E-04         | 1,6E-03                  | 8,0E-01                         |
| 15       | 4,9E-04                          | 7,0E-04        | <b>9,7E-04</b> | 8,6E-04         | 1,6E-03                  | 8,1E-01                         |
| 20       | 5,7E-04                          | 7,7E-04        | <b>1,0E-03</b> | 9,0E-04         | 1,7E-03                  | 8,3E-01                         |
| 30       | 7,2E-04                          | 8,9E-04        | <b>1,1E-03</b> | 9,6E-04         | 1,7E-03                  | 8,7E-01                         |
| 40       | 8,6E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,8E-01                         |
| 45       | 9,2E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,9E-01                         |
| 50       | 9,9E-04                          | 1,1E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 9,0E-01                         |
| 60       | 1,1E-03                          | 1,2E-03        | <b>1,3E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 70       | 1,2E-03                          | 1,3E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 80       | 1,3E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 90       | 1,4E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 100      | 1,5E-03                          | 1,5E-03        | <b>1,5E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 120      | 1,7E-03                          | 1,7E-03        | <b>1,6E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 180      | 2,3E-03                          | 2,1E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,4E-01                         |
| 200      | 2,5E-03                          | 2,2E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,5E-01                         |
| 300      | 3,3E-03                          | 2,8E-03        | <b>2,1E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 360      | 3,7E-03                          | 3,1E-03        | <b>2,3E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 400      | 4,0E-03                          | 3,3E-03        | <b>2,4E-03</b> | 1,6E-03         | 1,9E-03                  | 9,5E-01                         |
| 500      | 4,7E-03                          | 3,8E-03        | <b>2,6E-03</b> | 1,7E-03         | 1,9E-03                  | 9,5E-01                         |
| 600      | 5,3E-03                          | 4,2E-03        | <b>2,9E-03</b> | 1,8E-03         | 1,9E-03                  | 9,6E-01                         |
| 700      | 5,9E-03                          | 4,6E-03        | <b>3,1E-03</b> | 1,9E-03         | 1,9E-03                  | 9,6E-01                         |
| 800      | 6,4E-03                          | 5,0E-03        | <b>3,3E-03</b> | 2,0E-03         | 1,9E-03                  | 9,6E-01                         |
| 900      | 6,9E-03                          | 5,3E-03        | <b>3,4E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 1000     | 7,3E-03                          | 5,6E-03        | <b>3,6E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 2000     | 1,0E-02                          | 7,8E-03        | <b>4,7E-03</b> | 2,6E-03         | 1,9E-03                  | 9,7E-01                         |
| 3000     | 1,2E-02                          | 8,9E-03        | <b>5,3E-03</b> | 2,9E-03         | 1,9E-03                  | 9,7E-01                         |
| 4000     | 1,3E-02                          | 9,6E-03        | <b>5,6E-03</b> | 3,1E-03         | 1,9E-03                  | 9,7E-01                         |
| 5000     | 1,3E-02                          | 1,0E-02        | <b>5,9E-03</b> | 3,2E-03         | 2,0E-03                  | 9,8E-01                         |
| 6000     | 1,4E-02                          | 1,1E-02        | <b>6,1E-03</b> | 3,3E-03         | 2,0E-03                  | 9,8E-01                         |
| 8000     | 1,5E-02                          | 1,1E-02        | <b>6,5E-03</b> | 3,5E-03         |                          |                                 |
| 10000    | 1,5E-02                          | 1,2E-02        | <b>6,7E-03</b> | 3,6E-03         |                          |                                 |



**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-234**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                  | 6,5E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                  | 2,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                  | 4,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                  | 4,7E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                  | 5,0E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                  | 5,2E-03                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01                  | 5,3E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,3E-03                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,4E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,4E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,5E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,6E-03                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,7E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,8E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                          | 6,5E-03                         |
| 5000     | 2,2E-01                          |                |                |                 |                          | 6,5E-03                         |
| 6000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 8000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 10000    |                                  |                |                |                 |                          |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,2E-01         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 1,4E-02                 | 7,2E-01                         |
| 7        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,4E-01                         |
| 8        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,5E-01                         |
| 9        | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,6E-01                         |
| 10       | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,7E-01                         |
| 14       | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,0E-01                         |
| 15       | 1,7E-01                          | 2,0E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,1E-01                         |
| 20       | 1,8E-01                          | 2,0E-01        | <b>2,4E-01</b> | 2,0E-01         | 1,7E-02                 | 8,3E-01                         |
| 30       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,7E-02                 | 8,7E-01                         |
| 40       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,8E-01                         |
| 45       | 1,9E-01                          | 2,2E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,9E-01                         |
| 50       | 1,9E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,1E-01         | 1,8E-02                 | 9,0E-01                         |
| 60       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 70       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 80       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 90       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 100      | 2,0E-01                          | 2,3E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 120      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 180      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,4E-01                         |
| 200      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 300      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 360      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 400      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 500      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 600      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 2,3E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 2,4E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 2,4E-01        |                |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,2E-02                          | 1,4E-02        | <b>1,8E-02</b> | 1,5E-02         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,6E-02                          | 1,9E-02        | <b>2,4E-02</b> | 2,0E-02         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,7E-02                          | 2,0E-02        | <b>2,5E-02</b> | 2,1E-02         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,8E-02                          | 2,1E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,8E-02                          | 2,2E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,9E-02                          | 2,2E-02        | <b>2,7E-02</b> | 2,3E-02         | 1,4E-02                 | 7,2E-01                         |
| 7        | 2,0E-02                          | 2,3E-02        | <b>2,8E-02</b> | 2,3E-02         | 1,5E-02                 | 7,4E-01                         |
| 8        | 2,1E-02                          | 2,4E-02        | <b>2,8E-02</b> | 2,4E-02         | 1,5E-02                 | 7,5E-01                         |
| 9        | 2,2E-02                          | 2,5E-02        | <b>2,9E-02</b> | 2,4E-02         | 1,5E-02                 | 7,6E-01                         |
| 10       | 2,3E-02                          | 2,5E-02        | <b>3,0E-02</b> | 2,5E-02         | 1,5E-02                 | 7,7E-01                         |
| 14       | 2,5E-02                          | 2,8E-02        | <b>3,1E-02</b> | 2,6E-02         | 1,6E-02                 | 8,0E-01                         |
| 15       | 2,6E-02                          | 2,8E-02        | <b>3,2E-02</b> | 2,6E-02         | 1,6E-02                 | 8,1E-01                         |
| 20       | 2,9E-02                          | 3,1E-02        | <b>3,4E-02</b> | 2,8E-02         | 1,7E-02                 | 8,3E-01                         |
| 30       | 3,5E-02                          | 3,5E-02        | <b>3,7E-02</b> | 2,9E-02         | 1,7E-02                 | 8,7E-01                         |
| 40       | 4,0E-02                          | 3,9E-02        | <b>3,9E-02</b> | 3,1E-02         | 1,8E-02                 | 8,8E-01                         |
| 45       | 4,2E-02                          | 4,1E-02        | <b>4,0E-02</b> | 3,1E-02         | 1,8E-02                 | 8,9E-01                         |
| 50       | 4,5E-02                          | 4,3E-02        | <b>4,1E-02</b> | 3,2E-02         | 1,8E-02                 | 9,0E-01                         |
| 60       | 4,9E-02                          | 4,6E-02        | <b>4,3E-02</b> | 3,3E-02         | 1,8E-02                 | 9,1E-01                         |
| 70       | 5,2E-02                          | 4,9E-02        | <b>4,5E-02</b> | 3,4E-02         | 1,8E-02                 | 9,1E-01                         |
| 80       | 5,6E-02                          | 5,1E-02        | <b>4,6E-02</b> | 3,4E-02         | 1,8E-02                 | 9,2E-01                         |
| 90       | 5,9E-02                          | 5,4E-02        | <b>4,7E-02</b> | 3,5E-02         | 1,8E-02                 | 9,2E-01                         |
| 100      | 6,2E-02                          | 5,6E-02        | <b>4,9E-02</b> | 3,6E-02         | 1,9E-02                 | 9,3E-01                         |
| 120      | 6,8E-02                          | 6,0E-02        | <b>5,1E-02</b> | 3,7E-02         | 1,9E-02                 | 9,3E-01                         |
| 180      | 8,0E-02                          | 6,9E-02        | <b>5,6E-02</b> | 3,9E-02         | 1,9E-02                 | 9,4E-01                         |
| 200      | 8,3E-02                          | 7,1E-02        | <b>5,7E-02</b> | 4,0E-02         | 1,9E-02                 | 9,5E-01                         |
| 300      | 9,5E-02                          | 8,0E-02        | <b>6,1E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 360      | 9,9E-02                          | 8,3E-02        | <b>6,3E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 400      | 1,0E-01                          | 8,4E-02        | <b>6,4E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 500      | 1,1E-01                          | 8,7E-02        | <b>6,5E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 600      | 1,1E-01                          | 8,8E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 8,9E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 9,0E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 9,1E-02        | <b>6,7E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 9,2E-02        | <b>6,8E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  | 9,3E-02        | <b>6,8E-02</b> |                 |                         |                                 |
| 10000    |                                  | 9,3E-02        | <b>6,9E-02</b> |                 |                         |                                 |

**Retention in der Lunge R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 1,1E-01  | <b>6,1E-02</b> | 2,9E-02   |           |                           |
| 2        | 3,1E-01                          | 2,2E-01  | <b>1,2E-01</b> | 5,5E-02   |           |                           |
| 3        | 4,5E-01                          | 3,3E-01  | <b>1,7E-01</b> | 8,0E-02   |           |                           |
| 4        | 6,0E-01                          | 4,3E-01  | <b>2,3E-01</b> | 1,0E-01   |           |                           |
| 5        | 7,4E-01                          | 5,3E-01  | <b>2,8E-01</b> | 1,3E-01   |           |                           |
| 6        | 8,8E-01                          | 6,3E-01  | <b>3,3E-01</b> | 1,5E-01   |           |                           |
| 7        | 1,0E+00                          | 7,3E-01  | <b>3,9E-01</b> | 1,8E-01   |           |                           |
| 8        | 1,2E+00                          | 8,3E-01  | <b>4,4E-01</b> | 2,0E-01   |           |                           |
| 9        | 1,3E+00                          | 9,3E-01  | <b>4,9E-01</b> | 2,2E-01   |           |                           |
| 10       | 1,4E+00                          | 1,0E+00  | <b>5,4E-01</b> | 2,5E-01   |           |                           |
| 14       | 1,9E+00                          | 1,4E+00  | <b>7,3E-01</b> | 3,3E-01   |           |                           |
| 15       | 2,1E+00                          | 1,5E+00  | <b>7,8E-01</b> | 3,6E-01   |           |                           |
| 20       | 2,7E+00                          | 1,9E+00  | <b>1,0E+00</b> | 4,6E-01   |           |                           |
| 30       | 3,8E+00                          | 2,7E+00  | <b>1,4E+00</b> | 6,4E-01   |           |                           |
| 40       | 4,7E+00                          | 3,4E+00  | <b>1,8E+00</b> | 8,1E-01   |           |                           |
| 45       | 5,2E+00                          | 3,7E+00  | <b>1,9E+00</b> | 8,8E-01   |           |                           |
| 50       | 5,6E+00                          | 4,1E+00  | <b>2,1E+00</b> | 9,5E-01   |           |                           |
| 60       | 6,4E+00                          | 4,6E+00  | <b>2,4E+00</b> | 1,1E+00   |           |                           |
| 70       | 7,2E+00                          | 5,2E+00  | <b>2,7E+00</b> | 1,2E+00   |           |                           |
| 80       | 7,9E+00                          | 5,7E+00  | <b>2,9E+00</b> | 1,3E+00   |           |                           |
| 90       | 8,5E+00                          | 6,1E+00  | <b>3,1E+00</b> | 1,4E+00   |           |                           |
| 100      | 9,1E+00                          | 6,5E+00  | <b>3,3E+00</b> | 1,5E+00   |           |                           |
| 120      | 1,0E+01                          | 7,3E+00  | <b>3,7E+00</b> | 1,7E+00   |           |                           |
| 180      | 1,3E+01                          | 9,0E+00  | <b>4,6E+00</b> | 2,1E+00   |           |                           |
| 200      | 1,3E+01                          | 9,5E+00  | <b>4,8E+00</b> | 2,2E+00   |           |                           |
| 300      | 1,5E+01                          | 1,1E+01  | <b>5,6E+00</b> | 2,5E+00   |           |                           |
| 360      | 1,6E+01                          | 1,2E+01  | <b>5,9E+00</b> | 2,7E+00   |           |                           |
| 400      | 1,7E+01                          | 1,2E+01  | <b>6,1E+00</b> | 2,7E+00   |           |                           |
| 500      | 1,7E+01                          | 1,2E+01  | <b>6,3E+00</b> | 2,8E+00   |           |                           |
| 600      | 1,8E+01                          | 1,3E+01  | <b>6,4E+00</b> | 2,9E+00   |           |                           |
| 700      | 1,8E+01                          | 1,3E+01  | <b>6,5E+00</b> | 2,9E+00   |           |                           |
| 800      |                                  |          | <b>6,6E+00</b> | 2,9E+00   |           |                           |
| 900      |                                  |          | <b>6,6E+00</b> | 3,0E+00   |           |                           |
| 1000     |                                  |          |                | 3,0E+00   |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 1,7E-04                          | 3,0E-04        | <b>4,7E-04</b> | 4,3E-04         | 7,9E-04                  | 5,3E-01                         |
| 2        | 2,5E-04                          | 4,6E-04        | <b>7,3E-04</b> | 6,7E-04         | 1,3E-03                  | 6,6E-01                         |
| 3        | 2,8E-04                          | 4,9E-04        | <b>7,6E-04</b> | 7,0E-04         | 1,3E-03                  | 6,8E-01                         |
| 4        | 3,0E-04                          | 5,1E-04        | <b>7,9E-04</b> | 7,2E-04         | 1,4E-03                  | 6,9E-01                         |
| 5        | 3,2E-04                          | 5,3E-04        | <b>8,1E-04</b> | 7,4E-04         | 1,4E-03                  | 7,1E-01                         |
| 6        | 3,4E-04                          | 5,5E-04        | <b>8,3E-04</b> | 7,5E-04         | 1,4E-03                  | 7,2E-01                         |
| 7        | 3,5E-04                          | 5,7E-04        | <b>8,5E-04</b> | 7,7E-04         | 1,5E-03                  | 7,4E-01                         |
| 8        | 3,7E-04                          | 5,9E-04        | <b>8,7E-04</b> | 7,8E-04         | 1,5E-03                  | 7,5E-01                         |
| 9        | 3,9E-04                          | 6,0E-04        | <b>8,9E-04</b> | 8,0E-04         | 1,5E-03                  | 7,6E-01                         |
| 10       | 4,1E-04                          | 6,2E-04        | <b>9,0E-04</b> | 8,1E-04         | 1,5E-03                  | 7,7E-01                         |
| 14       | 4,8E-04                          | 6,8E-04        | <b>9,6E-04</b> | 8,5E-04         | 1,6E-03                  | 8,0E-01                         |
| 15       | 4,9E-04                          | 7,0E-04        | <b>9,7E-04</b> | 8,6E-04         | 1,6E-03                  | 8,1E-01                         |
| 20       | 5,7E-04                          | 7,7E-04        | <b>1,0E-03</b> | 9,0E-04         | 1,7E-03                  | 8,3E-01                         |
| 30       | 7,2E-04                          | 8,9E-04        | <b>1,1E-03</b> | 9,6E-04         | 1,7E-03                  | 8,7E-01                         |
| 40       | 8,6E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,8E-01                         |
| 45       | 9,2E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,9E-01                         |
| 50       | 9,9E-04                          | 1,1E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 9,0E-01                         |
| 60       | 1,1E-03                          | 1,2E-03        | <b>1,3E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 70       | 1,2E-03                          | 1,3E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 80       | 1,3E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 90       | 1,4E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 100      | 1,5E-03                          | 1,5E-03        | <b>1,5E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 120      | 1,7E-03                          | 1,7E-03        | <b>1,6E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 180      | 2,3E-03                          | 2,1E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,4E-01                         |
| 200      | 2,5E-03                          | 2,2E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,5E-01                         |
| 300      | 3,3E-03                          | 2,8E-03        | <b>2,1E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 360      | 3,7E-03                          | 3,1E-03        | <b>2,3E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 400      | 4,0E-03                          | 3,3E-03        | <b>2,4E-03</b> | 1,6E-03         | 1,9E-03                  | 9,5E-01                         |
| 500      | 4,7E-03                          | 3,8E-03        | <b>2,6E-03</b> | 1,7E-03         | 1,9E-03                  | 9,5E-01                         |
| 600      | 5,3E-03                          | 4,2E-03        | <b>2,9E-03</b> | 1,8E-03         | 1,9E-03                  | 9,6E-01                         |
| 700      | 5,9E-03                          | 4,6E-03        | <b>3,1E-03</b> | 1,9E-03         | 1,9E-03                  | 9,6E-01                         |
| 800      | 6,4E-03                          | 5,0E-03        | <b>3,3E-03</b> | 2,0E-03         | 1,9E-03                  | 9,6E-01                         |
| 900      | 6,9E-03                          | 5,3E-03        | <b>3,4E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 1000     | 7,3E-03                          | 5,6E-03        | <b>3,6E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 2000     | 1,0E-02                          | 7,8E-03        | <b>4,7E-03</b> | 2,6E-03         | 1,9E-03                  | 9,7E-01                         |
| 3000     | 1,2E-02                          | 8,9E-03        | <b>5,3E-03</b> | 2,9E-03         | 1,9E-03                  | 9,7E-01                         |
| 4000     | 1,3E-02                          | 9,6E-03        | <b>5,6E-03</b> | 3,1E-03         | 1,9E-03                  | 9,7E-01                         |
| 5000     | 1,3E-02                          | 1,0E-02        | <b>5,9E-03</b> | 3,2E-03         | 2,0E-03                  | 9,8E-01                         |
| 6000     | 1,4E-02                          | 1,1E-02        | <b>6,1E-03</b> | 3,3E-03         | 2,0E-03                  | 9,8E-01                         |
| 8000     | 1,5E-02                          | 1,1E-02        | <b>6,5E-03</b> | 3,5E-03         |                          |                                 |
| 10000    | 1,5E-02                          | 1,2E-02        | <b>6,7E-03</b> | 3,6E-03         |                          |                                 |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                  | 6,5E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                  | 2,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                  | 4,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                  | 4,7E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                  | 5,0E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                  | 5,2E-03                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01                  | 5,3E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,3E-03                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,4E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,4E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,5E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,6E-03                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,7E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,8E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                          | 6,5E-03                         |
| 5000     | 2,2E-01                          |                |                |                 |                          | 6,5E-03                         |
| 6000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 8000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 10000    |                                  |                |                |                 |                          |                                 |

**Retention in der Lunge R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**U-235**

| Zeit (d) | Inhalation (Absorptionsklasse S) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,8E-01                          | 1,3E-01  | <b>6,8E-02</b> | 3,2E-02   |           |                           |
| 2        | 3,4E-01                          | 2,5E-01  | <b>1,3E-01</b> | 6,1E-02   |           |                           |
| 3        | 5,1E-01                          | 3,6E-01  | <b>1,9E-01</b> | 8,9E-02   |           |                           |
| 4        | 6,7E-01                          | 4,8E-01  | <b>2,6E-01</b> | 1,2E-01   |           |                           |
| 5        | 8,3E-01                          | 6,0E-01  | <b>3,2E-01</b> | 1,5E-01   |           |                           |
| 6        | 9,9E-01                          | 7,1E-01  | <b>3,8E-01</b> | 1,7E-01   |           |                           |
| 7        | 1,1E+00                          | 8,3E-01  | <b>4,4E-01</b> | 2,0E-01   |           |                           |
| 8        | 1,3E+00                          | 9,4E-01  | <b>5,0E-01</b> | 2,3E-01   |           |                           |
| 9        | 1,5E+00                          | 1,1E+00  | <b>5,5E-01</b> | 2,5E-01   |           |                           |
| 10       | 1,6E+00                          | 1,2E+00  | <b>6,1E-01</b> | 2,8E-01   |           |                           |
| 14       | 2,2E+00                          | 1,6E+00  | <b>8,4E-01</b> | 3,8E-01   |           |                           |
| 15       | 2,4E+00                          | 1,7E+00  | <b>9,0E-01</b> | 4,1E-01   |           |                           |
| 20       | 3,1E+00                          | 2,2E+00  | <b>1,2E+00</b> | 5,3E-01   |           |                           |
| 30       | 4,5E+00                          | 3,2E+00  | <b>1,7E+00</b> | 7,6E-01   |           |                           |
| 40       | 5,8E+00                          | 4,2E+00  | <b>2,2E+00</b> | 9,8E-01   |           |                           |
| 45       | 6,4E+00                          | 4,6E+00  | <b>2,4E+00</b> | 1,1E+00   |           |                           |
| 50       | 7,0E+00                          | 5,0E+00  | <b>2,6E+00</b> | 1,2E+00   |           |                           |
| 60       | 8,2E+00                          | 5,9E+00  | <b>3,0E+00</b> | 1,4E+00   |           |                           |
| 70       | 9,3E+00                          | 6,7E+00  | <b>3,4E+00</b> | 1,6E+00   |           |                           |
| 80       | 1,0E+01                          | 7,5E+00  | <b>3,8E+00</b> | 1,7E+00   |           |                           |
| 90       | 1,1E+01                          | 8,2E+00  | <b>4,2E+00</b> | 1,9E+00   |           |                           |
| 100      | 1,2E+01                          | 9,0E+00  | <b>4,6E+00</b> | 2,1E+00   |           |                           |
| 120      | 1,4E+01                          | 1,0E+01  | <b>5,3E+00</b> | 2,4E+00   |           |                           |
| 180      | 2,0E+01                          | 1,4E+01  | <b>7,3E+00</b> | 3,3E+00   |           |                           |
| 200      | 2,2E+01                          | 1,6E+01  | <b>7,9E+00</b> | 3,6E+00   |           |                           |
| 300      | 3,0E+01                          | 2,2E+01  | <b>1,1E+01</b> | 4,9E+00   |           |                           |
| 360      | 3,5E+01                          | 2,5E+01  | <b>1,3E+01</b> | 5,6E+00   |           |                           |
| 400      | 3,8E+01                          | 2,7E+01  | <b>1,4E+01</b> | 6,1E+00   |           |                           |
| 500      | 4,4E+01                          | 3,2E+01  | <b>1,6E+01</b> | 7,2E+00   |           |                           |
| 600      | 5,1E+01                          | 3,6E+01  | <b>1,8E+01</b> | 8,2E+00   |           |                           |
| 700      | 5,6E+01                          | 4,0E+01  | <b>2,0E+01</b> | 9,1E+00   |           |                           |
| 800      | 6,1E+01                          | 4,4E+01  | <b>2,2E+01</b> | 9,9E+00   |           |                           |
| 900      | 6,6E+01                          | 4,8E+01  | <b>2,4E+01</b> | 1,1E+01   |           |                           |
| 1000     | 7,1E+01                          | 5,1E+01  | <b>2,6E+01</b> | 1,1E+01   |           |                           |
| 2000     | 1,0E+02                          | 7,2E+01  | <b>3,6E+01</b> | 1,6E+01   |           |                           |
| 3000     | 1,2E+02                          | 8,3E+01  | <b>4,2E+01</b> | 1,9E+01   |           |                           |
| 4000     | 1,2E+02                          | 9,0E+01  | <b>4,5E+01</b> | 2,0E+01   |           |                           |
| 5000     | 1,3E+02                          | 9,5E+01  | <b>4,8E+01</b> | 2,1E+01   |           |                           |
| 6000     | 1,4E+02                          | 9,9E+01  | <b>5,0E+01</b> | 2,2E+01   |           |                           |
| 8000     | 1,5E+02                          | 1,0E+02  | <b>5,3E+01</b> | 2,4E+01   |           |                           |
| 10000    | 1,5E+02                          | 1,1E+02  | <b>5,5E+01</b> | 2,5E+01   |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-238**

| Zeit (d) | Inhalation (Absorptionsklasse F) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,1E-01                          | 1,3E-01        | <b>1,5E-01</b> | 1,2E-01         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,4E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,5E-01                          | 1,6E-01        | <b>1,9E-01</b> | 1,6E-01         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,5E-01                          | 1,7E-01        | <b>2,0E-01</b> | 1,7E-01         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,7E-01         | 1,4E-02                 | 7,2E-01                         |
| 7        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,4E-01                         |
| 8        | 1,6E-01                          | 1,8E-01        | <b>2,1E-01</b> | 1,8E-01         | 1,5E-02                 | 7,5E-01                         |
| 9        | 1,6E-01                          | 1,8E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,6E-01                         |
| 10       | 1,7E-01                          | 1,9E-01        | <b>2,2E-01</b> | 1,8E-01         | 1,5E-02                 | 7,7E-01                         |
| 14       | 1,7E-01                          | 1,9E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,0E-01                         |
| 15       | 1,7E-01                          | 2,0E-01        | <b>2,3E-01</b> | 1,9E-01         | 1,6E-02                 | 8,1E-01                         |
| 20       | 1,8E-01                          | 2,0E-01        | <b>2,4E-01</b> | 2,0E-01         | 1,7E-02                 | 8,3E-01                         |
| 30       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,7E-02                 | 8,7E-01                         |
| 40       | 1,9E-01                          | 2,1E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,8E-01                         |
| 45       | 1,9E-01                          | 2,2E-01        | <b>2,5E-01</b> | 2,1E-01         | 1,8E-02                 | 8,9E-01                         |
| 50       | 1,9E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,1E-01         | 1,8E-02                 | 9,0E-01                         |
| 60       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 70       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,1E-01                         |
| 80       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 90       | 2,0E-01                          | 2,2E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,8E-02                 | 9,2E-01                         |
| 100      | 2,0E-01                          | 2,3E-01        | <b>2,6E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 120      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,3E-01                         |
| 180      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,2E-01         | 1,9E-02                 | 9,4E-01                         |
| 200      | 2,0E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 300      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> | 2,3E-01         | 1,9E-02                 | 9,5E-01                         |
| 360      | 2,1E-01                          | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 400      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 500      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,5E-01                         |
| 600      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 2,3E-01        | <b>2,7E-01</b> |                 | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 2,3E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 2,4E-01        | <b>2,8E-01</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 2,4E-01        |                |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  |                |                |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  |                |                |                 |                         |                                 |
| 10000    |                                  |                |                |                 |                         |                                 |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-238**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,02$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                         |                                 |
| 1        | 1,2E-02                          | 1,4E-02        | <b>1,8E-02</b> | 1,5E-02         | 7,9E-03                 | 5,3E-01                         |
| 2        | 1,6E-02                          | 1,9E-02        | <b>2,4E-02</b> | 2,0E-02         | 1,3E-02                 | 6,6E-01                         |
| 3        | 1,7E-02                          | 2,0E-02        | <b>2,5E-02</b> | 2,1E-02         | 1,3E-02                 | 6,8E-01                         |
| 4        | 1,8E-02                          | 2,1E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 6,9E-01                         |
| 5        | 1,8E-02                          | 2,2E-02        | <b>2,6E-02</b> | 2,2E-02         | 1,4E-02                 | 7,1E-01                         |
| 6        | 1,9E-02                          | 2,2E-02        | <b>2,7E-02</b> | 2,3E-02         | 1,4E-02                 | 7,2E-01                         |
| 7        | 2,0E-02                          | 2,3E-02        | <b>2,8E-02</b> | 2,3E-02         | 1,5E-02                 | 7,4E-01                         |
| 8        | 2,1E-02                          | 2,4E-02        | <b>2,8E-02</b> | 2,4E-02         | 1,5E-02                 | 7,5E-01                         |
| 9        | 2,2E-02                          | 2,5E-02        | <b>2,9E-02</b> | 2,4E-02         | 1,5E-02                 | 7,6E-01                         |
| 10       | 2,3E-02                          | 2,5E-02        | <b>3,0E-02</b> | 2,5E-02         | 1,5E-02                 | 7,7E-01                         |
| 14       | 2,5E-02                          | 2,8E-02        | <b>3,1E-02</b> | 2,6E-02         | 1,6E-02                 | 8,0E-01                         |
| 15       | 2,6E-02                          | 2,8E-02        | <b>3,2E-02</b> | 2,6E-02         | 1,6E-02                 | 8,1E-01                         |
| 20       | 2,9E-02                          | 3,1E-02        | <b>3,4E-02</b> | 2,8E-02         | 1,7E-02                 | 8,3E-01                         |
| 30       | 3,5E-02                          | 3,5E-02        | <b>3,7E-02</b> | 2,9E-02         | 1,7E-02                 | 8,7E-01                         |
| 40       | 4,0E-02                          | 3,9E-02        | <b>3,9E-02</b> | 3,1E-02         | 1,8E-02                 | 8,8E-01                         |
| 45       | 4,2E-02                          | 4,1E-02        | <b>4,0E-02</b> | 3,1E-02         | 1,8E-02                 | 8,9E-01                         |
| 50       | 4,5E-02                          | 4,3E-02        | <b>4,1E-02</b> | 3,2E-02         | 1,8E-02                 | 9,0E-01                         |
| 60       | 4,9E-02                          | 4,6E-02        | <b>4,3E-02</b> | 3,3E-02         | 1,8E-02                 | 9,1E-01                         |
| 70       | 5,2E-02                          | 4,9E-02        | <b>4,5E-02</b> | 3,4E-02         | 1,8E-02                 | 9,1E-01                         |
| 80       | 5,6E-02                          | 5,1E-02        | <b>4,6E-02</b> | 3,4E-02         | 1,8E-02                 | 9,2E-01                         |
| 90       | 5,9E-02                          | 5,4E-02        | <b>4,7E-02</b> | 3,5E-02         | 1,8E-02                 | 9,2E-01                         |
| 100      | 6,2E-02                          | 5,6E-02        | <b>4,9E-02</b> | 3,6E-02         | 1,9E-02                 | 9,3E-01                         |
| 120      | 6,8E-02                          | 6,0E-02        | <b>5,1E-02</b> | 3,7E-02         | 1,9E-02                 | 9,3E-01                         |
| 180      | 8,0E-02                          | 6,9E-02        | <b>5,6E-02</b> | 3,9E-02         | 1,9E-02                 | 9,4E-01                         |
| 200      | 8,3E-02                          | 7,1E-02        | <b>5,7E-02</b> | 4,0E-02         | 1,9E-02                 | 9,5E-01                         |
| 300      | 9,5E-02                          | 8,0E-02        | <b>6,1E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 360      | 9,9E-02                          | 8,3E-02        | <b>6,3E-02</b> | 4,2E-02         | 1,9E-02                 | 9,5E-01                         |
| 400      | 1,0E-01                          | 8,4E-02        | <b>6,4E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 500      | 1,1E-01                          | 8,7E-02        | <b>6,5E-02</b> | 4,3E-02         | 1,9E-02                 | 9,5E-01                         |
| 600      | 1,1E-01                          | 8,8E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 700      |                                  | 8,9E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 800      |                                  | 9,0E-02        | <b>6,6E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 900      |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 1000     |                                  | 9,0E-02        | <b>6,7E-02</b> | 4,4E-02         | 1,9E-02                 | 9,6E-01                         |
| 2000     |                                  | 9,1E-02        | <b>6,7E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 3000     |                                  | 9,2E-02        | <b>6,8E-02</b> | 4,5E-02         | 1,9E-02                 | 9,7E-01                         |
| 4000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 1,9E-02                 | 9,7E-01                         |
| 5000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 6000     |                                  | 9,2E-02        | <b>6,8E-02</b> |                 | 2,0E-02                 | 9,8E-01                         |
| 8000     |                                  | 9,3E-02        | <b>6,8E-02</b> |                 |                         |                                 |
| 10000    |                                  | 9,3E-02        | <b>6,9E-02</b> |                 |                         |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-238**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 1,7E-04                          | 3,0E-04        | <b>4,7E-04</b> | 4,3E-04         | 7,9E-04                  | 5,3E-01                         |
| 2        | 2,5E-04                          | 4,6E-04        | <b>7,3E-04</b> | 6,7E-04         | 1,3E-03                  | 6,6E-01                         |
| 3        | 2,8E-04                          | 4,9E-04        | <b>7,6E-04</b> | 7,0E-04         | 1,3E-03                  | 6,8E-01                         |
| 4        | 3,0E-04                          | 5,1E-04        | <b>7,9E-04</b> | 7,2E-04         | 1,4E-03                  | 6,9E-01                         |
| 5        | 3,2E-04                          | 5,3E-04        | <b>8,1E-04</b> | 7,4E-04         | 1,4E-03                  | 7,1E-01                         |
| 6        | 3,4E-04                          | 5,5E-04        | <b>8,3E-04</b> | 7,5E-04         | 1,4E-03                  | 7,2E-01                         |
| 7        | 3,5E-04                          | 5,7E-04        | <b>8,5E-04</b> | 7,7E-04         | 1,5E-03                  | 7,4E-01                         |
| 8        | 3,7E-04                          | 5,9E-04        | <b>8,7E-04</b> | 7,8E-04         | 1,5E-03                  | 7,5E-01                         |
| 9        | 3,9E-04                          | 6,0E-04        | <b>8,9E-04</b> | 8,0E-04         | 1,5E-03                  | 7,6E-01                         |
| 10       | 4,1E-04                          | 6,2E-04        | <b>9,0E-04</b> | 8,1E-04         | 1,5E-03                  | 7,7E-01                         |
| 14       | 4,8E-04                          | 6,8E-04        | <b>9,6E-04</b> | 8,5E-04         | 1,6E-03                  | 8,0E-01                         |
| 15       | 4,9E-04                          | 7,0E-04        | <b>9,7E-04</b> | 8,6E-04         | 1,6E-03                  | 8,1E-01                         |
| 20       | 5,7E-04                          | 7,7E-04        | <b>1,0E-03</b> | 9,0E-04         | 1,7E-03                  | 8,3E-01                         |
| 30       | 7,2E-04                          | 8,9E-04        | <b>1,1E-03</b> | 9,6E-04         | 1,7E-03                  | 8,7E-01                         |
| 40       | 8,6E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,8E-01                         |
| 45       | 9,2E-04                          | 1,0E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 8,9E-01                         |
| 50       | 9,9E-04                          | 1,1E-03        | <b>1,2E-03</b> | 1,0E-03         | 1,8E-03                  | 9,0E-01                         |
| 60       | 1,1E-03                          | 1,2E-03        | <b>1,3E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 70       | 1,2E-03                          | 1,3E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,1E-01                         |
| 80       | 1,3E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 90       | 1,4E-03                          | 1,4E-03        | <b>1,4E-03</b> | 1,1E-03         | 1,8E-03                  | 9,2E-01                         |
| 100      | 1,5E-03                          | 1,5E-03        | <b>1,5E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 120      | 1,7E-03                          | 1,7E-03        | <b>1,6E-03</b> | 1,2E-03         | 1,9E-03                  | 9,3E-01                         |
| 180      | 2,3E-03                          | 2,1E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,4E-01                         |
| 200      | 2,5E-03                          | 2,2E-03        | <b>1,8E-03</b> | 1,3E-03         | 1,9E-03                  | 9,5E-01                         |
| 300      | 3,3E-03                          | 2,8E-03        | <b>2,1E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 360      | 3,7E-03                          | 3,1E-03        | <b>2,3E-03</b> | 1,5E-03         | 1,9E-03                  | 9,5E-01                         |
| 400      | 4,0E-03                          | 3,3E-03        | <b>2,4E-03</b> | 1,6E-03         | 1,9E-03                  | 9,5E-01                         |
| 500      | 4,7E-03                          | 3,8E-03        | <b>2,6E-03</b> | 1,7E-03         | 1,9E-03                  | 9,5E-01                         |
| 600      | 5,3E-03                          | 4,2E-03        | <b>2,9E-03</b> | 1,8E-03         | 1,9E-03                  | 9,6E-01                         |
| 700      | 5,9E-03                          | 4,6E-03        | <b>3,1E-03</b> | 1,9E-03         | 1,9E-03                  | 9,6E-01                         |
| 800      | 6,4E-03                          | 5,0E-03        | <b>3,3E-03</b> | 2,0E-03         | 1,9E-03                  | 9,6E-01                         |
| 900      | 6,9E-03                          | 5,3E-03        | <b>3,4E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 1000     | 7,3E-03                          | 5,6E-03        | <b>3,6E-03</b> | 2,1E-03         | 1,9E-03                  | 9,6E-01                         |
| 2000     | 1,0E-02                          | 7,8E-03        | <b>4,7E-03</b> | 2,6E-03         | 1,9E-03                  | 9,7E-01                         |
| 3000     | 1,2E-02                          | 8,9E-03        | <b>5,3E-03</b> | 2,9E-03         | 1,9E-03                  | 9,7E-01                         |
| 4000     | 1,3E-02                          | 9,6E-03        | <b>5,6E-03</b> | 3,1E-03         | 1,9E-03                  | 9,7E-01                         |
| 5000     | 1,3E-02                          | 1,0E-02        | <b>5,9E-03</b> | 3,2E-03         | 2,0E-03                  | 9,8E-01                         |
| 6000     | 1,4E-02                          | 1,1E-02        | <b>6,1E-03</b> | 3,3E-03         | 2,0E-03                  | 9,8E-01                         |
| 8000     | 1,5E-02                          | 1,1E-02        | <b>6,5E-03</b> | 3,5E-03         |                          |                                 |
| 10000    | 1,5E-02                          | 1,2E-02        | <b>6,7E-03</b> | 3,6E-03         |                          |                                 |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**U-238**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,002$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|--------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                          |                                 |
| 1        | 5,9E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                  | 6,5E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                  | 2,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                  | 4,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,1E-01                  | 4,7E-03                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                  | 5,0E-03                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                  | 5,2E-03                         |
| 7        | 8,2E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 9,9E-01                  | 5,3E-03                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,3E-03                         |
| 9        | 8,5E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                  | 5,4E-03                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,4E-03                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,5E-03                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                          | 5,6E-03                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,7E-03                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,8E-03                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,0E-01         |                          | 5,9E-03                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,0E-03                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,1E-03                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                          | 6,2E-03                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,5E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                          | 6,3E-03                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> | 4,2E-01         |                          | 6,4E-03                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                          | 6,4E-03                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                          | 6,4E-03                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                          | 6,5E-03                         |
| 5000     | 2,2E-01                          |                |                |                 |                          | 6,5E-03                         |
| 6000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 8000     | 2,3E-01                          |                |                |                 |                          |                                 |
| 10000    |                                  |                |                |                 |                          |                                 |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Np-237**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 2,9E-03                          | 3,3E-03        | <b>3,8E-03</b> | 3,2E-03         | 4,7E-05   | 1,4E-01                   |
| 2        | 5,5E-03                          | 6,1E-03        | <b>7,0E-03</b> | 5,8E-03         | 1,2E-04   | 2,4E-01                   |
| 3        | 6,3E-03                          | 6,9E-03        | <b>7,9E-03</b> | 6,6E-03         | 1,3E-04   | 2,7E-01                   |
| 4        | 6,9E-03                          | 7,5E-03        | <b>8,5E-03</b> | 7,0E-03         | 1,4E-04   | 2,9E-01                   |
| 5        | 7,4E-03                          | 7,9E-03        | <b>8,9E-03</b> | 7,3E-03         | 1,5E-04   | 3,0E-01                   |
| 6        | 7,7E-03                          | 8,3E-03        | <b>9,2E-03</b> | 7,5E-03         | 1,5E-04   | 3,1E-01                   |
| 7        | 8,1E-03                          | 8,6E-03        | <b>9,4E-03</b> | 7,7E-03         | 1,6E-04   | 3,2E-01                   |
| 8        | 8,4E-03                          | 8,8E-03        | <b>9,6E-03</b> | 7,8E-03         | 1,6E-04   | 3,2E-01                   |
| 9        | 8,7E-03                          | 9,0E-03        | <b>9,8E-03</b> | 7,9E-03         | 1,6E-04   | 3,2E-01                   |
| 10       | 8,9E-03                          | 9,2E-03        | <b>9,9E-03</b> | 8,0E-03         | 1,6E-04   | 3,2E-01                   |
| 14       | 9,9E-03                          | 1,0E-02        | <b>1,0E-02</b> | 8,2E-03         | 1,6E-04   | 3,3E-01                   |
| 15       | 1,0E-02                          | 1,0E-02        | <b>1,0E-02</b> | 8,3E-03         | 1,6E-04   | 3,3E-01                   |
| 20       | 1,1E-02                          | 1,1E-02        | <b>1,1E-02</b> | 8,5E-03         | 1,7E-04   | 3,3E-01                   |
| 30       | 1,3E-02                          | 1,2E-02        | <b>1,2E-02</b> | 9,0E-03         | 1,7E-04   | 3,4E-01                   |
| 40       | 1,5E-02                          | 1,4E-02        | <b>1,2E-02</b> | 9,3E-03         | 1,7E-04   | 3,4E-01                   |
| 45       | 1,6E-02                          | 1,4E-02        | <b>1,3E-02</b> | 9,5E-03         | 1,7E-04   | 3,4E-01                   |
| 50       | 1,7E-02                          | 1,5E-02        | <b>1,3E-02</b> | 9,6E-03         | 1,7E-04   | 3,4E-01                   |
| 60       | 1,8E-02                          | 1,6E-02        | <b>1,4E-02</b> | 9,9E-03         | 1,7E-04   | 3,4E-01                   |
| 70       | 1,9E-02                          | 1,7E-02        | <b>1,4E-02</b> | 1,0E-02         | 1,7E-04   | 3,5E-01                   |
| 80       | 2,1E-02                          | 1,8E-02        | <b>1,5E-02</b> | 1,0E-02         | 1,7E-04   | 3,5E-01                   |
| 90       | 2,2E-02                          | 1,9E-02        | <b>1,5E-02</b> | 1,1E-02         | 1,7E-04   | 3,5E-01                   |
| 100      | 2,3E-02                          | 2,0E-02        | <b>1,6E-02</b> | 1,1E-02         | 1,8E-04   | 3,5E-01                   |
| 120      | 2,5E-02                          | 2,1E-02        | <b>1,6E-02</b> | 1,1E-02         | 1,8E-04   | 3,5E-01                   |
| 180      | 3,0E-02                          | 2,5E-02        | <b>1,8E-02</b> | 1,2E-02         | 1,8E-04   | 3,6E-01                   |
| 200      | 3,1E-02                          | 2,5E-02        | <b>1,9E-02</b> | 1,2E-02         | 1,8E-04   | 3,6E-01                   |
| 300      | 3,6E-02                          | 2,9E-02        | <b>2,1E-02</b> | 1,3E-02         | 1,9E-04   | 3,7E-01                   |
| 360      | 3,8E-02                          | 3,1E-02        | <b>2,2E-02</b> | 1,4E-02         | 1,9E-04   | 3,8E-01                   |
| 400      | 3,9E-02                          | 3,1E-02        | <b>2,2E-02</b> | 1,4E-02         | 1,9E-04   | 3,8E-01                   |
| 500      | 4,1E-02                          | 3,3E-02        | <b>2,3E-02</b> | 1,5E-02         | 2,0E-04   | 3,9E-01                   |
| 600      | 4,3E-02                          | 3,4E-02        | <b>2,4E-02</b> | 1,5E-02         | 2,0E-04   | 4,0E-01                   |
| 700      | 4,4E-02                          | 3,5E-02        | <b>2,5E-02</b> | 1,5E-02         | 2,0E-04   | 4,1E-01                   |
| 800      | 4,5E-02                          | 3,6E-02        | <b>2,5E-02</b> | 1,6E-02         | 2,1E-04   | 4,2E-01                   |
| 900      | 4,6E-02                          | 3,7E-02        | <b>2,6E-02</b> | 1,6E-02         | 2,1E-04   | 4,2E-01                   |
| 1000     | 4,7E-02                          | 3,8E-02        | <b>2,6E-02</b> | 1,6E-02         | 2,1E-04   | 4,3E-01                   |
| 2000     | 5,4E-02                          | 4,3E-02        | <b>3,0E-02</b> | 1,9E-02         | 2,4E-04   | 4,9E-01                   |
| 3000     | 5,9E-02                          | 4,7E-02        | <b>3,3E-02</b> | 2,1E-02         | 2,7E-04   | 5,3E-01                   |
| 4000     | 6,3E-02                          | 5,0E-02        | <b>3,5E-02</b> | 2,2E-02         | 2,8E-04   | 5,7E-01                   |
| 5000     | 6,6E-02                          | 5,3E-02        | <b>3,6E-02</b> | 2,3E-02         | 3,0E-04   | 5,9E-01                   |
| 6000     | 6,9E-02                          | 5,5E-02        | <b>3,8E-02</b> | 2,4E-02         | 3,1E-04   | 6,2E-01                   |
| 8000     | 7,3E-02                          | 5,8E-02        | <b>4,0E-02</b> | 2,5E-02         | 3,3E-04   | 6,6E-01                   |
| 10000    | 7,7E-02                          | 6,1E-02        | <b>4,2E-02</b> | 2,6E-02         | 3,4E-04   | 6,8E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Np-237**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 3,7E-04                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 2,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 4,1E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 5,3E-03                   |
| 5        | 7,2E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 6,0E-03                   |
| 6        | 7,5E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 6,4E-03                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 6,7E-03                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 6,8E-03                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 6,9E-03                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 7,0E-03                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 7,2E-03                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 7,2E-03                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 7,3E-03                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 7,4E-03                   |
| 40       | 1,0E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 7,6E-03                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 7,7E-03                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 7,8E-03                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 7,9E-03                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 8,1E-03                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 8,2E-03                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 8,4E-03                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 8,5E-03                   |
| 120      | 1,2E-01                          | 2,5E-01        |                |                 |           | 8,8E-03                   |
| 180      | 1,3E-01                          | 2,5E-01        |                |                 |           | 9,6E-03                   |
| 200      | 1,3E-01                          | 2,5E-01        |                |                 |           | 9,9E-03                   |
| 300      | 1,3E-01                          | 2,6E-01        |                |                 |           | 1,1E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        |                |                 |           | 1,2E-02                   |
| 400      | 1,3E-01                          |                |                |                 |           | 1,2E-02                   |
| 500      | 1,3E-01                          |                |                |                 |           | 1,3E-02                   |
| 600      | 1,3E-01                          |                |                |                 |           | 1,4E-02                   |
| 700      | 1,3E-01                          |                |                |                 |           | 1,4E-02                   |
| 800      | 1,3E-01                          |                |                |                 |           | 1,5E-02                   |
| 900      | 1,3E-01                          |                |                |                 |           | 1,6E-02                   |
| 1000     | 1,3E-01                          |                |                |                 |           | 1,6E-02                   |
| 2000     | 1,3E-01                          |                |                |                 |           | 2,0E-02                   |
| 3000     | 1,3E-01                          |                |                |                 |           | 2,2E-02                   |
| 4000     | 1,3E-01                          |                |                |                 |           | 2,3E-02                   |
| 5000     | 1,3E-01                          |                |                |                 |           | 2,5E-02                   |
| 6000     | 1,3E-01                          |                |                |                 |           | 2,6E-02                   |
| 8000     | 1,3E-01                          |                |                |                 |           | 2,7E-02                   |
| 10000    | 1,4E-01                          |                |                |                 |           | 2,8E-02                   |

**Retention im Ganzkörper R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Np-239**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                 |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|-----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | <b>AMAD=5µm</b> | AMAD=10µm |           |                           |
| 1        | 2,3E-01                          | 3,8E-01  | <b>5,7E-01</b>  | 5,3E-01   | 7,9E-01   | 7,5E-01                   |
| 2        | 3,8E-01                          | 5,6E-01  | <b>8,1E-01</b>  | 7,4E-01   | 1,1E+00   | 1,2E+00                   |
| 3        | 4,7E-01                          | 6,5E-01  | <b>9,1E-01</b>  | 8,2E-01   | 1,2E+00   | 1,6E+00                   |
| 4        | 5,3E-01                          | 7,0E-01  | <b>9,5E-01</b>  | 8,5E-01   | 1,3E+00   | 1,8E+00                   |
| 5        | 5,7E-01                          | 7,3E-01  | <b>9,7E-01</b>  | 8,7E-01   | 1,3E+00   | 2,0E+00                   |
| 6        | 6,0E-01                          | 7,6E-01  | <b>9,9E-01</b>  | 8,8E-01   |           | 2,2E+00                   |
| 7        | 6,3E-01                          | 7,8E-01  | <b>1,0E+00</b>  | 8,8E-01   |           | 2,3E+00                   |
| 8        | 6,5E-01                          | 7,9E-01  | <b>1,0E+00</b>  | 8,9E-01   |           | 2,3E+00                   |
| 9        | 6,6E-01                          | 8,0E-01  |                 | 8,9E-01   |           | 2,4E+00                   |
| 10       | 6,7E-01                          | 8,1E-01  |                 | 8,9E-01   |           | 2,4E+00                   |
| 14       | 6,9E-01                          | 8,2E-01  |                 | 9,0E-01   |           | 2,5E+00                   |
| 15       | 6,9E-01                          | 8,2E-01  |                 | 9,0E-01   |           | 2,5E+00                   |
| 20       |                                  | 8,3E-01  |                 |           |           |                           |
| 30       |                                  | 8,3E-01  |                 |           |           |                           |
| 40       |                                  |          |                 |           |           |                           |
| 45       |                                  |          |                 |           |           |                           |
| 50       |                                  |          |                 |           |           |                           |
| 60       |                                  |          |                 |           |           |                           |
| 70       |                                  |          |                 |           |           |                           |
| 80       |                                  |          |                 |           |           |                           |
| 90       |                                  |          |                 |           |           |                           |
| 100      |                                  |          |                 |           |           |                           |
| 120      |                                  |          |                 |           |           |                           |
| 180      |                                  |          |                 |           |           |                           |
| 200      |                                  |          |                 |           |           |                           |
| 300      |                                  |          |                 |           |           |                           |
| 360      |                                  |          |                 |           |           |                           |
| 400      |                                  |          |                 |           |           |                           |
| 500      |                                  |          |                 |           |           |                           |
| 600      |                                  |          |                 |           |           |                           |
| 700      |                                  |          |                 |           |           |                           |
| 800      |                                  |          |                 |           |           |                           |
| 900      |                                  |          |                 |           |           |                           |
| 1000     |                                  |          |                 |           |           |                           |
| 2000     |                                  |          |                 |           |           |                           |
| 3000     |                                  |          |                 |           |           |                           |
| 4000     |                                  |          |                 |           |           |                           |
| 5000     |                                  |          |                 |           |           |                           |
| 6000     |                                  |          |                 |           |           |                           |
| 8000     |                                  |          |                 |           |           |                           |
| 10000    |                                  |          |                 |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Np-239**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 2,7E-03                          | 3,0E-03        | <b>3,5E-03</b>                 | 2,9E-03         | 4,1E-05   | 1,2E-01                   |
| 2        | 4,7E-03                          | 5,3E-03        | <b>6,1E-03</b>                 | 5,1E-03         | 9,7E-05   | 2,1E-01                   |
| 3        | 5,2E-03                          | 5,8E-03        | <b>6,6E-03</b>                 | 5,5E-03         | 1,1E-04   | 2,3E-01                   |
| 4        | 5,5E-03                          | 6,0E-03        | <b>6,9E-03</b>                 | 5,7E-03         | 1,1E-04   | 2,4E-01                   |
| 5        | 5,6E-03                          | 6,1E-03        | <b>7,0E-03</b>                 | 5,8E-03         | 1,1E-04   | 2,4E-01                   |
| 6        | 5,7E-03                          | 6,2E-03        | <b>7,1E-03</b>                 | 5,8E-03         | 1,1E-04   | 2,4E-01                   |
| 7        | 5,8E-03                          | 6,3E-03        | <b>7,1E-03</b>                 | 5,9E-03         | 1,2E-04   | 2,5E-01                   |
| 8        | 5,8E-03                          | 6,3E-03        | <b>7,1E-03</b>                 | 5,9E-03         | 1,2E-04   | 2,5E-01                   |
| 9        | 5,8E-03                          | 6,3E-03        | <b>7,2E-03</b>                 |                 |           |                           |
| 10       | 5,8E-03                          | 6,3E-03        | <b>7,2E-03</b>                 |                 |           |                           |
| 14       | 5,9E-03                          | 6,4E-03        |                                |                 |           |                           |
| 15       | 5,9E-03                          | 6,4E-03        |                                |                 |           |                           |
| 20       |                                  |                |                                |                 |           |                           |
| 30       |                                  |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Np-239**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|--------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | <b>AMAD=5<math>\mu</math>m</b> | AMAD=10 $\mu$ m |           |                           |
| 1        | 4,8E-03                          | 1,6E-02        | <b>3,1E-02</b>                 | 3,0E-02         | 8,2E-02   | 3,2E-04                   |
| 2        | 2,4E-02                          | 7,8E-02        | <b>1,5E-01</b>                 | 1,4E-01         | 3,8E-01   | 1,7E-03                   |
| 3        | 3,7E-02                          | 1,1E-01        | <b>2,1E-01</b>                 | 2,0E-01         | 5,4E-01   | 2,7E-03                   |
| 4        | 4,2E-02                          | 1,3E-01        | <b>2,4E-01</b>                 | 2,3E-01         | 6,0E-01   | 3,3E-03                   |
| 5        | 4,4E-02                          | 1,3E-01        | <b>2,4E-01</b>                 | 2,3E-01         | 6,2E-01   | 3,5E-03                   |
| 6        | 4,5E-02                          |                | <b>2,5E-01</b>                 |                 | 6,2E-01   | 3,6E-03                   |
| 7        | 4,5E-02                          |                | <b>2,5E-01</b>                 |                 |           | 3,6E-03                   |
| 8        | 4,6E-02                          |                |                                |                 |           | 3,6E-03                   |
| 9        | 4,6E-02                          |                |                                |                 |           | 3,6E-03                   |
| 10       |                                  |                |                                |                 |           | 3,7E-03                   |
| 14       |                                  |                |                                |                 |           | 3,7E-03                   |
| 15       |                                  |                |                                |                 |           |                           |
| 20       |                                  |                |                                |                 |           |                           |
| 30       |                                  |                |                                |                 |           |                           |
| 40       |                                  |                |                                |                 |           |                           |
| 45       |                                  |                |                                |                 |           |                           |
| 50       |                                  |                |                                |                 |           |                           |
| 60       |                                  |                |                                |                 |           |                           |
| 70       |                                  |                |                                |                 |           |                           |
| 80       |                                  |                |                                |                 |           |                           |
| 90       |                                  |                |                                |                 |           |                           |
| 100      |                                  |                |                                |                 |           |                           |
| 120      |                                  |                |                                |                 |           |                           |
| 180      |                                  |                |                                |                 |           |                           |
| 200      |                                  |                |                                |                 |           |                           |
| 300      |                                  |                |                                |                 |           |                           |
| 360      |                                  |                |                                |                 |           |                           |
| 400      |                                  |                |                                |                 |           |                           |
| 500      |                                  |                |                                |                 |           |                           |
| 600      |                                  |                |                                |                 |           |                           |
| 700      |                                  |                |                                |                 |           |                           |
| 800      |                                  |                |                                |                 |           |                           |
| 900      |                                  |                |                                |                 |           |                           |
| 1000     |                                  |                |                                |                 |           |                           |
| 2000     |                                  |                |                                |                 |           |                           |
| 3000     |                                  |                |                                |                 |           |                           |
| 4000     |                                  |                |                                |                 |           |                           |
| 5000     |                                  |                |                                |                 |           |                           |
| 6000     |                                  |                |                                |                 |           |                           |
| 8000     |                                  |                |                                |                 |           |                           |
| 10000    |                                  |                |                                |                 |           |                           |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 9,1E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,9E-05         | 1,4E-06                   | 4,2E-03                         |
| 2        | 2,4E-04                          | 2,6E-04        | <b>3,0E-04</b> | 2,5E-04         | 4,8E-06                   | 1,1E-02                         |
| 3        | 3,2E-04                          | 3,5E-04        | <b>4,0E-04</b> | 3,3E-04         | 6,7E-06                   | 1,4E-02                         |
| 4        | 3,8E-04                          | 4,1E-04        | <b>4,7E-04</b> | 3,9E-04         | 7,9E-06                   | 1,6E-02                         |
| 5        | 4,2E-04                          | 4,5E-04        | <b>5,1E-04</b> | 4,2E-04         | 8,7E-06                   | 1,8E-02                         |
| 6        | 4,5E-04                          | 4,9E-04        | <b>5,5E-04</b> | 4,5E-04         | 9,2E-06                   | 1,9E-02                         |
| 7        | 4,9E-04                          | 5,2E-04        | <b>5,8E-04</b> | 4,7E-04         | 9,6E-06                   | 1,9E-02                         |
| 8        | 5,1E-04                          | 5,4E-04        | <b>6,0E-04</b> | 4,9E-04         | 9,9E-06                   | 2,0E-02                         |
| 9        | 5,4E-04                          | 5,6E-04        | <b>6,2E-04</b> | 5,0E-04         | 1,0E-05                   | 2,0E-02                         |
| 10       | 5,6E-04                          | 5,8E-04        | <b>6,3E-04</b> | 5,1E-04         | 1,0E-05                   | 2,1E-02                         |
| 14       | 6,4E-04                          | 6,5E-04        | <b>6,8E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 15       | 6,6E-04                          | 6,7E-04        | <b>7,0E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 20       | 7,5E-04                          | 7,4E-04        | <b>7,5E-04</b> | 5,9E-04         | 1,2E-05                   | 2,3E-02                         |
| 30       | 9,2E-04                          | 8,8E-04        | <b>8,5E-04</b> | 6,5E-04         | 1,2E-05                   | 2,5E-02                         |
| 40       | 1,1E-03                          | 1,0E-03        | <b>9,4E-04</b> | 7,1E-04         | 1,3E-05                   | 2,6E-02                         |
| 45       | 1,2E-03                          | 1,1E-03        | <b>9,8E-04</b> | 7,4E-04         | 1,3E-05                   | 2,7E-02                         |
| 50       | 1,3E-03                          | 1,1E-03        | <b>1,0E-03</b> | 7,6E-04         | 1,4E-05                   | 2,8E-02                         |
| 60       | 1,4E-03                          | 1,3E-03        | <b>1,1E-03</b> | 8,1E-04         | 1,4E-05                   | 2,9E-02                         |
| 70       | 1,6E-03                          | 1,4E-03        | <b>1,2E-03</b> | 8,6E-04         | 1,5E-05                   | 3,0E-02                         |
| 80       | 1,7E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,1E-04         | 1,6E-05                   | 3,1E-02                         |
| 90       | 1,8E-03                          | 1,6E-03        | <b>1,3E-03</b> | 9,5E-04         | 1,6E-05                   | 3,2E-02                         |
| 100      | 2,0E-03                          | 1,7E-03        | <b>1,4E-03</b> | 1,0E-03         | 1,7E-05                   | 3,3E-02                         |
| 120      | 2,2E-03                          | 1,9E-03        | <b>1,5E-03</b> | 1,1E-03         | 1,7E-05                   | 3,5E-02                         |
| 180      | 2,9E-03                          | 2,5E-03        | <b>1,9E-03</b> | 1,3E-03         | 2,0E-05                   | 3,9E-02                         |
| 200      | 3,2E-03                          | 2,6E-03        | <b>2,0E-03</b> | 1,3E-03         | 2,0E-05                   | 4,1E-02                         |
| 300      | 4,1E-03                          | 3,3E-03        | <b>2,5E-03</b> | 1,6E-03         | 2,3E-05                   | 4,7E-02                         |
| 360      | 4,6E-03                          | 3,7E-03        | <b>2,7E-03</b> | 1,8E-03         | 2,5E-05                   | 5,0E-02                         |
| 400      | 4,9E-03                          | 3,9E-03        | <b>2,8E-03</b> | 1,9E-03         | 2,6E-05                   | 5,2E-02                         |
| 500      | 5,5E-03                          | 4,5E-03        | <b>3,2E-03</b> | 2,1E-03         | 2,8E-05                   | 5,7E-02                         |
| 600      | 6,1E-03                          | 5,0E-03        | <b>3,5E-03</b> | 2,3E-03         | 3,1E-05                   | 6,2E-02                         |
| 700      | 6,7E-03                          | 5,4E-03        | <b>3,8E-03</b> | 2,4E-03         | 3,3E-05                   | 6,6E-02                         |
| 800      | 7,2E-03                          | 5,8E-03        | <b>4,1E-03</b> | 2,6E-03         | 3,5E-05                   | 7,0E-02                         |
| 900      | 7,7E-03                          | 6,2E-03        | <b>4,3E-03</b> | 2,8E-03         | 3,7E-05                   | 7,4E-02                         |
| 1000     | 8,2E-03                          | 6,6E-03        | <b>4,6E-03</b> | 2,9E-03         | 3,9E-05                   | 7,8E-02                         |
| 2000     | 1,2E-02                          | 9,4E-03        | <b>6,5E-03</b> | 4,1E-03         | 5,4E-05                   | 1,1E-01                         |
| 3000     | 1,4E-02                          | 1,1E-02        | <b>7,9E-03</b> | 5,0E-03         | 6,5E-05                   | 1,3E-01                         |
| 4000     | 1,6E-02                          | 1,3E-02        | <b>8,9E-03</b> | 5,6E-03         | 7,3E-05                   | 1,5E-01                         |
| 5000     | 1,8E-02                          | 1,4E-02        | <b>9,8E-03</b> | 6,2E-03         | 8,0E-05                   | 1,6E-01                         |
| 6000     | 1,9E-02                          | 1,5E-02        | <b>1,1E-02</b> | 6,7E-03         | 8,7E-05                   | 1,7E-01                         |
| 8000     | 2,2E-02                          | 1,7E-02        | <b>1,2E-02</b> | 7,5E-03         | 9,8E-05                   | 2,0E-01                         |
| 10000    | 2,4E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,3E-03         | 1,1E-04                   | 2,2E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 4,8E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 3,7E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 8,1E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 1,2E-02                         |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01                   | 1,4E-02                         |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 1,6E-02                         |
| 7        | 7,8E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,7E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,8E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 10       | 8,2E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,2E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,3E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 180      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,6E-02                         |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,7E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,0E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,2E-02                         |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,3E-02                         |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,5E-02                         |
| 600      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,7E-02                         |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,9E-02                         |
| 800      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,1E-02                         |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,3E-02                         |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,4E-02                         |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 5,5E-02                         |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 6,2E-02                         |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 6,9E-02                         |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,5E-02                         |
| 6000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 8,0E-02                         |
| 8000     |                                  | 2,7E-01        | <b>4,2E-01</b> |                 |                           | 9,0E-02                         |
| 10000    |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 9,8E-02                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 9,2E-07                          | 1,0E-06        | <b>1,2E-06</b> | 1,0E-06         | 2,8E-08                    | 4,2E-03                         |
| 2        | 2,5E-06                          | 2,7E-06        | <b>3,1E-06</b> | 2,6E-06         | 9,6E-08                    | 1,1E-02                         |
| 3        | 3,4E-06                          | 3,7E-06        | <b>4,2E-06</b> | 3,4E-06         | 1,3E-07                    | 1,4E-02                         |
| 4        | 4,1E-06                          | 4,4E-06        | <b>4,8E-06</b> | 4,0E-06         | 1,6E-07                    | 1,6E-02                         |
| 5        | 4,7E-06                          | 4,9E-06        | <b>5,4E-06</b> | 4,4E-06         | 1,7E-07                    | 1,8E-02                         |
| 6        | 5,2E-06                          | 5,4E-06        | <b>5,8E-06</b> | 4,7E-06         | 1,8E-07                    | 1,9E-02                         |
| 7        | 5,7E-06                          | 5,8E-06        | <b>6,1E-06</b> | 4,9E-06         | 1,9E-07                    | 1,9E-02                         |
| 8        | 6,1E-06                          | 6,2E-06        | <b>6,4E-06</b> | 5,1E-06         | 2,0E-07                    | 2,0E-02                         |
| 9        | 6,6E-06                          | 6,5E-06        | <b>6,7E-06</b> | 5,3E-06         | 2,0E-07                    | 2,0E-02                         |
| 10       | 7,0E-06                          | 6,9E-06        | <b>6,9E-06</b> | 5,4E-06         | 2,1E-07                    | 2,1E-02                         |
| 14       | 8,6E-06                          | 8,1E-06        | <b>7,7E-06</b> | 5,9E-06         | 2,2E-07                    | 2,2E-02                         |
| 15       | 8,9E-06                          | 8,4E-06        | <b>7,9E-06</b> | 6,0E-06         | 2,2E-07                    | 2,2E-02                         |
| 20       | 1,1E-05                          | 9,8E-06        | <b>8,8E-06</b> | 6,5E-06         | 2,3E-07                    | 2,3E-02                         |
| 30       | 1,5E-05                          | 1,3E-05        | <b>1,1E-05</b> | 7,5E-06         | 2,5E-07                    | 2,5E-02                         |
| 40       | 1,8E-05                          | 1,6E-05        | <b>1,2E-05</b> | 8,4E-06         | 2,6E-07                    | 2,6E-02                         |
| 45       | 2,0E-05                          | 1,7E-05        | <b>1,3E-05</b> | 8,9E-06         | 2,7E-07                    | 2,7E-02                         |
| 50       | 2,2E-05                          | 1,8E-05        | <b>1,4E-05</b> | 9,3E-06         | 2,8E-07                    | 2,8E-02                         |
| 60       | 2,6E-05                          | 2,1E-05        | <b>1,6E-05</b> | 1,0E-05         | 2,9E-07                    | 2,9E-02                         |
| 70       | 3,0E-05                          | 2,4E-05        | <b>1,7E-05</b> | 1,1E-05         | 3,0E-07                    | 3,0E-02                         |
| 80       | 3,4E-05                          | 2,7E-05        | <b>1,9E-05</b> | 1,2E-05         | 3,1E-07                    | 3,1E-02                         |
| 90       | 3,7E-05                          | 3,0E-05        | <b>2,0E-05</b> | 1,3E-05         | 3,2E-07                    | 3,2E-02                         |
| 100      | 4,1E-05                          | 3,3E-05        | <b>2,2E-05</b> | 1,4E-05         | 3,3E-07                    | 3,3E-02                         |
| 120      | 4,9E-05                          | 3,8E-05        | <b>2,5E-05</b> | 1,5E-05         | 3,5E-07                    | 3,5E-02                         |
| 180      | 7,3E-05                          | 5,6E-05        | <b>3,5E-05</b> | 2,0E-05         | 3,9E-07                    | 3,9E-02                         |
| 200      | 8,1E-05                          | 6,1E-05        | <b>3,8E-05</b> | 2,2E-05         | 4,1E-07                    | 4,1E-02                         |
| 300      | 1,2E-04                          | 9,2E-05        | <b>5,4E-05</b> | 3,0E-05         | 4,7E-07                    | 4,7E-02                         |
| 360      | 1,5E-04                          | 1,1E-04        | <b>6,4E-05</b> | 3,4E-05         | 5,0E-07                    | 5,0E-02                         |
| 400      | 1,6E-04                          | 1,2E-04        | <b>7,1E-05</b> | 3,8E-05         | 5,2E-07                    | 5,2E-02                         |
| 500      | 2,1E-04                          | 1,5E-04        | <b>8,8E-05</b> | 4,6E-05         | 5,7E-07                    | 5,7E-02                         |
| 600      | 2,5E-04                          | 1,9E-04        | <b>1,0E-04</b> | 5,4E-05         | 6,2E-07                    | 6,2E-02                         |
| 700      | 3,0E-04                          | 2,2E-04        | <b>1,2E-04</b> | 6,2E-05         | 6,6E-07                    | 6,6E-02                         |
| 800      | 3,4E-04                          | 2,5E-04        | <b>1,4E-04</b> | 7,1E-05         | 7,0E-07                    | 7,0E-02                         |
| 900      | 3,9E-04                          | 2,9E-04        | <b>1,6E-04</b> | 7,9E-05         | 7,4E-07                    | 7,4E-02                         |
| 1000     | 4,4E-04                          | 3,2E-04        | <b>1,7E-04</b> | 8,7E-05         | 7,8E-07                    | 7,8E-02                         |
| 2000     | 8,7E-04                          | 6,3E-04        | <b>3,4E-04</b> | 1,6E-04         | 1,1E-06                    | 1,1E-01                         |
| 3000     | 1,2E-03                          | 9,0E-04        | <b>4,8E-04</b> | 2,3E-04         | 1,3E-06                    | 1,3E-01                         |
| 4000     | 1,5E-03                          | 1,1E-03        | <b>5,9E-04</b> | 2,9E-04         | 1,5E-06                    | 1,5E-01                         |
| 5000     | 1,8E-03                          | 1,3E-03        | <b>7,0E-04</b> | 3,4E-04         | 1,6E-06                    | 1,6E-01                         |
| 6000     | 2,1E-03                          | 1,5E-03        | <b>7,9E-04</b> | 3,8E-04         | 1,7E-06                    | 1,7E-01                         |
| 8000     | 2,5E-03                          | 1,8E-03        | <b>9,5E-04</b> | 4,6E-04         | 2,0E-06                    | 2,0E-01                         |
| 10000    | 2,9E-03                          | 2,1E-03        | <b>1,1E-03</b> | 5,3E-04         | 2,2E-06                    | 2,2E-01                         |

**Ausscheidungsrate über den Stuhl  $E_s(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                    | 4,8E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                    | 3,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                    | 8,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                    | 1,2E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                    | 1,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                    | 1,6E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,7E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,8E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,6E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,7E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,0E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,3E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                            | 3,5E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,7E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,9E-02                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,1E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,3E-02                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,4E-02                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                            | 5,5E-02                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 6,2E-02                         |
| 4000     | 2,2E-01                          | 3,3E-01        |                |                 |                            | 6,9E-02                         |
| 5000     | 2,2E-01                          |                |                |                 |                            | 7,5E-02                         |
| 6000     | 2,2E-01                          |                |                |                 |                            | 8,0E-02                         |
| 8000     | 2,3E-01                          |                |                |                 |                            | 9,0E-02                         |
| 10000    | 2,3E-01                          |                |                |                 |                            | 9,8E-02                         |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 2,8E-07                   | 4,2E-03                         |
| 2        |            | 9,6E-07                   | 1,1E-02                         |
| 3        |            | 1,3E-06                   | 1,4E-02                         |
| 4        |            | 1,6E-06                   | 1,6E-02                         |
| 5        |            | 1,7E-06                   | 1,8E-02                         |
| 6        |            | 1,8E-06                   | 1,9E-02                         |
| 7        |            | 1,9E-06                   | 1,9E-02                         |
| 8        |            | 2,0E-06                   | 2,0E-02                         |
| 9        |            | 2,0E-06                   | 2,0E-02                         |
| 10       |            | 2,1E-06                   | 2,1E-02                         |
| 14       |            | 2,2E-06                   | 2,2E-02                         |
| 15       |            | 2,2E-06                   | 2,2E-02                         |
| 20       |            | 2,3E-06                   | 2,3E-02                         |
| 30       |            | 2,5E-06                   | 2,5E-02                         |
| 40       |            | 2,6E-06                   | 2,6E-02                         |
| 45       |            | 2,7E-06                   | 2,7E-02                         |
| 50       |            | 2,8E-06                   | 2,8E-02                         |
| 60       |            | 2,9E-06                   | 2,9E-02                         |
| 70       |            | 3,0E-06                   | 3,0E-02                         |
| 80       |            | 3,1E-06                   | 3,1E-02                         |
| 90       |            | 3,2E-06                   | 3,2E-02                         |
| 100      |            | 3,3E-06                   | 3,3E-02                         |
| 120      |            | 3,5E-06                   | 3,5E-02                         |
| 180      |            | 3,9E-06                   | 3,9E-02                         |
| 200      |            | 4,1E-06                   | 4,1E-02                         |
| 300      |            | 4,7E-06                   | 4,7E-02                         |
| 360      |            | 5,0E-06                   | 5,0E-02                         |
| 400      |            | 5,2E-06                   | 5,2E-02                         |
| 500      |            | 5,7E-06                   | 5,7E-02                         |
| 600      |            | 6,2E-06                   | 6,2E-02                         |
| 700      |            | 6,6E-06                   | 6,6E-02                         |
| 800      |            | 7,0E-06                   | 7,0E-02                         |
| 900      |            | 7,4E-06                   | 7,4E-02                         |
| 1000     |            | 7,8E-06                   | 7,8E-02                         |
| 2000     |            | 1,1E-05                   | 1,1E-01                         |
| 3000     |            | 1,3E-05                   | 1,3E-01                         |
| 4000     |            | 1,5E-05                   | 1,5E-01                         |
| 5000     |            | 1,6E-05                   | 1,6E-01                         |
| 6000     |            | 1,7E-05                   | 1,7E-01                         |
| 8000     |            | 2,0E-05                   | 2,0E-01                         |
| 10000    |            | 2,2E-05                   | 2,2E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Pu-238**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 9,5E-02                   | 4,8E-04                         |
| 2        |            | 4,9E-01                   | 3,7E-03                         |
| 3        |            | 7,8E-01                   | 8,1E-03                         |
| 4        |            | 9,2E-01                   | 1,2E-02                         |
| 5        |            | 9,7E-01                   | 1,4E-02                         |
| 6        |            | 9,9E-01                   | 1,6E-02                         |
| 7        |            | 1,0E+00                   | 1,7E-02                         |
| 8        |            | 1,0E+00                   | 1,8E-02                         |
| 9        |            |                           | 1,9E-02                         |
| 10       |            |                           | 1,9E-02                         |
| 14       |            |                           | 2,0E-02                         |
| 15       |            |                           | 2,0E-02                         |
| 20       |            |                           | 2,1E-02                         |
| 30       |            |                           | 2,1E-02                         |
| 40       |            |                           | 2,1E-02                         |
| 45       |            |                           | 2,2E-02                         |
| 50       |            |                           | 2,2E-02                         |
| 60       |            |                           | 2,2E-02                         |
| 70       |            |                           | 2,3E-02                         |
| 80       |            |                           | 2,3E-02                         |
| 90       |            |                           | 2,3E-02                         |
| 100      |            |                           | 2,4E-02                         |
| 120      |            |                           | 2,4E-02                         |
| 180      |            |                           | 2,6E-02                         |
| 200      |            |                           | 2,7E-02                         |
| 300      |            |                           | 3,0E-02                         |
| 360      |            |                           | 3,2E-02                         |
| 400      |            |                           | 3,3E-02                         |
| 500      |            |                           | 3,5E-02                         |
| 600      |            |                           | 3,7E-02                         |
| 700      |            |                           | 3,9E-02                         |
| 800      |            |                           | 4,1E-02                         |
| 900      |            |                           | 4,3E-02                         |
| 1000     |            |                           | 4,4E-02                         |
| 2000     |            |                           | 5,5E-02                         |
| 3000     |            |                           | 6,2E-02                         |
| 4000     |            |                           | 6,9E-02                         |
| 5000     |            |                           | 7,5E-02                         |
| 6000     |            |                           | 8,0E-02                         |
| 8000     |            |                           | 9,0E-02                         |
| 10000    |            |                           | 9,8E-02                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 9,1E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,9E-05         | 1,4E-06                   | 4,2E-03                         |
| 2        | 2,4E-04                          | 2,6E-04        | <b>3,0E-04</b> | 2,5E-04         | 4,8E-06                   | 1,1E-02                         |
| 3        | 3,2E-04                          | 3,5E-04        | <b>4,0E-04</b> | 3,3E-04         | 6,7E-06                   | 1,4E-02                         |
| 4        | 3,8E-04                          | 4,1E-04        | <b>4,7E-04</b> | 3,9E-04         | 7,9E-06                   | 1,6E-02                         |
| 5        | 4,2E-04                          | 4,5E-04        | <b>5,1E-04</b> | 4,2E-04         | 8,7E-06                   | 1,8E-02                         |
| 6        | 4,5E-04                          | 4,9E-04        | <b>5,5E-04</b> | 4,5E-04         | 9,2E-06                   | 1,9E-02                         |
| 7        | 4,9E-04                          | 5,2E-04        | <b>5,8E-04</b> | 4,7E-04         | 9,6E-06                   | 1,9E-02                         |
| 8        | 5,1E-04                          | 5,4E-04        | <b>6,0E-04</b> | 4,9E-04         | 9,9E-06                   | 2,0E-02                         |
| 9        | 5,4E-04                          | 5,6E-04        | <b>6,2E-04</b> | 5,0E-04         | 1,0E-05                   | 2,0E-02                         |
| 10       | 5,6E-04                          | 5,8E-04        | <b>6,3E-04</b> | 5,1E-04         | 1,0E-05                   | 2,1E-02                         |
| 14       | 6,4E-04                          | 6,5E-04        | <b>6,8E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 15       | 6,6E-04                          | 6,7E-04        | <b>7,0E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 20       | 7,5E-04                          | 7,4E-04        | <b>7,5E-04</b> | 5,9E-04         | 1,2E-05                   | 2,3E-02                         |
| 30       | 9,2E-04                          | 8,8E-04        | <b>8,5E-04</b> | 6,5E-04         | 1,2E-05                   | 2,5E-02                         |
| 40       | 1,1E-03                          | 1,0E-03        | <b>9,4E-04</b> | 7,1E-04         | 1,3E-05                   | 2,6E-02                         |
| 45       | 1,2E-03                          | 1,1E-03        | <b>9,8E-04</b> | 7,4E-04         | 1,3E-05                   | 2,7E-02                         |
| 50       | 1,3E-03                          | 1,1E-03        | <b>1,0E-03</b> | 7,6E-04         | 1,4E-05                   | 2,8E-02                         |
| 60       | 1,4E-03                          | 1,3E-03        | <b>1,1E-03</b> | 8,2E-04         | 1,4E-05                   | 2,9E-02                         |
| 70       | 1,6E-03                          | 1,4E-03        | <b>1,2E-03</b> | 8,6E-04         | 1,5E-05                   | 3,0E-02                         |
| 80       | 1,7E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,1E-04         | 1,6E-05                   | 3,1E-02                         |
| 90       | 1,8E-03                          | 1,6E-03        | <b>1,3E-03</b> | 9,5E-04         | 1,6E-05                   | 3,2E-02                         |
| 100      | 2,0E-03                          | 1,7E-03        | <b>1,4E-03</b> | 1,0E-03         | 1,7E-05                   | 3,3E-02                         |
| 120      | 2,2E-03                          | 1,9E-03        | <b>1,5E-03</b> | 1,1E-03         | 1,7E-05                   | 3,5E-02                         |
| 180      | 2,9E-03                          | 2,5E-03        | <b>1,9E-03</b> | 1,3E-03         | 2,0E-05                   | 3,9E-02                         |
| 200      | 3,2E-03                          | 2,6E-03        | <b>2,0E-03</b> | 1,3E-03         | 2,0E-05                   | 4,1E-02                         |
| 300      | 4,1E-03                          | 3,4E-03        | <b>2,5E-03</b> | 1,6E-03         | 2,3E-05                   | 4,7E-02                         |
| 360      | 4,6E-03                          | 3,7E-03        | <b>2,7E-03</b> | 1,8E-03         | 2,5E-05                   | 5,0E-02                         |
| 400      | 4,9E-03                          | 4,0E-03        | <b>2,9E-03</b> | 1,9E-03         | 2,6E-05                   | 5,2E-02                         |
| 500      | 5,6E-03                          | 4,5E-03        | <b>3,2E-03</b> | 2,1E-03         | 2,9E-05                   | 5,7E-02                         |
| 600      | 6,2E-03                          | 5,0E-03        | <b>3,5E-03</b> | 2,3E-03         | 3,1E-05                   | 6,2E-02                         |
| 700      | 6,7E-03                          | 5,4E-03        | <b>3,8E-03</b> | 2,4E-03         | 3,3E-05                   | 6,6E-02                         |
| 800      | 7,3E-03                          | 5,8E-03        | <b>4,1E-03</b> | 2,6E-03         | 3,5E-05                   | 7,1E-02                         |
| 900      | 7,8E-03                          | 6,2E-03        | <b>4,4E-03</b> | 2,8E-03         | 3,7E-05                   | 7,5E-02                         |
| 1000     | 8,2E-03                          | 6,6E-03        | <b>4,6E-03</b> | 2,9E-03         | 3,9E-05                   | 7,8E-02                         |
| 2000     | 1,2E-02                          | 9,5E-03        | <b>6,6E-03</b> | 4,2E-03         | 5,5E-05                   | 1,1E-01                         |
| 3000     | 1,5E-02                          | 1,2E-02        | <b>8,0E-03</b> | 5,1E-03         | 6,6E-05                   | 1,3E-01                         |
| 4000     | 1,7E-02                          | 1,3E-02        | <b>9,2E-03</b> | 5,8E-03         | 7,5E-05                   | 1,5E-01                         |
| 5000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,4E-03         | 8,3E-05                   | 1,7E-01                         |
| 6000     | 2,0E-02                          | 1,6E-02        | <b>1,1E-02</b> | 7,0E-03         | 9,0E-05                   | 1,8E-01                         |
| 8000     | 2,3E-02                          | 1,8E-02        | <b>1,3E-02</b> | 8,0E-03         | 1,0E-04                   | 2,1E-01                         |
| 10000    | 2,6E-02                          | 2,0E-02        | <b>1,4E-02</b> | 8,9E-03         | 1,1E-04                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 4,8E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 3,7E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 8,1E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 1,2E-02                         |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01                   | 1,4E-02                         |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 1,6E-02                         |
| 7        | 7,8E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,7E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,8E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 10       | 8,2E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,2E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,3E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 180      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,6E-02                         |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,7E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,0E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,2E-02                         |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,3E-02                         |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,5E-02                         |
| 600      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,7E-02                         |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,9E-02                         |
| 800      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,1E-02                         |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,3E-02                         |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,4E-02                         |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 5,5E-02                         |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 6,3E-02                         |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,1E-02                         |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,7E-02                         |
| 6000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 8,3E-02                         |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 9,4E-02                         |
| 10000    |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 1,0E-01                         |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 9,2E-07                          | 1,0E-06        | <b>1,2E-06</b> | 1,0E-06         | 2,8E-08                    | 4,2E-03                         |
| 2        | 2,5E-06                          | 2,7E-06        | <b>3,1E-06</b> | 2,6E-06         | 9,6E-08                    | 1,1E-02                         |
| 3        | 3,4E-06                          | 3,7E-06        | <b>4,2E-06</b> | 3,4E-06         | 1,3E-07                    | 1,4E-02                         |
| 4        | 4,1E-06                          | 4,4E-06        | <b>4,9E-06</b> | 4,0E-06         | 1,6E-07                    | 1,6E-02                         |
| 5        | 4,7E-06                          | 4,9E-06        | <b>5,4E-06</b> | 4,4E-06         | 1,7E-07                    | 1,8E-02                         |
| 6        | 5,2E-06                          | 5,4E-06        | <b>5,8E-06</b> | 4,7E-06         | 1,8E-07                    | 1,9E-02                         |
| 7        | 5,7E-06                          | 5,8E-06        | <b>6,1E-06</b> | 4,9E-06         | 1,9E-07                    | 1,9E-02                         |
| 8        | 6,2E-06                          | 6,2E-06        | <b>6,4E-06</b> | 5,1E-06         | 2,0E-07                    | 2,0E-02                         |
| 9        | 6,6E-06                          | 6,5E-06        | <b>6,7E-06</b> | 5,3E-06         | 2,0E-07                    | 2,0E-02                         |
| 10       | 7,0E-06                          | 6,9E-06        | <b>6,9E-06</b> | 5,4E-06         | 2,1E-07                    | 2,1E-02                         |
| 14       | 8,6E-06                          | 8,1E-06        | <b>7,7E-06</b> | 5,9E-06         | 2,2E-07                    | 2,2E-02                         |
| 15       | 8,9E-06                          | 8,4E-06        | <b>7,9E-06</b> | 6,0E-06         | 2,2E-07                    | 2,2E-02                         |
| 20       | 1,1E-05                          | 9,8E-06        | <b>8,8E-06</b> | 6,5E-06         | 2,3E-07                    | 2,3E-02                         |
| 30       | 1,5E-05                          | 1,3E-05        | <b>1,1E-05</b> | 7,5E-06         | 2,5E-07                    | 2,5E-02                         |
| 40       | 1,8E-05                          | 1,6E-05        | <b>1,2E-05</b> | 8,4E-06         | 2,6E-07                    | 2,6E-02                         |
| 45       | 2,0E-05                          | 1,7E-05        | <b>1,3E-05</b> | 8,9E-06         | 2,7E-07                    | 2,7E-02                         |
| 50       | 2,2E-05                          | 1,8E-05        | <b>1,4E-05</b> | 9,3E-06         | 2,8E-07                    | 2,8E-02                         |
| 60       | 2,6E-05                          | 2,1E-05        | <b>1,6E-05</b> | 1,0E-05         | 2,9E-07                    | 2,9E-02                         |
| 70       | 3,0E-05                          | 2,4E-05        | <b>1,7E-05</b> | 1,1E-05         | 3,0E-07                    | 3,0E-02                         |
| 80       | 3,4E-05                          | 2,7E-05        | <b>1,9E-05</b> | 1,2E-05         | 3,1E-07                    | 3,1E-02                         |
| 90       | 3,7E-05                          | 3,0E-05        | <b>2,0E-05</b> | 1,3E-05         | 3,2E-07                    | 3,2E-02                         |
| 100      | 4,1E-05                          | 3,3E-05        | <b>2,2E-05</b> | 1,4E-05         | 3,3E-07                    | 3,3E-02                         |
| 120      | 4,9E-05                          | 3,8E-05        | <b>2,5E-05</b> | 1,5E-05         | 3,5E-07                    | 3,5E-02                         |
| 180      | 7,3E-05                          | 5,6E-05        | <b>3,5E-05</b> | 2,0E-05         | 3,9E-07                    | 3,9E-02                         |
| 200      | 8,1E-05                          | 6,2E-05        | <b>3,8E-05</b> | 2,2E-05         | 4,1E-07                    | 4,1E-02                         |
| 300      | 1,2E-04                          | 9,2E-05        | <b>5,4E-05</b> | 3,0E-05         | 4,7E-07                    | 4,7E-02                         |
| 360      | 1,5E-04                          | 1,1E-04        | <b>6,4E-05</b> | 3,4E-05         | 5,0E-07                    | 5,0E-02                         |
| 400      | 1,7E-04                          | 1,2E-04        | <b>7,1E-05</b> | 3,8E-05         | 5,2E-07                    | 5,2E-02                         |
| 500      | 2,1E-04                          | 1,6E-04        | <b>8,8E-05</b> | 4,6E-05         | 5,7E-07                    | 5,7E-02                         |
| 600      | 2,5E-04                          | 1,9E-04        | <b>1,1E-04</b> | 5,4E-05         | 6,2E-07                    | 6,2E-02                         |
| 700      | 3,0E-04                          | 2,2E-04        | <b>1,2E-04</b> | 6,3E-05         | 6,6E-07                    | 6,6E-02                         |
| 800      | 3,5E-04                          | 2,6E-04        | <b>1,4E-04</b> | 7,1E-05         | 7,1E-07                    | 7,1E-02                         |
| 900      | 3,9E-04                          | 2,9E-04        | <b>1,6E-04</b> | 8,0E-05         | 7,5E-07                    | 7,5E-02                         |
| 1000     | 4,4E-04                          | 3,2E-04        | <b>1,8E-04</b> | 8,8E-05         | 7,8E-07                    | 7,8E-02                         |
| 2000     | 8,9E-04                          | 6,5E-04        | <b>3,5E-04</b> | 1,7E-04         | 1,1E-06                    | 1,1E-01                         |
| 3000     | 1,3E-03                          | 9,3E-04        | <b>4,9E-04</b> | 2,4E-04         | 1,3E-06                    | 1,3E-01                         |
| 4000     | 1,6E-03                          | 1,2E-03        | <b>6,2E-04</b> | 3,0E-04         | 1,5E-06                    | 1,5E-01                         |
| 5000     | 1,9E-03                          | 1,4E-03        | <b>7,3E-04</b> | 3,5E-04         | 1,7E-06                    | 1,7E-01                         |
| 6000     | 2,2E-03                          | 1,6E-03        | <b>8,4E-04</b> | 4,0E-04         | 1,8E-06                    | 1,8E-01                         |
| 8000     | 2,7E-03                          | 1,9E-03        | <b>1,0E-03</b> | 4,9E-04         | 2,1E-06                    | 2,1E-01                         |
| 10000    | 3,1E-03                          | 2,3E-03        | <b>1,2E-03</b> | 5,8E-04         | 2,3E-06                    | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_s(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                    | 4,8E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                    | 3,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                    | 8,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                    | 1,2E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                    | 1,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                    | 1,6E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,7E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,8E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,6E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,7E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,0E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,3E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                            | 3,5E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,7E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,9E-02                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,1E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,3E-02                         |
| 1000     | 2,0E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,4E-02                         |
| 2000     | 2,1E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 5,5E-02                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 6,3E-02                         |
| 4000     | 2,2E-01                          |                |                |                 |                            | 7,1E-02                         |
| 5000     | 2,3E-01                          |                |                |                 |                            | 7,7E-02                         |
| 6000     | 2,3E-01                          |                |                |                 |                            | 8,3E-02                         |
| 8000     |                                  |                |                |                 |                            | 9,4E-02                         |
| 10000    |                                  |                |                |                 |                            | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 2,8E-07                   | 4,2E-03                         |
| 2        |            | 9,6E-07                   | 1,1E-02                         |
| 3        |            | 1,3E-06                   | 1,4E-02                         |
| 4        |            | 1,6E-06                   | 1,6E-02                         |
| 5        |            | 1,7E-06                   | 1,8E-02                         |
| 6        |            | 1,8E-06                   | 1,9E-02                         |
| 7        |            | 1,9E-06                   | 1,9E-02                         |
| 8        |            | 2,0E-06                   | 2,0E-02                         |
| 9        |            | 2,0E-06                   | 2,0E-02                         |
| 10       |            | 2,1E-06                   | 2,1E-02                         |
| 14       |            | 2,2E-06                   | 2,2E-02                         |
| 15       |            | 2,2E-06                   | 2,2E-02                         |
| 20       |            | 2,3E-06                   | 2,3E-02                         |
| 30       |            | 2,5E-06                   | 2,5E-02                         |
| 40       |            | 2,6E-06                   | 2,6E-02                         |
| 45       |            | 2,7E-06                   | 2,7E-02                         |
| 50       |            | 2,8E-06                   | 2,8E-02                         |
| 60       |            | 2,9E-06                   | 2,9E-02                         |
| 70       |            | 3,0E-06                   | 3,0E-02                         |
| 80       |            | 3,1E-06                   | 3,1E-02                         |
| 90       |            | 3,2E-06                   | 3,2E-02                         |
| 100      |            | 3,3E-06                   | 3,3E-02                         |
| 120      |            | 3,5E-06                   | 3,5E-02                         |
| 180      |            | 3,9E-06                   | 3,9E-02                         |
| 200      |            | 4,1E-06                   | 4,1E-02                         |
| 300      |            | 4,7E-06                   | 4,7E-02                         |
| 360      |            | 5,0E-06                   | 5,0E-02                         |
| 400      |            | 5,2E-06                   | 5,2E-02                         |
| 500      |            | 5,7E-06                   | 5,7E-02                         |
| 600      |            | 6,2E-06                   | 6,2E-02                         |
| 700      |            | 6,6E-06                   | 6,6E-02                         |
| 800      |            | 7,1E-06                   | 7,1E-02                         |
| 900      |            | 7,5E-06                   | 7,5E-02                         |
| 1000     |            | 7,8E-06                   | 7,8E-02                         |
| 2000     |            | 1,1E-05                   | 1,1E-01                         |
| 3000     |            | 1,3E-05                   | 1,3E-01                         |
| 4000     |            | 1,5E-05                   | 1,5E-01                         |
| 5000     |            | 1,7E-05                   | 1,7E-01                         |
| 6000     |            | 1,8E-05                   | 1,8E-01                         |
| 8000     |            | 2,1E-05                   | 2,1E-01                         |
| 10000    |            | 2,3E-05                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Pu-239**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 9,5E-02                   | 4,8E-04                         |
| 2        |            | 4,9E-01                   | 3,7E-03                         |
| 3        |            | 7,8E-01                   | 8,1E-03                         |
| 4        |            | 9,2E-01                   | 1,2E-02                         |
| 5        |            | 9,7E-01                   | 1,4E-02                         |
| 6        |            | 9,9E-01                   | 1,6E-02                         |
| 7        |            | 1,0E+00                   | 1,7E-02                         |
| 8        |            | 1,0E+00                   | 1,8E-02                         |
| 9        |            |                           | 1,9E-02                         |
| 10       |            |                           | 1,9E-02                         |
| 14       |            |                           | 2,0E-02                         |
| 15       |            |                           | 2,0E-02                         |
| 20       |            |                           | 2,1E-02                         |
| 30       |            |                           | 2,1E-02                         |
| 40       |            |                           | 2,1E-02                         |
| 45       |            |                           | 2,2E-02                         |
| 50       |            |                           | 2,2E-02                         |
| 60       |            |                           | 2,2E-02                         |
| 70       |            |                           | 2,3E-02                         |
| 80       |            |                           | 2,3E-02                         |
| 90       |            |                           | 2,3E-02                         |
| 100      |            |                           | 2,4E-02                         |
| 120      |            |                           | 2,4E-02                         |
| 180      |            |                           | 2,6E-02                         |
| 200      |            |                           | 2,7E-02                         |
| 300      |            |                           | 3,0E-02                         |
| 360      |            |                           | 3,2E-02                         |
| 400      |            |                           | 3,3E-02                         |
| 500      |            |                           | 3,5E-02                         |
| 600      |            |                           | 3,7E-02                         |
| 700      |            |                           | 3,9E-02                         |
| 800      |            |                           | 4,1E-02                         |
| 900      |            |                           | 4,3E-02                         |
| 1000     |            |                           | 4,4E-02                         |
| 2000     |            |                           | 5,5E-02                         |
| 3000     |            |                           | 6,3E-02                         |
| 4000     |            |                           | 7,1E-02                         |
| 5000     |            |                           | 7,7E-02                         |
| 6000     |            |                           | 8,3E-02                         |
| 8000     |            |                           | 9,4E-02                         |
| 10000    |            |                           | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 9,1E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,9E-05         | 1,4E-06                   | 4,2E-03                         |
| 2        | 2,4E-04                          | 2,6E-04        | <b>3,0E-04</b> | 2,5E-04         | 4,8E-06                   | 1,1E-02                         |
| 3        | 3,2E-04                          | 3,5E-04        | <b>4,0E-04</b> | 3,3E-04         | 6,7E-06                   | 1,4E-02                         |
| 4        | 3,8E-04                          | 4,1E-04        | <b>4,7E-04</b> | 3,9E-04         | 7,9E-06                   | 1,6E-02                         |
| 5        | 4,2E-04                          | 4,5E-04        | <b>5,1E-04</b> | 4,2E-04         | 8,7E-06                   | 1,8E-02                         |
| 6        | 4,5E-04                          | 4,9E-04        | <b>5,5E-04</b> | 4,5E-04         | 9,2E-06                   | 1,9E-02                         |
| 7        | 4,9E-04                          | 5,2E-04        | <b>5,8E-04</b> | 4,7E-04         | 9,6E-06                   | 1,9E-02                         |
| 8        | 5,1E-04                          | 5,4E-04        | <b>6,0E-04</b> | 4,9E-04         | 9,9E-06                   | 2,0E-02                         |
| 9        | 5,4E-04                          | 5,6E-04        | <b>6,2E-04</b> | 5,0E-04         | 1,0E-05                   | 2,0E-02                         |
| 10       | 5,6E-04                          | 5,8E-04        | <b>6,3E-04</b> | 5,1E-04         | 1,0E-05                   | 2,1E-02                         |
| 14       | 6,4E-04                          | 6,5E-04        | <b>6,8E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 15       | 6,6E-04                          | 6,7E-04        | <b>7,0E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 20       | 7,5E-04                          | 7,4E-04        | <b>7,5E-04</b> | 5,9E-04         | 1,2E-05                   | 2,3E-02                         |
| 30       | 9,2E-04                          | 8,8E-04        | <b>8,5E-04</b> | 6,5E-04         | 1,2E-05                   | 2,5E-02                         |
| 40       | 1,1E-03                          | 1,0E-03        | <b>9,4E-04</b> | 7,1E-04         | 1,3E-05                   | 2,6E-02                         |
| 45       | 1,2E-03                          | 1,1E-03        | <b>9,8E-04</b> | 7,4E-04         | 1,3E-05                   | 2,7E-02                         |
| 50       | 1,3E-03                          | 1,1E-03        | <b>1,0E-03</b> | 7,6E-04         | 1,4E-05                   | 2,8E-02                         |
| 60       | 1,4E-03                          | 1,3E-03        | <b>1,1E-03</b> | 8,2E-04         | 1,4E-05                   | 2,9E-02                         |
| 70       | 1,6E-03                          | 1,4E-03        | <b>1,2E-03</b> | 8,6E-04         | 1,5E-05                   | 3,0E-02                         |
| 80       | 1,7E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,1E-04         | 1,6E-05                   | 3,1E-02                         |
| 90       | 1,8E-03                          | 1,6E-03        | <b>1,3E-03</b> | 9,5E-04         | 1,6E-05                   | 3,2E-02                         |
| 100      | 2,0E-03                          | 1,7E-03        | <b>1,4E-03</b> | 1,0E-03         | 1,7E-05                   | 3,3E-02                         |
| 120      | 2,2E-03                          | 1,9E-03        | <b>1,5E-03</b> | 1,1E-03         | 1,7E-05                   | 3,5E-02                         |
| 180      | 2,9E-03                          | 2,5E-03        | <b>1,9E-03</b> | 1,3E-03         | 2,0E-05                   | 3,9E-02                         |
| 200      | 3,2E-03                          | 2,6E-03        | <b>2,0E-03</b> | 1,3E-03         | 2,0E-05                   | 4,1E-02                         |
| 300      | 4,1E-03                          | 3,4E-03        | <b>2,5E-03</b> | 1,6E-03         | 2,3E-05                   | 4,7E-02                         |
| 360      | 4,6E-03                          | 3,7E-03        | <b>2,7E-03</b> | 1,8E-03         | 2,5E-05                   | 5,0E-02                         |
| 400      | 4,9E-03                          | 4,0E-03        | <b>2,9E-03</b> | 1,9E-03         | 2,6E-05                   | 5,2E-02                         |
| 500      | 5,6E-03                          | 4,5E-03        | <b>3,2E-03</b> | 2,1E-03         | 2,9E-05                   | 5,7E-02                         |
| 600      | 6,2E-03                          | 5,0E-03        | <b>3,5E-03</b> | 2,3E-03         | 3,1E-05                   | 6,2E-02                         |
| 700      | 6,7E-03                          | 5,4E-03        | <b>3,8E-03</b> | 2,4E-03         | 3,3E-05                   | 6,6E-02                         |
| 800      | 7,3E-03                          | 5,8E-03        | <b>4,1E-03</b> | 2,6E-03         | 3,5E-05                   | 7,1E-02                         |
| 900      | 7,8E-03                          | 6,2E-03        | <b>4,4E-03</b> | 2,8E-03         | 3,7E-05                   | 7,5E-02                         |
| 1000     | 8,2E-03                          | 6,6E-03        | <b>4,6E-03</b> | 2,9E-03         | 3,9E-05                   | 7,8E-02                         |
| 2000     | 1,2E-02                          | 9,5E-03        | <b>6,6E-03</b> | 4,2E-03         | 5,5E-05                   | 1,1E-01                         |
| 3000     | 1,5E-02                          | 1,2E-02        | <b>8,0E-03</b> | 5,1E-03         | 6,6E-05                   | 1,3E-01                         |
| 4000     | 1,7E-02                          | 1,3E-02        | <b>9,2E-03</b> | 5,8E-03         | 7,5E-05                   | 1,5E-01                         |
| 5000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,4E-03         | 8,3E-05                   | 1,7E-01                         |
| 6000     | 2,0E-02                          | 1,6E-02        | <b>1,1E-02</b> | 7,0E-03         | 9,0E-05                   | 1,8E-01                         |
| 8000     | 2,3E-02                          | 1,8E-02        | <b>1,3E-02</b> | 8,0E-03         | 1,0E-04                   | 2,1E-01                         |
| 10000    | 2,6E-02                          | 2,0E-02        | <b>1,4E-02</b> | 8,9E-03         | 1,1E-04                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 4,8E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 3,7E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 8,1E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 1,2E-02                         |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01                   | 1,4E-02                         |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 1,6E-02                         |
| 7        | 7,8E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,7E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,8E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 10       | 8,2E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,2E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,3E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 180      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,6E-02                         |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,7E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,0E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,2E-02                         |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,3E-02                         |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,5E-02                         |
| 600      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,7E-02                         |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,9E-02                         |
| 800      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,1E-02                         |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,3E-02                         |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,4E-02                         |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 5,5E-02                         |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 6,3E-02                         |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,1E-02                         |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,7E-02                         |
| 6000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 8,3E-02                         |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 9,4E-02                         |
| 10000    |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 9,2E-07                          | 1,0E-06        | <b>1,2E-06</b> | 1,0E-06         | 2,8E-08                    | 4,2E-03                         |
| 2        | 2,5E-06                          | 2,7E-06        | <b>3,1E-06</b> | 2,6E-06         | 9,6E-08                    | 1,1E-02                         |
| 3        | 3,4E-06                          | 3,7E-06        | <b>4,2E-06</b> | 3,4E-06         | 1,3E-07                    | 1,4E-02                         |
| 4        | 4,1E-06                          | 4,4E-06        | <b>4,9E-06</b> | 4,0E-06         | 1,6E-07                    | 1,6E-02                         |
| 5        | 4,7E-06                          | 4,9E-06        | <b>5,4E-06</b> | 4,4E-06         | 1,7E-07                    | 1,8E-02                         |
| 6        | 5,2E-06                          | 5,4E-06        | <b>5,8E-06</b> | 4,7E-06         | 1,8E-07                    | 1,9E-02                         |
| 7        | 5,7E-06                          | 5,8E-06        | <b>6,1E-06</b> | 4,9E-06         | 1,9E-07                    | 1,9E-02                         |
| 8        | 6,2E-06                          | 6,2E-06        | <b>6,4E-06</b> | 5,1E-06         | 2,0E-07                    | 2,0E-02                         |
| 9        | 6,6E-06                          | 6,5E-06        | <b>6,7E-06</b> | 5,3E-06         | 2,0E-07                    | 2,0E-02                         |
| 10       | 7,0E-06                          | 6,9E-06        | <b>6,9E-06</b> | 5,4E-06         | 2,1E-07                    | 2,1E-02                         |
| 14       | 8,6E-06                          | 8,1E-06        | <b>7,7E-06</b> | 5,9E-06         | 2,2E-07                    | 2,2E-02                         |
| 15       | 8,9E-06                          | 8,4E-06        | <b>7,9E-06</b> | 6,0E-06         | 2,2E-07                    | 2,2E-02                         |
| 20       | 1,1E-05                          | 9,8E-06        | <b>8,8E-06</b> | 6,5E-06         | 2,3E-07                    | 2,3E-02                         |
| 30       | 1,5E-05                          | 1,3E-05        | <b>1,1E-05</b> | 7,5E-06         | 2,5E-07                    | 2,5E-02                         |
| 40       | 1,8E-05                          | 1,6E-05        | <b>1,2E-05</b> | 8,4E-06         | 2,6E-07                    | 2,6E-02                         |
| 45       | 2,0E-05                          | 1,7E-05        | <b>1,3E-05</b> | 8,9E-06         | 2,7E-07                    | 2,7E-02                         |
| 50       | 2,2E-05                          | 1,8E-05        | <b>1,4E-05</b> | 9,3E-06         | 2,8E-07                    | 2,8E-02                         |
| 60       | 2,6E-05                          | 2,1E-05        | <b>1,6E-05</b> | 1,0E-05         | 2,9E-07                    | 2,9E-02                         |
| 70       | 3,0E-05                          | 2,4E-05        | <b>1,7E-05</b> | 1,1E-05         | 3,0E-07                    | 3,0E-02                         |
| 80       | 3,4E-05                          | 2,7E-05        | <b>1,9E-05</b> | 1,2E-05         | 3,1E-07                    | 3,1E-02                         |
| 90       | 3,7E-05                          | 3,0E-05        | <b>2,0E-05</b> | 1,3E-05         | 3,2E-07                    | 3,2E-02                         |
| 100      | 4,1E-05                          | 3,3E-05        | <b>2,2E-05</b> | 1,4E-05         | 3,3E-07                    | 3,3E-02                         |
| 120      | 4,9E-05                          | 3,8E-05        | <b>2,5E-05</b> | 1,5E-05         | 3,5E-07                    | 3,5E-02                         |
| 180      | 7,3E-05                          | 5,6E-05        | <b>3,5E-05</b> | 2,0E-05         | 3,9E-07                    | 3,9E-02                         |
| 200      | 8,1E-05                          | 6,2E-05        | <b>3,8E-05</b> | 2,2E-05         | 4,1E-07                    | 4,1E-02                         |
| 300      | 1,2E-04                          | 9,2E-05        | <b>5,4E-05</b> | 3,0E-05         | 4,7E-07                    | 4,7E-02                         |
| 360      | 1,5E-04                          | 1,1E-04        | <b>6,4E-05</b> | 3,4E-05         | 5,0E-07                    | 5,0E-02                         |
| 400      | 1,7E-04                          | 1,2E-04        | <b>7,1E-05</b> | 3,8E-05         | 5,2E-07                    | 5,2E-02                         |
| 500      | 2,1E-04                          | 1,6E-04        | <b>8,8E-05</b> | 4,6E-05         | 5,7E-07                    | 5,7E-02                         |
| 600      | 2,5E-04                          | 1,9E-04        | <b>1,1E-04</b> | 5,4E-05         | 6,2E-07                    | 6,2E-02                         |
| 700      | 3,0E-04                          | 2,2E-04        | <b>1,2E-04</b> | 6,3E-05         | 6,6E-07                    | 6,6E-02                         |
| 800      | 3,5E-04                          | 2,6E-04        | <b>1,4E-04</b> | 7,1E-05         | 7,1E-07                    | 7,1E-02                         |
| 900      | 3,9E-04                          | 2,9E-04        | <b>1,6E-04</b> | 8,0E-05         | 7,5E-07                    | 7,5E-02                         |
| 1000     | 4,4E-04                          | 3,2E-04        | <b>1,8E-04</b> | 8,8E-05         | 7,8E-07                    | 7,8E-02                         |
| 2000     | 8,9E-04                          | 6,5E-04        | <b>3,5E-04</b> | 1,7E-04         | 1,1E-06                    | 1,1E-01                         |
| 3000     | 1,3E-03                          | 9,3E-04        | <b>4,9E-04</b> | 2,4E-04         | 1,3E-06                    | 1,3E-01                         |
| 4000     | 1,6E-03                          | 1,2E-03        | <b>6,2E-04</b> | 3,0E-04         | 1,5E-06                    | 1,5E-01                         |
| 5000     | 1,9E-03                          | 1,4E-03        | <b>7,3E-04</b> | 3,5E-04         | 1,7E-06                    | 1,7E-01                         |
| 6000     | 2,2E-03                          | 1,6E-03        | <b>8,4E-04</b> | 4,0E-04         | 1,8E-06                    | 1,8E-01                         |
| 8000     | 2,7E-03                          | 1,9E-03        | <b>1,0E-03</b> | 4,9E-04         | 2,1E-06                    | 2,1E-01                         |
| 10000    | 3,1E-03                          | 2,3E-03        | <b>1,2E-03</b> | 5,8E-04         | 2,3E-06                    | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_s(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                    | 4,8E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                    | 3,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                    | 8,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                    | 1,2E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                    | 1,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                    | 1,6E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,7E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,8E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,6E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,7E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,0E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,3E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                            | 3,5E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,7E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,9E-02                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,1E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,3E-02                         |
| 1000     | 2,0E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,4E-02                         |
| 2000     | 2,1E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 5,5E-02                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 6,3E-02                         |
| 4000     | 2,2E-01                          |                |                |                 |                            | 7,1E-02                         |
| 5000     | 2,3E-01                          |                |                |                 |                            | 7,7E-02                         |
| 6000     | 2,3E-01                          |                |                |                 |                            | 8,3E-02                         |
| 8000     |                                  |                |                |                 |                            | 9,4E-02                         |
| 10000    |                                  |                |                |                 |                            | 1,0E-01                         |



**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 2,8E-07                   | 4,2E-03                         |
| 2        |            | 9,6E-07                   | 1,1E-02                         |
| 3        |            | 1,3E-06                   | 1,4E-02                         |
| 4        |            | 1,6E-06                   | 1,6E-02                         |
| 5        |            | 1,7E-06                   | 1,8E-02                         |
| 6        |            | 1,8E-06                   | 1,9E-02                         |
| 7        |            | 1,9E-06                   | 1,9E-02                         |
| 8        |            | 2,0E-06                   | 2,0E-02                         |
| 9        |            | 2,0E-06                   | 2,0E-02                         |
| 10       |            | 2,1E-06                   | 2,1E-02                         |
| 14       |            | 2,2E-06                   | 2,2E-02                         |
| 15       |            | 2,2E-06                   | 2,2E-02                         |
| 20       |            | 2,3E-06                   | 2,3E-02                         |
| 30       |            | 2,5E-06                   | 2,5E-02                         |
| 40       |            | 2,6E-06                   | 2,6E-02                         |
| 45       |            | 2,7E-06                   | 2,7E-02                         |
| 50       |            | 2,8E-06                   | 2,8E-02                         |
| 60       |            | 2,9E-06                   | 2,9E-02                         |
| 70       |            | 3,0E-06                   | 3,0E-02                         |
| 80       |            | 3,1E-06                   | 3,1E-02                         |
| 90       |            | 3,2E-06                   | 3,2E-02                         |
| 100      |            | 3,3E-06                   | 3,3E-02                         |
| 120      |            | 3,5E-06                   | 3,5E-02                         |
| 180      |            | 3,9E-06                   | 3,9E-02                         |
| 200      |            | 4,1E-06                   | 4,1E-02                         |
| 300      |            | 4,7E-06                   | 4,7E-02                         |
| 360      |            | 5,0E-06                   | 5,0E-02                         |
| 400      |            | 5,2E-06                   | 5,2E-02                         |
| 500      |            | 5,7E-06                   | 5,7E-02                         |
| 600      |            | 6,2E-06                   | 6,2E-02                         |
| 700      |            | 6,6E-06                   | 6,6E-02                         |
| 800      |            | 7,1E-06                   | 7,1E-02                         |
| 900      |            | 7,5E-06                   | 7,5E-02                         |
| 1000     |            | 7,8E-06                   | 7,8E-02                         |
| 2000     |            | 1,1E-05                   | 1,1E-01                         |
| 3000     |            | 1,3E-05                   | 1,3E-01                         |
| 4000     |            | 1,5E-05                   | 1,5E-01                         |
| 5000     |            | 1,7E-05                   | 1,7E-01                         |
| 6000     |            | 1,8E-05                   | 1,8E-01                         |
| 8000     |            | 2,1E-05                   | 2,1E-01                         |
| 10000    |            | 2,3E-05                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-240**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 9,5E-02                   | 4,8E-04                         |
| 2        |            | 4,9E-01                   | 3,7E-03                         |
| 3        |            | 7,8E-01                   | 8,1E-03                         |
| 4        |            | 9,2E-01                   | 1,2E-02                         |
| 5        |            | 9,7E-01                   | 1,4E-02                         |
| 6        |            | 9,9E-01                   | 1,6E-02                         |
| 7        |            | 1,0E+00                   | 1,7E-02                         |
| 8        |            | 1,0E+00                   | 1,8E-02                         |
| 9        |            |                           | 1,9E-02                         |
| 10       |            |                           | 1,9E-02                         |
| 14       |            |                           | 2,0E-02                         |
| 15       |            |                           | 2,0E-02                         |
| 20       |            |                           | 2,1E-02                         |
| 30       |            |                           | 2,1E-02                         |
| 40       |            |                           | 2,1E-02                         |
| 45       |            |                           | 2,2E-02                         |
| 50       |            |                           | 2,2E-02                         |
| 60       |            |                           | 2,2E-02                         |
| 70       |            |                           | 2,3E-02                         |
| 80       |            |                           | 2,3E-02                         |
| 90       |            |                           | 2,3E-02                         |
| 100      |            |                           | 2,4E-02                         |
| 120      |            |                           | 2,4E-02                         |
| 180      |            |                           | 2,6E-02                         |
| 200      |            |                           | 2,7E-02                         |
| 300      |            |                           | 3,0E-02                         |
| 360      |            |                           | 3,2E-02                         |
| 400      |            |                           | 3,3E-02                         |
| 500      |            |                           | 3,5E-02                         |
| 600      |            |                           | 3,7E-02                         |
| 700      |            |                           | 3,9E-02                         |
| 800      |            |                           | 4,1E-02                         |
| 900      |            |                           | 4,3E-02                         |
| 1000     |            |                           | 4,4E-02                         |
| 2000     |            |                           | 5,5E-02                         |
| 3000     |            |                           | 6,3E-02                         |
| 4000     |            |                           | 7,1E-02                         |
| 5000     |            |                           | 7,7E-02                         |
| 6000     |            |                           | 8,3E-02                         |
| 8000     |            |                           | 9,4E-02                         |
| 10000    |            |                           | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 9,1E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,9E-05         | 1,4E-06                   | 4,2E-03                         |
| 2        | 2,4E-04                          | 2,6E-04        | <b>3,0E-04</b> | 2,5E-04         | 4,8E-06                   | 1,1E-02                         |
| 3        | 3,2E-04                          | 3,5E-04        | <b>4,0E-04</b> | 3,3E-04         | 6,7E-06                   | 1,4E-02                         |
| 4        | 3,8E-04                          | 4,1E-04        | <b>4,7E-04</b> | 3,9E-04         | 7,9E-06                   | 1,6E-02                         |
| 5        | 4,2E-04                          | 4,5E-04        | <b>5,1E-04</b> | 4,2E-04         | 8,7E-06                   | 1,8E-02                         |
| 6        | 4,5E-04                          | 4,9E-04        | <b>5,5E-04</b> | 4,5E-04         | 9,2E-06                   | 1,9E-02                         |
| 7        | 4,9E-04                          | 5,2E-04        | <b>5,7E-04</b> | 4,7E-04         | 9,6E-06                   | 1,9E-02                         |
| 8        | 5,1E-04                          | 5,4E-04        | <b>6,0E-04</b> | 4,9E-04         | 9,9E-06                   | 2,0E-02                         |
| 9        | 5,4E-04                          | 5,6E-04        | <b>6,2E-04</b> | 5,0E-04         | 1,0E-05                   | 2,0E-02                         |
| 10       | 5,6E-04                          | 5,8E-04        | <b>6,3E-04</b> | 5,1E-04         | 1,0E-05                   | 2,1E-02                         |
| 14       | 6,4E-04                          | 6,5E-04        | <b>6,8E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 15       | 6,6E-04                          | 6,7E-04        | <b>7,0E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 20       | 7,5E-04                          | 7,4E-04        | <b>7,5E-04</b> | 5,9E-04         | 1,2E-05                   | 2,3E-02                         |
| 30       | 9,2E-04                          | 8,8E-04        | <b>8,5E-04</b> | 6,5E-04         | 1,2E-05                   | 2,5E-02                         |
| 40       | 1,1E-03                          | 1,0E-03        | <b>9,4E-04</b> | 7,1E-04         | 1,3E-05                   | 2,6E-02                         |
| 45       | 1,2E-03                          | 1,1E-03        | <b>9,8E-04</b> | 7,4E-04         | 1,3E-05                   | 2,7E-02                         |
| 50       | 1,3E-03                          | 1,1E-03        | <b>1,0E-03</b> | 7,6E-04         | 1,4E-05                   | 2,8E-02                         |
| 60       | 1,4E-03                          | 1,3E-03        | <b>1,1E-03</b> | 8,1E-04         | 1,4E-05                   | 2,9E-02                         |
| 70       | 1,6E-03                          | 1,4E-03        | <b>1,2E-03</b> | 8,6E-04         | 1,5E-05                   | 3,0E-02                         |
| 80       | 1,7E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,1E-04         | 1,6E-05                   | 3,1E-02                         |
| 90       | 1,8E-03                          | 1,6E-03        | <b>1,3E-03</b> | 9,5E-04         | 1,6E-05                   | 3,2E-02                         |
| 100      | 2,0E-03                          | 1,7E-03        | <b>1,4E-03</b> | 9,9E-04         | 1,7E-05                   | 3,3E-02                         |
| 120      | 2,2E-03                          | 1,9E-03        | <b>1,5E-03</b> | 1,1E-03         | 1,7E-05                   | 3,5E-02                         |
| 180      | 2,9E-03                          | 2,4E-03        | <b>1,9E-03</b> | 1,3E-03         | 2,0E-05                   | 3,9E-02                         |
| 200      | 3,1E-03                          | 2,6E-03        | <b>2,0E-03</b> | 1,3E-03         | 2,0E-05                   | 4,1E-02                         |
| 300      | 4,0E-03                          | 3,3E-03        | <b>2,4E-03</b> | 1,6E-03         | 2,3E-05                   | 4,6E-02                         |
| 360      | 4,5E-03                          | 3,7E-03        | <b>2,7E-03</b> | 1,7E-03         | 2,5E-05                   | 4,9E-02                         |
| 400      | 4,8E-03                          | 3,9E-03        | <b>2,8E-03</b> | 1,8E-03         | 2,6E-05                   | 5,1E-02                         |
| 500      | 5,4E-03                          | 4,4E-03        | <b>3,1E-03</b> | 2,0E-03         | 2,8E-05                   | 5,6E-02                         |
| 600      | 6,0E-03                          | 4,8E-03        | <b>3,4E-03</b> | 2,2E-03         | 3,0E-05                   | 6,1E-02                         |
| 700      | 6,5E-03                          | 5,2E-03        | <b>3,7E-03</b> | 2,4E-03         | 3,2E-05                   | 6,5E-02                         |
| 800      | 7,0E-03                          | 5,6E-03        | <b>4,0E-03</b> | 2,5E-03         | 3,4E-05                   | 6,9E-02                         |
| 900      | 7,4E-03                          | 6,0E-03        | <b>4,2E-03</b> | 2,7E-03         | 3,6E-05                   | 7,2E-02                         |
| 1000     | 7,8E-03                          | 6,3E-03        | <b>4,4E-03</b> | 2,8E-03         | 3,8E-05                   | 7,6E-02                         |
| 2000     | 1,1E-02                          | 8,7E-03        | <b>6,1E-03</b> | 3,8E-03         | 5,1E-05                   | 1,0E-01                         |
| 3000     | 1,3E-02                          | 1,0E-02        | <b>7,1E-03</b> | 4,5E-03         | 5,9E-05                   | 1,2E-01                         |
| 4000     | 1,4E-02                          | 1,1E-02        | <b>7,8E-03</b> | 4,9E-03         | 6,4E-05                   | 1,3E-01                         |
| 5000     | 1,5E-02                          | 1,2E-02        | <b>8,4E-03</b> | 5,3E-03         | 6,9E-05                   | 1,4E-01                         |
| 6000     | 1,6E-02                          | 1,3E-02        | <b>8,8E-03</b> | 5,5E-03         | 7,2E-05                   | 1,4E-01                         |
| 8000     | 1,7E-02                          | 1,4E-02        | <b>9,4E-03</b> | 5,9E-03         | 7,8E-05                   | 1,6E-01                         |
| 10000    | 1,8E-02                          | 1,4E-02        | <b>9,9E-03</b> | 6,2E-03         | 8,1E-05                   | 1,6E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 4,8E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 3,7E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 8,1E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 1,2E-02                         |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01                   | 1,4E-02                         |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 1,6E-02                         |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,9E-01                   | 1,7E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,8E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,9E-02                         |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,2E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,3E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        |                |                 |                           | 2,4E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        |                |                 |                           | 2,4E-02                         |
| 180      | 1,3E-01                          | 2,5E-01        |                |                 |                           | 2,6E-02                         |
| 200      | 1,3E-01                          | 2,6E-01        |                |                 |                           | 2,7E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        |                |                 |                           | 3,0E-02                         |
| 360      | 1,3E-01                          |                |                |                 |                           | 3,2E-02                         |
| 400      | 1,3E-01                          |                |                |                 |                           | 3,3E-02                         |
| 500      | 1,3E-01                          |                |                |                 |                           | 3,5E-02                         |
| 600      | 1,3E-01                          |                |                |                 |                           | 3,7E-02                         |
| 700      | 1,4E-01                          |                |                |                 |                           | 3,9E-02                         |
| 800      | 1,4E-01                          |                |                |                 |                           | 4,0E-02                         |
| 900      |                                  |                |                |                 |                           | 4,2E-02                         |
| 1000     |                                  |                |                |                 |                           | 4,3E-02                         |
| 2000     |                                  |                |                |                 |                           | 5,2E-02                         |
| 3000     |                                  |                |                |                 |                           | 5,8E-02                         |
| 4000     |                                  |                |                |                 |                           | 6,2E-02                         |
| 5000     |                                  |                |                |                 |                           | 6,6E-02                         |
| 6000     |                                  |                |                |                 |                           | 6,9E-02                         |
| 8000     |                                  |                |                |                 |                           | 7,3E-02                         |
| 10000    |                                  |                |                |                 |                           | 7,7E-02                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 9,2E-07                          | 1,0E-06        | <b>1,2E-06</b> | 1,0E-06         | 2,8E-08                    | 4,2E-03                         |
| 2        | 2,5E-06                          | 2,7E-06        | <b>3,1E-06</b> | 2,6E-06         | 9,6E-08                    | 1,1E-02                         |
| 3        | 3,4E-06                          | 3,7E-06        | <b>4,1E-06</b> | 3,4E-06         | 1,3E-07                    | 1,4E-02                         |
| 4        | 4,1E-06                          | 4,4E-06        | <b>4,8E-06</b> | 4,0E-06         | 1,6E-07                    | 1,6E-02                         |
| 5        | 4,7E-06                          | 4,9E-06        | <b>5,4E-06</b> | 4,4E-06         | 1,7E-07                    | 1,8E-02                         |
| 6        | 5,2E-06                          | 5,4E-06        | <b>5,8E-06</b> | 4,6E-06         | 1,8E-07                    | 1,9E-02                         |
| 7        | 5,7E-06                          | 5,8E-06        | <b>6,1E-06</b> | 4,9E-06         | 1,9E-07                    | 1,9E-02                         |
| 8        | 6,1E-06                          | 6,2E-06        | <b>6,4E-06</b> | 5,1E-06         | 2,0E-07                    | 2,0E-02                         |
| 9        | 6,6E-06                          | 6,5E-06        | <b>6,7E-06</b> | 5,3E-06         | 2,0E-07                    | 2,0E-02                         |
| 10       | 7,0E-06                          | 6,9E-06        | <b>6,9E-06</b> | 5,4E-06         | 2,1E-07                    | 2,1E-02                         |
| 14       | 8,6E-06                          | 8,1E-06        | <b>7,7E-06</b> | 5,9E-06         | 2,2E-07                    | 2,2E-02                         |
| 15       | 8,9E-06                          | 8,4E-06        | <b>7,9E-06</b> | 6,0E-06         | 2,2E-07                    | 2,2E-02                         |
| 20       | 1,1E-05                          | 9,8E-06        | <b>8,8E-06</b> | 6,5E-06         | 2,3E-07                    | 2,3E-02                         |
| 30       | 1,5E-05                          | 1,3E-05        | <b>1,1E-05</b> | 7,5E-06         | 2,5E-07                    | 2,5E-02                         |
| 40       | 1,8E-05                          | 1,5E-05        | <b>1,2E-05</b> | 8,4E-06         | 2,6E-07                    | 2,6E-02                         |
| 45       | 2,0E-05                          | 1,7E-05        | <b>1,3E-05</b> | 8,9E-06         | 2,7E-07                    | 2,7E-02                         |
| 50       | 2,2E-05                          | 1,8E-05        | <b>1,4E-05</b> | 9,3E-06         | 2,8E-07                    | 2,8E-02                         |
| 60       | 2,6E-05                          | 2,1E-05        | <b>1,6E-05</b> | 1,0E-05         | 2,9E-07                    | 2,9E-02                         |
| 70       | 3,0E-05                          | 2,4E-05        | <b>1,7E-05</b> | 1,1E-05         | 3,0E-07                    | 3,0E-02                         |
| 80       | 3,3E-05                          | 2,7E-05        | <b>1,9E-05</b> | 1,2E-05         | 3,1E-07                    | 3,1E-02                         |
| 90       | 3,7E-05                          | 3,0E-05        | <b>2,0E-05</b> | 1,3E-05         | 3,2E-07                    | 3,2E-02                         |
| 100      | 4,1E-05                          | 3,2E-05        | <b>2,2E-05</b> | 1,4E-05         | 3,3E-07                    | 3,3E-02                         |
| 120      | 4,9E-05                          | 3,8E-05        | <b>2,5E-05</b> | 1,5E-05         | 3,5E-07                    | 3,5E-02                         |
| 180      | 7,2E-05                          | 5,5E-05        | <b>3,4E-05</b> | 2,0E-05         | 3,9E-07                    | 3,9E-02                         |
| 200      | 8,0E-05                          | 6,1E-05        | <b>3,8E-05</b> | 2,1E-05         | 4,1E-07                    | 4,1E-02                         |
| 300      | 1,2E-04                          | 9,0E-05        | <b>5,3E-05</b> | 2,9E-05         | 4,6E-07                    | 4,6E-02                         |
| 360      | 1,4E-04                          | 1,1E-04        | <b>6,3E-05</b> | 3,4E-05         | 4,9E-07                    | 4,9E-02                         |
| 400      | 1,6E-04                          | 1,2E-04        | <b>6,9E-05</b> | 3,7E-05         | 5,1E-07                    | 5,1E-02                         |
| 500      | 2,0E-04                          | 1,5E-04        | <b>8,5E-05</b> | 4,5E-05         | 5,6E-07                    | 5,6E-02                         |
| 600      | 2,4E-04                          | 1,8E-04        | <b>1,0E-04</b> | 5,2E-05         | 6,1E-07                    | 6,1E-02                         |
| 700      | 2,9E-04                          | 2,1E-04        | <b>1,2E-04</b> | 6,0E-05         | 6,5E-07                    | 6,5E-02                         |
| 800      | 3,3E-04                          | 2,4E-04        | <b>1,3E-04</b> | 6,8E-05         | 6,8E-07                    | 6,9E-02                         |
| 900      | 3,7E-04                          | 2,7E-04        | <b>1,5E-04</b> | 7,5E-05         | 7,2E-07                    | 7,2E-02                         |
| 1000     | 4,1E-04                          | 3,0E-04        | <b>1,7E-04</b> | 8,3E-05         | 7,6E-07                    | 7,6E-02                         |
| 2000     | 7,8E-04                          | 5,7E-04        | <b>3,0E-04</b> | 1,5E-04         | 1,0E-06                    | 1,0E-01                         |
| 3000     | 1,1E-03                          | 7,7E-04        | <b>4,1E-04</b> | 2,0E-04         | 1,2E-06                    | 1,2E-01                         |
| 4000     | 1,3E-03                          | 9,2E-04        | <b>4,9E-04</b> | 2,4E-04         | 1,3E-06                    | 1,3E-01                         |
| 5000     | 1,4E-03                          | 1,0E-03        | <b>5,5E-04</b> | 2,7E-04         | 1,4E-06                    | 1,4E-01                         |
| 6000     | 1,6E-03                          | 1,1E-03        | <b>6,0E-04</b> | 2,9E-04         | 1,4E-06                    | 1,4E-01                         |
| 8000     | 1,8E-03                          | 1,3E-03        | <b>6,8E-04</b> | 3,3E-04         | 1,6E-06                    | 1,6E-01                         |
| 10000    | 1,9E-03                          | 1,4E-03        | <b>7,3E-04</b> | 3,5E-04         | 1,6E-06                    | 1,6E-01                         |

**Ausscheidungsrate über den Stuhl  $E_s(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                    | 4,8E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                    | 3,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                    | 8,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                    | 1,2E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                    | 1,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                    | 1,6E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,7E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,8E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 80       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 120      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,6E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,7E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,0E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,3E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                            | 3,5E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,7E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,9E-02                         |
| 800      | 1,9E-01                          | 3,0E-01        | <b>4,6E-01</b> |                 |                            | 4,0E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,2E-02                         |
| 1000     | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,3E-02                         |
| 2000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                            | 5,2E-02                         |
| 3000     | 2,1E-01                          | 3,2E-01        | <b>4,7E-01</b> |                 |                            | 5,8E-02                         |
| 4000     | 2,1E-01                          | 3,3E-01        |                |                 |                            | 6,2E-02                         |
| 5000     | 2,2E-01                          | 3,3E-01        |                |                 |                            | 6,6E-02                         |
| 6000     | 2,2E-01                          |                |                |                 |                            | 6,9E-02                         |
| 8000     |                                  |                |                |                 |                            | 7,3E-02                         |
| 10000    |                                  |                |                |                 |                            | 7,7E-02                         |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 2,8E-07                   | 4,2E-03                         |
| 2        |            | 9,6E-07                   | 1,1E-02                         |
| 3        |            | 1,3E-06                   | 1,4E-02                         |
| 4        |            | 1,6E-06                   | 1,6E-02                         |
| 5        |            | 1,7E-06                   | 1,8E-02                         |
| 6        |            | 1,8E-06                   | 1,9E-02                         |
| 7        |            | 1,9E-06                   | 1,9E-02                         |
| 8        |            | 2,0E-06                   | 2,0E-02                         |
| 9        |            | 2,0E-06                   | 2,0E-02                         |
| 10       |            | 2,1E-06                   | 2,1E-02                         |
| 14       |            | 2,2E-06                   | 2,2E-02                         |
| 15       |            | 2,2E-06                   | 2,2E-02                         |
| 20       |            | 2,3E-06                   | 2,3E-02                         |
| 30       |            | 2,5E-06                   | 2,5E-02                         |
| 40       |            | 2,6E-06                   | 2,6E-02                         |
| 45       |            | 2,7E-06                   | 2,7E-02                         |
| 50       |            | 2,8E-06                   | 2,8E-02                         |
| 60       |            | 2,9E-06                   | 2,9E-02                         |
| 70       |            | 3,0E-06                   | 3,0E-02                         |
| 80       |            | 3,1E-06                   | 3,1E-02                         |
| 90       |            | 3,2E-06                   | 3,2E-02                         |
| 100      |            | 3,3E-06                   | 3,3E-02                         |
| 120      |            | 3,5E-06                   | 3,5E-02                         |
| 180      |            | 3,9E-06                   | 3,9E-02                         |
| 200      |            | 4,1E-06                   | 4,1E-02                         |
| 300      |            | 4,6E-06                   | 4,6E-02                         |
| 360      |            | 4,9E-06                   | 4,9E-02                         |
| 400      |            | 5,1E-06                   | 5,1E-02                         |
| 500      |            | 5,6E-06                   | 5,6E-02                         |
| 600      |            | 6,1E-06                   | 6,1E-02                         |
| 700      |            | 6,5E-06                   | 6,5E-02                         |
| 800      |            | 6,8E-06                   | 6,9E-02                         |
| 900      |            | 7,2E-06                   | 7,2E-02                         |
| 1000     |            | 7,6E-06                   | 7,6E-02                         |
| 2000     |            | 1,0E-05                   | 1,0E-01                         |
| 3000     |            | 1,2E-05                   | 1,2E-01                         |
| 4000     |            | 1,3E-05                   | 1,3E-01                         |
| 5000     |            | 1,4E-05                   | 1,4E-01                         |
| 6000     |            | 1,4E-05                   | 1,4E-01                         |
| 8000     |            | 1,6E-05                   | 1,6E-01                         |
| 10000    |            | 1,6E-05                   | 1,6E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Pu-241**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 9,5E-02                   | 4,8E-04                         |
| 2        |            | 4,9E-01                   | 3,7E-03                         |
| 3        |            | 7,8E-01                   | 8,1E-03                         |
| 4        |            | 9,2E-01                   | 1,2E-02                         |
| 5        |            | 9,7E-01                   | 1,4E-02                         |
| 6        |            | 9,9E-01                   | 1,6E-02                         |
| 7        |            | 1,0E+00                   | 1,7E-02                         |
| 8        |            | 1,0E+00                   | 1,8E-02                         |
| 9        |            |                           | 1,9E-02                         |
| 10       |            |                           | 1,9E-02                         |
| 14       |            |                           | 2,0E-02                         |
| 15       |            |                           | 2,0E-02                         |
| 20       |            |                           | 2,1E-02                         |
| 30       |            |                           | 2,1E-02                         |
| 40       |            |                           | 2,1E-02                         |
| 45       |            |                           | 2,2E-02                         |
| 50       |            |                           | 2,2E-02                         |
| 60       |            |                           | 2,2E-02                         |
| 70       |            |                           | 2,3E-02                         |
| 80       |            |                           | 2,3E-02                         |
| 90       |            |                           | 2,3E-02                         |
| 100      |            |                           | 2,4E-02                         |
| 120      |            |                           | 2,4E-02                         |
| 180      |            |                           | 2,6E-02                         |
| 200      |            |                           | 2,7E-02                         |
| 300      |            |                           | 3,0E-02                         |
| 360      |            |                           | 3,2E-02                         |
| 400      |            |                           | 3,3E-02                         |
| 500      |            |                           | 3,5E-02                         |
| 600      |            |                           | 3,7E-02                         |
| 700      |            |                           | 3,9E-02                         |
| 800      |            |                           | 4,0E-02                         |
| 900      |            |                           | 4,2E-02                         |
| 1000     |            |                           | 4,3E-02                         |
| 2000     |            |                           | 5,2E-02                         |
| 3000     |            |                           | 5,8E-02                         |
| 4000     |            |                           | 6,2E-02                         |
| 5000     |            |                           | 6,6E-02                         |
| 6000     |            |                           | 6,9E-02                         |
| 8000     |            |                           | 7,3E-02                         |
| 10000    |            |                           | 7,7E-02                         |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 9,1E-05                          | 1,0E-04        | <b>1,2E-04</b> | 9,9E-05         | 1,4E-06                   | 4,2E-03                         |
| 2        | 2,4E-04                          | 2,6E-04        | <b>3,0E-04</b> | 2,5E-04         | 4,8E-06                   | 1,1E-02                         |
| 3        | 3,2E-04                          | 3,5E-04        | <b>4,0E-04</b> | 3,3E-04         | 6,7E-06                   | 1,4E-02                         |
| 4        | 3,8E-04                          | 4,1E-04        | <b>4,7E-04</b> | 3,9E-04         | 7,9E-06                   | 1,6E-02                         |
| 5        | 4,2E-04                          | 4,5E-04        | <b>5,1E-04</b> | 4,2E-04         | 8,7E-06                   | 1,8E-02                         |
| 6        | 4,5E-04                          | 4,9E-04        | <b>5,5E-04</b> | 4,5E-04         | 9,2E-06                   | 1,9E-02                         |
| 7        | 4,9E-04                          | 5,2E-04        | <b>5,8E-04</b> | 4,7E-04         | 9,6E-06                   | 1,9E-02                         |
| 8        | 5,1E-04                          | 5,4E-04        | <b>6,0E-04</b> | 4,9E-04         | 9,9E-06                   | 2,0E-02                         |
| 9        | 5,4E-04                          | 5,6E-04        | <b>6,2E-04</b> | 5,0E-04         | 1,0E-05                   | 2,0E-02                         |
| 10       | 5,6E-04                          | 5,8E-04        | <b>6,3E-04</b> | 5,1E-04         | 1,0E-05                   | 2,1E-02                         |
| 14       | 6,4E-04                          | 6,5E-04        | <b>6,8E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 15       | 6,6E-04                          | 6,7E-04        | <b>7,0E-04</b> | 5,5E-04         | 1,1E-05                   | 2,2E-02                         |
| 20       | 7,5E-04                          | 7,4E-04        | <b>7,5E-04</b> | 5,9E-04         | 1,2E-05                   | 2,3E-02                         |
| 30       | 9,2E-04                          | 8,8E-04        | <b>8,5E-04</b> | 6,5E-04         | 1,2E-05                   | 2,5E-02                         |
| 40       | 1,1E-03                          | 1,0E-03        | <b>9,4E-04</b> | 7,1E-04         | 1,3E-05                   | 2,6E-02                         |
| 45       | 1,2E-03                          | 1,1E-03        | <b>9,8E-04</b> | 7,4E-04         | 1,3E-05                   | 2,7E-02                         |
| 50       | 1,3E-03                          | 1,1E-03        | <b>1,0E-03</b> | 7,6E-04         | 1,4E-05                   | 2,8E-02                         |
| 60       | 1,4E-03                          | 1,3E-03        | <b>1,1E-03</b> | 8,2E-04         | 1,4E-05                   | 2,9E-02                         |
| 70       | 1,6E-03                          | 1,4E-03        | <b>1,2E-03</b> | 8,6E-04         | 1,5E-05                   | 3,0E-02                         |
| 80       | 1,7E-03                          | 1,5E-03        | <b>1,3E-03</b> | 9,1E-04         | 1,6E-05                   | 3,1E-02                         |
| 90       | 1,8E-03                          | 1,6E-03        | <b>1,3E-03</b> | 9,5E-04         | 1,6E-05                   | 3,2E-02                         |
| 100      | 2,0E-03                          | 1,7E-03        | <b>1,4E-03</b> | 1,0E-03         | 1,7E-05                   | 3,3E-02                         |
| 120      | 2,2E-03                          | 1,9E-03        | <b>1,5E-03</b> | 1,1E-03         | 1,7E-05                   | 3,5E-02                         |
| 180      | 2,9E-03                          | 2,5E-03        | <b>1,9E-03</b> | 1,3E-03         | 2,0E-05                   | 3,9E-02                         |
| 200      | 3,2E-03                          | 2,6E-03        | <b>2,0E-03</b> | 1,3E-03         | 2,0E-05                   | 4,1E-02                         |
| 300      | 4,1E-03                          | 3,4E-03        | <b>2,5E-03</b> | 1,6E-03         | 2,3E-05                   | 4,7E-02                         |
| 360      | 4,6E-03                          | 3,7E-03        | <b>2,7E-03</b> | 1,8E-03         | 2,5E-05                   | 5,0E-02                         |
| 400      | 4,9E-03                          | 4,0E-03        | <b>2,9E-03</b> | 1,9E-03         | 2,6E-05                   | 5,2E-02                         |
| 500      | 5,6E-03                          | 4,5E-03        | <b>3,2E-03</b> | 2,1E-03         | 2,9E-05                   | 5,7E-02                         |
| 600      | 6,2E-03                          | 5,0E-03        | <b>3,5E-03</b> | 2,3E-03         | 3,1E-05                   | 6,2E-02                         |
| 700      | 6,7E-03                          | 5,4E-03        | <b>3,8E-03</b> | 2,4E-03         | 3,3E-05                   | 6,6E-02                         |
| 800      | 7,3E-03                          | 5,8E-03        | <b>4,1E-03</b> | 2,6E-03         | 3,5E-05                   | 7,1E-02                         |
| 900      | 7,8E-03                          | 6,2E-03        | <b>4,4E-03</b> | 2,8E-03         | 3,7E-05                   | 7,5E-02                         |
| 1000     | 8,2E-03                          | 6,6E-03        | <b>4,6E-03</b> | 2,9E-03         | 3,9E-05                   | 7,8E-02                         |
| 2000     | 1,2E-02                          | 9,5E-03        | <b>6,6E-03</b> | 4,2E-03         | 5,5E-05                   | 1,1E-01                         |
| 3000     | 1,5E-02                          | 1,2E-02        | <b>8,0E-03</b> | 5,1E-03         | 6,6E-05                   | 1,3E-01                         |
| 4000     | 1,7E-02                          | 1,3E-02        | <b>9,2E-03</b> | 5,8E-03         | 7,5E-05                   | 1,5E-01                         |
| 5000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,4E-03         | 8,3E-05                   | 1,7E-01                         |
| 6000     | 2,0E-02                          | 1,6E-02        | <b>1,1E-02</b> | 7,0E-03         | 9,0E-05                   | 1,8E-01                         |
| 8000     | 2,3E-02                          | 1,8E-02        | <b>1,3E-02</b> | 8,0E-03         | 1,0E-04                   | 2,1E-01                         |
| 10000    | 2,6E-02                          | 2,0E-02        | <b>1,4E-02</b> | 8,9E-03         | 1,1E-04                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion<br>$f_1=0,0005$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|---------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                           |                                 |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02                   | 4,8E-04                         |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01                   | 3,7E-03                         |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01                   | 8,1E-03                         |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01                   | 1,2E-02                         |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01                   | 1,4E-02                         |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01                   | 1,6E-02                         |
| 7        | 7,8E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,7E-02                         |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00                   | 1,8E-02                         |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 10       | 8,2E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 1,9E-02                         |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,0E-02                         |
| 20       | 9,2E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,1E-02                         |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |                           | 2,2E-02                         |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,2E-02                         |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |                           | 2,3E-02                         |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,3E-02                         |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |                           | 2,4E-02                         |
| 180      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,6E-02                         |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 2,7E-02                         |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,0E-02                         |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,2E-02                         |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,3E-02                         |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,5E-02                         |
| 600      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,7E-02                         |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 3,9E-02                         |
| 800      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,1E-02                         |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,3E-02                         |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 4,4E-02                         |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 5,5E-02                         |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 6,3E-02                         |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,1E-02                         |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 7,7E-02                         |
| 6000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |                           | 8,3E-02                         |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 9,4E-02                         |
| 10000    |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |                           | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 9,2E-07                          | 1,0E-06        | <b>1,2E-06</b> | 1,0E-06         | 2,8E-08                    | 4,2E-03                         |
| 2        | 2,5E-06                          | 2,7E-06        | <b>3,1E-06</b> | 2,6E-06         | 9,6E-08                    | 1,1E-02                         |
| 3        | 3,4E-06                          | 3,7E-06        | <b>4,2E-06</b> | 3,4E-06         | 1,3E-07                    | 1,4E-02                         |
| 4        | 4,1E-06                          | 4,4E-06        | <b>4,9E-06</b> | 4,0E-06         | 1,6E-07                    | 1,6E-02                         |
| 5        | 4,7E-06                          | 4,9E-06        | <b>5,4E-06</b> | 4,4E-06         | 1,7E-07                    | 1,8E-02                         |
| 6        | 5,2E-06                          | 5,4E-06        | <b>5,8E-06</b> | 4,7E-06         | 1,8E-07                    | 1,9E-02                         |
| 7        | 5,7E-06                          | 5,8E-06        | <b>6,1E-06</b> | 4,9E-06         | 1,9E-07                    | 1,9E-02                         |
| 8        | 6,2E-06                          | 6,2E-06        | <b>6,4E-06</b> | 5,1E-06         | 2,0E-07                    | 2,0E-02                         |
| 9        | 6,6E-06                          | 6,5E-06        | <b>6,7E-06</b> | 5,3E-06         | 2,0E-07                    | 2,0E-02                         |
| 10       | 7,0E-06                          | 6,9E-06        | <b>6,9E-06</b> | 5,4E-06         | 2,1E-07                    | 2,1E-02                         |
| 14       | 8,6E-06                          | 8,1E-06        | <b>7,7E-06</b> | 5,9E-06         | 2,2E-07                    | 2,2E-02                         |
| 15       | 8,9E-06                          | 8,4E-06        | <b>7,9E-06</b> | 6,0E-06         | 2,2E-07                    | 2,2E-02                         |
| 20       | 1,1E-05                          | 9,8E-06        | <b>8,8E-06</b> | 6,5E-06         | 2,3E-07                    | 2,3E-02                         |
| 30       | 1,5E-05                          | 1,3E-05        | <b>1,1E-05</b> | 7,5E-06         | 2,5E-07                    | 2,5E-02                         |
| 40       | 1,8E-05                          | 1,6E-05        | <b>1,2E-05</b> | 8,4E-06         | 2,6E-07                    | 2,6E-02                         |
| 45       | 2,0E-05                          | 1,7E-05        | <b>1,3E-05</b> | 8,9E-06         | 2,7E-07                    | 2,7E-02                         |
| 50       | 2,2E-05                          | 1,8E-05        | <b>1,4E-05</b> | 9,3E-06         | 2,8E-07                    | 2,8E-02                         |
| 60       | 2,6E-05                          | 2,1E-05        | <b>1,6E-05</b> | 1,0E-05         | 2,9E-07                    | 2,9E-02                         |
| 70       | 3,0E-05                          | 2,4E-05        | <b>1,7E-05</b> | 1,1E-05         | 3,0E-07                    | 3,0E-02                         |
| 80       | 3,4E-05                          | 2,7E-05        | <b>1,9E-05</b> | 1,2E-05         | 3,1E-07                    | 3,1E-02                         |
| 90       | 3,7E-05                          | 3,0E-05        | <b>2,0E-05</b> | 1,3E-05         | 3,2E-07                    | 3,2E-02                         |
| 100      | 4,1E-05                          | 3,3E-05        | <b>2,2E-05</b> | 1,4E-05         | 3,3E-07                    | 3,3E-02                         |
| 120      | 4,9E-05                          | 3,8E-05        | <b>2,5E-05</b> | 1,5E-05         | 3,5E-07                    | 3,5E-02                         |
| 180      | 7,3E-05                          | 5,6E-05        | <b>3,5E-05</b> | 2,0E-05         | 3,9E-07                    | 3,9E-02                         |
| 200      | 8,1E-05                          | 6,2E-05        | <b>3,8E-05</b> | 2,2E-05         | 4,1E-07                    | 4,1E-02                         |
| 300      | 1,2E-04                          | 9,2E-05        | <b>5,4E-05</b> | 3,0E-05         | 4,7E-07                    | 4,7E-02                         |
| 360      | 1,5E-04                          | 1,1E-04        | <b>6,4E-05</b> | 3,4E-05         | 5,0E-07                    | 5,0E-02                         |
| 400      | 1,7E-04                          | 1,2E-04        | <b>7,1E-05</b> | 3,8E-05         | 5,2E-07                    | 5,2E-02                         |
| 500      | 2,1E-04                          | 1,6E-04        | <b>8,8E-05</b> | 4,6E-05         | 5,7E-07                    | 5,7E-02                         |
| 600      | 2,5E-04                          | 1,9E-04        | <b>1,1E-04</b> | 5,4E-05         | 6,2E-07                    | 6,2E-02                         |
| 700      | 3,0E-04                          | 2,2E-04        | <b>1,2E-04</b> | 6,3E-05         | 6,6E-07                    | 6,6E-02                         |
| 800      | 3,5E-04                          | 2,6E-04        | <b>1,4E-04</b> | 7,1E-05         | 7,1E-07                    | 7,1E-02                         |
| 900      | 3,9E-04                          | 2,9E-04        | <b>1,6E-04</b> | 8,0E-05         | 7,5E-07                    | 7,5E-02                         |
| 1000     | 4,4E-04                          | 3,2E-04        | <b>1,8E-04</b> | 8,8E-05         | 7,8E-07                    | 7,8E-02                         |
| 2000     | 8,9E-04                          | 6,5E-04        | <b>3,5E-04</b> | 1,7E-04         | 1,1E-06                    | 1,1E-01                         |
| 3000     | 1,3E-03                          | 9,3E-04        | <b>4,9E-04</b> | 2,4E-04         | 1,3E-06                    | 1,3E-01                         |
| 4000     | 1,6E-03                          | 1,2E-03        | <b>6,2E-04</b> | 3,0E-04         | 1,5E-06                    | 1,5E-01                         |
| 5000     | 1,9E-03                          | 1,4E-03        | <b>7,3E-04</b> | 3,5E-04         | 1,7E-06                    | 1,7E-01                         |
| 6000     | 2,2E-03                          | 1,6E-03        | <b>8,4E-04</b> | 4,0E-04         | 1,8E-06                    | 1,8E-01                         |
| 8000     | 2,7E-03                          | 1,9E-03        | <b>1,0E-03</b> | 4,9E-04         | 2,1E-06                    | 2,1E-01                         |
| 10000    | 3,1E-03                          | 2,3E-03        | <b>1,2E-03</b> | 5,8E-04         | 2,3E-06                    | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_s(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation (Absorptionsklasse S) |                |                |                 | Ingestion<br>$f_1=0,00001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|----------------------------|---------------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |                            |                                 |
| 1        | 6,0E-03                          | 2,0E-02        | <b>3,8E-02</b> | 3,6E-02         | 9,5E-02                    | 4,8E-04                         |
| 2        | 3,4E-02                          | 1,1E-01        | <b>2,0E-01</b> | 1,9E-01         | 4,9E-01                    | 3,7E-03                         |
| 3        | 5,8E-02                          | 1,8E-01        | <b>3,2E-01</b> | 3,1E-01         | 7,8E-01                    | 8,1E-03                         |
| 4        | 7,1E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,6E-01         | 9,2E-01                    | 1,2E-02                         |
| 5        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,7E-01                    | 1,4E-02                         |
| 6        | 8,0E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,9E-01         | 9,9E-01                    | 1,6E-02                         |
| 7        | 8,3E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,7E-02                         |
| 8        | 8,4E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         | 1,0E+00                    | 1,8E-02                         |
| 9        | 8,6E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 10       | 8,7E-02                          | 2,3E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 1,9E-02                         |
| 14       | 9,2E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 15       | 9,3E-02                          | 2,4E-01        | <b>4,2E-01</b> | 4,0E-01         |                            | 2,0E-02                         |
| 20       | 9,9E-02                          | 2,4E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 30       | 1,1E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 40       | 1,2E-01                          | 2,5E-01        | <b>4,3E-01</b> | 4,0E-01         |                            | 2,1E-02                         |
| 45       | 1,2E-01                          | 2,6E-01        | <b>4,3E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 50       | 1,2E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 60       | 1,3E-01                          | 2,6E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,2E-02                         |
| 70       | 1,3E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 80       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 90       | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,3E-02                         |
| 100      | 1,4E-01                          | 2,7E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 120      | 1,4E-01                          | 2,8E-01        | <b>4,4E-01</b> | 4,1E-01         |                            | 2,4E-02                         |
| 180      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,6E-02                         |
| 200      | 1,5E-01                          | 2,8E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 2,7E-02                         |
| 300      | 1,6E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,0E-02                         |
| 360      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,2E-02                         |
| 400      | 1,7E-01                          | 2,9E-01        | <b>4,5E-01</b> | 4,1E-01         |                            | 3,3E-02                         |
| 500      | 1,7E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,1E-01         |                            | 3,5E-02                         |
| 600      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,7E-02                         |
| 700      | 1,8E-01                          | 3,0E-01        | <b>4,6E-01</b> | 4,2E-01         |                            | 3,9E-02                         |
| 800      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,1E-02                         |
| 900      | 1,9E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,3E-02                         |
| 1000     | 2,0E-01                          | 3,1E-01        | <b>4,6E-01</b> |                 |                            | 4,4E-02                         |
| 2000     | 2,1E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 5,5E-02                         |
| 3000     | 2,2E-01                          | 3,3E-01        | <b>4,7E-01</b> |                 |                            | 6,3E-02                         |
| 4000     | 2,2E-01                          |                |                |                 |                            | 7,1E-02                         |
| 5000     | 2,3E-01                          |                |                |                 |                            | 7,7E-02                         |
| 6000     | 2,3E-01                          |                |                |                 |                            | 8,3E-02                         |
| 8000     |                                  |                |                |                 |                            | 9,4E-02                         |
| 10000    |                                  |                |                |                 |                            | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 2,8E-07                   | 4,2E-03                         |
| 2        |            | 9,6E-07                   | 1,1E-02                         |
| 3        |            | 1,3E-06                   | 1,4E-02                         |
| 4        |            | 1,6E-06                   | 1,6E-02                         |
| 5        |            | 1,7E-06                   | 1,8E-02                         |
| 6        |            | 1,8E-06                   | 1,9E-02                         |
| 7        |            | 1,9E-06                   | 1,9E-02                         |
| 8        |            | 2,0E-06                   | 2,0E-02                         |
| 9        |            | 2,0E-06                   | 2,0E-02                         |
| 10       |            | 2,1E-06                   | 2,1E-02                         |
| 14       |            | 2,2E-06                   | 2,2E-02                         |
| 15       |            | 2,2E-06                   | 2,2E-02                         |
| 20       |            | 2,3E-06                   | 2,3E-02                         |
| 30       |            | 2,5E-06                   | 2,5E-02                         |
| 40       |            | 2,6E-06                   | 2,6E-02                         |
| 45       |            | 2,7E-06                   | 2,7E-02                         |
| 50       |            | 2,8E-06                   | 2,8E-02                         |
| 60       |            | 2,9E-06                   | 2,9E-02                         |
| 70       |            | 3,0E-06                   | 3,0E-02                         |
| 80       |            | 3,1E-06                   | 3,1E-02                         |
| 90       |            | 3,2E-06                   | 3,2E-02                         |
| 100      |            | 3,3E-06                   | 3,3E-02                         |
| 120      |            | 3,5E-06                   | 3,5E-02                         |
| 180      |            | 3,9E-06                   | 3,9E-02                         |
| 200      |            | 4,1E-06                   | 4,1E-02                         |
| 300      |            | 4,7E-06                   | 4,7E-02                         |
| 360      |            | 5,0E-06                   | 5,0E-02                         |
| 400      |            | 5,2E-06                   | 5,2E-02                         |
| 500      |            | 5,7E-06                   | 5,7E-02                         |
| 600      |            | 6,2E-06                   | 6,2E-02                         |
| 700      |            | 6,6E-06                   | 6,6E-02                         |
| 800      |            | 7,1E-06                   | 7,1E-02                         |
| 900      |            | 7,5E-06                   | 7,5E-02                         |
| 1000     |            | 7,8E-06                   | 7,8E-02                         |
| 2000     |            | 1,1E-05                   | 1,1E-01                         |
| 3000     |            | 1,3E-05                   | 1,3E-01                         |
| 4000     |            | 1,5E-05                   | 1,5E-01                         |
| 5000     |            | 1,7E-05                   | 1,7E-01                         |
| 6000     |            | 1,8E-05                   | 1,8E-01                         |
| 8000     |            | 2,1E-05                   | 2,1E-01                         |
| 10000    |            | 2,3E-05                   | 2,3E-01                         |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1} / Bq \cdot d^{-1}$ )

**Pu-242**

| Zeit (d) | Inhalation | Ingestion<br>$f_1=0,0001$ | direkte<br>Aufnahme<br>ins Blut |
|----------|------------|---------------------------|---------------------------------|
| 1        |            | 9,5E-02                   | 4,8E-04                         |
| 2        |            | 4,9E-01                   | 3,7E-03                         |
| 3        |            | 7,8E-01                   | 8,1E-03                         |
| 4        |            | 9,2E-01                   | 1,2E-02                         |
| 5        |            | 9,7E-01                   | 1,4E-02                         |
| 6        |            | 9,9E-01                   | 1,6E-02                         |
| 7        |            | 1,0E+00                   | 1,7E-02                         |
| 8        |            | 1,0E+00                   | 1,8E-02                         |
| 9        |            |                           | 1,9E-02                         |
| 10       |            |                           | 1,9E-02                         |
| 14       |            |                           | 2,0E-02                         |
| 15       |            |                           | 2,0E-02                         |
| 20       |            |                           | 2,1E-02                         |
| 30       |            |                           | 2,1E-02                         |
| 40       |            |                           | 2,1E-02                         |
| 45       |            |                           | 2,2E-02                         |
| 50       |            |                           | 2,2E-02                         |
| 60       |            |                           | 2,2E-02                         |
| 70       |            |                           | 2,3E-02                         |
| 80       |            |                           | 2,3E-02                         |
| 90       |            |                           | 2,3E-02                         |
| 100      |            |                           | 2,4E-02                         |
| 120      |            |                           | 2,4E-02                         |
| 180      |            |                           | 2,6E-02                         |
| 200      |            |                           | 2,7E-02                         |
| 300      |            |                           | 3,0E-02                         |
| 360      |            |                           | 3,2E-02                         |
| 400      |            |                           | 3,3E-02                         |
| 500      |            |                           | 3,5E-02                         |
| 600      |            |                           | 3,7E-02                         |
| 700      |            |                           | 3,9E-02                         |
| 800      |            |                           | 4,1E-02                         |
| 900      |            |                           | 4,3E-02                         |
| 1000     |            |                           | 4,4E-02                         |
| 2000     |            |                           | 5,5E-02                         |
| 3000     |            |                           | 6,3E-02                         |
| 4000     |            |                           | 7,1E-02                         |
| 5000     |            |                           | 7,7E-02                         |
| 6000     |            |                           | 8,3E-02                         |
| 8000     |            |                           | 9,4E-02                         |
| 10000    |            |                           | 1,0E-01                         |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Am-241**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,6E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,3E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,7E-03        | <b>4,6E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,3E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,6E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,4E-03                          | 7,8E-03        | <b>5,8E-03</b> | 3,9E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,3E-03        | <b>6,7E-03</b> | 4,4E-03         | 6,2E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 1,0E-02        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,4E-03</b> | 4,8E-03         | 6,6E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>8,0E-03</b> | 5,1E-03         | 7,0E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,6E-03</b> | 5,5E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>9,0E-03</b> | 5,8E-03         | 7,7E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,4E-02        | <b>9,5E-03</b> | 6,0E-03         | 8,0E-05   | 1,6E-01                   |
| 900      | 1,8E-02                          | 1,4E-02        | <b>9,9E-03</b> | 6,3E-03         | 8,3E-05   | 1,7E-01                   |
| 1000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,6E-05   | 1,7E-01                   |
| 2000     | 2,4E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04   | 2,2E-01                   |
| 3000     | 2,8E-02                          | 2,2E-02        | <b>1,5E-02</b> | 9,7E-03         | 1,3E-04   | 2,5E-01                   |
| 4000     | 3,1E-02                          | 2,5E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 5000     | 3,3E-02                          | 2,7E-02        | <b>1,8E-02</b> | 1,1E-02         | 1,5E-04   | 3,0E-01                   |
| 6000     | 3,5E-02                          | 2,8E-02        | <b>1,9E-02</b> | 1,2E-02         | 1,6E-04   | 3,2E-01                   |
| 8000     | 3,9E-02                          | 3,1E-02        | <b>2,1E-02</b> | 1,3E-02         | 1,7E-04   | 3,5E-01                   |
| 10000    | 4,2E-02                          | 3,3E-02        | <b>2,3E-02</b> | 1,4E-02         | 1,9E-04   | 3,7E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Am-241**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,5E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,7E-02                   |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,1E-02                   |
| 600      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,4E-02                   |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,9E-02                   |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,1E-02                   |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,3E-02                   |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 5,9E-02                   |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,0E-02                   |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,8E-02                   |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,4E-02                   |
| 6000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 9,0E-02                   |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 9,9E-02                   |
| 10000    |                                  |                |                |                 |           | 1,1E-01                   |



**Retention in der Lunge R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Am-241**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 1,1E-01  | <b>6,1E-02</b> | 2,9E-02   |           |                           |
| 2        | 3,1E-01                          | 2,2E-01  | <b>1,2E-01</b> | 5,5E-02   |           |                           |
| 3        | 4,5E-01                          | 3,3E-01  | <b>1,7E-01</b> | 8,0E-02   |           |                           |
| 4        | 6,0E-01                          | 4,3E-01  | <b>2,3E-01</b> | 1,0E-01   |           |                           |
| 5        | 7,4E-01                          | 5,3E-01  | <b>2,8E-01</b> | 1,3E-01   |           |                           |
| 6        | 8,8E-01                          | 6,3E-01  | <b>3,3E-01</b> | 1,5E-01   |           |                           |
| 7        | 1,0E+00                          | 7,3E-01  | <b>3,9E-01</b> | 1,8E-01   |           |                           |
| 8        | 1,2E+00                          | 8,3E-01  | <b>4,4E-01</b> | 2,0E-01   |           |                           |
| 9        | 1,3E+00                          | 9,3E-01  | <b>4,9E-01</b> | 2,2E-01   |           |                           |
| 10       | 1,4E+00                          | 1,0E+00  | <b>5,4E-01</b> | 2,5E-01   |           |                           |
| 14       | 1,9E+00                          | 1,4E+00  | <b>7,3E-01</b> | 3,3E-01   |           |                           |
| 15       | 2,1E+00                          | 1,5E+00  | <b>7,8E-01</b> | 3,6E-01   |           |                           |
| 20       | 2,7E+00                          | 1,9E+00  | <b>1,0E+00</b> | 4,6E-01   |           |                           |
| 30       | 3,8E+00                          | 2,7E+00  | <b>1,4E+00</b> | 6,4E-01   |           |                           |
| 40       | 4,7E+00                          | 3,4E+00  | <b>1,8E+00</b> | 8,1E-01   |           |                           |
| 45       | 5,2E+00                          | 3,7E+00  | <b>1,9E+00</b> | 8,8E-01   |           |                           |
| 50       | 5,6E+00                          | 4,1E+00  | <b>2,1E+00</b> | 9,5E-01   |           |                           |
| 60       | 6,4E+00                          | 4,6E+00  | <b>2,4E+00</b> | 1,1E+00   |           |                           |
| 70       | 7,2E+00                          | 5,2E+00  | <b>2,7E+00</b> | 1,2E+00   |           |                           |
| 80       | 7,9E+00                          | 5,7E+00  | <b>2,9E+00</b> | 1,3E+00   |           |                           |
| 90       | 8,5E+00                          | 6,1E+00  | <b>3,1E+00</b> | 1,4E+00   |           |                           |
| 100      | 9,1E+00                          | 6,5E+00  | <b>3,3E+00</b> | 1,5E+00   |           |                           |
| 120      | 1,0E+01                          | 7,3E+00  | <b>3,7E+00</b> | 1,7E+00   |           |                           |
| 180      | 1,3E+01                          | 9,0E+00  | <b>4,6E+00</b> | 2,1E+00   |           |                           |
| 200      | 1,3E+01                          | 9,5E+00  | <b>4,8E+00</b> | 2,2E+00   |           |                           |
| 300      | 1,5E+01                          | 1,1E+01  | <b>5,6E+00</b> | 2,5E+00   |           |                           |
| 360      | 1,6E+01                          | 1,2E+01  | <b>5,9E+00</b> | 2,7E+00   |           |                           |
| 400      | 1,7E+01                          | 1,2E+01  | <b>6,1E+00</b> | 2,7E+00   |           |                           |
| 500      | 1,7E+01                          | 1,2E+01  | <b>6,3E+00</b> | 2,8E+00   |           |                           |
| 600      | 1,8E+01                          | 1,3E+01  | <b>6,4E+00</b> | 2,9E+00   |           |                           |
| 700      | 1,8E+01                          | 1,3E+01  | <b>6,5E+00</b> | 2,9E+00   |           |                           |
| 800      |                                  |          | <b>6,6E+00</b> | 2,9E+00   |           |                           |
| 900      |                                  |          | <b>6,6E+00</b> | 3,0E+00   |           |                           |
| 1000     |                                  |          |                | 3,0E+00   |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Am-243**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,6E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,3E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,7E-03        | <b>4,6E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,3E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,6E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,4E-03                          | 7,8E-03        | <b>5,8E-03</b> | 3,9E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,3E-03        | <b>6,7E-03</b> | 4,4E-03         | 6,2E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 1,0E-02        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,4E-03</b> | 4,8E-03         | 6,6E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>8,0E-03</b> | 5,1E-03         | 7,0E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,6E-03</b> | 5,5E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>9,0E-03</b> | 5,8E-03         | 7,7E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,4E-02        | <b>9,5E-03</b> | 6,0E-03         | 8,0E-05   | 1,6E-01                   |
| 900      | 1,8E-02                          | 1,4E-02        | <b>9,9E-03</b> | 6,3E-03         | 8,3E-05   | 1,7E-01                   |
| 1000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,6E-05   | 1,7E-01                   |
| 2000     | 2,4E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04   | 2,2E-01                   |
| 3000     | 2,8E-02                          | 2,2E-02        | <b>1,5E-02</b> | 9,7E-03         | 1,3E-04   | 2,5E-01                   |
| 4000     | 3,1E-02                          | 2,5E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 5000     | 3,3E-02                          | 2,7E-02        | <b>1,8E-02</b> | 1,2E-02         | 1,5E-04   | 3,0E-01                   |
| 6000     | 3,6E-02                          | 2,8E-02        | <b>2,0E-02</b> | 1,2E-02         | 1,6E-04   | 3,2E-01                   |
| 8000     | 3,9E-02                          | 3,1E-02        | <b>2,1E-02</b> | 1,3E-02         | 1,7E-04   | 3,5E-01                   |
| 10000    | 4,2E-02                          | 3,4E-02        | <b>2,3E-02</b> | 1,4E-02         | 1,9E-04   | 3,8E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Am-243**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | AMAD=5 $\mu m$ | AMAD=10 $\mu m$ |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,5E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,7E-02                   |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,1E-02                   |
| 600      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,4E-02                   |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,9E-02                   |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,1E-02                   |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,3E-02                   |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 6,0E-02                   |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,0E-02                   |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,8E-02                   |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,5E-02                   |
| 6000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 9,0E-02                   |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 1,0E-01                   |
| 10000    |                                  |                |                |                 |           | 1,1E-01                   |

**Retention in der Lunge R'(t) bei chronischer Zufuhr**  
in Bq pro 1 Bq täglich zugeführter Aktivität (Bq/(Bq/d))

**Am-243**

| Zeit (d) | Inhalation (Absorptionsklasse M) |          |                |           | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------|----------------|-----------|-----------|---------------------------|
|          | AMAD=0,3 µm                      | AMAD=1µm | AMAD=5µm       | AMAD=10µm |           |                           |
| 1        | 1,6E-01                          | 1,1E-01  | <b>6,1E-02</b> | 2,9E-02   |           |                           |
| 2        | 3,1E-01                          | 2,2E-01  | <b>1,2E-01</b> | 5,5E-02   |           |                           |
| 3        | 4,5E-01                          | 3,3E-01  | <b>1,7E-01</b> | 8,0E-02   |           |                           |
| 4        | 6,0E-01                          | 4,3E-01  | <b>2,3E-01</b> | 1,0E-01   |           |                           |
| 5        | 7,4E-01                          | 5,3E-01  | <b>2,8E-01</b> | 1,3E-01   |           |                           |
| 6        | 8,8E-01                          | 6,3E-01  | <b>3,3E-01</b> | 1,5E-01   |           |                           |
| 7        | 1,0E+00                          | 7,3E-01  | <b>3,9E-01</b> | 1,8E-01   |           |                           |
| 8        | 1,2E+00                          | 8,3E-01  | <b>4,4E-01</b> | 2,0E-01   |           |                           |
| 9        | 1,3E+00                          | 9,3E-01  | <b>4,9E-01</b> | 2,2E-01   |           |                           |
| 10       | 1,4E+00                          | 1,0E+00  | <b>5,4E-01</b> | 2,5E-01   |           |                           |
| 14       | 1,9E+00                          | 1,4E+00  | <b>7,3E-01</b> | 3,3E-01   |           |                           |
| 15       | 2,1E+00                          | 1,5E+00  | <b>7,8E-01</b> | 3,6E-01   |           |                           |
| 20       | 2,7E+00                          | 1,9E+00  | <b>1,0E+00</b> | 4,6E-01   |           |                           |
| 30       | 3,8E+00                          | 2,7E+00  | <b>1,4E+00</b> | 6,4E-01   |           |                           |
| 40       | 4,7E+00                          | 3,4E+00  | <b>1,8E+00</b> | 8,1E-01   |           |                           |
| 45       | 5,2E+00                          | 3,7E+00  | <b>1,9E+00</b> | 8,8E-01   |           |                           |
| 50       | 5,6E+00                          | 4,1E+00  | <b>2,1E+00</b> | 9,5E-01   |           |                           |
| 60       | 6,4E+00                          | 4,6E+00  | <b>2,4E+00</b> | 1,1E+00   |           |                           |
| 70       | 7,2E+00                          | 5,2E+00  | <b>2,7E+00</b> | 1,2E+00   |           |                           |
| 80       | 7,9E+00                          | 5,7E+00  | <b>2,9E+00</b> | 1,3E+00   |           |                           |
| 90       | 8,5E+00                          | 6,1E+00  | <b>3,1E+00</b> | 1,4E+00   |           |                           |
| 100      | 9,1E+00                          | 6,5E+00  | <b>3,3E+00</b> | 1,5E+00   |           |                           |
| 120      | 1,0E+01                          | 7,3E+00  | <b>3,7E+00</b> | 1,7E+00   |           |                           |
| 180      | 1,3E+01                          | 9,0E+00  | <b>4,6E+00</b> | 2,1E+00   |           |                           |
| 200      | 1,3E+01                          | 9,5E+00  | <b>4,8E+00</b> | 2,2E+00   |           |                           |
| 300      | 1,5E+01                          | 1,1E+01  | <b>5,6E+00</b> | 2,5E+00   |           |                           |
| 360      | 1,6E+01                          | 1,2E+01  | <b>5,9E+00</b> | 2,7E+00   |           |                           |
| 400      | 1,7E+01                          | 1,2E+01  | <b>6,1E+00</b> | 2,7E+00   |           |                           |
| 500      | 1,7E+01                          | 1,2E+01  | <b>6,3E+00</b> | 2,8E+00   |           |                           |
| 600      | 1,8E+01                          | 1,3E+01  | <b>6,4E+00</b> | 2,9E+00   |           |                           |
| 700      | 1,8E+01                          | 1,3E+01  | <b>6,5E+00</b> | 2,9E+00   |           |                           |
| 800      |                                  |          | <b>6,6E+00</b> | 2,9E+00   |           |                           |
| 900      |                                  |          | <b>6,6E+00</b> | 3,0E+00   |           |                           |
| 1000     |                                  |          |                | 3,0E+00   |           |                           |
| 2000     |                                  |          |                |           |           |                           |
| 3000     |                                  |          |                |           |           |                           |
| 4000     |                                  |          |                |           |           |                           |
| 5000     |                                  |          |                |           |           |                           |
| 6000     |                                  |          |                |           |           |                           |
| 8000     |                                  |          |                |           |           |                           |
| 10000    |                                  |          |                |           |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-242**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,6E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,8E-02                   |
| 7        | 2,0E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,6E-02                   |
| 15       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 20       | 2,9E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 8,9E-02                   |
| 30       | 3,5E-03                          | 3,3E-03        | <b>3,2E-03</b> | 2,4E-03         | 4,6E-05   | 9,2E-02                   |
| 40       | 3,9E-03                          | 3,7E-03        | <b>3,4E-03</b> | 2,6E-03         | 4,7E-05   | 9,4E-02                   |
| 45       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,7E-05   | 9,5E-02                   |
| 50       | 4,3E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,6E-03         | 4,8E-05   | 9,6E-02                   |
| 60       | 4,7E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,8E-05   | 9,7E-02                   |
| 70       | 5,0E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,8E-02                   |
| 80       | 5,3E-03                          | 4,7E-03        | <b>4,0E-03</b> | 2,9E-03         | 4,9E-05   | 9,9E-02                   |
| 90       | 5,6E-03                          | 4,9E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 9,9E-02                   |
| 100      | 5,8E-03                          | 5,0E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,0E-05   | 1,0E-01                   |
| 120      | 6,2E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 180      | 7,1E-03                          | 6,0E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,2E-05   | 1,1E-01                   |
| 200      | 7,3E-03                          | 6,2E-03        | <b>4,9E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 300      | 8,0E-03                          | 6,7E-03        | <b>5,2E-03</b> | 3,5E-03         | 5,4E-05   |                           |
| 360      | 8,2E-03                          | 6,9E-03        | <b>5,3E-03</b> | 3,6E-03         | 5,5E-05   |                           |
| 400      | 8,4E-03                          | 7,0E-03        | <b>5,3E-03</b> | 3,6E-03         | 5,5E-05   |                           |
| 500      | 8,5E-03                          | 7,1E-03        | <b>5,4E-03</b> | 3,7E-03         | 5,6E-05   |                           |
| 600      | 8,6E-03                          | 7,2E-03        | <b>5,5E-03</b> | 3,7E-03         | 5,6E-05   |                           |
| 700      | 8,7E-03                          | 7,2E-03        | <b>5,5E-03</b> |                 | 5,7E-05   |                           |
| 800      | 8,7E-03                          | 7,3E-03        | <b>5,5E-03</b> |                 | 5,7E-05   |                           |
| 900      | 8,8E-03                          | 7,3E-03        | <b>5,5E-03</b> |                 |           |                           |
| 1000     | 8,8E-03                          |                | <b>5,6E-03</b> |                 |           |                           |
| 2000     |                                  |                | <b>5,6E-03</b> |                 |           |                           |
| 3000     |                                  |                |                |                 |           |                           |
| 4000     |                                  |                |                |                 |           |                           |
| 5000     |                                  |                |                |                 |           |                           |
| 6000     |                                  |                |                |                 |           |                           |
| 8000     |                                  |                |                |                 |           |                           |
| 10000    |                                  |                |                |                 |           |                           |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-242**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                                 |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|---------------------------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu m$                 | AMAD=1 $\mu m$ | <b>AMAD=5<math>\mu m</math></b> | AMAD=10 $\mu m$ |           |                           |
| 1        | 5,6E-03                          | 1,9E-02        | <b>3,6E-02</b>                  | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b>                  | 1,8E-01         | 4,9E-01   | 6,1E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b>                  | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,6E-02                          | 2,0E-01        | <b>3,6E-01</b>                  | 3,4E-01         | 9,1E-01   | 1,1E-02                   |
| 5        | 7,2E-02                          | 2,1E-01        | <b>3,8E-01</b>                  | 3,6E-01         | 9,6E-01   | 1,2E-02                   |
| 6        | 7,5E-02                          | 2,1E-01        | <b>3,9E-01</b>                  | 3,7E-01         | 9,8E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>3,9E-01</b>                  | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 8        | 7,8E-02                          | 2,2E-01        | <b>3,9E-01</b>                  | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 9        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b>                  | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,5E-02                          | 2,2E-01        | <b>4,0E-01</b>                  |                 |           | 1,3E-02                   |
| 15       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b>                  |                 |           | 1,4E-02                   |
| 20       | 9,0E-02                          | 2,3E-01        | <b>4,0E-01</b>                  |                 |           | 1,4E-02                   |
| 30       | 9,7E-02                          | 2,3E-01        | <b>4,0E-01</b>                  |                 |           | 1,4E-02                   |
| 40       | 1,0E-01                          | 2,3E-01        | <b>4,1E-01</b>                  |                 |           | 1,5E-02                   |
| 45       | 1,0E-01                          | 2,4E-01        | <b>4,1E-01</b>                  |                 |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        |                                 |                 |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        |                                 |                 |           | 1,5E-02                   |
| 70       | 1,1E-01                          | 2,4E-01        |                                 |                 |           | 1,6E-02                   |
| 80       | 1,1E-01                          | 2,4E-01        |                                 |                 |           | 1,6E-02                   |
| 90       | 1,1E-01                          | 2,4E-01        |                                 |                 |           | 1,6E-02                   |
| 100      | 1,2E-01                          | 2,4E-01        |                                 |                 |           | 1,6E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        |                                 |                 |           | 1,7E-02                   |
| 180      |                                  | 2,5E-01        |                                 |                 |           | 1,8E-02                   |
| 200      |                                  |                |                                 |                 |           | 1,9E-02                   |
| 300      |                                  |                |                                 |                 |           | 2,0E-02                   |
| 360      |                                  |                |                                 |                 |           | 2,0E-02                   |
| 400      |                                  |                |                                 |                 |           | 2,0E-02                   |
| 500      |                                  |                |                                 |                 |           | 2,1E-02                   |
| 600      |                                  |                |                                 |                 |           | 2,1E-02                   |
| 700      |                                  |                |                                 |                 |           | 2,1E-02                   |
| 800      |                                  |                |                                 |                 |           | 2,1E-02                   |
| 900      |                                  |                |                                 |                 |           | 2,2E-02                   |
| 1000     |                                  |                |                                 |                 |           | 2,2E-02                   |
| 2000     |                                  |                |                                 |                 |           |                           |
| 3000     |                                  |                |                                 |                 |           |                           |
| 4000     |                                  |                |                                 |                 |           |                           |
| 5000     |                                  |                |                                 |                 |           |                           |
| 6000     |                                  |                |                                 |                 |           |                           |
| 8000     |                                  |                |                                 |                 |           |                           |
| 10000    |                                  |                |                                 |                 |           |                           |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-243**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,5E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,2E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,6E-03        | <b>4,6E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,2E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,6E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,4E-03                          | 7,7E-03        | <b>5,8E-03</b> | 3,8E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,2E-03        | <b>6,7E-03</b> | 4,3E-03         | 6,1E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 9,9E-03        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,4E-03</b> | 4,7E-03         | 6,6E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>8,0E-03</b> | 5,1E-03         | 6,9E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,5E-03</b> | 5,4E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>8,9E-03</b> | 5,7E-03         | 7,6E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,3E-02        | <b>9,4E-03</b> | 6,0E-03         | 7,9E-05   | 1,6E-01                   |
| 900      | 1,7E-02                          | 1,4E-02        | <b>9,8E-03</b> | 6,2E-03         | 8,2E-05   | 1,6E-01                   |
| 1000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,4E-03         | 8,5E-05   | 1,7E-01                   |
| 2000     | 2,3E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,1E-03         | 1,1E-04   | 2,1E-01                   |
| 3000     | 2,7E-02                          | 2,1E-02        | <b>1,5E-02</b> | 9,2E-03         | 1,2E-04   | 2,4E-01                   |
| 4000     | 2,9E-02                          | 2,3E-02        | <b>1,6E-02</b> | 1,0E-02         | 1,3E-04   | 2,6E-01                   |
| 5000     | 3,1E-02                          | 2,5E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 6000     | 3,2E-02                          | 2,6E-02        | <b>1,8E-02</b> | 1,1E-02         | 1,5E-04   | 2,9E-01                   |
| 8000     | 3,4E-02                          | 2,7E-02        | <b>1,9E-02</b> | 1,2E-02         | 1,6E-04   | 3,1E-01                   |
| 10000    | 3,6E-02                          | 2,9E-02        | <b>2,0E-02</b> | 1,2E-02         | 1,6E-04   | 3,2E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-243**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        |                |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        |                |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,5E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,6E-02                   |
| 400      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          | 2,6E-01        |                |                 |           | 3,1E-02                   |
| 600      | 1,3E-01                          | 2,6E-01        |                |                 |           | 3,3E-02                   |
| 700      | 1,4E-01                          | 2,6E-01        |                |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          | 2,6E-01        |                |                 |           | 3,8E-02                   |
| 900      |                                  | 2,6E-01        |                |                 |           | 4,0E-02                   |
| 1000     |                                  | 2,6E-01        |                |                 |           | 4,2E-02                   |
| 2000     |                                  | 2,6E-01        |                |                 |           | 5,7E-02                   |
| 3000     |                                  | 2,6E-01        |                |                 |           | 6,6E-02                   |
| 4000     |                                  | 2,6E-01        |                |                 |           | 7,3E-02                   |
| 5000     |                                  | 2,6E-01        |                |                 |           | 7,8E-02                   |
| 6000     |                                  | 2,6E-01        |                |                 |           | 8,1E-02                   |
| 8000     |                                  | 2,6E-01        |                |                 |           | 8,7E-02                   |
| 10000    |                                  | 2,7E-01        |                |                 |           | 9,1E-02                   |



**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-244**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,5E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,2E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,6E-03        | <b>4,5E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,2E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,5E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,3E-03                          | 7,7E-03        | <b>5,8E-03</b> | 3,8E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,2E-03        | <b>6,6E-03</b> | 4,3E-03         | 6,1E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 9,9E-03        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,3E-03</b> | 4,7E-03         | 6,5E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>7,9E-03</b> | 5,1E-03         | 6,9E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,4E-03</b> | 5,4E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>8,9E-03</b> | 5,7E-03         | 7,6E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,3E-02        | <b>9,3E-03</b> | 5,9E-03         | 7,9E-05   | 1,6E-01                   |
| 900      | 1,7E-02                          | 1,4E-02        | <b>9,7E-03</b> | 6,1E-03         | 8,2E-05   | 1,6E-01                   |
| 1000     | 1,8E-02                          | 1,4E-02        | <b>1,0E-02</b> | 6,4E-03         | 8,5E-05   | 1,7E-01                   |
| 2000     | 2,3E-02                          | 1,8E-02        | <b>1,3E-02</b> | 8,0E-03         | 1,0E-04   | 2,1E-01                   |
| 3000     | 2,6E-02                          | 2,1E-02        | <b>1,4E-02</b> | 9,0E-03         | 1,2E-04   | 2,4E-01                   |
| 4000     | 2,8E-02                          | 2,2E-02        | <b>1,5E-02</b> | 9,7E-03         | 1,3E-04   | 2,5E-01                   |
| 5000     | 2,9E-02                          | 2,3E-02        | <b>1,6E-02</b> | 1,0E-02         | 1,3E-04   | 2,7E-01                   |
| 6000     | 3,1E-02                          | 2,4E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 8000     | 3,2E-02                          | 2,6E-02        | <b>1,8E-02</b> | 1,1E-02         | 1,5E-04   | 2,9E-01                   |
| 10000    | 3,3E-02                          | 2,7E-02        | <b>1,8E-02</b> | 1,2E-02         | 1,5E-04   | 3,0E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S'(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-244**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 9,9E-01   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        |                |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        |                |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        |                |                 |           | 2,4E-02                   |
| 360      | 1,3E-01                          |                |                |                 |           | 2,6E-02                   |
| 400      | 1,3E-01                          |                |                |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          |                |                |                 |           | 3,0E-02                   |
| 600      | 1,3E-01                          |                |                |                 |           | 3,3E-02                   |
| 700      | 1,3E-01                          |                |                |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          |                |                |                 |           | 3,8E-02                   |
| 900      | 1,4E-01                          |                |                |                 |           | 4,0E-02                   |
| 1000     |                                  |                |                |                 |           | 4,2E-02                   |
| 2000     |                                  |                |                |                 |           | 5,6E-02                   |
| 3000     |                                  |                |                |                 |           | 6,4E-02                   |
| 4000     |                                  |                |                |                 |           | 7,0E-02                   |
| 5000     |                                  |                |                |                 |           | 7,4E-02                   |
| 6000     |                                  |                |                |                 |           | 7,7E-02                   |
| 8000     |                                  |                |                |                 |           | 8,2E-02                   |
| 10000    |                                  |                |                |                 |           | 8,5E-02                   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-246**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,6E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,3E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,7E-03        | <b>4,6E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,3E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,6E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,4E-03                          | 7,8E-03        | <b>5,8E-03</b> | 3,9E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,3E-03        | <b>6,7E-03</b> | 4,4E-03         | 6,2E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 1,0E-02        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,4E-03</b> | 4,8E-03         | 6,6E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>8,0E-03</b> | 5,1E-03         | 7,0E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,6E-03</b> | 5,5E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>9,0E-03</b> | 5,8E-03         | 7,7E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,4E-02        | <b>9,5E-03</b> | 6,0E-03         | 8,0E-05   | 1,6E-01                   |
| 900      | 1,8E-02                          | 1,4E-02        | <b>9,9E-03</b> | 6,3E-03         | 8,3E-05   | 1,7E-01                   |
| 1000     | 1,8E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,6E-05   | 1,7E-01                   |
| 2000     | 2,4E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04   | 2,2E-01                   |
| 3000     | 2,8E-02                          | 2,2E-02        | <b>1,5E-02</b> | 9,7E-03         | 1,3E-04   | 2,5E-01                   |
| 4000     | 3,1E-02                          | 2,5E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 5000     | 3,3E-02                          | 2,7E-02        | <b>1,8E-02</b> | 1,2E-02         | 1,5E-04   | 3,0E-01                   |
| 6000     | 3,6E-02                          | 2,8E-02        | <b>2,0E-02</b> | 1,2E-02         | 1,6E-04   | 3,2E-01                   |
| 8000     | 3,9E-02                          | 3,1E-02        | <b>2,1E-02</b> | 1,3E-02         | 1,7E-04   | 3,5E-01                   |
| 10000    | 4,2E-02                          | 3,3E-02        | <b>2,3E-02</b> | 1,4E-02         | 1,9E-04   | 3,8E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-246**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,5E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,7E-02                   |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,1E-02                   |
| 600      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,4E-02                   |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,9E-02                   |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,1E-02                   |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,3E-02                   |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 6,0E-02                   |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,0E-02                   |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,8E-02                   |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,5E-02                   |
| 6000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 9,0E-02                   |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 1,0E-01                   |
| 10000    |                                  |                |                |                 |           | 1,1E-01                   |

**Ausscheidungsrate über den Urin  $E_U(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-248**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 1,1E-03                          | 1,2E-03        | <b>1,4E-03</b> | 1,2E-03         | 1,9E-05   | 5,0E-02                   |
| 2        | 1,5E-03                          | 1,7E-03        | <b>1,9E-03</b> | 1,6E-03         | 3,2E-05   | 6,6E-02                   |
| 3        | 1,7E-03                          | 1,8E-03        | <b>2,1E-03</b> | 1,7E-03         | 3,5E-05   | 7,2E-02                   |
| 4        | 1,8E-03                          | 1,9E-03        | <b>2,2E-03</b> | 1,8E-03         | 3,7E-05   | 7,5E-02                   |
| 5        | 1,9E-03                          | 2,0E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,8E-05   | 7,7E-02                   |
| 6        | 2,0E-03                          | 2,1E-03        | <b>2,3E-03</b> | 1,9E-03         | 3,9E-05   | 7,9E-02                   |
| 7        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 1,9E-03         | 4,0E-05   | 8,0E-02                   |
| 8        | 2,1E-03                          | 2,2E-03        | <b>2,4E-03</b> | 2,0E-03         | 4,0E-05   | 8,1E-02                   |
| 9        | 2,2E-03                          | 2,3E-03        | <b>2,5E-03</b> | 2,0E-03         | 4,1E-05   | 8,2E-02                   |
| 10       | 2,3E-03                          | 2,4E-03        | <b>2,5E-03</b> | 2,1E-03         | 4,2E-05   | 8,3E-02                   |
| 14       | 2,6E-03                          | 2,6E-03        | <b>2,7E-03</b> | 2,2E-03         | 4,3E-05   | 8,7E-02                   |
| 15       | 2,7E-03                          | 2,7E-03        | <b>2,8E-03</b> | 2,2E-03         | 4,4E-05   | 8,7E-02                   |
| 20       | 3,0E-03                          | 2,9E-03        | <b>2,9E-03</b> | 2,3E-03         | 4,5E-05   | 9,0E-02                   |
| 30       | 3,6E-03                          | 3,4E-03        | <b>3,2E-03</b> | 2,5E-03         | 4,7E-05   | 9,3E-02                   |
| 40       | 4,1E-03                          | 3,8E-03        | <b>3,5E-03</b> | 2,6E-03         | 4,8E-05   | 9,6E-02                   |
| 45       | 4,4E-03                          | 4,0E-03        | <b>3,6E-03</b> | 2,7E-03         | 4,8E-05   | 9,6E-02                   |
| 50       | 4,6E-03                          | 4,2E-03        | <b>3,7E-03</b> | 2,7E-03         | 4,9E-05   | 9,7E-02                   |
| 60       | 5,1E-03                          | 4,5E-03        | <b>3,9E-03</b> | 2,8E-03         | 4,9E-05   | 9,9E-02                   |
| 70       | 5,5E-03                          | 4,8E-03        | <b>4,1E-03</b> | 2,9E-03         | 5,0E-05   | 1,0E-01                   |
| 80       | 5,9E-03                          | 5,1E-03        | <b>4,2E-03</b> | 3,0E-03         | 5,1E-05   | 1,0E-01                   |
| 90       | 6,3E-03                          | 5,4E-03        | <b>4,4E-03</b> | 3,1E-03         | 5,1E-05   | 1,0E-01                   |
| 100      | 6,6E-03                          | 5,7E-03        | <b>4,6E-03</b> | 3,2E-03         | 5,2E-05   | 1,0E-01                   |
| 120      | 7,3E-03                          | 6,1E-03        | <b>4,8E-03</b> | 3,3E-03         | 5,3E-05   | 1,1E-01                   |
| 180      | 8,9E-03                          | 7,4E-03        | <b>5,6E-03</b> | 3,7E-03         | 5,6E-05   | 1,1E-01                   |
| 200      | 9,4E-03                          | 7,8E-03        | <b>5,8E-03</b> | 3,9E-03         | 5,7E-05   | 1,1E-01                   |
| 300      | 1,1E-02                          | 9,3E-03        | <b>6,7E-03</b> | 4,4E-03         | 6,2E-05   | 1,2E-01                   |
| 360      | 1,2E-02                          | 1,0E-02        | <b>7,1E-03</b> | 4,6E-03         | 6,4E-05   | 1,3E-01                   |
| 400      | 1,3E-02                          | 1,0E-02        | <b>7,4E-03</b> | 4,8E-03         | 6,6E-05   | 1,3E-01                   |
| 500      | 1,4E-02                          | 1,1E-02        | <b>8,0E-03</b> | 5,1E-03         | 7,0E-05   | 1,4E-01                   |
| 600      | 1,5E-02                          | 1,2E-02        | <b>8,6E-03</b> | 5,5E-03         | 7,3E-05   | 1,5E-01                   |
| 700      | 1,6E-02                          | 1,3E-02        | <b>9,0E-03</b> | 5,8E-03         | 7,7E-05   | 1,5E-01                   |
| 800      | 1,7E-02                          | 1,4E-02        | <b>9,5E-03</b> | 6,0E-03         | 8,0E-05   | 1,6E-01                   |
| 900      | 1,8E-02                          | 1,4E-02        | <b>9,9E-03</b> | 6,3E-03         | 8,3E-05   | 1,7E-01                   |
| 1000     | 1,9E-02                          | 1,5E-02        | <b>1,0E-02</b> | 6,5E-03         | 8,6E-05   | 1,7E-01                   |
| 2000     | 2,4E-02                          | 1,9E-02        | <b>1,3E-02</b> | 8,4E-03         | 1,1E-04   | 2,2E-01                   |
| 3000     | 2,8E-02                          | 2,2E-02        | <b>1,5E-02</b> | 9,7E-03         | 1,3E-04   | 2,5E-01                   |
| 4000     | 3,1E-02                          | 2,5E-02        | <b>1,7E-02</b> | 1,1E-02         | 1,4E-04   | 2,8E-01                   |
| 5000     | 3,3E-02                          | 2,7E-02        | <b>1,8E-02</b> | 1,2E-02         | 1,5E-04   | 3,0E-01                   |
| 6000     | 3,6E-02                          | 2,8E-02        | <b>2,0E-02</b> | 1,2E-02         | 1,6E-04   | 3,2E-01                   |
| 8000     | 3,9E-02                          | 3,1E-02        | <b>2,1E-02</b> | 1,3E-02         | 1,7E-04   | 3,5E-01                   |
| 10000    | 4,2E-02                          | 3,4E-02        | <b>2,3E-02</b> | 1,5E-02         | 1,9E-04   | 3,8E-01                   |

**Ausscheidungsrate über den Stuhl  $E_S(t)$  bei chronischer Zufuhr**  
in Bq/d pro 1 Bq täglich zugeführter Aktivität ( $Bq \cdot d^{-1}/Bq \cdot d^{-1}$ )

**Cm-248**

| Zeit (d) | Inhalation (Absorptionsklasse M) |                |                |                 | Ingestion | direkte Aufnahme ins Blut |
|----------|----------------------------------|----------------|----------------|-----------------|-----------|---------------------------|
|          | AMAD=0,3 $\mu$ m                 | AMAD=1 $\mu$ m | AMAD=5 $\mu$ m | AMAD=10 $\mu$ m |           |                           |
| 1        | 5,7E-03                          | 1,9E-02        | <b>3,6E-02</b> | 3,4E-02         | 9,5E-02   | 1,5E-03                   |
| 2        | 3,2E-02                          | 1,0E-01        | <b>1,9E-01</b> | 1,8E-01         | 4,9E-01   | 6,2E-03                   |
| 3        | 5,5E-02                          | 1,7E-01        | <b>3,1E-01</b> | 2,9E-01         | 7,8E-01   | 9,6E-03                   |
| 4        | 6,7E-02                          | 2,0E-01        | <b>3,6E-01</b> | 3,4E-01         | 9,1E-01   | 1,2E-02                   |
| 5        | 7,3E-02                          | 2,1E-01        | <b>3,8E-01</b> | 3,7E-01         | 9,7E-01   | 1,2E-02                   |
| 6        | 7,6E-02                          | 2,1E-01        | <b>3,9E-01</b> | 3,7E-01         | 9,9E-01   | 1,3E-02                   |
| 7        | 7,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 8        | 7,9E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         | 1,0E+00   | 1,3E-02                   |
| 9        | 8,0E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 10       | 8,1E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,3E-02                   |
| 14       | 8,6E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 15       | 8,7E-02                          | 2,2E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 20       | 9,1E-02                          | 2,3E-01        | <b>4,0E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 30       | 9,9E-02                          | 2,3E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,4E-02                   |
| 40       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 45       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 50       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,5E-02                   |
| 60       | 1,1E-01                          | 2,4E-01        | <b>4,1E-01</b> | 3,8E-01         |           | 1,6E-02                   |
| 70       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,6E-02                   |
| 80       | 1,2E-01                          | 2,5E-01        | <b>4,1E-01</b> | 3,9E-01         |           | 1,7E-02                   |
| 90       | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 100      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,7E-02                   |
| 120      | 1,2E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 1,8E-02                   |
| 180      | 1,3E-01                          | 2,5E-01        | <b>4,2E-01</b> |                 |           | 2,0E-02                   |
| 200      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,1E-02                   |
| 300      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,5E-02                   |
| 360      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,7E-02                   |
| 400      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 2,8E-02                   |
| 500      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,1E-02                   |
| 600      | 1,3E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,4E-02                   |
| 700      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,6E-02                   |
| 800      | 1,4E-01                          | 2,6E-01        | <b>4,2E-01</b> |                 |           | 3,9E-02                   |
| 900      |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,1E-02                   |
| 1000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 4,3E-02                   |
| 2000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 6,0E-02                   |
| 3000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,0E-02                   |
| 4000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 7,8E-02                   |
| 5000     |                                  | 2,6E-01        | <b>4,2E-01</b> |                 |           | 8,5E-02                   |
| 6000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 9,0E-02                   |
| 8000     |                                  | 2,7E-01        | <b>4,3E-01</b> |                 |           | 1,0E-01                   |
| 10000    |                                  |                |                |                 |           | 1,1E-01                   |