# Slovak Republic

# National Profile
# on Radioactive Waste and Spent Fuel

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## Abbreviations

| | |
|---|---|
| BSC | Bohunice Treatment Centre |
| EU | European Union |
| FS KRAO | Final processing of Liquid Radioactive Waste |
| ISFS | Interim storage for spent fuel |
| IS RAW | Interim storage for radioactive waste |
| JAVYS, a. s. | Nuclear and Decommissioning Company/Jadrová a vyraďovacia spoločnosť |
| NPP | Nuclear Power Plant |
| NPP A1 | NPP Bohunice A1 |
| NPP V1 | NPP V1 Jaslovské Bohunice (Units 1&2) |
| NPP V2 | NPP V2 Jaslovské Bohunice (Units 3&4) |
| NPP Mochovce/EMO | NPP Mochovce |
| KRAO | Liquid radioactive waste |
| IAEA | International Atomic Energy Agency |
| MDVRR SR | Ministry of Transport, Construction and Regional Development of the Slovak Republic |
| MH SR | Ministry of Economy of the Slovak Republic |
| MV SR | Ministry of Interior of the Slovak Republic |
| MŽP SR | Ministry of Environment of the Slovak Republic |
| NNF | National Nuclear fund |
| PS | Operational set |
| RAO | Radioactive Waste |
| RÚ RAW | National Repository for Radwaste |
| SE, a. s. | Slovenské elektrárne, a. s. |
| SR | Slovak Republic |
| TSÚ RAW | Technology of treatment and conditioning of RAW |
| UJD SR | Úrad jadrového dozoru SR/Nuclear Regulatory Authority of the SR |
| VBK | Fibre-concrete container |
| WWER | Water-water power reactor |

# National Framework for Management of Radioactive Waste and Spent Fuel

**National Policy and Program**

According to Act No. 238/2006 Coll. as amended by Act No. 143/2013 Coll. (National Nuclear Fund) the Board of Trustees of the National Nuclear Fund submits the draft National Policy and the National Programme for the Management of RAW and SNF to the MH SR together with the opinion of UJD SR. Subsequently the MH SR submits the draft National Policy and the draft National Program and every six years their updates to the Government for approval. The Government approved the draft National Policy and the draft National Programme by the Resolution No. 387/2015 on 8 July 2015.

**National Policy for Spent Fuel Management (SNF) and Radioactive Waste (RAW) Management**

The National Policy is based on the following principles:

a) The Slovak Republic has the ultimate responsibility for the decommissioning of nuclear installations located in Slovakia, for the safe and responsible long-term storage and disposal of spent nuclear fuel and for the radioactive waste management, which has been produced on its territory after its takeover from the producer,
b) The ultimate responsibility for the safe and responsible disposal of radioactive waste or of spent fuel to be transported from the Slovak Republic for conditioning or reprocessing to a Member State of the European Union or to a third country, including any waste generated as a by-product of conditioning or reprocessing, is borne by the Slovak Republic, unless the international treaty, by which the Slovak Republic is bound, stipulates otherwise,
c) Production of radioactive waste in terms of its activity and volume, is maintained at the lowest level, which is reasonably achievable, by means of appropriate design measures, operating procedures and decommissioning practices, including recycling and reuse of materials,
d) The interdependencies between all steps of spent nuclear fuel and radioactive waste management are taken into account,
e) Management of spent nuclear fuel and radioactive waste shall be safe, even in the long-term, especially when applying passive safety features,
f) Graded approach is applied in management of spent nuclear fuel and radioactive waste, taking into account in particular its activity, amount, type of nuclear installation, in which they are handled and their other hazardous properties,
g) The costs of management of spent nuclear fuel and radioactive waste shall be borne by the person, who produced them, in case of an unknown originator, appropriate measures are taken,
h) Documenting the decision-making process is based on evidence and results of characterization at all stages of management of spent nuclear fuel and radioactive waste.

Goals of the National Policy are the following:

1. Safe and reliable decommissioning of nuclear installations
2. Waste minimization
3. Selection of a suitable fuel cycle
4. Safe storage
5. Management of radioactive waste

6. Nuclear safety
7. Application of graded approach
8. The principle of "polluter pays"
9. Objective decision-making process
10. Liability

Regulation of the peaceful use of nuclear energy is performed by the governmental bodies and organizations within the framework of their competence defined by the respective acts according to the structure (figure):

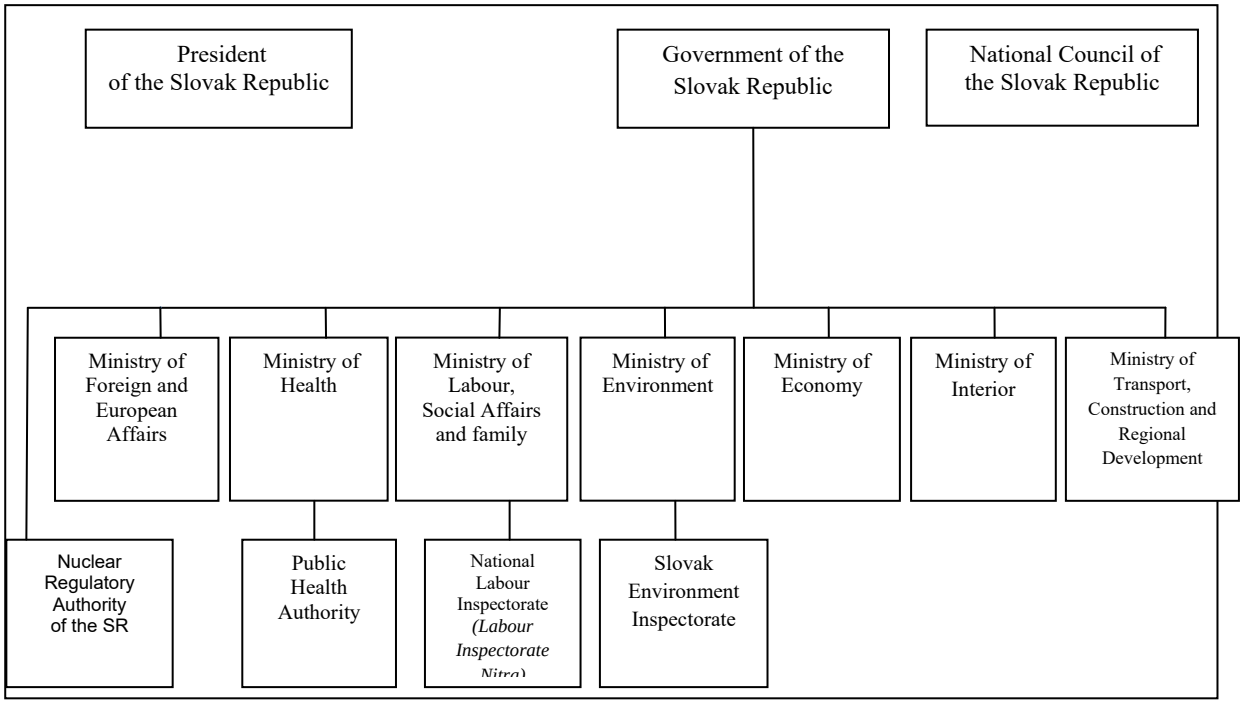


*Fig. Structure of government / regulatory bodies*

**Ministry of Health of the Slovak Republic (Public Health Authority of SR)**

State administration in the field of health protection is executed by the Ministry of Health and the Public Health Authority. The scope of the Ministry includes establishing radiation limits and conditions for radioactive waste management in terms of their potential impact on health. Public Health Authority prepares proposals on principal directions and priorities of the National Health Policy for the protection of health, assesses impacts of harmful factors on health of the population at the national level, manages, controls and coordinates the state administration in health protection against ionizing radiation.

**Ministry of Environment of the Slovak Republic (MŽP SR)**

MŽP SR provides, inter alia, the assessment process of strategic documents carried out also under the Protocol on Strategic Environmental Assessment, in conformity with the Convention on the Assessment of Environmental Impacts in a Transboundary Context (Espoo Convention). MŽP SR under the Act governs also the procedure on assessment of anticipated impacts on the environment of proposed activities before deciding about their siting or prior to their authorization pursuant to special regulations in accordance with the Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment and under the Espoo Convention.

**Ministry of Interior of the Slovak Republic (MV SR)**

In case of accidents at a nuclear installation it is involved in management and carrying out rescue works, organizes and provides for the operation of the notification and warning centre of the Slovak Republic, etc. It provides for a 24 hours permanent service, which fulfils the role of the national point of contact of the Slovak Republic vis-à-vis the International Atomic Energy Agency in Vienna and a competent body of the European Commission (ECURIE) in Luxembourg.

**Ministry of Economy of the Slovak Republic (MH SR)**

The Ministry of Economy of the Slovak Republic is a central state administration authority for, amongst others, nuclear energy industry, including the management of nuclear fuel, storage of radioactive waste, prospecting and exploration of radioactive raw materials and their extraction.

**Ministry of Transport, Construction and Regional Development of the Slovak Republic (MDVRR SR) and Department of Health Officer**

In terms of transports of fresh and spent nuclear fuel, MDVRR SR is one of the authorities participating in the permitting process. According to Section 28 par. 13 sub-par. c) of the Atomic Act, MDVRR SR approves the emergency transport schedule containing measures during an incident or accident during transport of radioactive materials.

Within its competence Department of Health Officer MDVRR SR in the field of use of nuclear energy issues permits for transport of fresh and spent nuclear fuel and defines conditions for performance of these activities, it performs state health supervision over radiation protection during transport according to the Act No. 355/2007 Coll.

**Ministry of Labour, Social Affairs and Family of the Slovak Republic (MPSVR SR)**

The Ministry of Labour, Social Affairs and Family is a central state administration authority for, among others, safety and health protection at work and labour inspection. State administration on labour inspection is executed by state administration bodies MPSVR SR, the National Labour Inspectorate and labour inspectorates.

The Ministry of Labour, Social Affairs and Family of SR oversees and controls the National Labour Inspectorate (NLI) and is responsible for the execution of labour inspection. The National Labour Inspectorate is a governing body for labour inspectorates, which performs supervision of compliance with laws and other regulations to ensure safety and protection of health at work at the workplaces (including nuclear installations).

**Nuclear Regulatory Authority of the Slovak Republic (UJD SR)**

In accordance with the Act No. 575/2001 Coll. UJD SR is a central state administration authority. It executes state regulatory activities in the field of nuclear safety of nuclear installations, including management of radioactive waste, spent fuel and other parts of the fuel cycle, as well as transport and management of nuclear materials including their control and record keeping system. It is responsible for the assessment of goals of nuclear energy program and of quality of the classified equipment, as well as for commitments of the Slovak Republic under international agreements and treaties in the said field.

UJD SR issues various types of decisions: on approval, on license, on authorization, on sanction or measure imposition, on determination of a new licensee, on verification of professional competency, on documentation review and other.
Competence of the UJD SR is established by Section 4 of the Atomic Act, which is very extensive *(http://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/AZ/$FILE/541_2004%20ZAROVNANY%20povodny2004_12.1.2015.pdf).*

**JAVYS, a. s.**

JAVYS is company that, due to its activities, plays a big part in the energy security of Slovakia and that holds a key position in the Middle European region. With emphasis on maximum safety as well as quality and preservation of the environment, we secure the responsible and competent realization of the final stage of nuclear power industry.
Main activities of the Company are:

- Decommissioning of A1 NPP,
- Decommissioning of V1 NPP,
- Radioactive Waste (RAW) Management:
  - from operation of nuclear facilities,
  - from decommissioning of nuclear facilities,
  - institutional RAW and captured radioactive materials,
- Spent Nuclear Fuel Management.

**Slovenské elektrárne, a. s.**

Two nuclear power plants in Slovakia, NPP EBO V2 and NPP EMO1,2, are owned and operated by company Slovenské elektrárne, a. s. The first one is situated in Jaslovské Bohunice site and the second one in Mochovce site. Both power plants are the same type, each of them consists of two WWER-440 units. Another two units of the same type are currently under construction in Mochovce site.
Management of radioactive waste and nuclear spent fuel in the company consists of activities such as monitoring, collection, sorting and storage of waste and monitoring, cooling and short term storage of spent fuel in the ponds for the period of 3-5 years.
For long terms storage the spent fuel is transported to interim spent fuel storage operated by the company JAVYS.

## National legal and regulatory framework

**Legislative and Regulatory Framework**

Use of nuclear energy is governed by **Act No. 541/2004 Coll.** on peaceful use of nuclear energy (the Atomic Act). It came into effect on 1 December 2004 and has been amended thirteen times.

**Acts in the field of State Regulation**

**Act No. 575/2001 Coll. on Organization of Governmental Activities and of Central State Administration** as amended (so called Competence Act) defines the framework of tasks and responsibilities of central state administration authorities. The provision on UJD SR is in section 29 of the valid Competence Act.

**Act No. 251/2012 Coll. on the energy sector,** repealed the original Act No. 656/2004 Coll. on the energy sector as amended. The Energy Act, as one of the basic laws, governs the terms and condition for doing business in the nuclear energy sector as well as the rights and obligations of legal entities doing business in this field and state supervision and control over doing business in the energy sector.

**Act No. 250/2012 Coll. on regulation in network industries** governs conditions and the method of regulation in network industries. Network industry means also the power generation sector. Activities performed in the network industries are considered as regulated activities, which require permit from the Regulatory Office for Network Industries.

**Act No. 24/2006 Coll. on environmental impact assessment** with the aim to strengthen and ensure high environmental protection, the Act establishes a procedure for expert and public environmental impact assessment:

1. Strategic documents prior to their approval (*for example, concept* for radioactive waste and spent nuclear fuel management, the national program of radioactive waste and spent nuclear fuel management); and
2. Proposed activities prior to the decision on their siting or prior to their approval according to special regulations (construction of nuclear installations and relating activities).

The Act defines activities that are obligatory subject to international assessment from the aspect of their environmental impact. The Ministry of Environment is the competent authority to assess transboundary environmental impacts.

**Act No. 238/2006 Coll. on National Nuclear Fund for Decommissioning of Nuclear Installation and for Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund).** The Nuclear Fund is an independent legal entity, which is managed by the Ministry of Economy. The Fund has its own bodies (Council of Administrators, Supervisors Board, Director, managers of sub-accounts, auditor). The sources of the Nuclear Fund are various – contributions paid by the licensees for operation of nuclear facilities, charges collected by the operators of the transmission and the distribution systems in the prices of supplied electricity directly from end customers (serving for compensation of the so called "historical debt"), fines imposed by UJD SR, interests earned on deposits, subsidies and contributions from the EU, from the state budget, and other.

**Act No. 355/2007 Coll. on the protection, promotion and development of public health** establishes requirements for the protection of public health, defining health authorities, their competence, the basic conditions for the implementation of activities leading to radiation exposure, and activities relevant for radiation protection and the release of radioactive substances and radioactive contaminated materials from administrative control, defines the requirements for professional competence, tests of professional competence and issuing certificates of professional competence of persons in the field of radiation protection, determines the activities leading to exposure, which need to be authorized and activities that are subject to reporting, state health supervision and penalties for violation of obligations in the field of radiation protection.

Amending the **Act No. 50/1976 Coll. on land use and the building code** (the Building Code) with effect from 01. 12. 2004 UJD SR became a special building authority for constructions of nuclear installations and construction related to nuclear installation located within the premises of a nuclear installation.

*Note*: Prior to issuing decision on siting of a nuclear installation the building authority is obliged to request a binding opinion from UJD SR, which may condition its consent by fulfilment of conditions.

Civil liability for nuclear damage and the requirements for its financial coverage are governed by a special Act No. 54/2015 Coll. on civil liability for nuclear damage.

## Radioactive Waste Management, Decommissioning and Spent Fuel Strategy and current Practices and Technologies

Nuclear safety during siting, design, construction, commissioning, operation and decommissioning is subject to fulfilment of general safety requirements for nuclear installations and subject to, special requirements for nuclear installations with nuclear reactor, special requirements for nuclear installations for treatment, conditioning or storage of SNF. Fulfilment of safety requirements is required by legislation and controlled through regulatory inspections.

General safety requirements of RAW management are similar as for SNF.

The originator of radioactive waste is liable for safe radioactive waste management prior to its placement to the repository.

Radioactive waste shall be managed so as to:

a) Maintain subcriticality,

b) Provide for residual heat removal,

c) Minimize effects of ionizing radiation on the operators, the public and the environment,

d) Account is taken of properties affecting nuclear safety, such as toxicity, flammability, explosiveness and other dangerous properties.

Production of radioactive waste and radioactive waste management must be governed by technical and organizational measures so that their quantity and the level of activity are maintained as low as reasonably achievable.

The conditioning of radioactive waste consists of activities leading to production of a form suitable for its transport and disposal or for its storage.

All activities during radioactive waste management shall be directed to its safe disposal.

The requirement for minimization of RAW generation is laid down in the Atomic Act (No. 541/2004 Coll.). The minimization system is elaborated at every nuclear installation in line with legislative requirements.

Assessment of the impact on future generations is part of Environmental impact assessment (valid since 1994) and is a part of the National Strategy for Spent Fuel Management (or RAW).

The operator documents the fulfilment of these requirements in the form of a preliminary safety report and in safety reports submitted prior to the construction and commissioning of the nuclear installation. Periodic verifications are carried out during operation in order to ensure that the physical state and operation of the nuclear installation is constantly in line with the design and applicable safety requirements. Operators have in place a quality assurance system covering all activities relevant for safety. Following safety analyses, tests, reviews and operating experience, operators have defined limits and conditions, observance of which is strictly controlled during operation.

**Interim Spent Fuel Storage of JAVYS, a. s. (ISFS)**

ISFS is a nuclear installation intended for temporary and safe storage of spent nuclear fuel from WWER-*440* reactors prior to its further processing in the reprocessing plant or final disposal. It is designed as a wet storage and was put into operation in 1986. Active operation began in 1987.

**The ISFS** is a standalone building without any construction link to the buildings within the premises of other nuclear installations at Jaslovské Bohunice. The building is divided to container section and storage section. The storage section consists of 4 storage pools. The storage pools are interconnected with a transport channel.

**Technology for Treatment and Conditioning of Radioactive Waste (TSÚ RAW)**

Technology for treatment and conditioning of RAW includes the following technology:

- Bohunice Treatment Centre - BSC RAW, containing new technology:
  - Incineration plant (burning of combustible KRAO and solid RAW);
  - High pressure compacting facility (compacting of solid RAW, in particular metal waste);
  - Concentration facility (Final evaporation of concentrates on the evaporator);
  - Facility for RAW conditioning by cementation to fibre-concrete containers;
  - Sorting facility for solid RAW;
  - Storage and transportation facility;
- Bituminization lines PS 44 and PS 100 for treatment of concentrates and sorbents, and active water purification station PS 100;
- *Discontinuous bituminization line PS44/2 designated for treatment of saturated sorbents,*
- Wastewater treatment plant *for treatment of KRAO from NPP A1;*
- Fragmenting line and high capacity decontamination line for metal RAW for treatment of metal RAW;
- Workplace for processing air filters,
- *Workplace for crushing used power cables.*

**Facility for Final Treatment and Conditioning of Liquid Radioactive Waste (FS KRAO)**

FS KRAO is designed for treatment and conditioning of KRAO (radioactive concentrates, saturated sorbents and sludge) and certain types of PRAO from the operation of EMO Units and for conditioning of processed PRAO from other NIs. The resulting product is VBK complying with the L&C for storage, transportation and disposal at RÚ RAW. KRAO is solidified by bituminization in 200 liter drums, or PRAO put into VBK directly or in drums, or as compacts filled with active cement mixture.

**National Repository for Radwaste (RÚ RAW)**

The National Repository for Radioactive Waste is a near-surface type, designed for disposal of solid and solidified low activity RAW from operation and from decommissioning of nuclear installations. The Repository site is located about 2 km northwest from NPP Mochovce site.

The basic safety requirement for a repository is that during operation and after its closure during period of institutional control no leakage of radionuclides to the environment shall occur that would cause radiation exposure exceeding the values set by valid legal regulations.

**Financing RAW, SNF Management and Decommissioning of Nuclear Installations**

The Act No. 238/2006 Coll. on National Nuclear Fund for Decommissioning of Nuclear Installation and for Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund) sets rules for management, contributions and the scope of activity of the Fund for Decommissioning of Nuclear Facilities.

The purpose of establishment and activity of the National Nuclear Fund is to collect and administer financial resources (resources of the Fund) determined for the back-end of nuclear energy and grant these resources in sufficient amount in a transparent and non-discriminatory manner to the applicants for covering of lawful expenses incurred in connection with activities related to the back-end of nuclear energy under conditions mentioned in the Act and in compliance with Slovakia´s commitments resulting from the Joint Convention.

# Radioactive waste classification, waste and spent fuel quantities

## Inventory of stored RAW by UJD SR Decree No. 30/2012 Coll., resp. by IAEA Safety Guide GSC-1

### Criteria Used to Define and Classify Waste

According to the Act No. 541/2004 Coll. (Atomic act) radioactive waste shall mean any unusable material in gaseous, liquid or solid form, which due to the content of radionuclides or due to the level of their contamination with radionuclides cannot be released into the environment.

Classification of radioactive waste is based on their ability to be disposed and is defined in Section 5 of Decree of UJD SR No. 30/2012 Coll., setting the details of requirements for handling nuclear materials, radioactive waste and spent nuclear fuel. According to this Decree Radwaste is divided *by activity* into the following categories: (by IAEA Safety Guide „Classification of GSC-1).

Occupational exposure limits allowing release into the environment of individual radionuclides are listed in Annex 3 of the Government Regulation No. 345/2006 Coll. on Basic safety requirements for health protection of workers and the population from ionizing radiation.

| **Transposition table for the types of Radioactive Waste** | |
|---|---|
| **UJD SR Decree No. 30/2012 Coll.** | **IAEA Safety Guide GSC-1** |
| ***Exemption levels*** *are laid down in Government Decree 345/2008 Coll.;* | ***Exempt waste (EW):*** *Waste that meets the criteria for clearance, exemption or exclusion from regulatory control for radiation protection purposes.* |
| ***Transient radioactive wastes*** *whose activity falls below the limit value for their introduction to the environment during storage;* | ***Very short lived waste (VSLW):*** *Waste that can be stored for decay over a limited period of up to a few years and subsequently cleared from regulatory control according to arrangements approved by the regulatory body, for uncontrolled disposal, use or discharge. This class includes waste containing primarily radionuclides with very short half-lives often used for research and medical purposes.* |

| | |
|---|---|
| ***Very low-activity radioactive waste****, whose activity is slightly higher than the limit value for their introduction to the environment, contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storage require a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;* | ***Very low level waste (VLLW)****: Waste that does not necessarily meet the criteria of EW, but that does not need a high level of containment and isolation and, therefore, is suitable for disposal in near surface landfill type facilities with limited regulatory control. Such landfill type facilities may also contain other hazardous waste. Typical waste in this class includes soil and rubble with low levels of activity concentration. Concentrations of longer lived radionuclides in VLLW are generally very limited.* |
| ***Low-activity radioactive waste****, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;* | ***Low level waste (LLW):*** *Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste. LLW may include short lived radionuclides at higher levels of activity concentration, and also long lived radionuclides, but only at relatively low levels of activity concentration.* |
| ***Intermediate-activity radioactive waste****, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g, may produce residual heat and measures for its removal are less than in the case of highly active radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;* | ***Intermediate level waste (ILW):*** *Waste that, because of its content, particularly of long lived radionuclides, requires a greater degree of containment and isolation than that provided by near surface disposal. However, ILW needs no provision, or only limited provision, for heat dissipation during its storage and disposal. ILW may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon. Therefore, waste in this class requires disposal at greater depths, of the order of tens of metres to a few hundred metres.* |

| | |
|---|---|
| ***Highly-active radioactive waste****, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.* | ***High level waste (HLW):*** *Waste with levels of activity concentration high enough to generate significant quantities of heat by the radioactive decay process or waste with large amounts of long lived radionuclides that need to be considered in the design of a disposal facility for such waste. Disposal in deep, stable geological formations usually several hundred metres or more below the surface is the generally recognized option for disposal of HLW.* |

Currently spent nuclear fuel is not considered as high-level radioactive waste.

***Table 1: Radioactive waste in storage (as at 31. 12. 2015)***

| Route Waste Class | Processed (type)/ Unprocessed) | Total Current Volume (kg/m$^3$) | Estimated Disposal Volume (m$^3$) | Distribution (%) | | | | | | | Planned Disposal Route (if known) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | RO | FFE | RP | NA | DF | DC/ RE | N D | |
| Total of all Classes | | 19 828 720 kg*<br>557,281 m$^3$ ** | | 1,3% | - | - | - | - | 98,7% | - | |
| ***Transient radioactive wastes*** | | 1 549 kg* | | 100% | - | - | - | - | 0% | - | |
| ***Very low-activity radioactive waste*** | | 11 600 814 kg* | | 0% | - | - | - | - | 100% | - | |
| ***Low-activity radioactive waste*** | | 8 194 719 kg*<br>543,781 m$^3$ ** | | 2% | - | - | - | - | 98% | - | |
| ***Medium-activity radioactive waste*** | | 31 638 kg*<br>13,5 m$^3$** | | 100% | - | - | - | - | 0% | - | |
| ***Highly-active radioactive waste*** | | - | - | - | - | - | - | - | - | - | |

NEWMDB waste origin type codes:
RO — reactor operations
FFE — fuel fabrication and enrichment
RP — fuel reprocessing
NA — nuclear applications
DF — defence
DC/RE – decommisssioning and remediation
ND - not determined

*** Solid RAW**
**** Liquid RAW**

***Table 2: Radioactive waste disposed (as disposed volume) (as at 31. 12. 2015)***

| Waste Class | Processed (not) | Total Volume (m$^3$) | Distribution (%) | | | | | | | Disposal Route Used |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | RO | FFE | RP | NA | DF | DC/RE | ND | |
| Total of all classes | | 13 152 m$^3$ | 69 % | - | - | - | - | 31 % | - | |
| ***Transient radioactive wastes*** | | - | - | - | - | - | - | - | - | |
| ***Very low-activity radioactive waste*** | | - | - | - | - | - | - | - | - | |
| ***Low-activity radioactive waste*** | | 13 152 m$^3$ | 69 % | - | - | - | - | 31 % | - | |
| ***Medium-activity radioactive waste*** | | | - | - | - | - | - | - | - | |
| ***Highly-active radioactive waste*** | | | - | - | - | - | - | - | - | |

*(Note: Abbreviations as in Table 1)*

***Table 3: Spent fuel in storage (MTHM) (as at 31. 12. 2015)***

| Type | Current Amount (NPP) | Current Amount (Research Reactors |
|---|---|---|
| Total Spent Fuel Storage | 1328,70686006 MTHM | - |
| Wet Storage (AR) - SE,a.s. | 160,8 MTHM | - |
| Wet Storage (AFR) | 1328,70686006 MTHM | - |
| Dry Storage (AR) | - | - |
| Dry Storage (AFR) | - | - |
| Total spent fuel held in storage for other countries (amounts also included above) | - | - |

***Table 4: Spent fuel sent for reprocessing (in home country or sent to another country)[12] ([12] All years)* (MTHM)**

| Type | Current Amount (NPP) | Current Amount (Research Reactors |
|---|---|---|
| Total amount of spent fuel sent for reprocessing (in your country) | - | - |
| Total amount of spent fuel sent for reprocessing (in another country) | - | - |
| Total amount of spent fuel received from another country for reprocessing and recycling | - | - |
| Total amount of spent fuel (MTHM) or radioactive waste (cubic metres) returned to country of origin for storage/disposal | - | - |

AR = "at reactor site", including fuel pools at NPP
AFR = away from reactor site"

In the case of disused sources not included in volumes according to the relevant national waste classes, please include a similar table for disused sources declared as numbers of items stored and disposed.

***Table 5 below shows a translation matrix from a national classification system to IAEA classes.***

| National Waste Classification Name | IAEA Classification | | | | |
|---|---|---|---|---|---|
| | VSLW | VLLW | LLW | ILW | HLW |
| ***Transient radioactive wastes*** | 100 % | | | | |
| ***Very low-activity radioactive waste*** | | 100 % | | | |
| ***Low-activity radioactive waste*** | | | 100 % | | |
| ***Medium-activity radioactive waste*** | | | | 100 % | |
| ***Highly-active radioactive waste*** | | | | | - |

**Tabulation of processing, storage and disposal facilities for waste and spent fuel**

*Table 6: Facilities for management of spent fuel and radioactive waste*

| Type | Planned | Construction | Commissioning | In Operation | Shuttdown | Decomm. | Other | Total |
|---|---|---|---|---|---|---|---|---|
| Spent fuel storage | - | - | - | 1 | - | - | - | 1 |
| Spent fuel reprocessing and recycling | - | - | - | - | - | - | - | - |
| Spent fuel conditioning | - | - | - | - | - | - | - | - |
| Spent fuel disposal | - | - | - | - | - | - | - | - |
| Waste processing | | | | | | | | |
| *(multiple lines by country waste class)* ***For VSLW, VLLW, LLW, ILW*** | - | - | - | 1 + 1* | - | - | - | 2 |
| Waste storage | - | 1** + 1 | - | - | - | - | - | 2 |
| *(multiple lines by country waste class)* | - | - | - | - | - | - | - | - |
| Waste disposal | - | - | - | 1 | - | - | - | 1 |
| *(multiple lines by country waste class)* | - | - | - | - | - | - | | - |

* Bohunice TSÚ RAW + FS KRAO

** IS RAW Bohunice + Storage for Institutional Waste

*Table 7: Major sources of radioactive waste (number of facilities)*

| Type | Planned | Construction | Commissioning | In Operation | Shuttdown | Decomm. | Other | Total |
|---|---|---|---|---|---|---|---|---|
| Research reactors* | - | - | - | - | - | - | - | - |
| Nuclear power reactors | | 2 | - | 4 | - | 3 | - | 9 |
| Spent fuel reprocessing and recycling | - | - | - | - | - | - | - | - |
| Other (define)** | - | - | - | - | - | - | - | - |
| *(multiple lines if required)* | - | - | - | - | - | - | - | - |

*Note: research reactors with medium or high power from RRDB

Note: "Planned" means it has been identified in a national report, strategy, or formal plan. It includes: Planned, Under Study-Assessment, Siting-Design phases

**If applicable, where included in national inventory, e. g. decommissioning of contaminated facilities, clean-up of accident related sites

**Trends and future prospects (volumes of waste and spent fuel arising, waste and spent fuel management facilities)**

***Table 8: Expected future quantities of spent fuel and radioactive waste***

| Type | Current amount | Estimated current amount when prepared for disposal* | Current disposal capacity | Total forecast at 2030 | | Total forecast at 2050 | |
|---|---|---|---|---|---|---|---|
| Spent fuel storage | 1328,70686006 + 160,8 SE,a.s. MTHM | | | 2024+265 MTHM | | 3193+187 MHTM | |
| Wet storage (AR) | + 160,8 SE,a.s. | | | -265 | | -187 | |
| Wet storage (AFR) | 1328,70686006 MTHM | | | 2024 MHTM | | 3193 MTHM | |
| Dry storage (AR) | - | | | - | | - | |
| Dry storage (AFR) | - | | | 324 MTHM | | 1307 MTHM | |
| Total amount of spent fuel sent for reprocessing and recycling | - | | | - | | - | |
| Total amount of spent fuel disposed | - | | - | - | | - | |
| Waste in storage - total | 17 464,8 $m^3$ | - | | 26 000 $m^3$ | | 11 000 $m^3$ | |
| *VLLW* | 9 043 $m^3$ | | | | | | |
| *LLW* | 8 397 $m^3$ | | | 25 000 $m^3$ | | 10 000 $m^3$ | |
| *ILW* | 24,8 $m^3$ | | | 1 000 $m^3$ | | 1 000 $m^3$ | |
| Waste disposal - total | 13 152 $m^3$ | | 21 600 $m^3$ | 50 912 $m^3$ | | 66 644 $m^3$ | |
| *LLW* | 13 152 $m^3$ | | 21 600 $m^3$ | 36 912 $m^3$ | | 43 644 $m^3$ | |
| *VLLW* | | | | 14 000 $m^3$ | | 23 000 $m^3$ | |

AR = “at reactor site”
AFR = “away from reactor site”

*calculated equivalent amount when waste has been conditioned and packaged for disposal as per table of conversion factors given.

## Sources of data

1. Report of the Slovak Republic Compiled in Terms of Article 14 par. 1 Council Directive 2011/70/EURATOM (August 2015)
2. National Report of the Slovak Republic Compiled in Terms of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radwaste Management (August 2014)

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