



REPUBLIC OF SLOVENIA  
MINISTRY OF ENVIRONMENT AND SPATIAL PLANNING  
SLOVENIAN NUCLEAR SAFETY ADMINISTRATION

Third Slovenian Report under the  
**JOINT CONVENTION ON THE SAFETY OF SPENT FUEL MANAGEMENT AND  
ON THE SAFETY OF RADIOACTIVE WASTE MANAGEMENT**

Answers to questions raised by other contracting parties



Answers to questions raised by other contracting parties under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management were prepared by the Slovenian Nuclear Safety Administration, the Krško NPP, the Agency for Radwaste Management, the Žirovski vrh Mine d.o.o., and the Slovenian Radiation Protection Administration.

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Q.No	Country	Article	Ref. in National Report
1	Brazil	Planned Activities	Section K - Page106
Question/ Comment	What would be the expected condition of the Zirovski vrh Uranium Mine after remediation? (Unrestricted use? Restricted access?). What is the radiological criteria or objective?		
Answer	<p>The underground mine has been permanently closed, the sites of the entrance tunnels and ventilation shafts were backfilled with concrete barrage and inert material. Joint gravity outflow of the mine waters was arranged.</p> <p>The processing plant was decommissioned and the site was given to local municipality for unlimited use. At present it is a local industrial zone. Mining waste piles located on several places on the slopes of the Žirovski Vrh mountain were relocated to Jazbec mining waste disposal and covered with two meters thick soil layers. The background and seepage waters around Jazbec are drained. The site is re-cultivated with grass and fenced. This site shall remain the property of the government and can not be subject to real estate transactions. Long-term monitoring and maintenance will be assured by the government. The government may let the site for use with limitations.</p> <p>The identical solution is foreseen for Boršt, where mill tailings are disposed. The work is planned to be completed by 2010.</p> <p>Other sites were decontaminated and will be returned to unlimited use.</p> <p>The radiological criteria of dose constraints to an individual from critical population of 300 <math>\mu</math>Sv per year are already met.</p>		
Q.No	Country	Article	Ref. in National Report
2	Bulgaria	Planned Activities	
Question/ Comment	Are additional measures necessary for ensuring the safety as a result of the carried out in 2008 characterization of RAW in Central Interim Storage in Brinje?		
Answer	<p>During the inventory characterisation activity all historical waste in the storage was categorized and repacked. As a result of this activity a smaller amount of waste containing liquids exceeding waste acceptance criteria was identified and prepared for treatment. According to the requirements of the Slovenian Nuclear Safety Administration the liquid waste has to be treated by the end of 2009. No other safety measures are needed as the approved safety report includes also safety analyses for all different types of waste.</p>		
Q.No	Country	Article	Ref. in National Report
3	Brazil	General	
Question/ Comment	Very good report for a country with a small nuclear power program. Good work on the selection of a waste repository site (including public participation) and plans for decommissioning of Krsko NPP (including a good financing scheme).		
Answer	Thank you very much for you comments.		

Q.No	Country	Article	Ref. in National Report
4	Brazil	General	page 12
Question/ Comment	The report states that “LILW waste repository shall be built and become operational before 2014” . Has implementation of the project already started or have measures been taken for such?		
Answer	The selection of the site for LILW repository is still underway. It is believed that the National Spatial Plan for LILW repository at Vrbina site will be adopted until summer 2009. In between several measures for the implementation of the project have been prepared for the activities to continue as soon as the decision is accepted. The measures include documentation elaboration (preliminary safety analyses, environmental report, project documentation including conceptual and basic designs of a repository, technical elaborates, ...), field investigations and measurements.		
Q.No	Country	Article	Ref. in National Report
5	Bulgaria	Article 5	Art.8, Art.12, Art. 15
Question/ Comment	In what way differ the conditions of the license for experimental operation (Consent) and that for normal operation?		
Answer	At present the licence for trial operation is issued by the Ministry of the environment and spatial planning on the basis of law for civil construction and among others also upon consent of the SNSA. There are no major differences between SNSA conditions for the consent for trial operation and the licence for normal operation issued by the SNSA. The consent for trial operation is issued for a maximum of two years’ period, while the license for normal operation is issued for ten years maximum. Operational conditions and limitations are the same in both licensing processes. However, after the trial period, the safety of facility must be assessed and safety case updated by the licensee.		
Q.No	Country	Article	Ref. in National Report
6	United States of America	Article 5	Section ES, Page 10
Question/ Comment	What is the projected service life of the recently refurbished LILW storage facility at Brinje?		
Answer	The operational licence which was issued by the regulatory body is given for ten years and expires in April 2018. It is planned that the short lived LILW from the storage will be disposed off in the LILW repository once it is in operation. In case that all waste will meet the disposal criteria or storage criteria at the disposal site, the waste from Brinje should be disposed off or stored at the disposal site. The Brinje storage facility shall be decontaminated or decommissioned. As long as no new solution is available, the storage will continue to operate (with proper analyses and re-licensing).		
Q.No	Country	Article	Ref. in National Report
7	Hungary	Article 10	G-H p.99
Question/ Comment	Do you plan to make your spent fuel management policy more flexible with introducing the possibility of reprocessing in addition to the currently followed direct disposal option?		
Answer	The next update of The National Programme for Management of Radioactive Waste and Spent Fuel is due in 2015. Meanwhile all stakeholders are monitoring the global development in this area.		

Q.No	Country	Article	Ref. in National Report
8	Bulgaria	Article 12	Annexes
Question/ Comment	How and as what type of waste are managed the dry spent ion exchange resins from the secondary circuit?		
Answer	Spent ion exchange resins from the secondary circuit (Water Treatment System, Condensate Polishing System) are treated as Non-Nuclear waste and are handed over to authorized outside company for disposal. Spent resins from a Blow Down System are first discharged from Ion Exchange Vessel to a separate spent resin tank and then the radiological measurements are performed by NEK and verified by an independent institute. After Steam Generators were replaced the spent ion exchange resins can be unconditionally released.		
Q.No	Country	Article	Ref. in National Report
9	Bulgaria	Article 12	Annexes
Question/ Comment	In what type of containers for end disposal are being stored the spent ion exchange resins from the primary circuit? What methods are being applied for their solidification and limitation of the generation of hydrogen?		
Answer	The spent ion exchange resins from primary systems have been conditioned in two ways: solidification by vermiculate-cement and since 1998 by in-drum drying system. The conditioned waste is placed in drums (cemented in carbon steel and dried in stainless steel) and over-packed within TTC tube type containers (carbon steel) in the Solid Radwaste Storage facility. These are also the packages forms considered as the final to be accepted in disposal if the current assumption is approved by the safety analyses.		
Q.No	Country	Article	Ref. in National Report
10	Italy	Article 12	Section H page80
Question/ Comment	Could more details be given about the refurbishment of the Central Interim Storage for Radioactive Waste in Brinje, in particular: what were the main safety problems? What are the updated safety requirements for the storage facility? Are there any requirements for the containers used for repacking?		
Answer	Until 1999, when ARAO became responsible for CISF the Jozef Stefan research institute was operator of the facility. At the transfer of responsibility for operation, it was found out that conditions in the storage facility were not in line with the requirements of legislation: some installations and systems were out-of-date or not functioning at all, the inventory was poorly characterized and arranged, there were no appropriate procedures and instructions or safety analyses. The safety analysis report was produced and the plan for refurbishment was prepared. The plan included improvements of the old and out-of-date systems such as the ventilation system with a new engine room equipped by ventilation drive and HEPA filter units (enabling the enforced ventilation of air in storage and reduction of radon concentration below 650 Bq/m <sup>3</sup> ), the sewage system (emplacement of the cesspit and renovation of sewage system to assure collection of all possible contaminated liquids from storage), improvement of physical and fire protection (renovation of electric installations and fire alarms placement). Also some minor remediation works on the walls and floor were performed. During the trial operation the air drying system for humidity reduction in the storage was also installed thus ensuring protection of containers against corrosion. Containers for repacking were selected, based on radiological and safety calculations to respect Waste Acceptance Criteria for storage facility (limitation is dose rate 2 mSv/h on contact). Container types were approved by the Regulator.		

Q.No	Country	Article	Ref. in National Report
11	Austria	Article 13	
Question/ Comment	Has Slovenia already performed any consultations with neighbouring states on the LILW disposal site? If not, when is it planned to be done?		
Answer	<p>The process of the Strategic Environmental Assessment (SEA), according to the Directive 2001/42/EC of the European Parliament and the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (SEA Directive) has been started for potential locations for the LILW disposal site at the Vrbina site in the Krško municipality and at the Vrbina site in the Brežice municipality. The SEA Report for the Vrbina site in the Krško municipality, the most advanced potential site, is being prepared. SEA Report for the Vrbina site in the Brežice municipality is in the preparation phase.</p> <p>The Article 44 of the Environment Protection Act (Official Gazette RS, No. 39/06 and 70/08) determines that consultations with neighbouring countries must be performed if the SEA Report finds some trans-boundary impacts. Slovenia will involve the neighbouring countries in the process of trans-boundary consultation for the LILW disposal sites if the SEA Report is going to show trans-boundary impacts.</p> <p>Additionally, for none of the locations for the LILW disposal sites, the process of the Environmental Impact Assessment, according to the EIA Directive on Environmental Impact Assessment of the Effects of Project on the Environmental 85/337/EEC and 97/11/EC, has been started. Consequently the neighbouring countries have not been informed or consulted yet. Slovenia will involve the neighbouring countries in due time according to the national legislation (Article 59 of Environment Protection Act, Official Gazette RS, No. 39/06 and 70/08) and the Convention on Environmental Impact Assessment in a Transboundary Context – Appendix I, paragraph 3 (Official Gazette RS, No. 46/98), if there trans-boundary effects are going to be anticipated.</p>		
Q.No	Country	Article	Ref. in National Report
12	Croatia	Article 13	page 82
Question/ Comment	<p>According to Joint Convention (Article 13 (iv)), and according to Article 44 of the Slovenian Environment Protection Act, for a sitting of LILW repository in vicinity of neighboring state (possible cross-boundary impact) a consultation with neighboring state is mandatory.</p> <p>What is the status of Environmental Impact Assessment for the sites of Krsko and Brezice LILW repository? Will Slovenia consult Croatia regarding LILW disposal site?</p>		
Answer	<p>The process of the Strategic Environmental Assessment (SEA), according to the Directive 2001/42/EC of the European Parliament and the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (SEA Directive) has been started for potential locations for the LILW disposal site at the Vrbina site in the Krško municipality and at the Vrbina site in the Brežice municipality. The SEA Report for the Vrbina site in the Krško municipality, the most advanced potential site, is being prepared. SEA Report for the Vrbina site in the Brežice municipality is in the preparation phase.</p> <p>The Article 44 of the Environment Protection Act (Official Gazette RS, No. 39/06 and 70/08) determines that consultations with neighbouring countries must be performed if the SEA Report finds some trans-boundary impacts. Slovenia will involve the neighbouring countries in the process of trans-boundary consultation for the LILW disposal sites if the SEA Report is going to show trans-boundary impacts.</p> <p>Additionally, for none of the locations for the LILW disposal sites, the process of the Environmental Impact Assessment, according to the EIA Directive on Environmental Impact Assessment of the Effects of Project on the Environmental 85/337/EEC and 97/11/EC, has been started. Consequently the neighbouring countries have not been informed or consulted yet. Slovenia will involve the neighbouring countries in due time according to the national legislation (Article 59 of Environment Protection Act, Official Gazette RS, No. 39/06 and 70/08) and the Convention on Environmental Impact Assessment in a Transboundary Context – Appendix I, paragraph 3 (Official Gazette RS, No. 46/98), if there trans-boundary effects are going to be anticipated.</p>		

Q.No	Country	Article	Ref. in National Report
13	Italy	Article 13	Section H page 83
Question/ Comment	Are information to neighbouring countries foreseen on Environmental Impact Assessment whichever the results?		
Answer	<p>The process of the Strategic Environmental Assessment (SEA), according to the Directive 2001/42/EC of the European Parliament and the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (SEA Directive) has been started for potential locations for the LILW disposal site at the Vrbina site in the Krško municipality and at the Vrbina site in the Brežice municipality. The SEA Report for the Vrbina site in the Krško municipality, the most advanced potential site, is being prepared. SEA Report for the Vrbina site in the Brežice municipality is in the preparation phase.</p> <p>The Article 44 of the Environment Protection Act (Official Gazette RS, No. 39/06 and 70/08) determines that consultations with neighbouring countries must be performed if the SEA Report finds some trans-boundary impacts. Slovenia will involve the neighbouring countries in the process of trans-boundary consultation for the LILW disposal sites if the SEA Report is going to show trans-boundary impacts.</p> <p>Additionally, for none of the locations for the LILW disposal sites, the process of the Environmental Impact Assessment, according to the EIA Directive on Environmental Impact Assessment of the Effects of Project on the Environment 85/337/EEC and 97/11/EC, has been started. Consequently the neighbouring countries have not been informed or consulted yet. Slovenia will involve the neighbouring countries in due time according to the national legislation (Article 59 of Environment Protection Act, Official Gazette RS, No. 39/06 and 70/08) and the Convention on Environmental Impact Assessment in a Transboundary Context – Appendix I, paragraph 3 (Official Gazette RS, No. 46/98), if there trans-boundary effects are going to be anticipated.</p>		
Q.No	Country	Article	Ref. in National Report
14	Sweden	Article 13	Siting of .... p.83-86
Question/ Comment	It is stated that the LILW repository shall be built and become operational before 2014. A detailed description of the siting process is given in Sections G and H. Please tell more about the achievements since publication of the report and whether the process is still within the proposed time schedule.		
Answer	<p>The selection of the site for LILW repository is still underway. It is believed that the National Spatial Plan for LILW repository at the Vrbina site will be adopted until summer 2009, which is six months behind the original schedule. In between several measures for the implementation of the project have been prepared so the activities could continue as soon as the decision will be accepted. The measures include documentation elaboration (preliminary safety analyses, environmental report, project documentation including conceptual design, technical elaborates, ...) and field investigations and measurements.</p>		

Q.No	Country	Article	Ref. in National Report
15	Sweden	Article 13	p.83
Question/ Comment	<p>It is stated in the report that public involvement in the siting process of the LILW facility is assured through public hearings, consultations, exhibitions and by making all the information available to the public. It would be interesting to have some additional information on e.g. number of hearings, the public interest in the issue.</p> <p>Do the municipality have a right to veto a proposed site selection?</p>		
Answer	<p>Until now the Ministry of the environment and spatial planning carried out two public hearings: one in November 2004 starting the process of preparation of National Spatial Plan for LILW repository on the level of all Slovenia and the other one in February 2008 for the proposed site at Vrbina in the Krško municipality. A draft of the National Spatial Plan, Strategic Environmental Impact report and other support documentation were presented and discussed. In parallel local partnerships in Krško and Brežice (municipality with second potential location) have been established. Local partnerships promote activities like visits to the Central Interim Storage Facility for Radioactive Waste, public discussions on radioactive waste management issues, presentations of independent expert studies associated with the issue of radioactive waste, functioning of thematic committees. Each thematic committee prepares its own program and invites experts to deliver presentations on issues of local interest. According to the procedures the municipality has to confirm the proposal of the National Spatial Plan for LILW repository. In principle the State could approve the site also without the confirmation of the local community; however such practice has been never used in Slovenia. The confirmation of the local community is therefore a prerequisite for the site selection.</p> <p>Once the site is confirmed by the council of the local community, it can not be vetoed anymore.</p>		
Q.No	Country	Article	Ref. in National Report
16	Austria	Article 14	
Question/ Comment	<p>Why is the evaluation of different repository variants performed only for one of two suitable locations?</p>		
Answer	<p>The other offered potential location has been given a negative opinion by the ARSO (Environmental Agency of the Republic of Slovenia) due to overlapping with other national spatial plans (retention area for planned hydro power plants) and has to be adjusted. However, the decision whether to abandon the site proposal or not is still pending.</p>		
Q.No	Country	Article	Ref. in National Report
17	Brazil	Article 14	page 89
Question/ Comment	<p>Has any decision on the type of LILW repository and on the site for the repository been taken since the issuance of the report?</p>		
Answer	<p>Three repository variants have been considered in the design bases: surface repository, near surface silo repository and tunnel type repository, on the potential location Vrbina in Krško municipality. The proposal for the National spatial plan is a silo type of repository. The site has not been approved yet, the decision is expected to be taken in the first half of 2009.</p>		



Q.No 18	Country Brazil	Article Article 15	Ref. in National Report Page 92																										
Question/ Comment	What were some examples of the 12 scenarios for abnormal events treated in the Special Safety Analysis Report for the LILW repository?																												
Answer	<table border="1"> <thead> <tr> <th>Event</th> <th>Relevant scenarios</th> </tr> </thead> <tbody> <tr> <td>Drop of the transport container during the transport from NEK or Brinje to the repository</td> <td>Scattered solid radioactive materials</td> </tr> <tr> <td>Truck accident during the transport of LILW from NEK or CISF Brinje to the repository</td> <td>Scattered solid radioactive materials</td> </tr> <tr> <td>Spilling of liquids in the repository</td> <td>Canister drop containing ion resins</td> </tr> <tr> <td>Scattering of solid radioactive materials during the manipulation</td> <td>Drop of the canister or TTC</td> </tr> <tr> <td>Drop of the disposal container</td> <td>Scattering of solid radioactive materials</td> </tr> <tr> <td>Explosion in the repository</td> <td></td> </tr> <tr> <td>Explosion in the neighbourhood of the repository</td> <td></td> </tr> <tr> <td>Fire in the repository</td> <td>Fire in the repository</td> </tr> <tr> <td>Flooding</td> <td></td> </tr> <tr> <td>Earthquake</td> <td></td> </tr> <tr> <td>Airplane crash on the repository</td> <td></td> </tr> <tr> <td>Terrorist attack on the repository, sabotage</td> <td></td> </tr> </tbody> </table>		Event	Relevant scenarios	Drop of the transport container during the transport from NEK or Brinje to the repository	Scattered solid radioactive materials	Truck accident during the transport of LILW from NEK or CISF Brinje to the repository	Scattered solid radioactive materials	Spilling of liquids in the repository	Canister drop containing ion resins	Scattering of solid radioactive materials during the manipulation	Drop of the canister or TTC	Drop of the disposal container	Scattering of solid radioactive materials	Explosion in the repository		Explosion in the neighbourhood of the repository		Fire in the repository	Fire in the repository	Flooding		Earthquake		Airplane crash on the repository		Terrorist attack on the repository, sabotage		
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Q.No 19	Country Brazil	Article Article 15	Ref. in National Report page 92																										
Question/ Comment	What was the dose constraint adopted on the safety analysis of the LILW repository? Why was it adopted "well below ICRP recommendations"?																												
Answer	The adopted dose constraint 300 µSv per year for an individual from a critical group of population is in compliance with the ICRP recommendations for the normal evolution scenario due to normal degradation of the repository.																												

Q.No	Country	Article	Ref. in National Report
20	Italy	Article 15	Section H page 91
Question/ Comment	Are waste acceptance criteria for disposal already defined? Has the impact on the waste acceptance criteria been evaluated among the different disposal solutions (surface, sylos or tunnel type repository)?		
Answer	<p>Preparation of the draft preliminary radioactive waste acceptance criteria for disposal in Slovenia has been done under the several conditions which are determined by the current development of the project:</p> <ol style="list-style-type: none"> <li>(1) Repository site selection procedure is under way (one of a short listed site is Vrbina, Krško);</li> <li>(2) Design documentation for the repository is in an early stage (a conceptual design has been prepared for radioactive waste disposal in underground silos);</li> <li>(3) It has been assumed that all radioactive inventory expected in Slovenia by 2037 will be disposed (the assessment includes operational waste from the Krško Nuclear Power Plant (NEK), decommissioning waste from NEK and TRIGA, and other radioactive waste, Central Interim Storage Facility (CISF) in Brinje and small users);</li> <li>(4) Qualitative (analytical) characterization of radioactive waste has been made at the NEK Solid Radioactive Storage Facility (SRSF), and the preliminary radioactive waste acceptance criteria for this storage facility prepared; and</li> <li>(5) A characterization procedure has been carried out for the radioactive waste at the CISF, and necessary waste acceptance criteria have been prepared for acceptance and storage of this waste.</li> </ol> <p>Therefore, the radioactive waste acceptance criteria for disposal could presently be only anticipated and are prepared for a silo type of repository. The work will continue when more information is available.</p>		
Q.No	Country	Article	Ref. in National Report
21	Japan	Article 15	H, Page 92
Question/ Comment	What value was the dose constraint? For example, 300 microSv per year.		
Answer	The adopted dose constraint 300 $\mu$ Sv per year for an individual from a critical group of population is in compliance with the ICRP recommendations for the normal evolution scenario due to normal degradation of the repository.		

Q.No	Country	Article	Ref. in National Report
22	United States of America	Article 15	Section G and H, Page 92
Question/ Comment	The all barrier demolition scenario for a 'surface' repository (after 300 and 10,000 years) is considered highly unlikely, however, no basis is provided as to the reason for this being highly unlikely. What is the basis for assuming the all-barrier-demolition scenario is unlikely?		
Answer	<p>The LILW repository is intended only for short lived radioactive waste. In Special Safety Analyses for a surface type variant several alternative scenarios have been also assessed:</p> <ul style="list-style-type: none"> <li>•Cap destruction or/ and change of climatic conditions after expiry of the institutional control period (due to erosion, earthquake or a sort of accident- crash etc.).</li> <li>•Erosion of the embankment beneath the vaults of repository or in its close vicinity</li> <li>•Failure of partition clay layer beneath the embankment</li> <li>•Inadvertent human intrusion scenarios</li> </ul> <p>For all the scenarios mentioned, although not very probable, a set of conservative calculations has been also performed. The results for the worst case scenario show that the approved dose constraint to an individual from a critical group of population of 0.3 mSv/year may be exceeded. However, it is highly unlikely that such scenarios will occur due to the fact that after the closure the site will become the government property and will remain subject of institutional control.</p>		
Q.No	Country	Article	Ref. in National Report
23	Morocco	Article 19	
Question/ Comment	Regarding the release of liquid waste to the Sava River, can you tell us which are the concentration and activity limits prescribed for discharging to the environment? Is this operation needs a license from SNSA, the regulatory body?		
Answer	<p>For the planned repository for LILW no discharge limits for any form of effluents have been established yet.</p> <p>For operation of the NPP the limits for liquid discharges to the Sava River were set primarily in the operational licence and in the Technical Specifications. Two operational limits were set, namely (a) the total activity of fission and activation radionuclides, including noble gases but excluding H-3 (200 GBq/y) and (b) the total activity of H-3 (20 TBq per year and 8 TBq quarterly). Later, when the NPP prolonged the fuel cycle from 12 to 18 months a change was applied. The Slovenian Nuclear Safety Administration as a competent regulatory body issued a licence to the nuclear power plant. The new limit of the total released activity of H-3 was increased to 45 TBq/y and the quarterly limitation of H-3 discharge was removed; but the total activity of fission and activation radionuclides (without H-3) was reduced to 100 GBq/y.</p>		
Q.No	Country	Article	Ref. in National Report
24	Morocco	Article 19	
Question/ Comment	You said in your report that the Ministry of Health is the competent authority regarding sources used in medicine and veterinary care, can you explain how this situation agree with the independency principle, knowing that the Ministry of Health is also a user of radioactive sources?		
Answer	<p>The Ministry of Health in Slovenia is not a user of medical and veterinary radioactive sources. University medical centres in Ljubljana and Maribor, Institute of Oncology in Ljubljana and other hospitals in Slovenia with radioactive sources are legal persons, separated from the Ministry of Health and they have equivalent responsibilities according to the Slovenian legislation as other users in industry, research and other branches. The main financial resources of medical institutions are from the Health Insurance of Slovenia and not from the Ministry of Health. The Slovenian Radiation Protection Administration, that is an independent regulatory body with its own budget and leadership is competent authority for licensing and inspection of radioactive sources in medicine and veterinary care.</p>		

Q.No	Country	Article	Ref. in National Report
25	Sweden	Article 20	1. Regulatory body ... p.40
Question/ Comment	The two competent authorities SNSA and SRPA (nuclear safety and radiation protection) are described in the report. Could you please tell us some more about the interaction and co-operation between the two authorities, regarding i.e. joint inspections, licensing procedures etc.		
Answer	Both authorities, although embedded in different ministries, co-operate closely, specially in the inspection field and in licensing procedures. The Act on Inspection provides for close co-operation of all inspectors, no matter of the field of specialty or activity – if an inspector suspects the violation of legislation, even if in the field where he/she has no competence, he/she must duly inform the competent inspector. The exchange of information is ongoing between both inspections. With regard to joint inspections the SNSA is involved in many, but mainly with the colleagues from other authorities (Ministry of the Interior – on physical protection, Ministry of Defence/Administration for Disaster Relief-on emergency preparedness) than with SRPA. The co-operation with SRPA is closer in licensing activities.		
Q.No	Country	Article	Ref. in National Report
26	Brazil	Article 21	Page 43 (also Art.16 and 17)
Question/ Comment	There are several mentions to “the opinion of an authorised expert”. Who is this expert? And Who recognizes him as “authorised”?		
Answer	In accordance with the 2002 Act authorized experts for radiation and nuclear safety are legal entities or natural persons who have been granted a licence from the ministry competent for the environment. Regulations on Authorized Experts define conditions to be fulfilled to apply for the licence. The minister competent for the environment determined the verification programme and appointed a special three-member expert commission, consisting of specialists from the field of nuclear and radiation safety, to examine the fulfilment of these conditions. The role of the authorized experts is to give expert judgments on safety-related matters in a regulatory process (equivalent to TSO in other countries).		

Q.No	Country	Article	Ref. in National Report
27	Brazil	Article 22	Page 54
Question/	One of the objectives do the SNSA Quality Management System is mentioned as “- to increase clients’ satisfaction...”. Who are considered the “clients” of SNSA?		
Comment	And how is their satisfaction assessed?		
Answer	<p>The SNSA clients are the following:</p> <ul style="list-style-type: none"> <li>•licensees, and applicants for licences,</li> <li>•authorized organizations,</li> <li>•ministries and other regulatory bodies,</li> <li>•public and other organizations (professional, commercial, research, educational),</li> <li>•non governmental organizations, media and international organizations.</li> </ul> <p>The SNSA management encourages regular communication with all stakeholders and fulfilment of their expectations.</p> <p>Examples of sources of information on clients’ satisfaction include:</p> <ul style="list-style-type: none"> <li>•clients’ complaints,</li> <li>•direct communication with clients,</li> <li>•questionnaires and surveys,</li> <li>•reports from clients’ organizations,</li> <li>•reports from various media.</li> </ul> <p>In accordance with the Decree on administrative operations (Official Gazette RS, No. 20/05) and its amendments, the SNSA performs monthly surveys of customers’ satisfaction.</p> <p>In addition a survey on quality of SNSA activities was preformed in the year 2007. The organizations carrying out radiation practices took part in that survey.</p> <p>A survey on employees’ satisfaction is performed every year as well.</p>		
Q.No	Country	Article	Ref. in National Report
28	Croatia	Article 22	page 45
Question/	It is stated that at the end of 2007, 573 people, both technical and non-technical staff, were employed at the NEK.		
Comment	From the total number of 573 people that is working in NEK, what number is involved in radioactive waste management?		
Answer	Around 8 people are directly involved in radioactive waste management (operators, system engineer...).		

Q.No	Country	Article	Ref. in National Report
29	Sweden	Article 22	(ii) Financial resources, p.46
Question/ Comment	It is reported that Slovenia and Croatia are co-financing the decommissioning of Krško nnp and the post operational radioactive waste and spent fuel management from Krško nnp. Could you please provide some more information on the procentage of the Slovenian share, what cost estimates the levy is based on, which body that manage the fund and how unforeseen costs should be managed?		
Answer	<p>According to the Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on the Regulation of the Status and Other Legal Relations Regarding the Investment, Exploitation and Decommissioning of the Krško NPP, which entered into force in 2003, the contracting parties shall, in equal shares, assure funds for the preparation of the programme for disposal of radioactive waste and spent fuel. The Slovenian share of assets for decommissioning of the Krško NPP is collected and managed by the Fund for decommissioning of the Krško NPP.</p> <p>In Slovenia the levy per kWhe is 0.3 Euro cents. In Croatia levy is higher due to the fact that they have established their decommissioning fund only a few years ago. The levies are based on the Decommissioning Plan for the Krško NPP and on the National Programme for Managing Radioactive Waste and Spent Nuclear Fuel. The unforeseen costs shall be evaluated and assessed in the next revision of the Decommissioning Plan, which will be due in 2009 and the levies shall be corrected appropriately. On the Croatian side a separate decommissioning and SF and RW management fund was established to cover the Croatian share of costs.</p>		
Q.No	Country	Article	Ref. in National Report
30	Bulgaria	Article 23	
Question/ Comment	Would you specify the seven core processes and two supporting processes of SNSA management system.		
Answer	<p>According to the SNSA Management Manual the SNSA processes are divided into two groups: seven core processes and two supporting processes.</p> <p>The SNSA core processes are:</p> <ol style="list-style-type: none"> <li>1.Control over nuclear and radiation safety (Administrative procedures)</li> <li>2.Inspection</li> <li>3.Preparation of legislation</li> <li>4.Emergency preparedness</li> <li>5.Monitoring</li> <li>6.Preparation of Annual Report and other national reports</li> <li>7.International relations</li> </ol> <p>The SNSA supporting processes are:</p> <ol style="list-style-type: none"> <li>1.Management process</li> <li>2.Information technology, infrastructure and the working environment</li> </ol>		

Q.No	Country	Article	Ref. in National Report
31	Brazil	Article 24	Page 60
Question/ Comment	It is mentioned that only in 2004 was the Radiological Effluent Technical Specification approved for Krsko. How was the effluents limited and controlled by SNSA before that?		
Answer	The limits for radioactive effluents from the Krško NPP were set during the licensing process and incorporated into the plant Technical Specifications at the beginning of operation of the NPP. In 2004, parts dealing with effluent control were taken out of the plant Technical Specifications and a separate document namely, Radiological Effluent Technical Specification (RETS) was developed. In fact, nothing essential was changed regarding the actual control of discharges, only the form of the document and its structural incorporation in relation to the operating licence were modified.		
Q.No	Country	Article	Ref. in National Report
32	Brazil	Article 24	Page 66
Question/ Comment	How were the liquid and gaseous discharges from Zirovski vrh Uranium Mine measured (or monitored)?		
Answer	<p>During the operational period, liquid and gaseous discharges from the U-mine have been monitored mostly by the analytical laboratory of the facility and partly also by authorised institutions, i.e. technical support organisations (TSOs) approved by the competent authority. In the decommissioning phase, the discharges are measured exclusively by the TSOs.</p> <p>The monitoring programme for liquid discharges comprises measurements of dissolved and suspended uranium and Ra-226 in mine water, and in percolating and run-off waters from the disposal sites. Samples have been taken on a daily basis and then monthly composite samples on radioactivity and chemical compounds are formed and analysed. Other radionuclides, such as Pb-210, Po-210 and Th-230 in liquid samples are being analysed regularly but in a smaller extent. The atmospheric releases from the mine are regularly monitored on long lived radioactivity in dust particles, radon-222 and short-lived radon decay products. Radon emissions from the disposal sites are being estimated by in-situ radon emanation measurements. The mining company reports annually to the SNSA on discharged activity of each of the radionuclides mentioned above. Also an extensive programme on environmental radioactivity (off-site) is being carried out continuously also during the period of site restoration.</p>		
Q.No	Country	Article	Ref. in National Report
33	Brazil	Article 24	page 58
Question/ Comment	The report mentions that “Effectively independent measurements have been provided by the technical support organizations, upon the contract with the installation”. How are these measurements effectively independent from the operator, if the TSO’s are hired by the operator? Who are these TSO’s? Private firms or public authorities?		
Answer	According to the former Yugoslavian regulations (in the past Slovenia was one of the Yugoslavian federal units), in addition to operational monitoring the control of radioactive liquid and gaseous discharges had to be performed by authorised public research or technical institutions (TSOs) on behalf of the authority. In 2007, the new Slovenian regulation on monitoring of radioactivity was adopted introducing a clear requirement for independent control measurements of radioactive discharges and environmental sampling. A programme of these measurements has been performed by the authorised TSOs that are now contracted by the SNSA. TSOs could be both: private or state-owned.		

Q.No 34	Country Japan	Article Article 24	Ref. in National Report F, a)(P61)																
Question/ Comment	It is shown in Figure 4 that the annual collective doses at Krsko NPP have a decreasing trend from 2002. We would like to have more detailed explanations on the cause of decreasing of the annual collective doses.																		
Answer	A great deal of the annual collective dose was received during the outage works and partly also due to the repair and maintenance works during the plant operation. The collective dose essentially decreased after 2000 when the steam generators (SG) were replaced. The collective dose became much lower due to less maintenance of the SG and reduced source term of Co-60 in the alloy. The careful ALARA planning that included administrative, technical and organisational protective measures, also reduced the collective dose well below the value of 1 manSv per year. The last three years' rolling average was 0.7 manSv. The NPP set its own internal target value of 0.6 manSv.																		
Q.No 35	Country Japan	Article Article 25	Ref. in National Report F(P68)																
Question/ Comment	It is reported that the intervention measures should be planned upon the emergency class declared according to 2002 ACT provisions. Do the operators have some kinds of intervention measures based on each phase in their emergency plan?																		
Answer	<p style="text-align: center;"><b>Summary of recommendations proposed by the operator for intervention measures in case of emergency</b></p> <table border="1"> <thead> <tr> <th><b>Emergency Class</b></th> <th><b>Recommendation proposed by the operator (NPP -nuclear power plant) to the authorities for adoption</b></th> </tr> </thead> <tbody> <tr> <td><u>Unusual Event</u></td> <td>No intervention measures needed</td> </tr> <tr> <td><u>Alert</u></td> <td>No intervention measures needed</td> </tr> <tr> <td><u>Site Emergency</u></td> <td>Sheltering in the PAZ (Preventive Action Zone with radius 3 km) may be recommended – depends on the source term and wind direction</td> </tr> <tr> <td><u>General Emergency</u> – if the effluent monitors detect radioactive release, which may produce effective dose 10 mSv in one hour, or 50mGy to thyroid in one hour at the distance of 500 m from the NPP</td> <td>Evacuation of PAZ, except if the values in the left hand column are substantially higher then evacuation in the UPZ (zone where urgent protective actions are planned with radius 10 km) is considered</td> </tr> <tr> <td><u>General Emergency</u>- Core melt without a substantial radioactive release to the environment</td> <td>Evacuation of PAZ</td> </tr> <tr> <td><u>General Emergency</u>- Core melt when the activity in the containment atmosphere is larger than the activity in the gap between the fuel and cladding</td> <td>Evacuation of PAZ and evacuation 10 km in the downwind direction (sector with 45 to 90 degrees) for the rest of UPZ (10 km) evacuation is recommended</td> </tr> <tr> <td><u>General Emergency</u>- Core melt when the significant amount of other fission products are in the containment atmosphere besides the noble gases AND the radioactive release is not yet imminent</td> <td>Evacuation of UPZ</td> </tr> </tbody> </table>			<b>Emergency Class</b>	<b>Recommendation proposed by the operator (NPP -nuclear power plant) to the authorities for adoption</b>	<u>Unusual Event</u>	No intervention measures needed	<u>Alert</u>	No intervention measures needed	<u>Site Emergency</u>	Sheltering in the PAZ (Preventive Action Zone with radius 3 km) may be recommended – depends on the source term and wind direction	<u>General Emergency</u> – if the effluent monitors detect radioactive release, which may produce effective dose 10 mSv in one hour, or 50mGy to thyroid in one hour at the distance of 500 m from the NPP	Evacuation of PAZ, except if the values in the left hand column are substantially higher then evacuation in the UPZ (zone where urgent protective actions are planned with radius 10 km) is considered	<u>General Emergency</u> - Core melt without a substantial radioactive release to the environment	Evacuation of PAZ	<u>General Emergency</u> - Core melt when the activity in the containment atmosphere is larger than the activity in the gap between the fuel and cladding	Evacuation of PAZ and evacuation 10 km in the downwind direction (sector with 45 to 90 degrees) for the rest of UPZ (10 km) evacuation is recommended	<u>General Emergency</u> - Core melt when the significant amount of other fission products are in the containment atmosphere besides the noble gases AND the radioactive release is not yet imminent	Evacuation of UPZ
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Q.No 36	Country Germany	Article Article 26	Ref. in National Report p. 74; Sec. F
Question/ Comment	Which management of the residual materials is foreseen in the decommissioning programme for the Krško NPP? Does the programme also cover the conditional clearance of radioactive residuals for melting, incineration and landfill?		
Answer	The existing version of the Decommissioning and LILW and SF Disposal Plan assesses the volumes of the decommissioning waste. All inventories should be treated, conditioned, and placed into drums (several types of drums) for disposal, large components should be cut and metal components melted. Currently the first revision of the Decommissioning Plan is under preparation and will consider the site specific inventory and provisions of new legislation in this area of work. Generally in Slovenia the effective dose of 10 µSv and collective dose of 1 manSv must be met under conditional clearance.		
Q.No 37	Country Hungary	Article Article 26	Ref. in National Report G-H p.74
Question/ Comment	The report mentions the Decommissioning Programme of the Krsko NPP. What is the proposed decommissioning strategy for the Krsko NPP?		
Answer	The proposed decommissioning strategy for the NPP Krško is immediate dismantling which is to be performed in 15 years (from 2023 to 2037).		
Q.No 38	Country Morocco	Article Article 26	Ref. in National Report
Question/ Comment	Is a preliminary decommissioning plan a requirement for licensing radioactive waste facilities or it is an optional point?		
Answer	Yes, Article 20 of the Regulation E1 stipulates that a Programme for Permanent Cessation of Operation of a Nuclear Facility has to be a part of the documentation. Annex 1 of the Regulation E2 stipulates the format and contents of the Safety Analysis Report, where details of the above-mentioned are determined. A new regulation in this area has been already drafted.		
Q.No 39	Country Japan	Article Article 27	Ref. in National Report I, Page 101
Question/ Comment	What kind of criteria was applied to inspection for returned waste?		
Answer	According to the Regulation on radioactive waste and spent fuel management the treated radioactive waste shall be in the form meeting the acceptance criteria for storage. The inventory of the radionuclide returned has to comply with their inventory in the waste sent for treatment. The detailed criteria are set in contractual arrangements for waste processing.		

Q.No 40	Country United States of America	Article Article 27	Ref. in National Report Section I, Page 101
Question/ Comment	Does Slovenia intend to adopt a Council Directive 2006/117/EURATOM of 12 November 2006 on supervision and control of shipments of radioactive waste and spent fuel? If not please explain.		
Answer	Slovenia has already adopted the provisions of this directive into its legal system.		
Q.No 41	Country Morocco	Article Article 28	Ref. in National Report
Question/ Comment	Regarding the transport of radioactive sources inside Slovenia, is it subject to an authorization from the authority body, or just a declaration/notification?		
Answer	Only the transport of radioactive material in packages for which multilateral approval is mandatory and the transport under special arrangement are subject to licensing for transport.		
Q.No 42	Country Sweden	Article Article 28	Ref. in National Report p.102
Question/ Comment	It is described in the report that one of ARAO's responsibilities is to accept and provide proper further management of waste when its producer or holder is not known (historical waste) or is incapable of paying the fee. The expenses in such cases are covered from the national budget. In cases where sealed sources are found at the premises of scrap-dealers, ironworks, etc., the above-mentioned fee is paid by them. The willingness of the scrap dealers to deliver such detected orphan sources maybe depending on the costs. Have there yet been any such deliveries from a scrap dealers etc.?		
Answer	In Slovenia scrap metal dealers have no licence for radiation practice or use of radiation sources. If they obtain a radiation source, inadvertent or not, they are recognised as a responsible person. In such a case a law enforcement officer (inspector) has the right and duty to issue an order to scrap dealer to transfer the source to Central Interim Storage for Radioactive Waste in Brinje. Until now there have been no objections from scrap dealers. However, being aware of costs, they significantly improved the detection capabilities and are making better commercial contracts with their suppliers.		

Q.No	Country	Article	Ref. in National Report
43	Brazil	Article 32	page 22
Question/ Comment	Which was the original Westinghouse procedure for treatment of evaporator bottoms and spent resins? How have legacy waste of these types been treated?		
Answer	<p>The evaporator bottoms and spent resins are transported in pipes to the drumming area.</p> <p>Waste evaporator bottoms and Spent Ion Exchange Resins are encapsulated in 208 l (55 gal) drums.</p> <p>Drums are prepared in a non radiation area separate from the drumming room. The drums are positioned upright and an injector assembly is suspended within the drum. A vibrator which is strapped to the vertical surface of the drum is intermittently energized and four bags of vermiculite cement are gradually poured into the drum. The mixture completely surrounds the liquid injector assembly. The drum lid is installed, and the clamping ring is secured in position.</p> <p>Spent resin drums are positioned upright and a mixture of water and cement is poured into the drum until the bottom surface is covered with a 2.54 cm (1 inch) thick layer.</p> <p>This operation is followed by placing a 16-gauge thick, carbon steel casting sleeve in the drum and filling the annulus between the casting sleeve the inside diameter of the drum with the water-cement mixture for a height of 73,7 cm (29 inches). After the cement liner has become compact, the drum vibrator is strapped to the outside surface of the drum and then intermittently energized. A 2.54 cm (1 inch) layer of dry vermiculite cement is then poured into the bottom of the casting sleeve. A resin cage assembly, fabricated of 12-gauge thick carbon steel, is suspended inside the casting sleeve. The void between the cage and sleeve and the area above the cage extending to the top of the drum is filled with the dry vermiculite cement. The drum lid is then installed and the clamping ring is secured in position.</p>		
Q.No	Country	Article	Ref. in National Report
44	Brazil	Article 32	page 22
Question/ Comment	How has been / will be quantified the radionuclide content of the treated solid waste? Please be specific with regards to each of the different waste streams, especially with regards to the supercompacted waste.		
Answer	<p>Measurement of radionuclides and their quantification is done by Canberra measuring system for all waste streams packed in 208 l drums. Measurement is performed on the day the waste is produced. Values of a specific activity are entered into Computer Waste Management Database and can be calculated, using algorithm, for a desired date. When drums are to be supercompacted, activity values for each drum are taken from the database. After supercompacting is done and pallets are put in the so-called Tube Type Container, this new package gets its unique package number with the activity calculated as a sum of all drums being stored in this package.</p>		

Q.No	Country	Article	Ref. in National Report
45	Croatia	Article 32	page 14
Question/ Comment	<p>It is stated that the Slovenian Strategy for Long-Term Spent Fuel Management from 1996 has been superseded in 2004 due to the Agreement which entered into force in 2003. On the other hand, no changes have been made in the Slovenian strategy of LILW disposal according to Joint Program scenario.</p> <p>What is Slovenian interpretation of the approved revisions of Joint Program for the Decommissioning of Nuclear Power Plant Krško and the Disposal of LILW and SF: (1) agreements on common solutions (something obligatory!) or (2) financial calculations (solutions/scenarios are agreed upon only for computational purposes)?</p>		
Answer	<p>According to the 2002 Act, Slovenia has to prepare the National Programme for RW and SF Management. The important, but not only inputs in the Programme, were provisions of the Agreement between Slovenia and Croatia. Due to the fact that the NPP Krško is running out of storage for LILW, and that further operation of NPP Krško may be impeded, it has been decided to speed up the siting process of the repository. Current activities have no impact on the agreed financial arrangements. The results of siting activities and financial implications will be taken into account in the revision of The Decommissioning Programme, at least for the Slovenian share of radioactive waste and associated costs, in compliance with bilateral agreement between Slovenia and Croatia, and the Slovenian National Programme for Radioactive Waste and Spent Fuel Management. For the sake of transparency it would be of great benefit to obtain an insight into the Croatian national programme for radioactive and spent fuel management.</p>		
Q.No	Country	Article	Ref. in National Report
46	Croatia	Article 32	page 23
Question/ Comment	<p>It is stated that some design changes in Krško NPP have been conducted to increase storage capacity, including improved packaging.</p> <p>What is current capacity for storage of LILW in NEK in terms of volume and consequently years of operation? What is the current storage filament factor? Are there any plans for increasing storage capacity?</p>		
Answer	<p>The storage capacity of NEK's Radioactive Waste Storage has been maintained or increased by the introduction of new waste treatments, including incineration, melting and supercompacting as well as upgrade of the storage area as described below. The original capacity of the storage was 1470 m<sup>2</sup> with useful capacity of a little more than 2000 m<sup>3</sup>, depending on the way packages are stored. The storage was declared as Interim 5 year Radioactive Waste Storage in which 5000 drums could be stored.</p> <p>Having space problems a decision was made to optimize storage capacity with installation of steel construction that allows storage of waste packages in two levels instead of one. The manipulation with packages has been improved with the introduction of the bridge crane instead of fork-lift, first foreseen to be used. This modification has increased the storage capacity to 11200 drums (3000 Tube Type Containers containing 3 drums each).</p> <p>In spite of the above-mentioned methods of radioactive waste volume reduction around 30 m<sup>3</sup> of radioactive waste per recent average is generated.</p> <p>It is expected that the storage capacity will be 95% filled with packages in 2010. The storage capacity problem until 2013, when the final repository is scheduled to be open, can be overcome with administrative and operative procedures, including continuation of incineration of burnable waste, supercompacting, minimization of equipment and other things being brought into radiologically controlled area, sorting, etc. Increasing of storage capacity is not planned since it would require significant licensing efforts (including local and state authorities) and the fact that the licensing of the permanent storage in the same local community is underway.</p>		

Q.No 47	Country Germany	Article Article 32	Ref. in National Report p. 14; Sec. B
Question/ Comment	On page 14, the report states that siting and construction of the disposal facility should be finished by 2050, in accordance with the strategy for long-term spent fuel management adopted by the Slovenian government. On pages 15 and 99, the report says that a repository in a deep geological formation is assured by 2065. Which is the correct year?		
Answer	The chapter dealing with spent fuel management policy, presents the evolution of the policy. The first few lines of this chapter describe the situation that was superseded in 2004 (year 2050). The remaining text of this chapter describes the current spent fuel management policy. Therefore the correct year is 2065.		
Q.No 48	Country Germany	Article Article 32	Ref. in National Report p. 15; Sec. B
Question/ Comment	It is mentioned that, as an alternative to the disposal of spent fuel in deep geological formation either in Slovenia or in Croatia, also an option of export and disposal in a third country is considered. Are there already any bilateral agreements or negotiations with other countries in this direction?		
Answer	There are no bilateral agreements or negotiations with other countries regarding the option of export and disposal of spent fuel in a third country.		
Q.No 49	Country Germany	Article Article 32	Ref. in National Report p. 15; Sec. B
Question/ Comment	The decommissioning programme for the Krško NPP foresees transfer of spent fuel to a dry storage facility between 2024 and 2030, for a storage period of about 35 years. Are there already detailed plans for siting and construction of such a facility?		
Answer	The basic scenario on decommissioning considers the shut down of the NPP in 2024 (without life extension) and removal of the fuel from the reactor pool in the next five years. There are no detailed plans for siting and construction of dry storage facility at this moment.		
Q.No 50	Country Germany	Article Article 32	Ref. in National Report p. 105; Sec. K
Question/ Comment	In order to assess compliance with the acceptance criteria, part of the inventory of the Central Interim Storage for Radioactive Waste in Brinje – “historical waste“ with poor information on their chemical and radiochemical characteristics – needs to be categorised, treated and repacked. According to the report, it was intended to complete the post-qualification by the end of 2008. Which measurements have been performed if the waste packages were not compliant with the waste acceptance criteria? Has the post-qualification of waste given rise to any changes in the inventory (Section L, Table 13, p. 112)? Who is in charge of paying the portion of costs which is not covered by the PHARE programme?		
Answer	During the inventory characterisation activity all historical waste in the storage was categorized and repacked. As a result of this activity a smaller amount of waste containing liquids exceeding waste acceptance criteria was identified and prepared for treatment. According to the requirements of the Slovenian Nuclear Safety Administration the liquid waste has to be treated by the end of 2009. Based on the results of the characterisation the radioactive waste inventory database was updated with the data on new waste packages and according to the regulation requirements. Polluters pay principle is in force in Slovenia. However, for historical waste stored at Central Interim Storage for Radioactive Waste in Brinje the costs are covered by the Government. Through PHARE programme which was co-financed by the Slovenian Government, only the characterisation of historical waste was performed.		

Q.No	Country	Article	Ref. in National Report
51	Germany	Article 32	p. 24; Sec. B
Question/ Comment	According to the report, the Ljubljana Institute of Oncology uses decay storage tanks in order to control releases of radioactive effluents, while the Ljubljana University Medical Centre – Department for Nuclear Medicine releases the radioactive effluents directly into sewage systems. These discharges are not regularly monitored and are estimated from the administered activities only. What is the meaning of “administered activities“ in this context? How is it assured that there are no unplanned or uncontrolled releases of I-131 into the environment?		
Answer	Administered activities are the activities in Becquerels [Bq], administered to the patients. Releases of I-131 into the environment are limited by activity allowed in individual patients and the number of patients who are hospitalized at the University Medical Centre in Ljubljana. Activity allowed in hospitalized patients is 1100 MBq. He/she can be treated as outpatient, if the activity in the body is less than 800 MBq. Only 6 patients per week are allowed to be hospitalized. The release into a sewage system can not be higher than about 3 GBq per week, because patients excrete approximately 50% of I-131 in average. The activity concentration of discharged water from Central Purifying Plant does not exceed the discharge limits for surface waters prescribed.		
Q.No	Country	Article	Ref. in National Report
52	Italy	Article 32	Section D
Question/ Comment	Are the solid radioactive waste stored in the storage facility of the Krsko NPP all conditioned and ready for disposal? What are the safety requirements for storage?		
Answer	Solid radioactive waste stored in the storage facility of the NPP Krško is not conditioned and ready for disposal. The Waste Acceptance Criteria (WAC) for the final repository has not been defined yet. NPP Krško is doing its best to assure corrosion resistance of the packages being used. Integrity of packages is being checked periodically and until now no deviations have been found. After the WAC has been defined the packages will be checked for fulfilment of all criteria and will be conditioned if necessary. Safety requirements applying for the storage are those defined for a temporary storage of radioactive waste storage: there must be no release of radioactive substances, packages shall be corrosion resistant and package integrity shall be assured. Administrative restriction has also been given: equivalent dose of 0.2 mSv/year on the fence of the plant shall not be exceeded. In addition to that efforts are made to provide an ambient condition in the storage that will provide constant temperature, humidity and pressure through installation of the new air-conditioning system that will minimize corrosion affects on packages and also provide radiological protection of the surroundings.		
Q.No	Country	Article	Ref. in National Report
53	Japan	Article 32	B, P25
Question/ Comment	1) Who decide that the specific activity of radionuclides in substances does not exceed the clearance levels? 2) The radioactive contamination is usually present on the surface. In the case of surface contamination, how is the specific activity evaluated?		
Answer	1) If the specific activity of radionuclides is below clearance levels then the material can be released without approval of a regulatory body. The operator of the facility or user of a radioactive source is obliged to notify the SNSA in advance about the clearance of radioactive materials. The SNSA may require additional measurements by an authorized radiation protection expert prior to the loss of control over material. 2) In case of surface contamination the limits for surface contamination which are defined in the Decree on Dose Limits, Radioactive Contamination and Intervention Levels apply. The decree distinguishes the limits of contamination for surfaces in controlled area, unrestricted area, surface of soil, equipment and tool contamination, surface of protective clothing and skin contamination. The limits are defined in Bq per 100 cm <sup>2</sup> and are directly applicable without specific activity evaluation.		

Q.No	Country	Article	Ref. in National Report
54	Japan	Article 32	D(P31)
Question/ Comment	Although it is described that the uranium mine is in the process of being decommissioned in the republic of Slovenia, is there the any definitive closing standard? How will this waste be disposed?		
Answer	<p>The closing requirements are proven by safety case which is approved through the licensing process. The following limits should be met:</p> <p>Gaseous effluents (Rn-222):</p> <ul style="list-style-type: none"> <li>•exhalation rate 0.7 Bq m-2s-1 for mill tailings site (Boršt),</li> <li>•exhalation rate 0.1 Bq m-2s-1 for mine waste disposal site(Jazbec).</li> </ul> <p>No limit on total annual release of radon has been set, neither for the U mine nor for the disposal sites.</p> <p>Liquid effluents:</p> <p>Outflow water (from the mine):</p> <ul style="list-style-type: none"> <li>•limits of total discharged activity of Ra-226: 50 MBq per year or total mass limit of 200 kg U3O8 per year,</li> <li>•limit of annual average concentration of Ra-226: 60 Bq/m3 or concentration limit of U3O8: 300 mg/m3</li> </ul> <p>Seepage water (from mine waste disposal site at Jazbec):</p> <ul style="list-style-type: none"> <li>•limits of total discharged activity of Ra-226: 25 MBq per year or limit of total mass of U3O8: 100 kg per year,</li> <li>•limit of annual average concentration of Ra-226: 40 Bq/m3 or concentration limit of U3O8: 600 mg/m3,</li> <li>•limit of annual average concentrations of Th-230, Pb-210, Po-210: 100 Bq/m3</li> </ul> <p>Seepage water (from mill tailings site at Boršt):</p> <ul style="list-style-type: none"> <li>•limit of total discharged activity of Ra-226: 50 MBq per year,</li> <li>•limit of annual average concentration of Ra-226: 60 Bq/m3.</li> </ul> <p>Other authorised limits:</p> <ul style="list-style-type: none"> <li>•external radiation (gamma dose rate): 0.2 µGy/h</li> <li>•total effective dose of a member of the public: 0.3 mSv/year.</li> </ul> <p>The waste remains in situ. It is covered with 2.2m thick soil layer.</p>		
Q.No	Country	Article	Ref. in National Report
55	Japan	Article 32	B(ii)(P17)
Question/ Comment	It is mentioned that achievement of higher burnup to reduce spent fuel waste in NPP. Do you have a plan to introduce nuclear fuels which have 235U enrichment beyond 5wt% in order to obtain higher burnup value? In this case, is it possible to handle such higher burnup fuel in current storage facilities in NPP of your country?		
Answer	NPP Krško does not plan to introduce nuclear fuel with the higher enrichment of U-235 than 5 wt%. In case of higher enrichments the handling of higher burnup fuel is not possible in the current storage facility in NPP Krško (which is the only one NPP in our country).		

Q.No	Country	Article	Ref. in National Report
56	Sweden	Article 32	B, (i), p.14
Question/ Comment	The Decommissioning programme, which Slovenia and Croatia have jointly agreed upon, evidently covers not only disposal of high level waste but also direct disposal of the spent fuel from the Krško NPP. In that context it is mentioned a small volume of high level waste. What is the origin and characteristics of this waste? The programme foresees that disposal of the spent fuel will take place between 2070 and 2075. What are the reasons for this long time before disposal?		
Answer	<p>The minor amounts of other high level waste are long lived radioisotopes (mainly Am, Ra) and highly active sources that shall not meet the acceptance criteria for LILW repository.</p> <p>The main reason for deferred solution for SF disposal is that the future of nuclear power development in Slovenia (life extension of the existing NPP and/or construction of a new NPP) is not known at the moment. In addition, since Slovenia and Croatia have to take care of final disposal of waste of one NPP, it is reasonable to wait until optimal disposal technology is established in bigger countries and enough experience is gained. The potential multinational solutions in the future should not be neglected either.</p>		
Q.No	Country	Article	Ref. in National Report
57	Sweden	Article 32	B (iv), p.22
Question/ Comment	The original procedure for conditioning of evaporator concentrates and spent resins has been replaced by the so called In-drum Drying System. Please explain whether the original method involved any solidification of this kind of waste. Please also comment on the stability of the new waste form against swelling in a humid environment and its suitability for disposal. How is safety against self ignition and fire ascertained during drying?		
Answer	<p>The original method of conditioning of evaporator concentrate and spent resins was solidification with vermiculite. Since this method produces a large quantity of solid waste to be stored, NPP Krško has decided to minimize it with the introduction of a new way of treatment through In-Drum-Drying. Acceptance Criteria for the final product was and is a solid block with no free liquid and less than 30 wt. % of moisture content. NEK went through a licensing process that allowed this type of processing on-site for the temporary storage together with all necessary studies required by the Slovenian Nuclear Safety Administration (SNSA). Studies and test experiments have shown that types of packages being used can withstand all corrosion processes for at least 40 years (SS drums). Since we do not have any problems with humid environment in the temporary storage, no swelling of waste form is expected. No WAC for the final repository has been defined yet and possible necessary conditioning for final disposal is not known.</p> <p>Special processes taking care of prevention against self ignition have been taken into account in the phase of the development of the project for IDDS instalment. It has been taken into account that the temperature inside the drum shall be low enough which will prevent any kind of foreseen waste to self-ignite. Special care has been taken on sorting of the waste to be treated on IDDS system, not allowing anything else than spent ion-exchange resins and evaporator bottoms to be treated. The drumming Room, where IDDS is located, is equipped with Fire Protection Sensors that will in case of any kind of fire ignition alarm MCR and local operators for possible fire and fast actions could be taken to prevent possible damage.</p>		