# **ANNEX**

Final disposal project for spent nuclear fuel and general summary of the statements given on its environmental impact assessment report

# Contents

1	Party	responsible for the project	3
2	The project		
	2.1	The final disposal facility and related environmental impact assessment (EIA)	5
	2.2	Alternative disposal sites and final disposal solutions	5
3	in re	tion of environmental impact assessment procedure spect to final disposal in nuclear energy legislation-related	7
	deci	sion-making	
	3.1	Responsibilities in regard to final disposal	7
	3.2	Position of EIA procedure in the decision-making process	7
		Decision-in-principle and EIA	7
		Subsequent license procedure	9
	3.3	Application for the decision-in-principle by Posiva Oy	9
4		mation distribution and hearing in regard to the ronmental Impact Assessment Report	11
5	State	ements and views	13
	5.1	General	13
	5.2	Non-implementation of final disposal	14
	5.3	Alternative methods for the management of spent nuclear fuel	15
	5.4	Retrievability	17
	5.5	Quantity and origin of nuclear fuel planned for final disposal	17
	5.6	Radiation safety	19
	5.7	Health impact beyond that caused by radiation	20
	5.8	Social impact	21
	5.9	Transport	23
	5.10	Accidents during operational phase of facility	24
	5.11	Scientific level and reliability of environmental impact assessment	26
			27
			28
			31
	5.12 5.13	Need for final disposal safety and environmental impact follow-up  Communications quality and success of interaction  Other perspectives and observations in regard to the EIA Report	28

5.15	Statements of neighbouring nations in regard to the Environmental	2.2
	Impact Assessment Report	33
	Sweden	33
	Russia	34
	Estonia	34
5.16	Perspectives on the relationship between final disposal project EIA	
	procedure and the final disposal-related decision-making process	35
5.17	Issues raised in regard to general energy policy and final disposal	35

# 1 Party responsible for the project

The party responsible for the project is:

Posiva Oy, Mikonkatu 15, 00100 HELSINKI

Posiva Oy is a company owned jointly by Teollisuuden Voima Oy and Fortum Power and Heat Oy (formerly Imatran Voima Oy), responsible for the management of nuclear waste and whose principal task rests in the investigation, planning and execution of final disposal respective to the spent nuclear fuel generated by the enterprises mentioned.

#### 2 The project

# 2.1 The final disposal facility and related environmental impact assessment (EIA)

The purpose of this project is the final disposal of the spent nuclear fuel generated by Finland's nuclear power plants, i.e., emplacement in a manner intended as permanent in the Finnish bedrock. According to such plans, the final disposal facility shall be built during the decade 2010–2020, and final disposal itself is to start at the earliest in the year 2020. The extent and duration of the project shall be dependent on the quantity of fuel to be finally disposed.

The final disposal facility for spent fuel shall be composed of the encapsulation plant to be constructed on the surface together with auxiliary premises, plus the final disposal areas to be excavated at a depth of 300–700 metres into the bedrock. The final disposal-related operations would require a superterranean land area of approximately 40 hectares in addition to a road area of about 20–40 metres, depending on the location.

In EIA procedure, the environmental influence of the final disposal facility is assessed as a basic case, the facility being measured on the basis of the fuel accumulated for final disposal by Finland's current nuclear power plant units during 40 years of operation. This way, the amount of fuel is approximately 2 600 tons of uranium at maximum. In addition, an instance is examined in which the units were to function for 60 years, at which point the corresponding quantity of fuel would be 4 000 tons of uranium. Circumstances in which the amount of nuclear fuel would be larger than this—not in excess of 9 000 tons, however—have been examined to the extent that the increase in the quantity of nuclear fuel would change the environmental impact as assessed. The case last-mentioned would apply to a situation, for example, in which new nuclear power plants were to be built in Finland.

# 2.2 Alternative disposal sites and final disposal solutions

The procedure for environmental impact assessment and the report provided on the same affects four possible alternatives for the final disposal facility site:

- In the Municipality of Eurajoki, the final disposal area would be located in the centre of Olkiluoto Island. The encapsulation plant could be situated either within the grounds of the present power plant area or area for final disposal.
- The final disposal area in the City of Kuhmo as well as the encapsulation plant would be located 20 km from the centre of Kuhmo in Romuvaara to the northeast.
- The final disposal area in the City of Loviisa would be situated within the bedrock of the island of Hästholmen as well as, in part, the Källa mainland. The encapsulation plant would be located on the island of Hästholmen on the grounds of the present power plant.

• In the City of Äänekoski, the final disposal area and encapsulation plant would be located to the northern part of Äänekoski, in Kivetty.

6

The assessment report presents some methods used for the final disposal of spent nuclear fuel and, on the basis of these, variations in particular of geological final disposal-related technologies. The examination concentrates in the main on the so-called "base alternative" selected as that for the project, in which the radioactive elements are packed into watertight, durable copper canisters and deposited in the rock at a depth of 400–700 metres.

## Position of environmental impact assessment procedure in respect to final disposal in nuclear energy legislationrelated decision-making

## 3.1 Responsibilities in regard to final disposal

According to the Nuclear Energy Act (990/1987), the generater of nuclear waste must take responsibility for all measures connected with the management of the same, including the preparation of such measures and the assumption of liability for the cost of nuclear waste management. Spent nuclear fuel is regarded, in accordance with this legislation, as nuclear waste. In keeping with the alteration rendered to the Act on Nuclear Energy in 1994, nuclear waste originating in Finland must be handled, stored and disposed of in a manner intended as permanent (i.e., in terms of final disposal) within Finland.

The safety requirements of the final disposal facility are based on, among other things, the Act on Nuclear Energy, legislation on radiation and the related decrees provided and the Government decision on the safety of disposal of spent nuclear fuel (478/1999) as well as the instructions and regulations of the Radiation and Nuclear Safety Authority.

The main features, intermediate targets and schedule in regard to the selection of locale for final disposal in Finland have been originally stipulated in the decision-in-principle ratified 10 November 1983 by the Council of State on nuclear waste management research, study and planning efforts. Subsequent to the coming into force of the current Act on Nuclear Energy, the aims included in the decision-in-principle have been made binding on Teollisuuden Voima Oy and Fortum Power and Heat Oy by the resolutions of the Ministry of Trade and Industry 7/815/91 KTM and 11/815/95 KTM. According to the resolutions, these power companies are to implement the research programme aimed towards final disposal in the bedrock in such wise that, by the end of the year 2000, a site has been determined and selected at which the final disposal facility, if needed, can be constructed. The practical tasks of final disposal-related research, planning and implementation shall be carried out by Posiva Oy, jointly owned by the above-mentioned power companies. The legal and economic responsibility for the management of spent fuel rests with the power companies referred to above.

## 3.2 Position of EIA procedure in the decision-making process

## Decision-in-principle and EIA

The final disposal facility for spent nuclear fuel is, in the general meaning intended by the Act on Nuclear Energy, a significant nuclear institution whose construction requires a project-specific decision-in-principle by the Council of State to the effect that the building of this facility is consonant with the overall good of society. The application for decision-in-principle is directed to the Council of State. According to nuclear energy decree, an environmental impact assessment report in keeping with EIA legislation should be annexed to the application for the decision-in-principle.

According to EIA Act, environmental impact assessment procedure and the report prepared on the same represents a specific element of final disposal facility safety and the assessment of environmental influence. In the EIA Report, the party in charge of the project presents the project as designed as well as its alternatives, taking the effective legislation and resolutions by officials into consideration. EIA procedure is realized through interaction with the inhabitants living in the area influenced by the project. EIA procedure ends when the contact authority, i.e., on the part of the nuclear facility, the Ministry of Trade and Industry, has provided its final statement on the EIA Report. It is stated whether or not the report fulfils the requirements set forward in the EIA Act and decree in this pronouncement, in addition to whether or not it has taken the contact authority's observations referring the EIA programme into account, among other matters. Moreover, other statements as rendered are presented in the contact authority's pronouncement and it is confirmed as to whether or not the EIA Report is regarded. in the Ministry's view, as sufficient. The contact authority's statement on the EIA Report is delivered to the party in charge of the project as well as to the Council of State for handling.

The starting point for the examination of the application for decision-in-principle by the Council of State lies in the overall good of society. Handling of the application is not based solely on the material submitted by the applicant; rather, the authorities obtain those studies specified in the decree on nuclear energy in addition to others viewed as necessary and in which the project is examined from the most general points of departure.

The processing of the application for decision-in-principle also includes, in like manner to EIA procedure, interaction with the residents in the area affected by the project. The Ministry of Trade and Industry must, prior to making the decision-in-principle, ensure the possibility for inhabitants, municipalities and local authorities in the immediate environs of the nuclear facility to present their views in regard to the project. Additionally, the Ministry must arrange—in the planned site locality and in a more precisely defined manner—a public occasion in which opinions may be put forward on the matter, either orally or in writing. The opinions expressed must be brought to the knowledge of the Council of State.

Before the Council of State can make an affirmative decision-in-principle, it must be able to substantiate, in accordance with the Act on Nuclear Energy, that the intended site locality has defended the construction of the facility in its statement and that, in connection with the declaration of the Radiation and Nuclear Safety Authority or the processing of the application otherwise, aspects have not come to the fore which would otherwise indicate that there are insufficient prerequisites to build and utilize the facility in such a manner that it would be safe and not cause detriment to human beings, the environment or property.

The decision-in-principle made by the Council of State must be presented promptly to the Parliament for examination. The Parliament is capable of cancelling the decision-inprinciple as such, or resolve that it remains as such in effect.

#### Subsequent licence procedure

The general permit procedure follows the decision-in-principle by the Council of State. The construction of the final disposal facility necessitates a construction license granted by the Council of State. The prerequisite for granting a construction license is, among other things, that the plans regarding the facility are, from the safety point of view, adequate, that both occupational safety and the security of the populace are suitably taken into account in the design of operations, and that the site is, from the perspective of the operations planned, a suitable one with environmental protection being appropriately taken into consideration in the operations-related planning.

The use of the facility requires a licence granted by the Council of State, the requisite for issuance on its part being that occupational safety, safety and environmental protection must be appropriately taken into regard, among other matters. Also in connection with the processing of construction and licence-related applications, a hearing of the relevant municipalities, officials and citizens is organized.

According to the Act on Nuclear Energy, the principle behind the decision-making and permit system is that the assessment of safety and environmental influence shall continue and that the assessments are further specified and updated during the entire course of the project. In keeping with the decree on nuclear energy, several appraisals of safety assessment and environmental influence as well as control-related studies must be annexed to the nuclear facility project construction license application.

# 3.3 Application for the decision-in-principle by Posiva Oy

On 26 May 1999, Posiva Oy submitted, for the attention of the Council of State, an application for decision-in-principle in which Olkiluoto, in Eurajoki, is proposed for the building of a final disposal facility. The Ministry of Trade and Industry announced condition pending on the matter 18 June 1999. The statements of the authorities and surrounding municipalities, as well as other statements and views on the project and application, have been requested for submission to the Ministry no later than 19 November 1999. The public hearing required by the Act on Nuclear Energy is being arranged in Eurajoki 9 November 1999. The preliminary safety assessment by the Radiation and Nuclear Safety Authority on the project has been requested for submission to the Ministry by 31 December 1999 at the latest, and the statement by the Municipality of Eurajoki—which would include either pro or con expression of opinion in regard to the emplacement of the facility at the site proposed—by 28 January 2000. In accordance with the decree on nuclear energy, the Environmental Impact Assessment Report has been attached to the application for decision-in-principle on the final disposal facility for spent nuclear fuel.

In its application, Posiva has announced that in the event Olkiluoto were to prove, for some reason, to be inappropriate as the site for the final disposal project, the first runner-up locality would be Loviisa. In this instance, the application for decision-in-principle would be partially or wholly renewed.

# Information distribution and hearing in regard to the Environmental Impact Assessment Report

Notice of institution of proceedings pertaining to the assessment report was undertaken by bulletin board communiqué in the following municipalities and cities during the period 21 June – 20 August 1999: Eurajoki, Eura, Kiukainen, Lappi, Luvia, Nakkila, Rauma, Kuhmo, Hyrynsalmi, Lieksa, Nurmes, Ristijärvi, Sotkamo, Suomussalmi, Valtimo, Loviisa, Lapinjärvi, Liljendal, Pernaja, Pyhtää, Ruotsinpyhtää, Äänekoski, Kannonkoski, Konnevesi, Laukaa, Saarijärvi, Sumiainen, Suolahti, Uurainen, Vesanto, Viitasaari.

Statements were requested from the above-mentioned municipalities as well as from the Ministry of the Environment, Ministry of Defence, Radiation and Nuclear Safety Authority, Advisory Committee on Nuclear Energy, Finnish Environmental Institute, Provincial State Office of Western Finland and the Regional Council of Satakunta. The opportunity to submit statements has been reserved in respect to the Ministry of Social Affairs and Health; the Ministry of Transport and Communications; the Finnish National Road Administration; the Technical Research Centre of Finland; the Geological Survey of Finland; the Provincial State Offices of South Finland, East Finland and Oulu; the Provincial Government of Åland; the Uusimaa, West Finland, Central Finland, Southwest Finland and Kainuu Regional Environment Centres; the Regional Councils of East Uusimaa, Central Finland and Kainuu; the Water Courts of West Finland, East Finland and North Finland; the Employment and Economic Development Centres of Uusimaa, Satakunta, Central Finland and Kainuu, and the Finnish Association for Nature Conservation.

Institution of proceedings has also been announced in the following newspapers: Länsi-Suomi, Satakunnan Kansa, Uusi-Rauma, Kuhmolainen, Kainuun Sanomat, Karjalainen, Loviisan Sanomat, Uusimaa, Östra Nyland, Borgåbladet, Keskisuomalainen, Sisä-Suomen Lehti, Keski-Suomen Viikko, Helsingin Sanomat and Hufvudstadsbladet.

Statements and views were requested for submission to the contact authority by 20 August 1999 at the latest. In close proximity to the EIA Report as exhibited, there were reply forms available, each supplied with the address of the contact authority for the purpose of the presentation of views.

Finland's Ministry of the Environment has sent, to the officials of Sweden, Estonia and Russia, a notice in regard to the institution of proceedings in respect to the project-based Environmental Impact Assessment Report, asking them for possible statements on the assessment report. Representatives of the countries concerned were informed about the matter in addition to the contents of the assessment report in oral form as well for the purpose, at occasions organized by the Ministry of the Environment, the Ministry of Trade and Industry and Posiva Oy. In connection with the project-based assessment programme, the environmental authorities of these nations had presented the wish to receive the opportunity to present viewpoints also in regard to the assessment report; though no obligation issues from international agreements in respect to hearing the officials of these countries.

#### 5 Statements and views

#### 5.1 General

Statements as requested were obtained from 14 officials and public institutions on the Environmental Impact Assessment Report, from all alternative site municipalities and most of the neighbouring municipalities (totalling 23), as well as from the authorities of Sweden, Russia and Estonia. Organizations and local civic movements in addition to private citizens have presented a total of 14 statements or opinions.

The Ministry of Trade and Industry has arranged delivery of the copies of all statements and views provided in regard to the assessment report to Posiva Oy. The original statements and views are being preserved at the Ministry of Trade and Industry, and a collated copy of the same has been rendered as background material relevant to this declaration on the EIA Report. One may acquaint oneself with the collation concerned at the Ministry of Trade and Industry, and a printed copy may also be obtained of the same.

The goal of the hearing procedure in regard to the EIA Report is to bring various perspectives to the knowledge of the contact authority in regard to the success of the assessment in addition to possible shortcomings, prior to the contact authority forming its position on the adequacy of the report.

In many of the statements submitted, viewpoints have been expressed not only in respect to the EIA Report but also in regard to, among other matters, the final disposal of nuclear wastes in general and the final disposal site alternatives in rank order, accompanied by thoughts on the decision-making process and the EIA procedure-related need for development and stands taken on the questions respective to energy policy, such as the acceptability of the use of nuclear energy in general or progress in the investigation of renewal energy sources, etc. A partial reason for the sweeping magnitude of these statements would appear to be the simultaneous institution of proceedings respective to the application for decision-in-principle on the outlined final disposal facility at Olkiluoto in Eurajoki with that of the EIA Report. Private persons and civic organizations have generally taken the strongest positions in regard to the final disposal of nuclear wastes, though more comprehensive issues than the environmental impact assessment alone have also frequently been taken up for consideration in the statements made by the authorities and the stands taken by the municipalities.

The perspectives in regard to the general acceptability of nuclear energy policy and the final disposal of nuclear wastes are, in the view of the Ministry, pertinent to the sphere of decision-in-principle procedure in accordance with the Act on Nuclear Energy. As the contact authority, the Ministry has endeavoured, in handling the current EIA Report concerned, to evaluate all positions upheld during the EIA statement period in the event that they have connection to the EIA procedure. The Ministry of Trade and Industry shall annex the viewpoints expressed in conjunction with the project in a summary to be completed of the opinions presented in regard to the application for decision-in-principle.

In respect to opinion on the style of presentation of the EIA Report on the part of those providing statements, the general impression is positive. For example, the Geological Survey of Finland regards the report as intelligible to a wide audience. The City of Loviisa declares the report to be well-executed, as does the Provincial State Office of Southern Finland. The Finnish Environmental Institute states that the EIA Report rests on an exceptionally comprehensive body of research data and is quite comprehensible and clear, though occasionally decidedly single-minded in purpose. The view of the Technical Research Centre of Finland is that the report is understandable and lucid and, taking the complexity of the project into account, far-reaching and multifaceted. The Advisory Committee on Nuclear Energy also regards the report as comprehensive and specific to the purpose. In the estimation of the Ministry of the Environment, the environmental impact has been clarified and assessed in accordance with the EIArelated legislation and statutory order. The Ministry of Social Affairs and Health affirms that the assessment of effects on health as presented fulfils the requirements of EIA law. Conversely, the general perspective of the Finnish Association for Nature Conservation, for instance, is negative. The Satakunta Chapter of the Finnish Association for Nature Conservation regards the EIA Report as catalogue-like and, from a private individual's perspective, the EIA Report allegedly does not provide a reliable picture of the environmental impact of the project.

The pivotal content of statements and views is presented in condensed form according to the subject group as follows. After several subject group-relevant statement descriptions, the observations and assertions of the Ministry of Trade and Industry are presented (indented text), which are connected with the positions taken by the statement providers or in regard to the subject group in general concerned.

The statements provided by neighbouring nations are set out separately in section 5.15.

## 5.2 Non-implementation of final disposal

Some statement providers have made special note in regard to the so-called 'zero alternative,' i.e., what they consider to be the minimality of the treatment given to non-implementation of the project. The City of Äänekoski, in its statement, puts forward that the various alternatives, including the zero alternative and its influence on the environment, have been meagrely handled. It is also the viewpoint of the Regional Council of Satakunta that the zero alternative has not been dealt with as deeply as the alternative geological-based final disposal methods. The view of a private person is that, subsequent to the programme phase, the additions rendered to the examination of the zero alternative in the EIA Report do not actually provide additional information on the matter. The Technical Research Centre of Finland on its part avers that the zero alternative is, in keeping with the wishes of the contact authority, studied in the assessment programme with wider scope, and that the examination is otherwise sufficient.

The Radiation and Nuclear Safety Authority points out in its pronouncement that an actual zero alternative, in regard to which nothing is really done in regard to nuclear wastes, does not exist in practice. Furthermore, the Authority affirms that the nuclear

fuel spent by the nuclear power plants in our country is not intended for non-defined extended storage periods and that the safety of the present type of fuel in particular over long-term periods of storage has not been indicated, nor are any practical experiences available in respect to the same.

Treatment within the EIA Report of the effects on the environment posed by the zero alternative is demanded in both the decree on EIA and the statement issued in regard to the Environmental Impact Assessment Programme on the final disposal project. According to EIA decree, this must be done "to the degree needed" unless this alternative is, for some reason, unnecessary. In addition, the EIA-related decree stipulates examination of the feasibility of various alternatives inclusive of the zero alternative.

The Ministry affirms that the examination in the EIA Report of environmental influence as exerted by the zero alternative is fundamentally briefer than that pertaining to the impact of the base alternative. According to the viewpoint of the party responsible for the project, the zero alternative is not applicable as a final disposal solution on the basis of the Nuclear Energy Act currently in effect. According to the law, spent nuclear fuel must be disposed of in a permanent manner in Finland. The party responsible for the project states that the zero alternative means, in practice, the continuation of interim storage in water pools as at present, and that the environmental impact would thereby correspond to interim storage.

## 5.3 Alternative methods for the management of spent nuclear fuel

Many statement issuers regard the treatment in the report of alternative solutions as sufficient. In the view of the Geological Survey of Finland, the foundations respective to the base alternative as selected are quite favourable. The Provincial State Office of Oulu concludes that the inspection of effects on human beings is comprehensive and appropriate as well as balanced in terms of all alternatives. The Technical Research Centre of Finland declares in its own statement that the study of the various alternatives is of sufficient scope as compared to the handling of the base alternative. Additionally, the Technical Research Centre states that the same conclusions are reached in the EIA Report in reference to the practical feasibility of the various alternatives as those presented in the study prepared by the Technical Research Centre under mandate of the Ministry of Trade and Industry, "Käytetyn ydinpolttoaineen huollon vaihtoehdot pitkäaikaisvarastointi ja transmutaatio" ["Alternatives for spent nuclear management long-term storage and transmutation"], KTM / Studies and reports 10/1999. The Finnish Environmental Institute is of the view that rejection of alternative technologies does not represent ample enough grounds to warrant taking a new direction in the research and development effort.

The Finnish Association for Nature Conservation states in its pronouncement that the report lacks, in respect to interim storage, the treatment of dry storage and considers such a deficiency unfortunate, since the method concerned could, in the view of the Association, be a valid one in the event that bedrock emplacement is not acceptable on political grounds. The Radiation and Nuclear Safety Authority (STUK) avers that it has nothing to note both in regard to the technical descriptions presented in the report and the examinations on environmental impact related to the same descriptions on radiation safety. Moreover, the STUK regards the previous position as taken by the OECD/NEA Nuclear Waste Committee as justified, i.e., that geologically based final disposal is, at the moment, the most preferable alternative for long-term management of nuclear wastes. In the EIA Report, the so-called 'wet' geological alternatives presented would appear to deviate in their premises from the so-called 'DRD' method—dry storage—but the STUK does not consider the latter to be suitable for Finnish conditions, at least in respect to the alternative final disposal areas outlined in the report.

In the statement by the contact authority submitted by the Ministry of Trade and Industry in reference to the environmental impact assessment programme, it was affirmed that alternative geological final disposal solutions as well as their relevant safety, costs and environmental effects should be addressed in the EIA Report. In addition, it was established that the party responsible for the project may restrict examination to those alternatives which are acceptable in law and technically capable of implementation on the basis of present-day knowledge. The Ministry, however, proposed that it be taken into account that alternatives in principle for the management of spent fuel could also be generally looked into which are not, on the basis of current knowledge, either technically feasible or fail to correspond to the requirements of the legislation presently in effect.

The EIA Report concentrates on describing the base alternative and its environmental impact. Other geological final disposal techniques are also briefly outlined, some of which are variations on the base alternative and confirmed to be, in respect to most environmental repercussions, largely similar to the base alternative. The most fundamentally deviant geological techniques for final disposal by comparison to the base alternative have been outlined: the so-called 'hydraulic cage' method (WP-Cave) and the 'deep hole' solution. The environmental impact of these also are stated to be similar, to all intents and purposes, to that of the base alternative. The party responsible for the project declares, in regard to the abovementioned alternative technologies-related research and development, that considerable emphasis in R&D would be necessary and has thereby, at this stage, considered these techniques to be unrealistic in terms of implementation.

The so-called 'DRD' or Dry Rock Deposit method, potentially applicable to long-term underground interim storage, has been handled in the EIA Report in similar manner to superterranean, dry storage-based interim solutions.

In regard to waste treatment as well as the techniques based on nuclide partitioning and transmutation technology presented in the report, the party responsible for the project affirms them to be, for the time being, incomplete in respect to technological development and costly to implement; neither can final disposal in the final analysis be entirely avoided through such means. In the view of this in charge of the project, the methods concerned do not, for this reason, appear to be feasible final disposal solutions at the present juncture when the regulations, liabilities and schedule concerning final disposal are fully taken into account.

#### 5.4 Retrievability

Positions have been taken as outlined in some of the statements generated in response to the EIA Report in regard to the retrieval potential respective to the nuclear fuel in final disposal and its examination within the report.

According to the perspective of the Ministry of the Environment, the manner of implementation for opening the repository as well as the relevant impact has been inspected too briefly, and the Advisory Board on Nuclear Energy states that the safety-related risks of retrieval have not been set out. In the statement of the City of Äänekoski, it is likewise averred that retrieval potential in regard to the base alternative has not been assessed in sufficient detail. A citizens' movement, Romuvaara-liikkeen tuki, criticized the specifically target-oriented manner in which retrieval was presented and as a task easier said than done, both technically and in respect to cost.

The Radiation and Nuclear Safety Authority considers the possibilities of retrieval as having been handled in the manner required by the statement from the Ministry, and regards retrieval as feasible as this applies to the base alternative types of final disposal techniques, if not easy. The expense and difficulty of waste retrieval have been given attention by private individuals as well as by the STUK. The latter, however, notes that the arduousness of retrieval may, from an environmental impact point of view, also act as an advantage in the future if the prevailing social and techno-economic level is low. The Geological Survey of Finland declares retrieval potential to be most favourable in respect to the base alternative. The Municipality of Konnevesi remarks that the possibility of opening the repository is important, proposing moreover that final disposal must be carried out in accordance with the base alternative.

# 5.5 Quantity and origin of nuclear fuel planned for final disposal

In the statements from the Municipalities of Kiukainen and Eura, reference is made to the quantities and origins of the spent nuclear fuel for final disposal set forth in the EIA Report. In these pronouncements, there is, in particular, consideration given to the

adequacy of national legislation and possibility to refuse the import of nuclear wastes from abroad to the final disposal facility in Finland. The Municipality of Eura wishes this matter clarified.

The Ministry states that the question of the potential final disposal in Finland of spent nuclear fuel originating from abroad is irrelevant to the subject area of the EIA Report. This matter shall be taken up in connection with the decision-in-principle procedure.

The quantity of nuclear fuel under examination is also referred to in the viewpoint of a private citizen. According to the outlook of the individual presenting this opinion, nuclear fuel generated abroad could also, on the basis of EU legislation, be transported in the future to Finland for final disposal purposes, at which point the maximum amount of nuclear waste within the final disposal facility as confirmed in the EIA procedure would not be applicable, nor would the EIA Report for that reason be aligned with the facts.

Within the assessment procedure, an instance as one alternative has been inspected in which the quantity of nuclear waste for final disposal is greater than that which Finland's current nuclear power plant units generate. The alternatives being examined were determined at the EIA programme stage. The Ministry stated in its pronouncement on the programme that the final disposal of spent fuel generated by potentially new nuclear power plant units may be taken into consideration within the assessment of final disposal facility-related environmental impact. The decision-in-principle concerning a final disposal facility and the application concerning it on its behalf should be limited in magnitude to the maximum examined in the EIA Report.

Subsequent to the EIA Report on the final disposal facility presently under consideration, Teollisuuden Voima Oy as well as Fortum Power and Heat Oy have both simultaneously submitted an assessment report on environmental impact in regard to a new nuclear power plant unit. The EIA procedure affecting these shall terminate in January 2000. In the event that, for instance, one or both of these power plants are realized, it would be feasible to permanently dispose of the spent nuclear fuel used by the same within the confines of the Posiva Oy project, which according to the EIA report would be, at maximum, 9 000 tons of uranium inclusive of the spent nuclear fuel engendered by the nuclear power plants already in existence.