

# **N**uclear Legislation in **OECD and NEA Countries**

Regulatory and Institutional  
Framework for Nuclear Activities



Slovenia

# Slovenia

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## I. General Regulatory Regime

### 1. Introduction

Slovenia has one 730 MWe nuclear power reactor in operation located in Krško. The Krško Nuclear Power Plant (NPP) is jointly owned by Slovenia and Croatia, since at the time of its construction both countries were part of the former Republic of Yugoslavia. The Westinghouse 2-loop pressurised water reactor was the first Western NPP built in Eastern Europe. Construction started in 1975 and it was connected to the grid in 1981 and entered commercial operation in January 1983. Nuklearna Elektrarna Krško (NEK) is the operating company co-owned by Slovenian state-owned Gen-Energija and Croatian state-owned Hrvatska elektroprivreda (HEP).

In 2000, the Krško NPP's steam generators were replaced and it was uprated by 6.3%. It supplied a record 6.2 billion kWh in 2011, split equally between Slovenia and Croatia. The plant covers about 25% of Slovenia's electricity needs and roughly 15% for Croatia. Its operational life is designed to be 40 years.

In June 2012, the Slovenian Nuclear Safety Administration (SNSA) issued a decision approving modifications to enable long-term operation of the Krško NPP. This completed an extensive and long process initiated after the first Periodic Safety Review in 2003. At that time, the Krško NPP began with the preparation and introduction of an aging monitoring programme, which is a precondition for the extension of operation beyond the originally projected 40 years. The decision will have significant impact on the decommissioning plan, decommissioning fund and on the National Program for Managing Radioactive Waste and Spent Nuclear Fuel.

An additional Krško unit is under consideration with a capacity of up to 1 600 MWe. An application for an energy permit for a second unit at the Krško site was submitted to the Ministry of Economy by GEN Energija in January 2010.

Slovenia also has a 250 kW General Atomic TRIGA research reactor operating since 1966 at the Josef Stefan Institute (JSI), which is a major research establishment in Podgorica, near Ljubljana. It also operates a nuclear training centre.

In the Republic of Slovenia, the main piece of legislation in the area of nuclear safety and radiation protection is the Act on Ionising Radiation Protection and Nuclear Safety.<sup>1</sup> The 2002 Act entered into force on 1 October 2002. On that day, two previous acts ceased to apply, namely the Act on Radiation Protection and the Safe Use of Nuclear Energy<sup>2</sup> and the Act on Implementing Protection Against Ionising Radiation and Measures on the Safety of Nuclear Facilities.<sup>3</sup>

As defined in its first article, the main purpose of the 2002 Act is "to regulate ionising radiation protection, with the aim of reducing the detrimental effects on health and reducing to the lowest possible level radioactive contamination of the environment due to ionising radiation resulting from the use of radiation sources, while at the same time enabling the development, production and use of radiation sources and performing radiation practices".

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1. Act on Ionising Radiation Protection and Nuclear Safety, "the 2002 Act", Official Gazette RS n° 67/2002.
  2. Act on Radiation Protection and the Safe Use of Nuclear Energy, "the 1984 Act", Official Gazette SFRY n° 62/1984.
  3. Act on Implementing Protection Against Ionising Radiation and Measures on the Safety of Nuclear Facilities, "the 1980 Act", Official Gazette SRS n° 28/1980.

The 2002 Act was amended in 2003,<sup>4</sup> 2004<sup>5</sup> and in 2011.<sup>6</sup> The 2002 Act allows for regulations issued on the basis of the 1984 and 1980 Acts to remain applicable until new regulations, which are to be adopted pursuant to provisions of the 2002 Act, are issued. Based on the 2002 Act, 27 governmental decrees and ministerial rules have been issued in total, therefore, no regulation issued on the basis of previous acts remains in force.

Slovenia joined the Organisation for Economic Co-operation and Development (OECD) in July 2010 and had been collaborating with the Nuclear Energy Agency (NEA) since 2002, before becoming an active member on 11 May 2011.

## 2. Mining regime

The Žirovski Vrh uranium mine and mill was in operation from 1985 to 1990. The exploitation of uranium ore and the exploration of the Žirovski Vrh uranium mine ceased permanently with the Act on Permanent Closeout of Uranium Ore Exploitation and Prevention of Mining Consequences at the Žirovski Vrh Uranium Mine.<sup>7</sup> The closure was mainly initiated because of economic reasons, as yellow cake production was no longer considered competitive.

According to the 2002 Act, the Jazbec mine waste pile and the Boršt mill tailings site are classified as radiation facilities. The SNSA is in charge of issuing authorisations to undertake mining work. All entrances to the underground mine have been closed. The uranium mill has been decommissioned and the resulting waste has been disposed of at the Jazbec mining waste disposal site and Boršt mill tailings site. Remediation work at the Boršt and Jazbec disposal sites has been completed. After final administrative closure of the sites, long term surveillance and maintenance will be according to the law transferred to the Agency for Radioactive Waste Management (ARAO).

## 3. Radioactive substances, nuclear fuel and equipment

Pursuant to Article 3 of the 2002 Act, a "Radioactive substance" is defined as any substance containing one or more radio-nuclides the activity or concentration of which can not be disregarded as far as radiation protection is concerned while a "Radiation source" is defined as a radioactive substance, apparatus or facility, which may emit ionising radiation or radioactive substances. Radiation sources may be either natural or artificial.

The 2002 Act requires prior notification of intention to:

- produce, process, use, store, carry out shipment, bring into and out of the States of the European Union (EU), import, export, clear or clear on condition, dispose of radioactive substances, or possess or handle them in any way,
- produce, bring out of the Member States of the EU, import, maintain or carry out a practice using a device or equipment which itself or due to its constituent parts emits ionising radiation resulting from operating at a voltage more than 5 kV or;
- carry out a practice defined by the Government as a radiation practice liable to licence.

Prior to commencement of a radiation practice, the applicant has to obtain a licence to carry out a radiation practice; such licence shall be issued to a person who fulfils conditions defined by the 2002 Act and subsequent implementing legislation.

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4. Act amending the Act on Ionising Radiation Protection and Nuclear Safety, Official Gazette RS n° 24/2003.
  5. Act amending the Act on Ionising Radiation Protection and Nuclear Safety, Official Gazette RS n° 46/2004.
  6. Act amending the Act on Ionising Radiation Protection and Nuclear Safety, Official Gazette RS n° 60/2011.
  7. Act on Permanent Closeout of Uranium Ore Exploitation and Prevention of Mining Consequences at the Žirovski Vrh Uranium Mine, Official Gazette RS n° 36/1992.

The licence to carry out a radiation practice shall be issued for:

- the management and decommissioning of a radiation facility or a nuclear facility,
- the deliberate addition of radioactive substances during the production and manufacture of consumer goods and for the import or export of such goods,
- the use of X-ray sets, radiation sources and particle accelerators, except electronmicroscopes,
- the disposal, processing and re-use of radioactive substances or materials which contain radioactive substances and originate from the use of radiation sources or from radiation practice in accordance with the 2002 Act, and for which there has been no decision from the competent authority for nuclear safety to indicate that they are no longer subject to the 2002 Act,
- for the production or development of equipment or technology which are nuclear goods,
- the transport of nuclear and radioactive material and;
- the maintenance, production, calibration and other similar work carried out on radiation sources if this is not included in practices described in the previous indents of this paragraph.

If it has been established that a radiation practice has been carried out or a radiation source has been used without a licence, or if prescribed procedures relating to a radiation source or radioactive waste were abandoned, the State will take all measures within its competency to stop the violation of the provisions of the legislation and prevent the possibility of uncontrolled exposure.

#### 4. Nuclear installations

With regard to nuclear safety, the 2002 Act is the most important piece of legislation, providing requirements for protection from the effects of ionising radiation and nuclear safety measures.

The definition of "nuclear safety" is given in the 2002 Act, according to which "*nuclear safety* shall mean technical and organisational measures which result in the safe operation of a nuclear facility, prevention of emergencies or mitigation of the consequences of emergencies, and which protect exposed workers, the population and the environment against ionising radiation".

Besides the main principles (as for example: "primary responsibility for safety", "the polluter-pays principle", "justification", "optimisation", "ALARA" and "the preparedness principle") the 2002 Act also includes, with respect to nuclear and radiation safety, provisions on:

- reporting an intention to carry out radiation practices or to use a radiation source;
- licensing of the radiation practice or use of a radiation source;
- classification of facilities (nuclear, radiation and less important radiation facilities);
- licensing procedures with respect to siting, construction, trial operation, operation and decommissioning of nuclear, radiation and less important radiation facilities;
- radioactive contamination and intervention measures;
- radioactive waste and spent fuel management;
- import, export and transit of nuclear and radioactive materials and radioactive waste and spent fuel;
- physical protection of nuclear materials and facilities;
- non-proliferation and safeguards;
- administrative tasks and inspection; and
- penal provisions.

With regard to the prescribed measures on radiation protection or nuclear safety, facilities are classified into nuclear facilities, radiation facilities and less important radiation facilities. A basic selection of facilities classified as nuclear facilities has already been done by the Act<sup>8</sup> itself, where a nuclear facility is defined as:

a facility for the processing or enrichment of nuclear materials or the production of nuclear fuels; a nuclear reactor in critical or sub-critical assembly; a research reactor; a nuclear power plant and heating plant; a facility for storing, processing and depositing nuclear fuel or high radioactive waste; a facility for storing, processing or depositing low and medium radioactive waste. A nuclear facility shall also mean several of nuclear facilities when they are functionally linked in the same geographically confined territory and are managed by the same person.

Furthermore, the Governmental Decree on Activities Involving Radiation<sup>9</sup> determines the criteria for the classification of radiation facilities and less important radiation facilities.

The responsibilities for radiation protection are divided among two authorities. Responsibility for supervision of nuclear safety in nuclear facilities and radiation practices outside medicine and veterinary activities lies with the SNSA, while responsibility for supervision of radiation practices in medicine and veterinary activities lies with the Slovenian Radiation Protection Administration (SRPA).

#### **a) Licensing and inspection, including nuclear safety**

The licensing process can be divided into four steps after the preliminary condition (*i.e.* planning of the location of nuclear facilities in the national site development plan) is fulfilled:

- application for licence for land use – the competent body is the Ministry of the Environment and Spatial Planning with preliminary approval of radiation and nuclear safety for which the competent body is the SNSA,
- application for licence to construct a facility – the competent body is the Ministry of the Environment and Spatial Planning with approval from the SNSA,
- application for licence for trial operation – the competent body is the SNSA and;
- application for operation and decommissioning – the competent body is the SNSA.

According to the 2002 Act, safety documentation needed to build a safety case to prove nuclear and radiation safety during the siting and construction of a nuclear facility shall consist of three main documents: the Special Safety Analysis (SSA), the Environmental Impact Assessment (EIA) and the Safety Analysis Report (SAR). The content of all three documents is similar but their extent and scope differ as the level of detail presented increases from the SSA to the SAR and at each stage, a re-evaluation of safety is needed.

Article 64 (the location of a nuclear facility) and Article 65 (the analysis of the safety of a site for the location of a nuclear facility) of the 2002 Act determine that selection of a site for the location of a nuclear facility shall be based on a SSA. The SSA will be used to assess all factors at the site of a future nuclear facility which may affect the nuclear safety of the facility during its active life and vice versa – the effects of the facility operation on the population and the environment. The detailed content and scope of the SSA are determined by the SNSA at the beginning of the siting process. A SSA is a standalone document focused on nuclear and radiation safety but considered as a part of the Environmental Report which covers various impacts of the facility on the environment and members of the public.

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8. Article 3. 22) of the 2002 Act.

9. Governmental Decree on Activities Involving Radiation, Official Gazette RS n° 48/2004, amended by the Governmental Decree Amending the Decree on Activities Involving Radiation, Official Gazette RS n° 6/2006.

The EIA is provisioned in Article 51 of the Environment Protection Act<sup>10</sup> and must be conducted in the course of issuing environmental protection consent for a nuclear facility. The SNSA proposes the content of the EIA in the part related to radiation and nuclear safety. The conditions, scope and content of the EIA are drawn up by the Environmental Agency of the Republic of Slovenia (EARS) on the basis of the SNSA proposal.

A SAR is required for approval of construction of a facility. An investor, who intends to construct the nuclear facility, needs to submit a SAR together with an application for approval and project documentation along with the opinion of an authorised expert in radiation and nuclear safety. The content of the SAR is determined by the Rules on Radiation and Nuclear Safety Factors.<sup>11</sup>

The siting of nuclear facilities and conditions for their location are carried out through the process of a National Spatial Plan (NSP). The purpose of a NSP is to give a holistic estimation of environmental impacts. An Environmental Report shall give sufficient information about acceptable impacts that the facility might have on the environment and members of the public. The SSA is added to the report, which covers aspects of nuclear and radiation safety.

After preparation of the Environmental Report and SSA, these documents are subject to public hearing and consultation with neighbouring states (in the case of cross-boundary impacts) and become public documents. The public hearing must last at least 30 days. The competent ministries and organisations prepare their positions in relation to opinions and comments given by the public and neighbouring states. When positive opinions of all competent ministries, municipalities and other organisations are given, the NSP is adopted with a governmental decree.

With adoption of the NSP, the design conditions are also issued. The procedure is similar for an EIA, which is necessary for obtaining Environmental Protection Consent from the EARS. The investor of the sited nuclear facility needs to submit an EIA, which includes a description of the project, its impact on the environment, comparison with other assessed alternatives and proposed mitigating activities. Similarly to the Environmental Report in the NSP stage, the EIA is subject to public hearing and consultation with neighbouring states. Before issuing environmental protection consent, the EARS must obtain positive opinions from competent ministries and organisations and preliminary consent on nuclear and radiation safety from the SNSA.

The construction licence for a nuclear facility is issued by the Ministry of the Environment and Spatial Planning on the basis of the Construction Act.<sup>12</sup> The investor can submit an application for it only after the SNSA gives consent for construction (as stipulated in Article 68 of the 2002 Act). The submitted application for consent for construction needs to include project documentation (*e.g.* design for construction licence), a SAR including relevant evaluation, the opinion of an approved expert in radiation and nuclear safety, decommissioning programme and other documents. The content of project documentation and other conditions are prescribed by the Rules JV5.

After completion of the construction, the investor applies for a licence for the use of the facility as stipulated by the Construction Act. Before such a licence is issued, a technical check and trial operation must be performed. The investor must also apply to the SNSA for consent to start trial operation, enclosing the programme for trial operation with other documentation. After issuing such consent, the Ministry of the Environment and Spatial Planning issues a decision for the start of the trial operation. The trial operation and the technical check represent the commissioning phase.

The purpose of the technical check together with trial operation is to verify that the construction of the installation was performed in concordance with the construction licence and that the facility complies with the licensed design basis. The technical check and trial operation are

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10. Environment Protection Act, Official Gazette RS n° 41/2004, as amended.

11. Rules on Radiation and Nuclear Safety Factors (Rules JV 5), Official Gazette RS n° 92/2009, as amended.

12. Construction Act, Official Gazette RS n° 110/2002, as amended.

supervised, among others, by the SNSA. The Ministry of the Environment and Spatial Planning issues the licence for use of the facility after it verifies that parameters regarding environmental impact from the trial operation meet the prescribed limits.

The operator applies to the SNSA for an operating licence after receiving a licence for use of the facility. The application for the operating licence shall contain an updated SAR, an opinion from an approved expert in radiation and nuclear safety and other prescribed documentation. The SAR must be updated with changes that occurred during the trial operation.

In accordance with Article 138 of the 2002 Act, inspection and enforcement of nuclear and radiation safety rest with the SNSA. On the other hand, the SRPA is in charge of inspection and enforcement of radiation practices and use of radiation sources in health and veterinary care. The inspection powers include control over implementation of provisions of the 2002 Act, regulations and decrees issued in accordance with the 2002 Act and other terms of the licences.

Within the scope of inspection, an inspector may:

- issue decisions, conclusions and/or orders within the framework of administrative proceedings,
- order measures for radiation protection and measures for radiation and nuclear safety or;
- order cessation of a radiation practice or use of a radiation source when it is established that the applicable licence has not been issued or if the prescribed methods of handling a radiation source or radioactive waste have not been followed.

An appeal against a decision of an inspector does not prevent its execution.

A general Inspection Act<sup>13</sup> stipulates the general principles of inspection (its organisation, status, rights and duties of inspectors, inspection measures and other issues in relation to inspection), which must be followed by nuclear and radiation safety inspectors.

For each inspection, a separate administrative procedure (case) has to be opened. Such an "inspection case" may be closed/terminated by the decision/conclusion if there is no evidence of non-compliance with the regulations, violation of the provisions of the legislation or if the inspector does not require corrective measures. In all other situations, the inspector has to issue a written decision/conclusion to the licensee to remedy the errors and/or violations found. While performing an inspection, the inspector may order, for example, material sampling, temporary or permanent seizure of any means, a documents check, search of premises, examinations, hearings, etc.

The enforcement of applicable regulations and terms of the licences is ensured by the application of penal provisions, inspection provisions, as well as provisions related to suspending the operation of a nuclear facility, as provided for by the 2002 Act.<sup>14</sup>

The SNSA may order suspension of operation of a nuclear facility on the initiative of a competent inspector or *ex officio*.

The SNSA may order suspension of operation of a nuclear facility on initiative from a competent inspector when it can be concluded that the prescribed conditions for radiation safety or nuclear safety have not been fulfilled and that the licensee has not ensured fulfilment within a reasonable period of time, in spite of a request from the inspector to remedy the deficiencies.

The SNSA may order suspension of operation of a nuclear facility *ex officio* if the licensee does not submit for approval the changes and amendments of the evaluation of the protection of exposed workers against radiation within the prescribed period of time or if the licensee starts

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13. Inspection Act, Official Gazette RS n° 56/2002.

14. Articles 115 and 116 of the 2002 Act.

maintenance work, testing or introducing modifications, which are significant for the radiation or nuclear safety of a facility, without prior approval by the SNSA. As in some other cases, there is also no right of appeal against the decision on suspension of the operation of a nuclear facility; no need to mention that the judicial protection is ensured.

In addition, the inspector must also apply the provisions of the general Act on Minor Offences.<sup>15</sup> Based on this Act, minor offences are divided into two main categories: for the first, the inspector may charge a fine (penalty payment) directly while for the second, the inspector may only refer the administrative offence prosecution to the competent court. The same applies when an inspector finds more serious unlawful activities, omissions or negligence, which the Penal Code qualifies as a criminal offence; also in these cases, defined by the Criminal Procedure Act, the inspector may only report and initiate the criminal offence to a public prosecutor.

Slovenia is a contracting party to the Convention on Nuclear Safety, which entered into force for Slovenia on 18 February 1997.

### **b) Emergency response**

Nuclear emergency preparedness and response in Slovenia is subject to the 2002 Act and the latest consolidated version of the Protection Against Natural and Other Disasters Act<sup>16</sup> issued in 2006. In general terms, response to a radiation emergency is also defined in the National Radiation Emergency Response Plan,<sup>17</sup> a third version of which was published in 2010.

According to the Public Administration Act,<sup>18</sup> there are two authorities with responsibilities and competencies to regulate and supervise the Krško NPP emergency preparedness. The Administration for Civil Protection and Disaster Relief (ACPDR) has a leading role as it is responsible for the protection of the population during a nuclear accident and for the organisation of civil protection units in nuclear installations. Whereas the SNSA, through its Emergency Preparedness Division, is responsible for on-site procedures and measures related to the on-site emergency plan.

The 2002 Act requires that the operator submit a SAR, which is the principal licensing document, a complete radiological emergency response plan, in line with civil protection regulations. The 2002 Act provisions mostly focus on intervention measures in case of an emergency. According to these provisions, the operator needs to be able to classify accidents, assess the consequences of the event and propose counter-measures. In the operator's emergency plan, the intervention measures should be planned upon the emergency class declared. The operator must provide to emergency planners all requested data available to the operator. The operator must maintain the emergency preparedness and provide response as stipulated by the on-site emergency plan. Prompt notification to the authorities without undue delay of an event is stipulated and the public needs to be informed about important facts in the emergency plans. The Ministry for Environment and Spatial Planning shall notify potential transnational emergencies in compliance with international conventions.

The Decree on the Contents and Drawing up of Protection and Rescue Plans<sup>19</sup> stipulates that the on-site nuclear emergency plan should be co-ordinated at national and municipal levels, and that such plans should be revised at least every five years. Emergency plans are public documents and should, therefore, be presented to the public within 90 days after their adoption. In 2006, the above mentioned decree was supplemented with a requirement specifying a set of data, relevant to emergency, to be supplied to the authorities by companies which are obliged to have an on-site

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15. Act on Minor Offences, Official Gazette RS n° 3/2007, as amended.

16. Act on Protection Against Natural and Other Disasters, Official Gazette RS n° 64/94, as amended.

17. National Emergency Plan in Case of Nuclear or Radiological Emergency, version 3.0., n° 84300-4/2010/3.

18. Public Administration Act, Official Gazette RS n° 52/2012.

19. Decree on the Contents and Drawing up of Protection and Rescue Plans, Official Gazette RS n° 3/2002, as amended.

emergency plan. In addition to maintaining and ensuring emergency preparedness, as well as developing procedures to provide an effective response to nuclear and radiological emergencies, the ACPDR prepared in 2012 the Plan of Distribution of Potassium Iodide Tablets in Case of Nuclear or Radiological Emergency in order to ensure the radiological protection of the population. Such a plan provides for scope and method to be followed for prior distribution, as well as for distribution of potassium iodide tablets in case of an accident. According to the plan, in 2012 the tablets were distributed nationwide to emergency personnel and on a local scale, to civil protection units. Furthermore, 19 regional hospitals received tablets. In 2013, the process continued and tablets were pre-distributed to schools, kindergartens and companies, as well as to people under 40 years of age, established within an area of a 10 km radius around the plant.

Slovenia is party to both the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency.

## 5. Trade in nuclear materials and equipment

The Act Regulating the Export of Dual-use Goods<sup>20</sup> regulates control measures for exports of dual-use items not governed by EU regulations or where these regulations authorise member states to further regulate the field in their national regulations.

Therefore, the Act applies in addition to the provisions of the Council Regulation,<sup>21</sup> which sets up a community regime for the control of exports of dual-use items and technology, and of the Council Joint Action<sup>22</sup> on the control of technical assistance related to certain military end-uses with their respective amendments.

Under the Act, a governmental commission for the control of exports of dual-use items coordinates and monitors the implementation of the control of exports of dual-use items.

Export and transfer within the EU of dual-use items, as included in the list of dual-use items and published on the basis of the Act, shall be subject to different kinds of authorisations to be granted by the Ministry of Economy. Authorisations may also be required for the export of dual-use items not included in the list (*i.e.* the “catch all” principle).

The list mentioned above implements internationally agreed dual-use controls included in the list published by the Nuclear Suppliers Group (NSG). Slovenia has been a member of the NSG since 2000.

## 6. Safeguards of nuclear material

Slovenia has been a party to the Treaty on the Non-Proliferation of Nuclear Weapons since 1992, and in 2000 the Additional Protocol on its safeguards agreement with the IAEA entered into force.

Based on the 2002 Act, the Decree on Safeguarding of Nuclear Materials was adopted by the Slovenian Government.<sup>23</sup> This decree implements Commission Regulation No. 302/2005 of 8 February 2005 on the application of Euratom safeguards and lays down the method and form of transmission of nuclear material data into the central records of nuclear materials, transmission of data and information relating to the safeguarding of nuclear materials, and the competent authority, *i.e.* the SNSA.

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20. Act Regulating the Export of Dual-use Goods, Official Gazette RS n° 37/2004, as amended.
  21. Council Regulation (EC) No 428/2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items, as amended, Official Journal L 134/10 (29 May 2009).
  22. Council Joint Action of 22 June 2000 concerning the control of technical assistance related to certain military end-uses, Official Journal L 159/216 (30 June 2000).
  23. Decree on Safeguarding of Nuclear Materials, Official Gazette RS n° 34/2008.

All other safeguard relevant matters, for example, the definition of nuclear materials which are subject of safeguards or the definition of material balance areas, are not provided by the decree. It lists only references to international treaties and agreements, which are legally binding for every "holder" of nuclear material in Slovenia, *i.e.* the Safeguards Agreement 78/164/Euratom, Additional Protocol 1999/188/Euratom and Euratom Treaty.

## 7. Radiation protection

Radiation protection in Slovenia is governed by the above-mentioned Act on Ionising Radiation Protection and Nuclear Safety issued in 2002. The use of radiation sources and activities involving radiation are furthermore regulated by two governmental decrees<sup>24</sup> and rules<sup>25</sup> which set out, notably, technical requirements for approval of radioactive sources and content of an application for authorisation for use and management of a radioactive source. As mentioned, competences in the field of radiation protection are divided in the 2002 Act among two regulatory bodies, namely the SNSA and the SRPA. The SNSA is accountable for industrial radiation sources, while the SRPA is responsible for radiation protection of patients, medical surveillance of exposed workers, surveillance of workplaces, dosimetry and dose registers and education in the area of radiation protection. That is why, besides the above mentioned decrees and rules, those adopted by the Ministry of Health have to be mentioned.

Rules on the Requirements and Methodology of Dose Assessment for Radiation Protection of the Population and Exposed Workers<sup>26</sup> set, *inter alia*, thresholds applicable to exposed workers, as well as to the population and the methodology to be used to assess and measure such exposure. The nature and extent of the radiation risk for exposed workers, apprentices and students based on the evaluation of radiation exposure of workers must be assessed in advance. In addition, based on this assessment, a programme for optimisation of radiation protection measures in all working conditions must be made. The document must be prepared by the applicant, who is obliged to consult an authorised radiation protection expert. The assessment can also be prepared by an authorised expert in this field. The assessment has to be approved by the SRPA. This set of rules is supplemented by the Rules on Health Surveillance of Exposed Workers,<sup>27</sup> which provides for, among others, extraordinary medical surveillance, decontamination and further treatment of exposed workers, as well as the obligation of keeping records of their health surveillance.

## 8. Radioactive waste management

Three independent parties, the producers of radioactive waste, the SNSA as the regulatory body and the Agency for Radioactive Waste Management (ARAO) as a state-owned public service for radioactive waste management, are involved in the process of radioactive waste management. The operators of nuclear and radiation facilities are responsible for radioactive waste management at their facilities. The ARAO has the responsibility of collecting, transporting, treating, storing and disposing of Low and Intermediate Level Radioactive Waste (LILW) coming from small producers in the Republic of Slovenia. The ARAO also has the responsibility for disposal of all radioactive waste coming from operators of nuclear and radiation facilities, when applicable.

The Resolution on the 2006-2015 National Programme for Managing Radioactive Waste and Spent Nuclear Fuel<sup>28</sup> was adopted by the Slovenian Parliament in March 2006, and constitutes a

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24. Decree on Activities Involving Radiation, Official Gazette RS n° 48/2008, as amended and Decree on Dose Limits, Radioactive Contamination and Intervention Levels, Official Gazette RS n° 49/2004.
  25. Rules on the Use of Radiation Sources and on Activities Involving Radiation, Official Gazette RS n° 27/2006.
  26. Rules on the Requirements and the Methodology of Dose Assessment for the Radiation Protection of the Population and Exposed Workers, Official Gazette RS n° 115/2003.
  27. Rules on Health Surveillance of Exposed Workers, Official Gazette RS n° 2/2004.
  28. Resolution on the 2006-2015 National Programme for Managing Radioactive Waste and Spent Nuclear Fuel, Official Gazette RS n° 15/2006.

key document in the field of radioactive waste management, the issue being addressed as an integral process covering all stages, from waste generation to waste disposal.

According to the Bilateral Slovenian-Croatian Agreement on the Krško NPP,<sup>29</sup> which entered into force in 2003, the decommissioning and management of radioactive waste and spent fuel from Krško NPP lie as a shared responsibility between Slovenia and Croatia. Revision of the Programme of NPP Krško Decommissioning and Spent Fuel and LILW Disposal (the "DP"), has to be undertaken every five years.

Indeed, a decree<sup>30</sup> approving the site for a LILW repository was passed by the government in December 2009. The site, called Vrbina, is located in the municipality of Krško, in the vicinity of the NPP. The local community will be compensated up to EUR 5 million per year, based on provisions of two governmental decrees.<sup>31</sup> Three repository variants have been considered for the site, knowingly surface repository, silos repository and tunnel type repository. The ARAO, after evaluation, favoured the silos-type repository.

Furthermore, preliminary design of the repository has already been elaborated. Construction will be carried out in phases. Two silos will have a capacity of 9 400 m<sup>3</sup> each. In case of an expansion of the Slovenian nuclear programme or an agreement between Slovenia and Croatia regarding disposal of the entire amount of waste, the capacity of the site can be increased.

The main rules governing the management of radioactive waste in the country are the Rules on Radioactive Waste and Spent Fuel Management.<sup>32</sup>

The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management entered into force for Slovenia on 18 June 2001.

## 9. Nuclear security

The 2002 Act stipulates the main provisions in the area of physical protection in Chapter 6: Physical Protection of Nuclear Facilities and Nuclear and Radioactive material. Two prior regulations<sup>33</sup> in the field of physical protection of nuclear material and facilities issued on the basis of the 2002 Act have ceased to apply and were replaced in 2013 by two new rules on the physical protection of nuclear facilities, nuclear and radioactive substances and transport of nuclear materials.<sup>34</sup> The purpose of the first is to define the scope and means of physical protection within

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29. Treaty 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 investment, exploitation and decommissioning of the Krško Nuclear Plant and Joint Declaration at the time of signature of the Treaty 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 investment, exploitation and decommissioning of the Krško Nuclear Plant, Official Gazette RS MP n° 23/2003.
  30. Decree on Detailed Plan of National Importance for LILW Repository on Site Vrbina in Krško Municipality, Official Gazette RS n° 114/2009.
  31. Decree on the Areas of Limited Use of Space Due to a Nuclear Facility and the Conditions of Facility Construction in These Areas, Official Gazette RS n° 36/2004, as amended and Decree on the Criteria for Setting Compensation Level Payable for Limited Use of Space Within the Area of a Nuclear Facility, Official Gazette RS n° 134/2003, as amended.
  32. Rules on Radioactive Waste and Spent Fuel Management, Official Gazette n° 49/2006.
  33. Rules on the Physical Protection of Nuclear Material, Nuclear Installations and Radiation Facilities, Official Gazette RS n° 31/2005 and Rules on the Conditions for Workers Who Carry Out Physical Protection of Nuclear Material, Nuclear Facilities or Radiation Facilities and on the Conditions for Workers Who Have Access to Nuclear Materials as well as on Other Conditions with Respect to Physical Protection, Official Gazette n° 36/2005 and 64/2005 (corr.), which ceased to be valid on 13 March 2013, but some provisions still partially apply until 22 February 2014.
  34. Rules on Physical Protection of Nuclear Facilities, Nuclear and Radioactive Substances and Transport of Nuclear Materials, "the 2013 Rules", Official Gazette RS 17/2013, and Rule Establishing a Programme of Basic Professional Training and a Programme of Periodic In-service Training of Security Personnel

facilities containing nuclear or radioactive material for all kinds of use and throughout all stages of their life (construction, decommissioning, transport and storage), as well as to prevent any wrongful or unauthorised use of nuclear and radioactive materials. Whilst the second deals with a basic professional training programme and periodic in-service training programme of security personnel.

In March 2012, the Slovenian Government appointed a new commission on physical protection of nuclear facilities and nuclear and radioactive material. The commission gives its opinions on threat assessments, monitors and co-ordinates implementation of measures for physical protection, makes recommendations to improve these measures, as well as gives its opinions and proposals in the preparation of legislation in the area of physical protection.

Slovenia has been a party to the Nuclear Non-Proliferation Treaty since 1992, and in 2000 the Additional Protocol on its safeguards agreement with the IAEA entered into force. Slovenia is a party to the Convention on the Physical Protection of Nuclear Material (CPPNM) and has also ratified the 2005 Amendment to the CPPNM. Slovenia also ratified the International Convention for the Suppression of Acts of Nuclear Terrorism in 2009, as well as the International Convention for the Suppression of the Financing of Terrorism in 2004.

## 10. Transport

Transport of radioactive materials is governed by the Act on Transport of Dangerous Goods.<sup>35</sup> The Act applies to dangerous goods, which include radioactive substances, as well as “wastes, preparations and nuclear materials that meet the conditions for classification as dangerous goods” as set by the above mentioned conventions. Furthermore, the Act on Transport contains a provision which conditions the transport of radioactive and nuclear material to the approval of its packaging. Another provision clearly specifies that such transport requires the operator to obtain a transportation licence. The authority in charge of issuing transportation licences is the SNSA, except for radioactive materials used in medicine and veterinary medicine for which the licence is issued by the SRPA. The authorities responsible for the supervision of the implementation of the Act on Transport of Dangerous Goods are the SNSA and the SRPA.

## 11. Nuclear third party liability

The field of nuclear third party liability has been regulated in Slovenia for more than three decades. Third party liability legislation was put into place well before the Krško NPP went into commercial operation in 1984 at a time when Slovenia was one of the six republics constituting the former Republic of Yugoslavia. There were two levels of legislation, the federal level and the level of republics. Thus, the third party liability legislation was also two-tiered: the Federal Act on Liability for Nuclear Damage<sup>36</sup> from 1978 and the national (Sloven) Act on Insurance for Liability for Nuclear Damage<sup>37</sup> from 1980.

Both Acts were based on the Vienna Convention on Civil Liability for Nuclear Damage, to which the former Yugoslavia had become a party to in 1977. Already by 1977, the Nuclear Insurance Pool had been established in order to provide insurance coverage for third party liability risks for the operator of nuclear installations.

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Performing Physical Protection of Nuclear Facilities, Nuclear or Radioactive Materials, and Transport of Nuclear Materials, Official Gazette n° 12/2013 which shall apply from 22 February 2014.

35. Act on Transport of Dangerous Goods, “the Act on transport”, Official Gazette RS n°79/1999, as amended.
36. Federal Act on Liability for Nuclear Damage (ZOJed-1), Official Gazette SFRJ n° 22/1978 and n° 34/1979, “the 1978 Federal Act”.
37. Act on Insurance for Liability for Nuclear Damage, Official Gazette SRS n° 12/1980, “the 1980 Act”.

Following Slovenia becoming a sovereign and independent state in 1991, it took several steps to reinforce its policy and legal framework in the area of third party liability:

- in 1992, Slovenia acceded to the 1963 Vienna Convention on Civil Liability for Nuclear Damage.
- in 1995, it acceded to the 1988 Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention.
- in 2002, the Vienna Convention ceased to apply to Slovenia, following notification of termination of its application.
- in the same year, Slovenia acceded to the 1960 Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention).
- in 2003, it acceded to the Convention Supplementary to the Paris Convention (Brussels Supplementary Convention).

On 22 September 2010, the new Act on Third Party Liability for Nuclear Damage<sup>38</sup> was adopted. The Act governs liability for nuclear damage resulting from the use of nuclear energy for peaceful purposes, the insurance of liability for nuclear damage and the procedure for claiming compensation for nuclear damage.

On one hand, the Act follows provisions of the 2004 Protocol to amend the Paris Convention regarding, for example, the extended heads of damage which are covered, increased liability amounts and extended prescription and extinction periods for nuclear damage claims. On the other hand, the Act regulates those areas which the convention leaves to be dealt with by national legislation. For example, the Act specifically designates one court which shall be competent to rule on compensation for nuclear damage. It also includes a number of provisions regarding the rules of procedure for claiming compensation and the distribution of compensation. It is to be noted that the legislation was complemented in 2010 by an ordinance,<sup>39</sup> which specifies persons for whom insurance coverage is not compulsory.

Regarding public funds that have to be provided by the State under the Brussels Supplementary Compensation Convention, the Act envisages that they shall be provided from the state budget and that their amount, as well as the manner and dynamics of their drawings, shall be determined by a future act. The Act also provides that assessment of the amount of nuclear damage must be prepared within six months from the date of the nuclear accident by a special commission. Members of that commission shall be appointed by the government from among representatives of different ministries (finance, environment and defence), the State Attorney's Office, the insurer and the operator. In its assessment, the commission shall propose the amount, the manner and the dynamics of the payment of funds. Such assessment is submitted by the Ministry of Finance to the government for adoption. During this period, which should not exceed six months, compensation shall not be payable, although the insurer may settle and pay compensation claims if the extent of nuclear damage and its known consequences make it evident that the resources of the operator (EUR 700 million) will be sufficient to provide for full compensation to all injured parties.

Regarding those risks which nuclear insurers are unwilling or unable to cover, the Act provides that a premium-based insurance agreement between the government and the operator shall be concluded but such an arrangement is limited in time (until the situation on the domestic and international insurance market changes but for no longer than four years). The Act also prescribes all necessary provisions to comply with the 2004 Protocol to amend the Brussels Convention.

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38. Act on Liability for Nuclear Damage, Official Gazette RS - International Treaties, n° 77/2010.

39. Ordinance on Determining the Persons to Whom the Conclusion of the Insurance for Nuclear Damage is Not Obligatory, Official Gazette RS n° 110/2010.

This Act entered into force six months after its publication in the Official Gazette (*i.e.* on 4 April 2011). Application of some provisions directly related to the 2004 Protocol to amend the Paris Convention is at the same time linked to entry into force of that protocol.

On the day this Act entered into force, the existing third party liability legislation ceased to be applicable (1980 Act, the 2001 governmental decree<sup>40</sup> and the 1978 Federal Act).

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40. Governmental Decree on Establishment of the Amount of Limited Operator's Liability for Nuclear Damage and on Establishment of the Amount of Insurance for Liability for Nuclear Damage, Official Gazette RS n° 110/2001.

## II. Institutional Framework

The 2002 Act divided the competencies in the field of nuclear and radiation safety among two regulatory bodies, namely the Slovenian Nuclear Safety Administration (SNSA) and the Slovenian Radiation Protection Administration (SRPA). The SNSA is accountable for nuclear safety and safety of industrial radiation sources, while the SRPA is responsible for radiation protection of patients, medical surveillance of exposed workers, surveillance of workplaces, dosimetry and dose registers and education in the area of radiation protection. Apart from this general division, there are some parts of the legislative and regulatory framework which are entrusted to other institutions, e.g. the Administration for Civil Protection and Disaster Relief of the Ministry of Defence is accountable for emergency preparedness and planning, while the Ministry of Interior has responsibility for physical protection.

### 1. Regulatory and supervisory authorities

#### a) Slovenian Nuclear Safety Administration (SNSA)

The SNSA, as a regulatory body in the area of nuclear and radiation safety, is a functionally autonomous institution within the Ministry of Agriculture and Environment (MAE). Its responsibilities and competencies are defined in the Decree on Administrative Authorities within Ministries<sup>41</sup>: the SNSA performs specialised technical and developmental administrative tasks and inspection tasks in the area of radiological and nuclear safety, radiation practices and use of radiation sources (except in health and veterinary care), protection of the environment against ionising radiation, physical protection of nuclear materials and nuclear facilities, non-proliferation of nuclear weapons and safeguards of nuclear goods. Furthermore, the SNSA monitors radioactivity in the environment and governs third party liability.

The precise competencies of the SNSA and other relevant administrations, which are entrusted with the implementation of the legislative framework, are prescribed, in particular, in the 2002 Act. The SNSA was recently re-organised in order to increase its efficiency and optimise its resources. A major change was the establishment of the Emergency Preparedness Division, which emphasised the importance of this activity. Currently, there are 41 employees at the SNSA.

The SNSA is organised into four divisions and two offices:

- Nuclear Safety Division,
- Radiation Safety and Materials Division,
- Inspection Division,
- Emergency Preparedness Division,
- Office of International Co-operation and;
- Office of General Affairs.

#### b) Slovenian Radiation Protection Administration (SRPA)

The 2002 Act allocates competencies in the area of radiation practices and use of radioactive sources in health and veterinary care to the SRPA, which was established in March 2003 within the Ministry of Health. Its responsibilities and competencies are also generally defined in the above mentioned Decree on Administrative Authorities within Ministries.

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41. Governmental Decree on Administrative Authorities within Ministries, Official Gazette RS n° 58/03, as amended.

The SRPA performs technical, administrative, inspection and development tasks in the area of radiation practices and use of radiation sources in health and veterinary care; health protection of people against detrimental effect of ionising radiation; systematic inspection of working and living premises due to exposure of people to natural radiation sources; implementation of monitoring of radioactive contamination of foodstuffs and drinking water; reduction, restriction and prevention of detrimental health effects of non-ionising radiation and assessment of compliance and authorisation of radiation protection experts.

Besides the SNSA and the SRPA, there are other administrations, ministries and organisations entrusted with implementation of the legislative framework which governs the safety of nuclear installations, in particular:

- the Civil Protection and Disaster Relief Administration (within the Ministry of Defence), as the operator of the National Notification Centre, is responsible for notification procedures in the event of a radiological emergency and for off-site emergency planning.
- the Ministry of Interior has competencies in the area of physical protection of nuclear materials and nuclear facilities in general (while the SNSA only approves the safety analysis report – to which the plan of physical protection is attached as a separate and restricted document).

## 2. Advisory bodies

Based on the 2002 Act, the Expert Council for Radiation and Nuclear Safety was appointed in mid-2003 as an advisory body to the MAE and the SNSA, and the Expert Council for the Protection of the Population Against Ionising Radiation, for Radiological Procedures and Use of Radiological Sources in Health and Veterinary Care, as an advisory body to the Ministry of Health and to the SRPA.

The Expert Council for Radiation and Nuclear Safety has no formal role in the licensing process of the SNSA since the 2002 Act provides its duties as follows:

- giving opinions and making proposals during the drawing up of regulations,
- giving opinion on the annual report on radiation protection and nuclear safety,
- giving opinions on the annual work plans of the SNSA and SNSA inspectors and;
- giving opinions and proposals on other issues related to topics they are experts on as requested by the SNSA.

The details are covered in the appropriate rules.<sup>42</sup>

In the area of nuclear security, the government appointed a commission on physical protection of nuclear facilities and nuclear and radioactive material, which also has an advisory role, as mentioned.

## 3. Public and semi-public agencies

### The Agency for Radioactive Waste Management

The Agency for Radioactive Waste Management was first established as a public company in 1991. However, in 1996, it was turned into a commercial public service. It is funded by the government

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42. Rules on the Expert Council on Radiation and Nuclear Safety, Official Gazette RS, n° 35/2003 and Rules on Functioning of the Expert Council for the Issues of Ionising Radiation Protection, Radiological Activities, and the Use of Radiation Sources in Human and Veterinary Medicine, Official Gazette RS, n° 62/2003.

and the ministry in charge of its administration is the Ministry of Infrastructure and Spatial Planning.

Its mandate under the 2002 Act encompasses three missions:

- commissioning, collecting, transporting, pre-conditioning, interim storage and disposal of radioactive waste and spent fuel not originating from energy producing nuclear facilities,
- pre-conditioning, interim storage and disposal of radioactive waste and spent fuel originating from energy producing nuclear facilities and long-term monitoring and maintenance of repositories for radioactive waste and spent fuel and;
- long-term maintenance and supervision of repositories of hydrometallurgical tailings and mine waste tailings originating from production of nuclear minerals raw materials.

Another part of its mandate is to participate in the elaboration of a national programme of radioactive waste and spent fuel management.

### **The Fund for Decommissioning of the Krško NPP**

The Fund for Financing the Decommissioning of the Krško NPP and for the Management of Radioactive Waste from the Krško NPP (hereinafter "Fund") was established pursuant to the Act on the Public Fund for Financing Decommissioning of the Krško Nuclear Power Plant Krško and Disposal of Radioactive Waste from the Krško NPP.<sup>43</sup>

In 2004, the first Programme for the Decommissioning of the Krško NPP and Disposal of LILW and Spent Fuel (hereinafter "Programme") was prepared. It determined the levy per kWh to be paid to the Fund.

Since 1998, the Fund is financing the work programme of the Agency for Radioactive Waste Management, namely projects referring to the safe management of LILW.

### **The Nuclear Insurance and Reinsurance Pool**

The Nuclear Insurance and Reinsurance Pool is a special insurance company, which deals with the insurance and reinsurance of nuclear risks.

The Nuclear Insurance and Reinsurance Pool has been operating since 1994, when eight members (insurance and reinsurance companies with their registered offices in Slovenia) signed a contract to establish the Nuclear Insurance and Reinsurance Pool.

Third-party liability of a nuclear operator with headquarters in the Republic of Slovenia is insured in accordance with the Act on Liability for Nuclear Damage that entered into force on 4 April 2011. Under this policy, the Nuclear Insurance and Reinsurance Pool covers up to the amount of insurance specified in the insurance policy, as well as costs, interest and expenses that the policy holder must reimburse to the victim of a nuclear incident.

The Nuclear Insurance and Reinsurance Pool participates in third-party liability insurance risk up to its capacity level, while the rest of the risk is reinsured by foreign pools.

## **4. Technical Support Organisations – approved experts**

### **Approved experts for radiation and nuclear safety**

The 2002 Act contains a requirement that the operators of radiation or nuclear facilities must obtain the opinion of approved experts on specific modifications in the facilities.

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43. Funds for Financing Decommissioning of the Krško Nuclear Power Plant Krško and Disposal of Radioactive Waste from the Krško NPP Act, Official Gazette RS n° 75/94, as amended.

In 2012, 17 legal entities and 1 natural person were approved by the SNSA to perform tasks of an Approved Expert for Radiation and Nuclear Safety. Staff maintained their level of competence and the equipment used was well-kept and updated. The organisations established quality management programs certificated in compliance with the standard ISO 9001:2008. Approved experts provided professional support to the Krško NPP by preparing independent expertise. An important part of the work focused on an independent review and assessment of plant modifications.

In the area of radiation protection in medicine, the SRPA approves expert organisations (or natural persons) for different tasks.

#### **Approved radiation protection experts**

Approved radiation protection experts co-operate with employers in drawing up evaluations of the protection of exposed workers against radiation; give advice on working conditions of exposed workers, on the extent of implementation of radiation protection measures in supervised and controlled areas, on the examination of the effectiveness thereof, on the regular calibration of measuring equipment, and on the control of usefulness of protective equipment; and perform training of exposed workers in radiation protection. Approved radiation protection experts regularly monitor the levels of ionising radiation, contamination of the working environment and working conditions in supervised and controlled areas.

#### **Approved dosimetric services**

Approved dosimetric services perform tasks related to the monitoring of individual exposure to ionising radiation.

#### **Approved medical physics experts**

Approved medical physics experts give advice on the optimisation, measurement and evaluation of irradiation of patients, the development, planning and use of radiological procedures and equipment, and ensuring and verifying the quality of radiological procedures in medicine. Only natural persons can become approved medical physics experts.

#### **Approved medical practitioners**

Approved medical practitioners carry out medical surveillance of exposed workers. An approval is issued by the Minister of Health on recommendation by the SRPA.