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NACKA TINGSRÄTT  
Avdelning 4

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AKTBIL: 520

**To Environmental Protection Agency  
SE-106 48  
Stockholm**

E-mail only [registrator@swedishepa.se](mailto:registrator@swedishepa.se)

Marktredwitz, April 12, 2016

**Subject: Case number: NV-07138-15 / objections to the planned project "EIA Sweden -  
deadline for objections 2016-04-15**

Ladies and gentlemen,

I hereby protest against the planned project "EIA Sweden: Final repository, encapsulation plant and extension of interim storage", the reasons for which are given below in detail.

- a. **17 pages in German is decidedly too little to get an overview of Sweden's plans.** I can speak English, but many of Germany's 80.5 million citizens are certainly not able to read documents in English. I therefore refer only to the German version, that is, of 17 pages. Pure German-speaking people are discriminated against. While Swedes can read the full documentation. Sweden is therefore in breach of international and European law. Sweden has signed the Aarhus Convention of 20 May 2005, and has also approved the Espoo Convention. Relevant items are as follows:

**The texts are written by Jan Haverkamp, Greenpeace:**

Over European law also stand international treaties - and especially where the EU is party to those treaties, it is the European Commission that has to guard over their implementation.

Here's the law:

Aarhus 3(9): Within the scope of the relevant provisions of this Convention, the public shall have access to information, have the possibility to participate in decision-making and have access to justice in environmental matters **without discrimination as to citizenship, nationality or domicile** and, in the case of a legal person, without discrimination as to where it has its registered seat or an effective centre of its activities.

Espoo 2(6): The Party of origin shall provide, in accordance with the provisions of this Convention, an opportunity to the public in the areas likely to be affected to participate in relevant environmental impact assessment procedures regarding proposed activities **and shall ensure that the opportunity provided to the public of the affected Party is equivalent to that provided to the public of the Party of origin.**

EIA Directive 85/337/EC, art. 7(5). The detailed arrangements for implementing this Article may be determined by the Member States concerned and shall be such **as to enable the public concerned in the territory of the affected Member State to participate effectively in the environmental decision-making procedures** referred to in Article 2(2) for the project.

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| nuclear energy and energy policy  
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\*You can't sink a rainbow\*

- a. **80.5 million people in Germany were not actively informed.** They found the EIA documentation by chance. Or did not. During the earlier stages, I could not attend in person because I did not know. The claim "information was available online and everyone could participate," is not true. Only the people who knew or were informed about it could participate. This must be improved.

- b. **The KBS-3 method is described, but the German version says nothing about the problems with corroding copper canisters.** This must be rectified.

Source: [http://www.deutschlandradiokultur.de/atommuell-schweden-auf-endlager-suche.2165.de.html?dram:article\\_id=340884](http://www.deutschlandradiokultur.de/atommuell-schweden-auf-endlager-suche.2165.de.html?dram:article_id=340884)

### **Sweden applies for final disposal**

By Christine Westerhaus

*The environmental organization MKG's office in Gothenburg is located right in the city. Johan Swahn works here towards ensuring that the Swedish state stores highly radioactive nuclear waste as safely as possible underground. He has many objections to the idea of the Finns and Swedes idea of burying radiation waste packed in copper containers of granite.*

*In 2011, Sweden's nuclear power industry also applied to the government to build a repository in granite. But the authorities demanded improvements, says Johan Swahn. Now, the private operator must, among other things, prove that the copper containers that surround the nuclear waste really will last 100,000 years. Swedish researchers have calculated that the copper canisters in which nuclear waste is packed corrode much faster than projected by the operating company.*

*"It must first be proven clearly that the artificial barriers actually work and protect us from nuclear waste. In Finland they say: We will solve the problem of corrosion when it occurs. They know therefore that this problem exists and I think it is very problematic to begin construction of the repository and then maybe stop again because problems arise. "*

*The concept and the location of the repository should not be chosen lightly, according to Johan Swahn from the Swedish environmental organization MKG. He fights for Sweden to also look for other ways to safely store nuclear waste. But he does not have much hope: The nuclear industry has already come too far with their plans.*

*"If a company has established a location for the repository over many years, a lot of money has already been invested. And there is therefore a tendency that at the end of an open search you end up back where you were in the beginning. "*

- c. **The realistic risk of war or terrorist attack is missing in the German version, but also in the English version.** During repository operation for 45 years, it is possible to cause an unimaginable disaster with bunker-piercing weapons through the open entrance. The Baltic Sea would be seriously affected. A description of how this is to be avoided does not exist, and must be submitted.

- d. **Espionage and misuse of the knowledge gained by terrorist groups is not explained sufficiently and needs to be clarified.**  
<https://www.publicintegrity.org/2016/02/29/19376/terrorist-group-s-plot-create-radioactive-dirty-bomb>
- e. Sweden wants to operate its nuclear power plant for several more years. The risks that John Large has described in a Greenpeace study are relevant also in Sweden. The study is secret. Greenpeace would surely however release this study at the request of the Swedish safety authorities. Contact Heinz Smital: [Heinz.Smital@greenpeace.de](mailto:Heinz.Smital@greenpeace.de)  
This must be improved in the text.
- f. Oda Becker has also presented several studies on terrorist attacks in interim storage facilities and nuclear power plants commissioned by Greenpeace and the German BUND. They are available on the Internet or can be ordered from Ms. Becker. These studies are also relevant for the presented project. Contact Oda Becker: [oda.becker@web.de](mailto:oda.becker@web.de)  
This must be improved in the text.

Professor Rolf Bertram in Göttingen and possibly others have formulated the following public objections that I want to add here:

**1. to "Description of the Forsmark area"**

- 1.1 how an exchange of groundwater flow in the deeper groundwater is avoided is not described sufficiently,
- 1.2 there is no complete inventory of the endangered species described in the red list (amphibians, birds, plants, etc.),
- 1.3 it is not clear how the "unusual wilderness character" is to be preserved permanently from the inevitable radioactive emissions,
- 1.4 how the "pristine nature" will be preserved is not sufficiently explained.

**2. to "Description of the area in Oskarshamn" "Impact, effects and consequences"**

- 2.1 A more detailed description of the "areas of national interest" identified on the Simpevarp peninsula and also of the Natura 2000 site Figeholm is missing,
- 2.2 the criteria used in the classification of the evaluation process are missing,
- 2.3 a detailed description of the radiological measurements for the determination and comparison with legal limits is missing,
- 2.4 a reliable risk assessment for the transport of radioactive material to the peninsula Simpevarp is missing.

**3. to "CLAB" (interim storage facility)**

- 3.1 A detailed description of transport containers for "spent fuel" is missing,
- 3.2 it is not explained what is meant by "end-of-life core components"
- 3.3 it is not clear how "severe accidents" should be avoided "without consequences for the environment",

3.4 the additional risks due to "extended interim storage" of spent fuel and compaction of nuclear components are not mentioned,

#### 4. to **"Impact, effects and consequences"**

##### 4.1 - **Operational safety and radiation protection**

4.1.1 It is not proven that there is no health risk to residents caused by continuous discharges of radionuclides,

4.1.2 it is not clear that the new findings about the harmful effects of prolonged radiation at low doses have been taken into account,

4.1.3. it is not clear that the special harmfulness of tritium and radio-carbon (C14) has been considered,

4.1.4 it is not clear that activation products caused by neutrons have been taken into consideration in radiation protection,

4.1.5 the assumed cleaning of the polluted air through the particulate filter is not proven,

4.1.6 the plant's performance through the filters and ion exchangers is not proven,

4.1.7 it does not explain what is meant by "marginal annual increases in emissions and dose".

##### 4.2 - **Discharges to water**

4.2.1 It is not proven that the water required for cooling as well as cooling water from the Oskarshamn nuclear power plant can be released into Hamnefjärden without damage,

4.2.2 it is not proven that potentially contaminated groundwater can be released without damaging the Herrgloet bay.

#### 5. to **"Other environmental consequences"**

5.1 The assumption that "no national interest or protected areas" will be affected "neither by CLAB nor transport to and from the facility" is not proven,

5.2 it is incomprehensible that "Clab's impact on the landscape" should be limited because of the surrounding forests,

5.3 it must also be proved that the local lowering of the ground water does not affect the natural values and groundwater levels in wells.

#### 6. to **"Clink" (encapsulation plant)**

##### 6.1 - Facility and activity

6.1.1 The way in which protection from neutron radiation will take place under the management of "fuel elements ... until they arrive at the plant" is not described

6.1.2 the way in which protection from radiation is ensured is not described when "filled canisters" and "... shipping containers transported by sea to the repository."

##### 6.2 - **Impact, effects and consequences**

###### 6.2.1 Operational safety and radiation protection

6.2.1.1. The notion that "encapsulated fuel ... is no longer a source of airborne radioactivity"

was scientifically disproven long ago.

6.2.1.2 There is no evidence that "Clink's radioactive emissions to air and water ... will not give rise to any health consequences for neighbours or consequences for the flora and fauna in the area."

6.2.2 Radioactive waste - Because "radioactive waste from Clink" and "waste from CLAB" are not identical, an identical treatment is not justified.

6.2.3 Land use: The conclusions in the final section are not understandable and require explanation.

## 7. to **"Final repository"**

The information is so general that an evaluation of the measures announced is not possible. An application for a licence should therefore be supplemented significantly. In the present form, the application should be dismissed.

## 8. to **"Impact, effects and consequences"**

### 8.1 - **Operational safety and radiation protection**

8.1.1 The term "penetrating defect" is not defined. Clarification is absolutely needed.

8.1.2 It must be explained how the "staff" will be protected by "Radiation-shielded handling" from "neutron radiation" and resulting activation products.

### 8.2 - **Post-closure safety**

**This chapter is missing:**

8.2.1 - Consistent criteria for evaluating a closure,

8.2.2 - A precise definition of "system of passive barriers"

8.2.3 - A detailed account of the aforementioned "interaction of proliferation, mitigation, prevention and delay of radioactive substances"

8.2.4 - Calculations and understandable assessment of "the risk for people"

8.2.5 - Calculations and understandable assessment of the risks to future generations,

8.2.6 - Support for the claim that "the overall risk is significantly lower than the risk criterion".

### 8.3 - **National interests and protected areas**

8.3.1 - When the applicant's own conclusions state "The risk that the impact will be significant can not be excluded", the planned measures should be explained in detail.

8.3.2 - It can not be accepted "to (only) limit the impact on the natural values". It must be avoided.

### 8.4 - **Emissions to air**

8.4.1 - "The assessment" that "no significant impact on human health or the environment" occurs must be justified in detail based on verifiable findings.

## 9. to **"Consider alternative location"**

### 9.1 - **Clab**

9.1.1 - In the light of new findings (extension and tightening of criteria, improved research methods, etc ..), it is imperative to

re-evaluate the results evaluated "in the 1970s" (more than 40 years ago).

9.1.2 - In a recent review it must be shown that the latest advances in science and technology have been considered.

## 9.2 Encapsulation plant

9.2.1 - In a "dry processing of fuel elements" it should be indicated how the emerging neutron radiation and the concomitant formation of C-14 activation product will be prevented.

9.2.2 - It is not proven that "The two alternatives are thereby largely equivalent from an environmental and health viewpoint."

## 9.3 - The final repository

The assessment of the impact of alternative repository sites in terms of "environment, habitat, human health and water" is incomprehensible.

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I ask to be kept informed of the progress of the process and be involved in possible future processes.

Sincerely,

Brigitte Artmann

Sent up to and including April 15 as email attachment to: [registrator\(at\)swedishepa.se](mailto:registrator(at)swedishepa.se)

To

Environmental Protection Agency

SE-106 48 Stockholm, Sweden

Subject: "NV-07138-15"

We express, for the following reasons, objections to the planned nuclear facilities:

1. Buildings located above ground in the planned interim storage facility, the planned final repository for irradiated nuclear fuel elements as well as in the planned encapsulation plant are neither sufficiently secured against terrorist attacks nor against aircraft crashes.
2. Even during the planned operation, radioactivity will be continuously released into the biosphere through the exhaust air and water emissions.
3. Accidents during the transportation of radioactive materials by sea and land can not be excluded.
4. Releases of radionuclides may reach Germany via air and water - radioactivity knows no borders.



Swedish Environmental Protection Agency  
SE-106 48 Stockholm  
Sweden

By e-mail to: [registrator@swedishepa.se](mailto:registrator@swedishepa.se)

Berlin, April 15, 2016

**Transboundary environmental impact assessment for a final repository for spent nuclear fuel as well as an encapsulation plant for an existing interim storage facility whose storage capacity is expanded**

**Case number "NV-07138-15"**

**Opinion/objection from Bastian Zimmermann**

Ladies and gentlemen,

The Swedish Kingdom is planning to build a final repository for spent nuclear fuel, as well as to extend an existing interim storage facility for spent fuel and supplement it with an encapsulation plant. In Sweden, two sites are currently being discussed for this. Firstly, the site Oskarshamn (Oskarshamn nuclear power plant) and the site Östhammar (Forsmark nuclear power plant).

Within the framework of this project, an environmental impact assessment (EIA) is carried out with transboundary participation from the German public in accordance with the Espoo Convention. There is an opportunity for the authorities and the public in Germany to comment during the transboundary EIA process until April 15, 2016. I would like to use this opportunity, with the following opinion on a final repository for spent nuclear fuel as well as an encapsulation plant for an existing interim storage facility whose storage capacity is expanded.

## 1. Rock stress and water permeability

Sweden follows the concept of storing radioactive waste in the bedrock. When selecting a site in the bedrock, the rock mechanical stress conditions in particular must be taken into account. On the Forsmark site, these rock mechanical stress conditions are more precarious than at the Oskarshamn site. This has an impact on the long-term stability of the repository.

As a result of the last ice age, the Scandinavian land (the Cap of the North) is rising steadily. As a result, movements in the rock and reactivation of ancient fault zones occur. Earthquakes can not be excluded. Since the different blocks of rock are not rising uniformly, old fractures and fissures in the ground will grow. Also, new cracks may be formed (mechanical fault zones). In connection with this, the used storage containers and the surrounding bentonite may be damaged. Moreover, it can lead to different types of groundwater penetrating.

Since the basic rock types in Sweden have a significantly high water permeability, special measures must be taken with regard to the container concept for the disposal of radioactive material, as the container assumes the crucial barrier function in the repository system.

## 2. Canister Concept

In Sweden, copper canisters will be used for disposal of the highly radioactive waste. In addition, a bentonite buffer encloses the copper containers.

### 2.1. *Described advantages of copper canisters and bentonite buffers*

Named advantages of the copper canisters are that biofilms will have difficulty forming on copper. They are said to be antibacterial. Consequently, they are said to be difficult to corrode. The bentonite buffer is described as important for the mechanical stability. The buffer is said to protect in case of earthquakes and vibrations and seals against water and other liquids.

### 2.2. *Disadvantages of copper canisters and bentonite buffers*

As for the long-term safety it can not be guaranteed that the copper canisters will provide adequate protection in contact with water for a period of 100,000 years (what is needed is 1 million years, see below). Therefore, contact with water must be avoided.

Although the canisters are difficult to corrode there is a danger that corrosive H<sub>2</sub>S is formed in bentonite as a result of an intensive sulphate reduction. For Sweden, this is important because the clay mineralogy and the absorption behaviour may vary depending on the geochemical load. In poorly compacted bentonite, microorganisms may penetrate, such as sulphate-reducing bacteria that produce H<sub>2</sub>S and thus attack the

copper containers.<sup>1</sup>

Several experts fear a corrosion of the copper containers, such as Gunnar Hultqulst, materials researcher at the Royal Institute of Technology (KTH) in Stockholm, Peter Szakalos, materials researcher at the Royal Institute of Technology (KTH) in Stockholm, the Swedish environmental organization MKG - the Swedish NGO Office for Nuclear Waste Review and Prof. Dr. rer. nat. Joachim Reitner at the University of Göttingen.

As far as I know, the operator Swedish Nuclear Fuel and Waste Management Co (SKB) must show that the copper containers that enclose the nuclear waste will remain intact and protect against radiation during the time period required. Artificial barriers like the container must prevent highly toxic radionuclides from leaking out and reaching the environment through the groundwater. According to current science and technology, an isolation from the biosphere for a period of 1 million years is considered necessary for highly active long-lived waste. **In my opinion, it is not possible to ensure an isolation for 1 million years at this site with sufficient reliability with a concept based so heavily on artificial barriers. In my opinion, it is a serious mistake by the authorities, for such dangerous and long-lived radioactive waste, to not select the location in Sweden for the final repository that provides the best possible safety according to current knowledge. Upon release from the repository, a far-reaching radioactive contamination via the Baltic Sea must be feared, in my view. Therefore, I consider the selected location to be irresponsible.**

In addition, the Swedish operator SKB should reconsider its repository concept with regard to the ability to control the nuclear waste containers. Prof. Dr. Reitner at the University of Goettingen proposes e.g. the development of a concept where the containers after the operational phase (late 2100s) for a certain period may be retrieved as a precaution and their quality and integrity be checked. Thus, there would be an opportunity to react faster to any corrosion damage.<sup>2</sup> Our experience from final disposal in Germany shows that certain eventualities that jeopardize the security can not be predicted. That is why the safety requirements of the German Environment Ministry from 2010 also include the possibility of retrieving the radioactive waste for a period of 500 years.

The Swedish organization MKG also suggests leaving the waste produced so far in the interim storage facility CLAB in Oskarshamn for the time being and researching safer containers and storage methods.<sup>3</sup>

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<sup>1</sup> See the presentation by Prof. Dr. Reitner "The Äspö tunnel - the world's largest underground laboratory for research on final disposal of nuclear waste" in the Lower Saxony state representation Berlin, 2014-10-22.

<sup>2</sup> Ibid.

<sup>3</sup> Cf. MKG (2011) "Inadequate plans for a Swedish final repository".

### 3. Further aspects

It is as yet unclear whether the expansion of capacity of the existing interim storage facility CLAB will also lead to the interim storage being updated according to the most recent science and technology. Questionable for example is the storage method in pools in caverns approximately 30 meters deep in contrast to today's preferred solution with dry storage. Nor is it apparent from the documents made available by SKB if new measures will be taken in view of the natural disaster in Fukushima and the real threat of international terrorism, in terms of protection against flooding and terrorism. Lacking also is a reliable risk assessment for the transport of radioactive material to the Simpevarp peninsula, especially as SKB itself describes the county road 743, used for transport, as periodically having a high traffic load.<sup>4</sup>

The assumption that no national interests or protected areas will be affected neither by CLAB nor by transports to and from the facility is not proven in detail. Nor is it proven that no health risks to local residents are caused by the continuous release of radionuclides and that the overall risk is significantly lower than the risk criterion (SSM), which means that people in the vicinity of the repository may not be exposed to greater risks.<sup>5</sup>

In the search for a final repository for high-level radioactive waste, the greatest possible safety of the site should be a top priority. The voluntary principle, which in Sweden has led to two nuclear power municipalities having voluntarily applied as sites and one of them finally being named as a potential location for the repository, must not lead to inadequate consideration of critical security issues for the long-term safety and the protection of man and nature against radiation. **I consider the selected location, directly on the Baltic coast, to be irresponsible.**

I ask you to consider these remarks in the further process and particularly in the siting decision, and I would be grateful if you would keep me informed of your continuing process.

Sincerely

Bastian Zimmermann

Greifenhagener Str. 54

10437 Berlin, Germany

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<sup>4</sup> Cf. SKB (2015): EIA for the KBS-3 system - Non-Technical Summary, p.7

<sup>5</sup> Ibid., p.9; 14.

----- Original message -----

From: Martina Haase [mailto:marthaal@web.de]  
Posted: April 14, 2016 15:07  
To: Registrar <registrator@naturvardsverket.se>  
Subject: EPA date ..... SE-106 48 Stockholm NV-07138-15

Ladies and gentlemen,

Apart from all the reasons, which should be addressed individually, that speak against your planned nuclear waste repository, it should be rejected in principle as long as nuclear waste is still produced in nuclear power plants in your country, Forsmark, Oskarshamn and Ringhals. Otherwise, we support the objections of BIWAANAA from the Upper Palatinate"

Organic regards,

Klaus Heber and Anke-Martina Haase, Wilbankstraße 133, D-52076 Aachen



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Environmental Protection Agency

**SE-106 48 Stockholm**

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Als gemeinnützig anerkannt

Steuer-Nr. 143/223/20222

FA München für Körperschaften

Vereinsregister: Amtsger. Mchn VR 11808

Your reference Our reference Phone number  
(089) 30 77 49 -11

E-Mail  
[ch@umweltinstitut.org](mailto:ch@umweltinstitut.org)

München,  
April 14th 2016

A copy of the statement has been sent in by e-mail  
to: [registrator@swedishepa.se](mailto:registrator@swedishepa.se)

Subject: Statement on transboundary EIA procedure for a repository for spent fuel, as well as for an encapsulation plant to the existing interim storage facility (CLAB) and extension of the storage capacity of this interim facility (integrated facility Clink); Case number: NV-07138-15

Ladies and gentlemen,

The Munich Environmental Institute hereby comments on the aforementioned transboundary EIA procedure: The construction of a final repository, an encapsulation plant and extension of interim storage.

Dipl.Phys. Karin Würzbacher has participated in this statement.

### Preliminary remarks

The Munich Environmental Institute is an independent, nonprofit organization founded after the Chernobyl disaster in 1986. We fight among other things for a global phasing-out of nuclear energy and a sustainable energy supply.

### Formal deficiencies

The documentation submitted is not sufficient. In German only a translation of the non-technical summary is provided, which includes only 17 pages. The full report is, however, important for an evaluation. According to the Espoo Convention, all citizens should have the opportunity to see the complete documentation in the local language.

The goal of a "full and open involvement of the German public" has thus not been achieved. Therefore the provision of the full report in German and a new process is required.

### Final repository for spent nuclear fuel

A total amount of approximately 1200 tonnes of spent nuclear fuel is calculated up to the end of the scheduled operation time for the Swedish nuclear power plants. In the current non-technical summary, it is described on page 2 that the repository according to the operator SKB "will not cause any significant environmental or health impacts in the future ...". It is also noted that the long term safety of the repository is described in the EIA report. Since this description is not available, these sweeping statements are not tracked or evaluated. A presentation of the description in German is required.

On page 3 the KBS method is presented. It is not clear how the safety of the barriers - the copper containers, the buffer of bentonite clay and enclosing rock - is guaranteed individually and in combination.

### Location

Reference is also made to a systematic comparison of the two sites, Forsmark and Laxemar/Simpevarp, which is not understandable either. The respective circumstances and the criteria that have motivated the choice of the Forsmark site are not clear in the report. An assessment can not be made.

For the selected location Forsmark, it is mentioned that several areas designated for the final repository are of national interest for nature conservation (p.4). There is no indication of the extent to which this has been considered in the location decision.

On page 5 the water-bearing strata in the top 150 meters and at a depth of 400 meters are described. It is not clear from this how an exchange of groundwater is avoided.

Noteworthy is the finding on page 6 that "the affected area became land first in the last thousand years." For this reason the long-term safety over a million years that is required can not be predicted with sufficient certainty.

In the description of the location Oskarshamn (Laxemar/Simpevarp) where the interim storage facility CLAB is found, a nearby Natura 2000 site is referred to. If CLAB is to be extended and an encapsulation plant built, a description of how the Natura 2000 site will not be affected is required. Such a statement is missing. Furthermore, "a number of areas of national interest" are mentioned but not explained. A review is therefore not possible.

On page 7 for the location Laxemar/Simpevarp it is stated that "emissions from the power plant amount to less than one hundredth of the legal limit." The contribution from the interim storage CLAB is therefore supposedly "almost negligible". Given that neither measured nor limit values of emitted radionuclides are mentioned, this statement can not be verified.



The description of the repository (p. 12) is very vague and must be made more concrete. From such a shallow description no assessment can be made.

#### The effects and consequences of the final repository

That containers handle disturbances and "mishaps" without any "penetrating defects occurring" (p. 14), is an unproven assertion. The type of radiation shielding during handling is not explained in detail. This should be supplemented.

After closure, according to the report, must "a system of passive barriers be accomplished that ... limits the spread of radioactive substances". It must be clarified what the nature of these barriers are.

An "analysis of the long-term safety of the repository" (p. 14) is referred to, which allegedly proves that security requirements are met for closure. In the absence of concrete information and evidence this can not be verified. Similarly, the assessment that the overall risk is "far below the risk criterion" is not understandable.

#### Interim storage facilities Clab

The description of the existing facility is unclear. It is not clear what is meant by "certain end-of-life high-level components" from nuclear power plants (p.7). For safety, this is essential.

Henceforth, it is said that nuclear fuel and spent nuclear components will be transported in "special transport containers" (p. 8). The nature of these containers is not clear. Therefore, safety cannot be assessed.

Regarding the proposed extension of the interim storage facilities it is argued that it can be carried out "with relatively simple measures." Mentioned measures are: "To store all the fuel in so-called compact cassettes" and the transfer of "core" components "to another location." Safety aspects that may occur due to a compression of the core components is not mentioned nor is "another location" specified. Thus, no assessment can be performed.

#### The effects and consequences of Clab

On page 9 it is mentioned that the released radionuclides are "very far below the legal limits." Neither measurements, nuclide composition or nuclide quantity are mentioned.

In addition, it is alleged that "the air ... is purified by a particulate filter" and therefore most of the radioactivity would be removed. There is no evidence for this, and no assessment is possible. The same applies to the emission of radioactivity through the water or cleaning with "filters and ion exchange resins."

The final claim that the increase in interim storage will only lead to a "marginal annual increase" of emissions can not be understood unless the values are stated.



In the section "Other environmental consequences", it is alleged that the local drawdown of the groundwater has no impact on the natural values and groundwater levels in wells. This is not understandable. No evidence is provided.

Surprisingly, this is also contradicted in another place: On pages 14 "National interests and protected areas" and 15 "Groundwater levels and wetlands", possible impacts from a reduction in the groundwater are mentioned explicitly. It says: "The risk that the impact will be significant can not be excluded". A clarification is urgently needed!

#### Encapsulation plant Clink

On page 11 it is mentioned that the encapsulated fuel elements are certainly not a source of airborne radioactivity, but that radiation shielding is required anyway. Proof that no release of radioactivity is possible, however, is missing, as well as information on the form in which shielding is ensured during handling.

Emissions from Clink would, according to the report, be "according to estimates far below the legal limit and have no health consequences." First, unpublished calculations are not proof, and second, no values, magnitudes or nuclides are given, so an assessment can not be done.

Without further information, it is claimed that "radioactive waste from Clink is handled in the same way as waste from CLAB. But given that the wastes from Clink and Clab are not identical, identical handling is not possible. For a review, detailed information on the waste and its intended handling must be provided.

The claim that "the plant is not expected to affect any national interests or protected areas" is too vague. It must be proven.

It is an unproven assertion that the additional cooling water discharged from Clink will only increase the temperature of Hamnefjärden marginally.

#### **Conclusions**

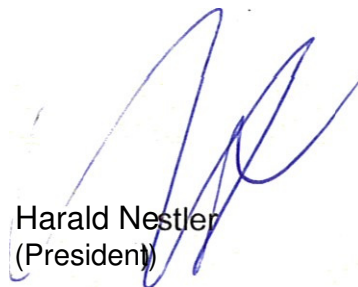
The current EIA report is very vague, with many empty claims and even contradictions. It does not permit an adequate assessment of the planned final repository and facility.

For these reasons, we reject the current "non-technical summary" and request a new report with complete documentation in German which allows an assessment.

Sincerely,



Christina Hacker  
(President)



Harald Nestler  
(President)

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**Subject: Case number: NV-07138-15**  
**Objections to the proposed project "EIA Sweden: Final repository, encapsulation plant and expansion of interim storage facility"**

**Deadline for objections: 15/04/2016**

#### Introduction

The EIA report from SKB [Swedish Nuclear Fuel and Waste Management Company], the company responsible for the implementation, shows a very questionable approach. They plan to build a final repository for highly radioactive nuclear waste from spent nuclear fuel without being able to guarantee long-term safety. The core of the concept, whether the engineered barriers of copper canisters and the engineered barrier of bentonite clay can actually confine radioactivity during the time required, can not be proved credibly.<sup>1</sup> Without proof, however, the whole concept collapses. It is irresponsible to begin construction in this situation and to delay the solution of the central problem to the future. It must be feared that the financial and organizational pressure to put the repository into operation despite serious deficiencies in the long-term safety will be too large after completion, with harmful effects on the environment as a result.

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<sup>1</sup> [http://nuris.org/wp-content/uploads/2015/04/Arvegard\\_The-Review-of-the-Swedish-Spent-Fuel-Repository-License-Application.pdf](http://nuris.org/wp-content/uploads/2015/04/Arvegard_The-Review-of-the-Swedish-Spent-Fuel-Repository-License-Application.pdf)

Moreover, the entire siting process loses its foundation when the promised protection standards can not be met and the assessment of the affected population is based on other facts than those presented in the EIS.

Extension of an interim storage facility for nuclear waste and an encapsulation plant for packaging waste are also subjects of the environmental impact assessment.

## Objections

1. The information provided is insufficient to assess the project. Specifically the information available in German does not meet the requirements of the Aarhus Convention.
2. Selection of repository site/options  
In June 2009, a systematic comparison of the conditions on the sites showed that all things considered, Forsmark is the site that offers the best prospects for achieving long-term safety. SKB therefore decided to submit licence applications for a final repository located in Forsmark.<sup>2</sup> The choice of location for the construction of the repository in Forsmark assumes that long-term safety can be met by the planned engineered barriers. Under this condition, the requirement on the geological barrier to prevent the spread of radioactivity is of secondary importance. For now, however, the barrier effect of the technical facilities for the requested time period is highly questionable. The scientific hypothesis that oxygen-free water does not lead to corrosion of copper containers seems to be false (see footnote 1). This results in corrosion rates that can lead to the release of radioactivity within less than 1000 years. Thus, the geological barrier effect once again becomes more important and the question of siting becomes relevant. This also means that SKB's statement that a systematic review of conditions at the sites shows that overall Forsmark would be the site that offers the best conditions for achieving long-term safety loses its foundation.
3. Deficiencies in the canister concept  
"Filled canisters are placed in transport casks and transported by sea to the final repository. The function of the canister in the repository is to contain the spent nuclear fuel and isolate it."<sup>3</sup> At present, the canister concept must be regarded as a failure.

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<sup>2</sup> <http://www.skb.com/wp-content/uploads/2016/02/UVE-f%C3%BCr-das-KBS-3-System-%E2%80%93-nichttechnischeZusammenfassung.pdf>

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<sup>3</sup> <http://www.skb.com/wp-content/uploads/2016/02/UVE-f%C3%BCr-das-KBS-3-System-%E2%80%93-nichttechnischeZusammenfassung.pdf>

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4. Deficiencies in the geological description

There are long, water-conducting horizontal fractures within the upper approximately 150 metres of the rock. At depths greater than 400 metres, the average distance between water-conducting fractures is more than 100 metres and the groundwater flow is limited. Due to these conditions, along with the area's gently dipping topography, most of the groundwater flows take place relatively close to the ground surface, without much exchange with deeper groundwaters.<sup>4</sup> Even if the exchange with potentially radioactive contaminated water (due to faults in the engineered barriers) is currently considered to be low, an impact on the environment must still be expected. No indication was given of how much a temperature increase due to the highly radioactive and heat-generating radioactive waste affects groundwater flow and how warmer water affects the higher groundwater flow. Referring to the problems in the former final repository Asse II in Germany, a more detailed assessment of the waters in the area surrounding the repository must be completed as soon as possible. A temporal assessment of the sustainable stability is missing entirely.<sup>5</sup>

5. Additional problems with the proposed disposal concept

Additional points of criticism<sup>6</sup> stem from problems caused by the possible swelling of the bentonite clay barrier, by stray currents from the direct current power cable under the sea, by tectonic and glacial disturbance forces acting on the mountain. Scenarios with people's disruptive behavior during the storage process and security measures that prevent the theft of nuclear material in the long term are not dealt with adequately in the EIA.

6. Extending the interim storage facility Clab

If an extension of the interim storage in Clab is ecologically motivated, this is not clear from the minimal version of the EIS. An extension of the interim storage can provide an economic advantage, but it is important to question how high the environmental impact actually is. SKB's assessment seems to be rather short-sighted, because the site must absolutely be reassessed according to current, applicable standards, not as in the environmental impact assessment [EIA] with standards more than 40 years old.

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<sup>4</sup> <http://www.skb.com/wp-content/uploads/2016/02/UVF-f%C3%BCr-das-KBS-3-System-%E2%80%93-nichttechnischeZusammenfassung.pdf>  
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<sup>5</sup> <https://www.greenpeace.de/themen/energiewende-atomkraft/atommull/asse-ii-der-endlager-gau>

<sup>6</sup> <http://www.mkg.se/>