

## 9 Germany – authorities

### 9.1 Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

#### 9.1.1 With regard to the "interim storage" aspect of the overall project (extension of the CLAB and construction and operation of the encapsulation plant), no adverse effects for the German public can be inferred from the project documents. However, this statement must be made with the reservation that there is no detailed description of the incident scenarios investigated for the facility in question, nor any information regarding beyond design basis accidents.

**Response:** The design basis events analyzed with regard to radiological environmental impact are various mishaps when handling fuel. A fuelcassette dropped into water, with the conservative assumption that all the fuel in the cassette is damaged, is the event that results in the highest dose. The received dose is far below the current acceptance criteria for this type of event.

Non-design-basis events have also been analyzed. The calculated dose at a distance of 30 km from the facility is below the acceptance criterion for environmental impact during normal operation of the facility. Thus the radiological impact on the German public for this type of events is judged to be of such magnitude that it can not be distinguished from the impact that could arise from the normal dose received from background radiation in the surrounding environment.

#### 9.1.2 Whether radiological impacts are possible during the operating phase which might also affect German interests cannot be determined from the documents submitted for the EIA to the same degree as is possible for the long-term safety. I would welcome a similar report on this issue as well.

**Response:** SKB believes that the prepared documentation in English is sufficient. The radiological impact on the German public judges to be insignificant because even for unlikely events only the immediate environment is expected to be affected. See also the answer to question 9.1.1.

#### 9.1.3 The step-by-step authorisation procedure followed by Sweden has the advantage of allowing plans and safety analyses to be gradually fleshed out and made more specific. According to the explanations given at the consultation, the next main steps are as follows:

- Licensing pursuant to the Act on Nuclear Activities and the Environmental Code
- Licensing by Swedish Radiation Safety Authority (SSM) prior to construction
- Licensing by SSM for trial operation and emplacement.

It was explained to me that no further steps involving the participation of other countries are envisaged for the above stages. Considering the long period until the repository begins operation, the further details still to follow and the importance the German public places on the

**issue of final disposal, I would appreciate it if you could provide Germany with regular updates on the ongoing process.**

**Response:** The consultation process with countries concerned under the Environmental Code and the Espoo Convention is concluded when a licensing decision is made. Although the same advocacy opportunities are not given after a licensing decision, the ambition is that Germany, among other countries concerned, will receive information in connection with major steps in the incremental licensing process such as when renewed safety assessments are submitted to the Swedish Radiation Safety Authority (SSM). In terms of information internationally, this is judged to be achieved through the Joint Convention. In the ongoing reporting according to the Joint Convention, countries should report on inter alia REGULATORY REQUIREMENTS ON and MEASURES TAKEN BY THE LICENCE HOLDER regarding DESIGN AND CONSTRUCTION OF FACILITIES. Furthermore, countries are expected to continuously also report DEVELOPEMENTS SINCE PREVIOUS REPORT. We hope that Germany's requests for information will be satisfied with this.

**9.1.4 Furthermore, I assume that, for all facilities dealt with in the environmental assessment, you will make further reports on the implementation and safety design details of the individual projects, for instance at the Review Meetings under the Joint Convention.**

**Response:** SKB notes the standpoint and refer to the answer to question 9.1.3 above.

**9.1.5 The project description does not make any statements regarding liability or cover for possible damage arising from the release of radioactivity, nor regarding the settlement of damages.**

**Response:** Under paragraph 10 § 2 of the Nuclear Activities Act those with permission to conduct nuclear activities are responsible for the implementation of necessary measures, inter alia to safely handle and dispose of nuclear waste arising from the activities or nuclear material arising therein that is not reused. This means that the nuclear companies that have had licenses to operate the nuclear power plants are also responsible for the handling and final disposal of the waste. Likewise, the licensee is responsible for safely decommissioning and dismantling the facilities where operations no longer will be conducted, 10 § 2 Nuclear Activities Act. The responsibility ends when all nuclear material and nuclear waste is placed in a final repository that has been finally sealed. According to § 30 of the Act (2010:950) on Liability and Compensation for Nuclear Accidents, the claim for compensation is limited to EUR 700 million.

Swedish Government official report SOU 2011:18 "Strålsäkerhet – gällande rätt i ny form" [Radiation safety: About law in a new form] proposed regulations that mean that the State takes over the nuclear power companies' responsibility for the spent fuel if there is no-one else who may be held responsible. The report also discusses the State's possibility to take over the responsibility for the final repository after final closure. The proposals in the report have not yet led to legislation.

## 9.2 Ministry of the Interior and Sport of Mecklenburg-Western Pomerania

### 9.2.1 Radiological impacts in the context of beyond design basis accidents are not part of the environmental impact assessment. Regardless of this however, I would be interested to know the following:

- a) What worst-case design basis accidents (umbrella cases) were radiologically investigated for the encapsulation plant?
- b) Are there any estimates of the radiological impacts of beyond design basis accidents resulting from terrorist activities, which have a geographical range as far as Mecklenburg-Western Pomerania?

**Response:** a) The design basis events analyzed for radiological environmental impact from Clink are various mishaps when handling fuel. A fuelcassette dropped into water, with the conservative assumption that all the fuel in the cassette is damaged, is the incident that results in the highest dose. The received dose is well below SSM's current acceptance criteria for this type of events.

b) Non-design-basis events have also been analyzed. The calculated dose at a distance of 30 km from the facility is below the acceptance criterion for normal operation of the facility. SKB believes that non-design basis events due to terrorist activity can not have larger environmental impact on the surroundings far away than the impact the non-design basis events that are analysed should give. Thus the radiological impact on Mecklenburg-Western Pomerania for this type of event is judged to be of such magnitude that it can not be distinguished from the impact that could arise from the normal dose received from background radiation in the surrounding environment.

### 9.3 Schleswig-Holstein – Ministry of Energy, Argiculture, Environment and Rural Areas

**9.3.1 Crystalline is less suitable compared to other storage mediums in terms of its hydraulic properties. For storage in granite (crystalline) the suitability of the technical barriers (e.g. copper canisters/bentonite buffer) would therefore be especially important. Storage in granite could, in the event of ice ages, entail a heightened risk of corrosion for the canisters and the inventory (see Synthesis Report issued by the Federal Office for Radiation Protection: A comparison of host rocks· Conceptual and safety-related issues regarding the disposal of radioactive wastes, 4 November 2005).**

**I would therefore recommend that evidence be provided in the further procedure which shows that in the case of granite storage the technical barriers will perform their task effectively over a period of one million years. Alternatively, proof could be provided which indicates that long-term safety only needs to be guaranteed for a considerably shorter period of time.**

**Reasoning: The latest discussions in Germany conclude that geological barriers should make a significantly higher contribution to safety than technical barriers. If this safety standard is relinquished and storage in granite planned, the standards for the technical barriers must be set considerably higher.**

**In this respect, a safety case for one million years is not provided in the documents submitted by Sweden. Instead it is indicated (but not conclusively substantiated) that safety only has to be guaranteed for a considerably shorter period of time ("After about 100,000 years, the spent fuel has the same activity as the uranium that was once mined in order to produce the fuel"). Such an assumption has not yet been proven in the international debate.**

**Response:** That the granitic bedrock would not be accorded decisive importance for the long-term safety of the repository is a misconception. This is for two reasons - the rock properties are essential for the performance of the engineered barriers and the rock itself constitutes an important barrier to retain and delay any radioactive emissions from the engineered barriers. The selected site in Forsmark has for a granitic bedrock very low permeability and a low frequency of water-bearing fractures, which is favourable for both these aspects. Rock properties were decisive for the choice of Forsmark as the site for the final repository.

The time aspect for the safety assessment of a spent fuel repository is also misunderstood. It is clear from the documentation for the Espoo consultations both that Swedish regulations require that the analysis covers one million years after closure and that the assessment of the repository in Forsmark is made for this time period. The assessment shows that the granitic rock at Forsmark together with the engineered barriers of the KBS-3 method provide full protection for humans and the environment throughout this period.