Western European
WENRA WGWD
Nuclear Regulators Association

Report

Radioactive Waste Treatment and Conditioning Safety Reference Levels

Report of Working Group of Waste and Decommissioning (WGWD)

Version 1.2, September 2026

Table of Contents

		Preface to version 1.2	4
		Executive Summary	5
		WENRA Policy Statement	8
		Glossary	13
		List of Abbreviations	14
1		Introduction and Methodology	15
1.1		Introduction	16
	1.1.1	Background	16
	1.1.2	Objective	17
	1.1.3	Scope	18
	1.1.4	Structure	19
1.2		Methodology	20
	1.2.1	Changes to previous SRL set (v1.1)	22
2		Radioactive Waste Treatment and Conditioning Safety Reference Levels	24
2.1		Safety area: Safety management	25
	2.1.1	Safety issue: Responsibility	25
	2.1.2	Safety issue: Organisational structure	29
	2.1.3	Safety issue: Management system	31
	2.1.4	Safety issue: Documentation and record management	33
	2.1.5	Safety issue: Product quality	35
2.2		Safety area: Process and product requirements	37
	2.2.1	Safety issue: General principles	37
	2.2.2	Safety issue: Selection of process	38
	2.2.3	Safety issue: Properties of processed waste	39
2.3		Safety area: Design	40
	2.3.1	Safety issue: Facility design requirements	40

2.4		Safety area: Operation	**44**
	2.4.1	Safety issue: General requirements	**44**
	2.4.2	Safety issue: Emergency preparedness	**45**
	2.4.3	Safety issue: Operating experience feedback	**47**
	2.4.4	Safety issue: Facility modification	**48**
	2.4.5	Safety issue: Maintenance, periodic testing and inspection	**49**
	2.4.6	Safety issue: Acceptance of incoming waste	**51**
	2.4.7	Safety issue: Operational records and verification of product properties	**51**
	2.4.8	Safety issue: Use of mobile waste processing equipment	**53**
2.5		Safety area: Safety verification	**55**
	2.5.1	Safety issue: Contents and updating of the facility safety case	**55**
	2.5.2	Safety issue: Periodic safety reviews	**58**
3		Benchmarking Results and Action Plans	**60**

Preface to version 1.2

–

The purpose of this version 1.2 of the radioactive waste treatment and conditioning report is to provide the reader with the most recent update on the implementation of the waste treatment and conditioning safety reference levels in the regulatory systems of WENRA member countries.

Benchmarking for the Processing Report started in 2018, after the publication of the full stakeholder discussed SRL set in version 1.1 of the report. Since then, 16 of the hitherto 18 WENRA member states (not counting newly admitted Poland or associated member states, neither of whom having yet started their benchmarking) have officially started their benchmarking by providing a self-assessment of their national regulatory framework for the treatment and conditioning of radioactive waste and, with the exceptions of Germany, Ukraine and Hungary, of spent fuel.

Executive Summary

The Western European Nuclear Regulators' Association (WENRA) is an international body made up of the Heads and senior staff members of Nuclear Regulatory Authorities of European countries with nuclear power plants in operation or decommissioning. The main objectives of WENRA are to develop a common approach to nuclear safety, to provide an independent capability to examine nuclear safety in applicant countries and to be a network for chief nuclear safety regulators in Europe to exchange experience and discuss significant safety issues.

To accomplish these tasks three working groups within the WENRA have been established – Reactor Harmonisation Working Group (RHWG), Working Group on Waste and Decommissioning (WGWD) and the Working Group on Research Reactors (WGRR).

This document contains the results of the work of WGWD in the area of facility safety and the practices for the processing of radioactive waste. The objective of this report is to provide Safety Reference Levels (SRLs) for these facilities, based on good practices in the RHWG report, other WENRA reports and relevant IAEA documents (requirements, guidance, etc.). Although the IAEA safety standards establish an essential basis for the safety of all nuclear installations covering also decommissioning activities, the WENRA Safety Reference Levels incorporate more facility specific requirements.

This document was prepared by the WENRA WGWD, based on the previous version 1.1 of March 2018, taking into account results from the national benchmarking processes that have been done since then.

Part III of this report describes the results of the benchmarking processes and the status of the country-specific national action plans.

The following WENRA WGWD members have contributed to this report:

Belgium	Cédric BARROO Frédéric BERNIER Fabienne DE SMET Radouane SGHIR
Bulgaria	Alexei ALEXIEV Nikolay GROZEV Lidiya KATZARSKA Valentin STANCHEV Radosveta MARKOVA-MIHAYLOVA

Czech Republic	Peter LIETAVA (former Chairman of WGWD)
Finland	Jarkko KYLLÖNEN
France	Olivier LAREYNIE Viviane NGUYEN
Germany	Jens-Uwe BÜTTNER Sven KESSEN Anne-Lise KOCH-LAVISSE Kerstin STAHL
Hungary	Gábor NAGY István LÁZÁR
Italy	Valeria Anzellotti Nadia CIPRIANI Barbara GIANNONE Alessandro Orsini
Lithuania	Marius DEKAMINAVIČIUS Algirdas VINSKAS Sigizmundas STYRO
Netherlands	Peter GÖRTS Saskia VAN HENSBERGEN
Romania	Daniela DOGARU Cornelia VIRTOPEANU
Slovakia	Alena ZAVAŽANOVÁ
Slovenia	Polona TAVČAR
Spain	Marcos DE TORO María Teresa SANCHEZ María Aránzazu SOGO
Sweden	Bengt HEDBERG Åsa ZAZZI

Switzerland	Stefan THEIS (former Chairman of WGWD) Isabel SIERRA
Ukraine	Ievgen NIKOLAEV Yuliia NOVIKOVA Tamara SUSHKO Oleksii TOKAREVSKI
United Kingdom	Chris GLAISTER Simon MORGAN (chairperson of WGWD) Kamaljit SIHRA

Western European
WENRA WGWD
Nuclear Regulators Association

Terms of Reference

of the WESTERN EUROPEAN NUCLEAR REGULATORS´ ASSOCIATION

(WENRA)

14 November 2023

1. We, the Heads of Nuclear Regulatory Authorities (signatories[1]) of European countries with nuclear power plants, gathered within WENRA, the independent association of European national nuclear regulators, commit to work together to continuously improve and harmonise nuclear safety to as high as reasonably practicable levels.
2. We commit, in particular, to maintain and further develop a common set of up to date safety reference levels (SRLs) aiming at a high safety level, strive for their implementation in our national regulatory frameworks and benchmark their implementation.
3. WENRA's vision is to have consistent high levels of nuclear safety in Europe, protecting people and the environment now and in the future.
4. Besides WENRA full members, other heads of national regulatory authorities may participate in WENRA under the status of associated member or observer member. The application process is defined in a separate document, approved by WENRA, defines the application process, the main criteria considered by WENRA, as well as the rights and duties of associated members and observer members. In any case admission of a new member remains a sovereign decision by WENRA full members.
5. WENRA, as an independent association, does not receive any instructions from national governments nor from EU or other international institutions.
6. Decisions in the name of WENRA are taken by consensus among full members and are expected to be applied by each of members.
7. Taking into account the European and international environment in the nuclear field, WENRA defines and updates regularly strategic objectives that streamline its actions.
8. Final documents reflecting WENRA's activities or positions on safety related matters are made public.
9. Working groups are established and shutdown through WENRA decisions during plenary meetings dependent on agreed priorities.

---

[1] *WENRA full members are the signatories of the Terms of Reference*

10. WENRA members provide adequate resources to ensure effective working of WENRA and its working groups.
11. WENRA keeps regular relationships with the European Union institutions, in particular ENSREG, to discuss any significant safety-related topic of interest, identify emerging safety issues that can challenge its members, address interface and avoid duplication in respective activities and provide advice on nuclear safety and regulatory matters.
12. WENRA develops and maintains suitable relations with regulatory authorities from other countries as well as with international organisations.
13. WENRA ensures appropriate opportunities for stakeholders to be informed of or, when applicable, to contribute to its work.

Glossary

For the purpose of this document, the following definitions have been adopted. Definitions identical to the IAEA Nuclear Safety and Security Glossary, 2022 (Interim) Edition, are marked with an asterisk (*). For terminology not included here please also refer to the IAEA Safety Glossary.

Conditioning *
Those operations that produce a waste package suitable for handling, transport, storage and/or disposal. Conditioning may include the conversion of the waste to a solid waste form, enclosure of the waste in containers and, if necessary, provision of an overpack.
(In the context of this report and the benchmarking activities carried out, the management of spent fuel has also been taken into consideration.)

Facility
An installation and its associated land, buildings and equipment in which radioactive materials are produced, processed, used, handled, stored or disposed on such a scale that consideration of safety is required. Processing facilities are normally stationary facilities but there are also licensed mobile facilities.

Waste acceptance criteria*
Quantitative or qualitative criteria specified by the regulatory body or specified by an operator and approved by the regulatory body, for the waste form and waste package to be accepted by the operator of a waste management facility.

Graded approach *
1. For a system of control, such as a regulatory system or a safety system, a process or method in which the stringency of the control measures and conditions to be applied is commensurate, to the extent practicable, with the likelihood and possible consequences of, and the level of risk associated with, a loss of control.
2. An application of safety requirements that is commensurate with the characteristics of the facilities and activities or the source and with the magnitude and likelihood of the exposures.

Licensee *
The holder of a current licence. The licensee is the person or organization having overall responsibility for a facility or activity.

Operational limits and conditions (OLC) *
A set of rules setting forth parameter limits, the functional capability and the performance levels of equipment and personnel approved by the regulatory body for safe operation of an authorized facility.

Postulated initiating events (PIE) *
A postulated event identified in design as capable of leading to anticipated operational occurrences or accident conditions. The primary causes of postulated initiating events may be credible equipment failures and operator errors (both within and external to the facility), human induced events or natural events.

Processing
Within the framework of this report, any treatment or conditioning operation that changes the characteristics of radioactive waste.

Product
Within the framework of this report, the result of any processing step in the treatment and conditioning of radioactive waste.

Product quality
The compliance of product with the process specifications after a processing step.

Safety assessment
Assessment of all aspects of facility practice which are relevant to safety and protection of people and the environment; for a nuclear facility this includes the site, the design, construction, operation and decommissioning of a facility.
Safety assessment is a major component of the safety case.

Safety case *
A collection of arguments and evidence in support of the safety of a facility or activity. This will normally include the findings of a safety assessment and a statement of confidence in these findings.

Safety policy
A documented commitment by the licensee to a high nuclear safety performance supported by clear safety objectives and targets and a commitment of necessary resources to achieve these targets. The safety policy is issued as separate safety management document or as visible part of an integrated organization policy.

Standards
Measures of quality or suitability for a specified purpose recognized by an authority or by general consent and expressed in terms of quantitative and/or qualitative rules or criteria. Examples are quality standards and safety standards.

Structures, systems and components (SSCs) *
A general term encompassing all of the elements (items) of a facility or activity that contribute to protection and safety, except human factors.

- Structures are the passive elements: buildings, vessels, shielding, etc.
- A system comprises several components which interact according to a design so as to perform a specific (active) function, in which an element of the system can be another system, called a subsystem.
- A component is one of the parts that make up of a system.

Treatment *
Operations intended to benefit safety and/or economy by changing the characteristics of the waste. Three basic treatment objectives are:

- volume reduction,
- removal of radionuclides from the waste, and
- change of composition.

Waste, radioactive *
For legal and regulatory purposes, material for which no further use is foreseen that contains, or is contaminated with, radionuclides at activity concentrations greater than clearance levels as established by the regulatory body.

Waste characterization
Determination of the physical, chemical, biological and radiological properties of the waste to establish the need for further adjustment, treatment or conditioning, or its suitability for further handling, processing, storage or disposal.

Waste form *
Waste in its physical and chemical form after treatment and/or conditioning (resulting in a solid product) prior to packaging. The waste form is a component of the waste package.

Waste package *

The product of conditioning that includes the waste form and any container(s) and internal barriers (e.g. absorbing materials and liners), as prepared in accordance with requirements for handling, transport, storage and/or disposal.

Waste owner

The waste owner means a body having legal title to waste or spent fuel including financial liabilities. It is usually the waste and spent fuel producer.

List of Abbreviations

EU	European Union
IAEA	International Atomic Energy Agency
NAP	National Action Plan
OEF	Operating Experience Feedback
OLCs	Operational Limits and Conditions
PIE	Postulated Initiating Event
PSR	Periodic Safety Review
RHWG	(WENRA) Reactor Harmonization Working Group
SSCs	Structures, Systems and Components
SRL	Safety Reference Level
WAC	Waste Acceptance Criteria
WENRA	Western European Nuclear Regulators' Association
WGRR	(WENRA) Working Group on Research Reactors
WGRSM	(WENRA) Working Group on Recruitment and Skills Management
WGWD	(WENRA) Working Group on Waste and Decommissioning

Part 1
Introduction and Methodology

-

1.1 Introduction

This report is the result of a project carried out by the WENRA Working Group on Waste and Decommissioning (WGWD) after 2018. The purpose of this version 1.2 of the Report on Radioactive Waste Processing is to provide the reader with the most recent update on the implementation of the safety reference levels (SRLs) in the regulatory systems of WENRA member countries.

The previous version of this report, published in March 2018, presented the SRLs for dedicated radioactive waste processing facilities as well as for radioactive waste processing activities undertaken within other nuclear facilities. These SRLs address both permanently installed systems and mobile equipment.

The SRLs cannot be considered as independent European safety requirements because current legislation in WENRA member states would not allow that due to fundamental differences reflecting the historical development in European countries. The SRLs are a set of requirements against which each country is assessed, and it is each country's responsibility to implement actions to ensure that these requirements are met.

1.1.1 Background

WENRA, established in February 1999, is the association of the Heads of Nuclear Regulatory Authorities of European countries with at least one nuclear power plant in the construction, operation or decommissioning phase. The group was formally extended in 2003 to include new and future European Union (EU) member states. Currently, regulatory authorities from the following countries are members of WENRA: Belgium, Bulgaria, the Czech Republic, Finland, France, Germany, Hungary, Italy, Lithuania, the Netherlands, Poland, Romania, Slovenia, Slovak Republic, Spain, Sweden, Switzerland, Ukraine and the United Kingdom. Authorities from Canada, the Russian Federation[2] and Japan have the status of "associated members" of WENRA, and authorities from various other states have been admitted to WENRA meetings as "observers", including Austria and the USA. However, while some observers have been present and active at WGWD meetings, the preparation of this report as well as the development of

[2] Russian Federation does since 2022 not participate in WENRA activities

the SRLs and efforts to harmonise their national regulations have been undertaken only by the members.

The original objectives of the Association were:

- to provide the EU institutions with an independent capability to examine nuclear safety and regulation in applicant countries,
- to provide the EU with an independent capability to examine nuclear safety and regulation in candidate countries, and
- to evaluate and achieve a common approach to nuclear safety and regulatory issues which arise.

The second objective of WENRA has been fulfilled by the preparation of a report on nuclear safety in candidate countries having at least one nuclear power plant. After May 1st, 2004, when most of these candidate countries became regular EU member states, the new WENRA tasks, based on first and third original Association's objectives, became:

- providing the European Union institutions with an independent capability to examine nuclear safety and regulation in applicant countries and
- developing common approaches to nuclear safety and regulations and to encourage the harmonization of practices.

Each WENRA member commits to implementing SRLs in its regulatory framework and to tracking this implementation. WENRA associated members commit to considering implementing the SRLs.

Each country undertakes a national self-assessment against each SRL, which is then benchmarked or moderated by the members of WGWD, with a rating of A (fully conforming with SRL), B (not applicable, or SRL addressed satisfactorily in another way) or C (improvements needed). WENRA Members which identified areas for improvement then develop a National Action Plan to respond to the findings, usually within a period of 2 to 3 years, and undergo re-benchmarking.

To perform these tasks, four working groups within WENRA have been established – initially the Reactor Harmonization Working Group (RHWG) and the Working Group on Waste and Decommissioning (WGWD), then in 2021 the Working Group on Research Reactors (WGRR). In 2024 the fourth Working Group on Recruitment and Skills Management (WGRSM) was established. The work of WGWD started in 2002.

1.1.2 Objective

The objective of this report is to provide SRLs for radioactive waste treatment and conditioning facilities irrespective of:

- the nature of the material to be processed,
- the location (on the waste producer site/in centralized facility),
- the type of conditioning facility (permanently installed/mobile), and
- the design of the process (single step/multi step).

Although the safety objective is the same in the above cases, the means of achieving it may differ considerably depending on the type and amount of waste to be treated as well as the type of process (e.g. vitrification vs. simple packaging). The requirements should accordingly be implemented using a graded approach proportionate to the hazard of the process and the radioactive waste.

A specific issue considered in this report is the use of mobile equipment in Nuclear Power Plants (NPPs) or other nuclear installations. In WENRA countries there are several approaches to the regulation of such activities. In all cases there are technical and organizational interfaces which have to be taken into account and which have been covered by SRLs in this report.

The SRLs in this report apply mainly to licensees, who are responsible for the safety of their facilities until the termination of their licences. However, some requirements cannot be directly or wholly addressed by the licensee as they concern issues such as the national waste management policy or certain interface issues. It is strongly recommended that this report is not used on a standalone basis but is considered in conjunction with the other relevant WENRA documents to ensure that all safety issues relevant to waste processing facility are properly addressed.

These SRLs constitute the basis for a common approach to nuclear safety during treatment and conditioning of radioactive waste in the WENRA Member States who, based on national action plans, are expected to implement the SRLs in their legal and regulatory framework. Detailed country-specific progress on these activities is presented in part III of the report.

1.1.3 Scope

This report has been largely modelled on previous reports prepared by the WENRA WGWD, but taking into account the particular issues associated with radioactive waste processing. The SRLs apply to the processing of all types of radioactive waste i.e. solids, liquids, slurries etc. The SRLs also apply to treatment and conditioning of spent fuel intended for direct disposal. Any kind of pretreatment or the reprocessing of spent fuel is not covered by this report.

The ultimate purpose of waste processing is the production of a qualified product considered suitable for all further steps of waste management. Consequently, the report establishes both facility-oriented and process-oriented SRLs. Waste processing is not only performed using permanently installed systems, but also using mobile equipment installed solely for the short period of time needed for the processing campaign. SRLs have therefore been developed to address the additional safety issues associated with mobile equipment.

Materials containing radionuclides of natural origin (NORM – mining and mineral processing waste as referred to in IAEA SSR-5) are not within the scope of this report. Various ways of managing such waste are implemented in different countries, depending on the characteristics and level of activity of the waste. While some of this waste may be processed in facilities covered by this report, any specific aspects relating to NORM-waste such as large volumes, physical state, etc. have not been considered when drafting the processing SRLs.

The processing SRLs address relevant nuclear and waste safety requirements, but do not take into account other regulatory requirements such as Environmental Impact Assessment regulation (required by EU directives), discharge authorization, management of non-radioactive waste, occupational health and safety, physical protection including safeguards, and funding issues. These other regulatory requirements should be treated in accordance with the applicable national regulatory systems.

With respect to chemical toxicity of the waste, the WGWD recognizes that protection from the non-radioactive hazardous content of the waste is an important issue, especially during waste treatment and conditioning. Some SRLs in this report address the chemical properties of materials and the applied processing techniques. The WGWD members stress the need for this issue to be duly handled by the licensee, so as to comply with any additionally applicable regulatory requirements.

1.1.4 Structure

The report consists of three main parts. Following this introduction in part 1, part 2 of the report presents the specific waste treatment and conditioning reference levels and the corresponding appendices. The results of regulators self-assessment and benchmarking exercises that have been done until now are documented in part 3 of this report.

1.2 Methodology

The objective of this report is to provide safety reference levels for processing activities. This document contains the results of the work of WGWD in the area of the radioactive waste processing activities performed since the publication of the last Report, version 1.1 in 2018, to April 2026. The structure, objective and working methodology of the report are identical to V1.1, but including country-specific information on NAP-status.

The meaning of the SRLs has not been changed since they were updated in 2018. In this new version of the report there are only minor modifications of a small amount of SRLs (P-29, P-33, P-39 and P-41) related to product quality that do not modify the meaning of the SRL but are intended to provide more clarity for benchmarking. These minor modifications were agreed by the WGWD on its 51th meeting held in Helsinki (Finland).

In this report we have updated the related IAEA documents, as far as these have been revised or superseded. The references presented in Part 2 have been updated to reflect the developments in internationally accepted safety standards and their continuing relation to the processing SRLs.

The working methodology of WGWD has gone through several steps and changes since 2002, when the working group was established. A list of topics to be covered by WGWD was defined taking into account the common field of responsibility of WENRA members. Generally, for the development of waste processing SRLs the following IAEA Safety Standards were considered:

- *Fundamental Safety Principles, IAEA Safety Fundamentals SF-1, Vienna (2006).*
- *Governmental, Legal and Regulatory Framework for Safety, IAEA General Safety Requirements, GSR Part 1 (Rev. 1), Vienna (2016).*
- *Leadership and Management for Safety, IAEA General Safety Requirements, GSR Part 2, Vienna (2016).*
- *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA General Safety Requirements, GSR Part 3, Vienna (2014).*
- *Safety Assessment for Facilities and Activities, IAEA General Safety Requirements, GSR Part 4 (Rev. 1), Vienna (2016).*
- *Predisposal Management of Radioactive Waste, IAEA General Safety Requirements, GSR Part 5, Vienna (2009).*
- *Preparedness and Response for a Nuclear or Radiological Emergency, IAEA General Safety Requirements, GSR Part 7, Vienna (2015).*

- *Safety of Nuclear Fuel Cycle Facilities, IAEA Specific Safety Requirements, SSR-4, Vienna (2017)*
- *The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste, IAEA General Safety Guide, GSG-3, Vienna (2013).*
- *Leadership, Management and Culture for Safety in Radioactive Waste Management, IAEA General Safety Guide GSG-16, Vienna, 2022*
- *Management of Radioactive Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education, IAEA Safety Guide, SSG-45, Vienna (2019).*
- *Storage of Radioactive Waste, IAEA Safety Guide, WS-G-6.1, Vienna (2006).*
- *Storage of Spent Nuclear Fuel, IAEA Specific Safety Guide, SSG-15 (Rev. 1), Vienna (2020).*
- *Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors, IAEA Specific Safety Guide, SSG-40, Vienna (2016).*
- *Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, IAEA Specific Safety Guide, SSG-41, Vienna (2016).*

Multilateral treaties, European law and WENRA recommendations relevant to processing of radioactive waste:

- *Joint convention on the safety of spent fuel management and on the safety of radioactive waste management. INFCIRC/546. 24 December 1997.*
- *Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste*
- *Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation*
- *WENRA – Waste and spent fuel storage safety reference levels report, version 2.3, January 2024*
- *WENRA – Decommissioning safety reference levels report, version 2.3, January 2024*
- *WENRA – Radioactive Waste Disposal facilities safety reference levels report, version 2.3, May 2026*

Requirements were selected and –if necessary- reworded in order to clearly address licensees of waste processing plants, licensees of nuclear installations when using mobile equipment for treatment and conditioning as well as their contractors and owners of radioactive waste with the responsibility of managing their waste. The thematic selection of requirements shall resemble a consistent set of SRLs describing the safety areas

- safety management,
- process and product requirements,
- design,
- operation, and

- safety verification.

The benchmarking exercises involved a country-by-country review of the justification and evidence for implementing each SRL, conducted through WGWD subgroups and panel discussions. The results were then discussed and adopted in WGWD plenary meetings. The outcomes of all benchmarking exercises completed to date are presented in part 3 of this report.

1.2.1 Changes to previous SRL set (v1.1)

The radioactive waste treatment and conditioning SRLs were developed starting in 2014, building upon the existing SRL set for radioactive waste and spent fuel storage. During this process, WGWD ensured that the differences between these practices were reflected, in particular with respect to the different purposes and deliverables: while storage aims to ensure the integrity of an existing waste package, in radioactive waste processing a waste package has to be produced according to specifications developed to meet the requirements of the subsequent waste management steps. To reflect this demands, assurance of product quality is of central importance for all processing steps and was thus made an integral part of the SRL set, where found to be appropriate.

When conducting the actual benchmarking exercises, it became apparent that including explicit product quality considerations, combined with WGWD's approach to ask for regulatory references for all requirements explicitly included in the SRLs, would lead to problems for regulatory frameworks where radioactive waste processing facilities were considered in the context of more integrated regulatory approaches of waste management instead of being regulated as dedicated processing facilities. More integrated regulations do ensure product quality often by defining requirements on a more general level – e.g., by ensuring operational safety of which product quality is an essential part in processing, and by controlling processes, OLCs and outcomes – while not making explicit references to product quality as they would only be relevant to certain facilities within their broader regulatory scope.

To avoid unnecessarily imposing specific requirements for processing facilities in national regulations without corresponding safety benefits, WGWD addressed this issue across three consecutive meetings (50, 51, and 52). These resulted in the identification of SRLs where explicit product quality references had caused excessive specificity in benchmarking. As a result, WGWD decided to reduce emphasis on explicit product quality references in cases where sufficient evidence was provided that consideration of product quality was implicitly included in the implementation of national regulations.

For three SRLs it was found to be necessary to revise the SRL text to clarify this approach as product quality references were prominent in their requirement lists: P-29, P-39, and P-41. These SRLs in their original form read as:

P-29: The licensee shall consider all relevant factors when selecting the processing options, including:

- nuclear and radiation safety
- discharges
- minimisation of secondary waste
- ability to apply quality assurance.

P-39: The licensee shall identify and classify Structures, Systems and Components (SSCs) in accordance with their importance for both operational safety and product quality, applying a graded approach.

P-41: The licensee shall establish, substantiate, document and implement Operational Limits and Conditions (OLCs) for the facility in accordance with the conditions of the licence and the relevant regulatory requirements to maintain its safety and to achieve suitable product quality.

For these SRLs, references to product quality were deemed overly specific and removed, while their remaining requirements remained unchanged.

Similarly, requirement P-33 was found to be too prescriptive for benchmarking national regulations as the link between the facility design requirements and product quality was too specific.

P-33: The licensee shall design the facility in such a way that product quality can be assured.

As the link to product quality is fundamental to the requirement expressed in the SRL, it was decided to remove the SRL completely. It should be noted that other facility design SRLs still ensure that the design reflects considerations of operational safety, adherence to OLCs and controlling SSCs which all substantiate that design measures actively contribute to product quality even after the removal of P-33.

The revised SRL set, agreed by WGWD at the 52nd WGWD meeting and subsequently endorsed by WENRA, is presented in full below. WENRA members whose benchmarking results might have been negatively affected by the former strong emphasis on product quality requirements, resulting in C or B ratings, were given the opportunity to re-benchmark the respective SRLs.3 All future benchmarking will use the updated SRL set detailed in part 2 of this report

[3] While these changes specifically address product quality requirements, re-benchmarking remains possible for any SRL previously rated below an A rating, as well as when WENRA members request to benchmark updated national regulations against the current SRL set.

Part 2
Radioactive Waste Treatment and Conditioning Safety Reference Levels

These reference levels apply to the treatment and conditioning of radioactive waste in processing facilities, either as part of other nuclear installations or as stand-alone facilities. They also apply to temporarily installed, mobile treatment and conditioning plants. The reference levels are relevant to a wide range of facilities and thus have to be applied in a proportionate manner, taking account of the magnitude of the hazard associated with the waste. Such a graded approach should also be applied within a facility.

Treatment and conditioning processes frequently involve physical and/or chemical changes such as heat treatment (e.g. incineration), supercompaction and chemical processing. The associated hazards have been considered in the development of the SRLs.

Depending on the individual national waste management systems, the preparation of final waste packages for disposal may be a multistep process with one or more interim phases of storage. WENRA assumes the general principle of a “cradle to grave” responsibility of the waste owner for proper planning of each step in order to arrive at a finally conditioned waste package meeting the waste acceptance criteria (WAC) of a disposal facility. For further discussion of the responsibilities of the various parties see the *Umbrella Document: Interfaces and Interdependencies*, supplementary report of the WGWD (2017).

The selection of an appropriate treatment and conditioning process is complex as the desired properties of the product are influenced by various downstream requirements (for example interim storage, final disposal, transport) which are not always consistent. The SRLs therefore address the selection of the waste treatment and conditioning process in a specific safety area.

Incoming waste accepted for processing must be consistent with the requirements of the facility safety case and the required waste product. SRLs have therefore been developed addressing the specifications for the waste feed, waste product and the process.

2.1
Safety area: Safety management

-

2.1.1 Safety issue: Responsibility

P-01:
There shall be clear and unequivocal ownership of radioactive waste, including when accepting foreign waste for processing.

*Related **IAEA** safety standards:*

It is possible that the predisposal management of radioactive waste will involve the transfer of radioactive waste from one operator to another, or that radioactive waste may even be processed in another State. In such situations, continuity of responsibility for safety is necessary throughout. (GSR Part 5, para 3.3)

The management of radioactive waste may entail the transfer of the waste from one operating organization to another, or from one State to another. […] The legal framework should include provisions to ensure a clear allocation of responsibility for safety throughout the entire waste management process (including provisions for regulatory control and authorization), in particular with respect to the long term storage of radioactive waste and with respect to its transfer between operating organizations. (SSG-40, para 3.6, & SSG-41, para 3.6)

P-02:
The waste owner shall provide information about changes of ownership of radioactive waste to the regulatory body prior to the implementation of the changes.

*Related **IAEA** safety standard:*

Information about changes of ownership of waste or about changes in the relationship between owner and licensee has to be provided to the regulatory body. (GSR Part 5, para 3.18)

P-03:
The waste owner shall be responsible for the overall strategy for the management of its radioactive waste, taking into account interdependencies between all stages of treatment and conditioning. It shall be consistent with the overall national radioactive waste management strategy.

*Related **IAEA** safety standards:*

The operator[4] is responsible for establishing and implementing the overall strategy for the management of the waste that is generated and for providing the required financial securities, taking into account interdependences among all steps in waste management, the available options and the national radioactive waste management policy. (GSR Part 5, para 3.17)

Interdependences among all steps in the predisposal management of radioactive waste, as well as the impact of the anticipated disposal option, shall be appropriately taken into account.
(GSR Part 5, Requirement 6)

P-04:

The waste owner shall improve in regular intervals the overall strategy for the management of its radioactive waste by using experience feedback and advances in science and technology.

Related IAEA safety standards: (see P-03)

P-05:

The waste owner shall ensure that a system is established and maintained for keeping up-to-date records. For the purposes of all subsequent waste management steps, this system shall include provisions to adequately identify and describe the radioactive waste at whatever stage it has reached.

Related IAEA safety standard:

Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including: […]

- *Maintenance of records and reporting as required by the regulatory body, including those records and reports necessary to guarantee the accountability for and traceability of radioactive waste throughout the different processes of radioactive waste management; […] (GSR Part 5, para 3.11)*

The operating organization should develop and maintain a records system on the generation, processing, storage and transfer of radioactive waste (e.g. for further processing, storage or disposal), which should cover, among other aspects, the radioactive inventory, the location and characteristics of the radioactive waste, and information on its ownership, origin and place of transfer. Such records should be preserved and updated, to enable the implementation of the facility specific radioactive waste management programme. The records system should be managed by the operating organization in accordance with regulatory requirements. (SSG-40, para 3.29, & SSG-41, para 3.29)

[4] The term operator is used within GSR Part 5 to subsume generators of radioactive waste as well as operators of predisposal waste management facilities (see GSR Part 5, footnote 2, page 7)

P-06:

The waste owner and the licensee, if they are different organisations, shall jointly agree and document the respective responsibilities of each organisation, according to national regulations.

*Related **IAEA** safety standard:*

It is possible that the predisposal management of radioactive waste will involve the transfer of radioactive waste from one operator to another, or that radioactive waste may even be processed in another State. In such situations, continuity of responsibility for safety is necessary throughout.

(GSR Part 5, para 3.3)

P-07:

The licensee shall be responsible for the safety of the facility.

*Related **IAEA** safety standard:*

The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks. (SF-1, Principle 1)

The licensee is responsible for: […]

- *Establishing procedures and arrangements to maintain safety under all conditions; […]*

(SF-1, para 3.6)

P-08:

The licensee shall establish and implement its safety policy taking due account of national and international standards and ensure that matters related to safety are given the highest priority.

*Related **IAEA** safety standard:*

The operating organization shall establish and implement safety, health and environmental policies that give protection and safety the overriding priority warranted by their significance. (SSR-4, Requirement 3)

The safety policy established and implemented by the operating organization shall give safety the utmost priority, overriding all other demands, including those of facility production and project schedules or research and development programmes. (SSR-4 para 4.5)

P-09:

The licensee shall continuously improve safety by using experience feedback and advances in science and technology.

*Related **IAEA** safety standard:*

[…] Processes must be put in place for the feedback and analysis of operating experience, including initiating events, accident precursors, near misses, accidents and unauthorized acts, so that lessons may be learned, shared and acted upon. (SF-1, para 3.17)

The management system shall include evaluation and timely use of the following:

(a) Lessons from experience gained and from events that have occurred, both within the organization and outside the organization, and lessons from identifying the causes of events;
(b) Technical advances and results of research and development;
(c) Lessons from identifying good practices.

(GSR Part 2, para 6.7)

P-10:

The licensee shall ensure that all activities, including those carried out by contractors, are performed and controlled according to the licensee's management system.

*Related **IAEA** safety standard:*

Management systems shall be applied for all steps and elements of the predisposal management of radioactive waste. (GSR Part 5, Requirement 7)

Where appropriate, the operator may delegate work associated with the aforementioned responsibilities to other organizations, but the operator has to retain overall responsibility and control. (GSR Part 5, para 3.14)

The operating organization is responsible for the safety of all activities undertaken at its facilities associated with the management of radioactive waste (including activities undertaken by contractors) in compliance with the principles contained in SF-1. […] (SSG-40, para 3.19, & SSG-41, para 3.19)

P-11:

The licensee shall ensure that the resources in terms of staffing, skills, experience and knowledge for all licensed activities will be available at the time they are needed.

*Related **IAEA** safety standard:*

Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including: […]

– *Ensuring that staff are trained, qualified and competent, and, where applicable, licensed by the regulatory body;*
– *Establishment and implementation of a management system; […]*

(GSR Part 5, para 3.11)

The operating organization shall be responsible for ensuring that the necessary knowledge, skills, behaviours and attitudes supporting a strong safety culture and safety expertise are sustained at the nuclear fuel cycle facility, and that human resource policies are developed and long term objectives for human resources are met. (SSR-4, para 9.12)

P-12:

The licensee shall carry out safety assessments and shall develop safety cases in compliance with legal and regulatory requirements.

*Related **IAEA** safety standard:*

Operators shall be responsible for the safety of predisposal radioactive waste management facilities or activities. The operator shall carry out safety assessments and shall develop a safety case, and shall ensure that the necessary activities for siting, design, construction, commissioning, operation, shutdown and decommissioning are carried out in compliance with legal and regulatory requirements.

(GSR Part 5, Requirement 4)

P-13:

The licensee shall establish and maintain emergency preparedness and response plans proportionate to the hazards associated with the facility and activities, and it shall report incidents significant to safety in a timely manner to the regulatory body and other interested parties, as appropriate.

*Related **IAEA** safety standard:*

The operator is required to establish and maintain emergency preparedness and response plans commensurate with the hazards associated with the radioactive waste facilities and activities, and to report incidents significant to safety in a timely manner to the regulatory body and other interested parties, as appropriate (GSR Part 5, para 3.13)

2.1.2 Safety issue: Organisational structure

P-14:

The licensee shall establish an organizational structure to enable its safety policy to be delivered, with a clear definition of responsibilities and accountabilities, lines of authority and communication, including when contractors are involved in the processing activities.

*Related **IAEA** safety standard:*

The structure of the operating organization and the functions, roles and responsibilities of its personnel shall be established and documented, in accordance with a graded approach. (SSR-4, requirement 55)

The operating organization may delegate to other organizations work necessary for discharging its responsibilities, in accordance with the regulatory requirements, but the overall responsibility and control shall be retained by the operating organization. (SSR-4, para 9.11)

)

The following aspects in particular should be addressed [in predisposal management of radioactive waste]:

(a) The identification of interfaces between each step and the definition of the responsibilities of the various organizations involved;[…]

(SSG-40, para 4.5, & SSG-41, para 4.5)

P-15:

The licensee shall establish and maintain the capability in terms of the staffing, skills, experience and knowledge required to undertake all processing activities.

*Related **IAEA** safety standard:*

The operating organization shall ensure that the nuclear fuel cycle facility is staffed with competent managers and sufficient qualified personnel for the safe operation of the facility. (SSR-4, requirement 56)

There shall be sufficient qualified staff to ensure that policies for the management of waste and discharge of effluents are carried out in accordance with authorized limits and with the objective of minimizing the generation of radioactive waste. (SSR-4, para 9.25)

P-16:

The licensee shall specify the necessary qualifications, experience and skills for all staff involved in processing activities and waste characterization and shall ensure that training programmes are established for developing and maintaining the professional skills of the staff.

*Related **IAEA** safety standard:*

Senior management shall ensure that competence requirements for individuals at all levels are specified and shall ensure that training is conducted, or other actions are taken, to achieve and to sustain the required levels of competence. An evaluation shall be conducted of the effectiveness of the training and of the actions taken. (GSR Part 2, para 4.23)

All individuals in the organization shall be trained in the relevant requirements of the management system. Such training shall be conducted to ensure that individuals are knowledgeable of the relevance and the importance of their activities and of how their activities contribute to ensuring safety in the achievement of the organization's goals. (GSR Part 2, para 4.26)

Senior management shall clearly document the duties, the responsibilities, the necessary experience and the training requirements of operating personnel, and their lines of communication. The duties, responsibilities and lines of communication of other personnel involved in the operation or use of the nuclear fuel cycle facility (e.g. technical support personnel and researchers) shall also be clearly documented. (SSR-4, para 9.14)

P-17:

Where any activity related to safety is carried out by a contractor, the licensee shall retain within its organization the capability to assess the adequacy of the contractor's resources and skills for ensuring safety and the quality of the deliverables.

*Related **IAEA** safety standard:*

Resource management includes measures to ensure that the resources essential to the implementation of safety policy and the enhancement of safety and the achievement of the organization's objectives are identified and made available. The management system shall ensure that:

[…] (c) External personnel (including suppliers of both materials and services) are adequately qualified and are performing their activities under the same controls and to the same standards as the facility personnel.

(SSR-4, para 4.16)

2.1.3 Safety issue: Management system

P-18:

The licensee shall establish a management system applicable to all activities performed in the facility. The management system shall be subject to continuous improvement.

*Related **IAEA** safety standard:*

Management systems shall be applied for all steps and elements of the predisposal management of radioactive waste […] (GSR Part 5, Requirement 7)

The management system shall be developed, applied and continuously improved. […]
(GSR Part 2, para 4.8)

P-19:

The licensee's management system shall achieve and enhance safety by:

- bringing together in a coherent manner all the requirements for managing the organization,
- describing the planned and systematic actions necessary to provide adequate confidence that all these requirements are satisfied,
- ensuring that health, environmental, security, quality and economic requirements are not considered separately from safety requirements, to help preclude their possible negative impact on safety.

*Related **IAEA** safety standard:*

The management system shall integrate its elements, including safety, health, environmental, security, quality, human-and-organizational-factor, societal and economic elements, so that safety is not compromised. (GSR Part 2, Requirement 6)

The management system shall be applied to achieve goals safely, to enhance safety and to foster a strong safety culture by:

(a) Bringing together in a coherent manner all the necessary elements for safely managing the organization and its activities;
(b) Describing the arrangements made for management of the organization and its activities;
(c) Describing the planned and systematic actions necessary to provide confidence that all requirements are met;

(d) *Ensuring that safety is taken into account in decision making and is not compromised by any decisions taken.*

(GSR Part 2, para 4.9)

P-20:

The licensee shall identify the processes in the management system that are needed to achieve the goals, provide the means to meet all requirements and deliver the products of the organization, and their development shall be planned, implemented, assessed and continually improved. The work performed in each process shall be carried out under controlled conditions, by using approved current procedures, instructions, drawings or other appropriate means that are periodically reviewed to ensure their adequacy and effectiveness.

*Related **IAEA** safety standard:*

Processes and activities shall be developed and shall be effectively managed to achieve the organization's goals without compromising safety. (GSR Part 2, Requirement 10)

Each process shall be developed and shall be managed to ensure that requirements are met without compromising safety. […] (GSR Part 2, para 4.28)

New processes or modifications to existing processes shall be designed, verified, approved and applied so that safety is not compromised. Processes, including any subsequent modifications to them, shall be aligned with the goals, strategies, plans and objectives of the organization. (GSR Part 2, para 4.30)

Each process or activity that could have implications for safety shall be carried out under controlled conditions, by means of following readily understood, approved and current procedures, instructions and drawings. These procedures, instructions and drawings shall be validated before their first use and shall be periodically reviewed to ensure their adequacy and effectiveness. […] (GSR Part 2, para 4.32)

P-21:

The licensee shall document in its management system the following as a minimum:

- its safety policy;
- a description of its management system;
- a description of its organizational structure;
- a description of its quality assurance programme;
- a description of the functional responsibilities, accountabilities, levels of authority and interactions of those managing, performing and assessing work;
- a description of the licensee's interactions with contractors, including the control of activities carried out by contractors and other relevant parties;
- a description of the processes and supporting information that explain how work is to be prepared, reviewed, carried out, recorded, assessed and improved; and,
- a description of the provisions to record and review knowledge, information and data about all aspects related to safety of the facility and to preserve the records.

*Related **IAEA** safety standard:*

The documentation of the management system shall include as a minimum: policy statements of the organization on values and behavioural expectations; the fundamental safety objective; a description of the organization and its structure; a description of the responsibilities and accountabilities; the levels of authority, including all interactions of those managing, performing and assessing work and including all processes; a description of how the management system complies with regulatory requirements that apply to the organization; and a description of the interactions with external organizations and with interested parties. (GSR Part 2, para 4.16)

Records shall be specified in the management system and shall be controlled. All records shall be readable, complete, identifiable and easily retrievable. (GSR Part 2, para 4.19)

2.1.4 Safety issue: Documentation and record management

P-22:

The licensee shall develop and maintain a record management system for detailing the characteristics and location of radioactive waste in the facility, containing at least the following information:

- The radiological characteristics,
- The chemical and physical characteristics,
- The source or origin,
- Any chemical, pathogenic or other hazards associated with the waste and the concentrations of hazardous material; and,
- Any special handling necessary owing to criticality concerns, the need for the removal of decay heat or significantly elevated radiation fields.

*Related **IAEA** safety standard:*

The operating organization should develop and maintain a records system on the generation, processing, storage and transfer of radioactive waste (e.g. for further processing, storage or disposal), which should cover, among other aspects, the radioactive inventory, the location and characteristics of the radioactive waste, and information on its ownership, origin and place of transfer. […] (SSG-40, para 3.29, & SSG-41, para 3.29)

The operating organization should develop and maintain a record keeping system on data relating to the spent fuel and the storage system, which should include the radioactive inventory, location and characteristics of the spent fuel, information on the ownership and origin of the spent fuel, and information about its characterization. […]

(SSG-15 Rev. 1, para 3.27)

In addition to documenting the management system, traceable records should be created that describe and characterize the radioactive waste and the waste management activities undertaken. The records should include various types of information, including the following, as appropriate:

(a) The origin of the waste and the processes by which it was generated;

(b) The physical and chemical forms and properties of the waste (e.g. of the materials used in waste conditioning and their radionuclide retention properties);

(c) The activity concentration and total activity of radionuclides in the waste;

(d) The mass, activity concentration and total activity of fissile nuclides in the waste;

(e) The type of waste package;

(f) The radiation level at the surface of the waste package;

(g) The level of surface contamination on the waste package;

(h) The mass and weight of the waste or waste package;

(i) The dates of waste processing;

(j) The methods and instruments used to describe and characterize the waste.

(GSG-16, para 5.64)

P-23:

The licensee's record management system shall enable traceability from the receipt of the incoming waste to the subsequent consignment of the processed waste.

*Related **IAEA** safety standard:*

Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including: […]

- *Maintenance of records and reporting as required by the regulatory body, including those records and reports necessary to guarantee the accountability for and traceability of radioactive waste throughout the different processes of radioactive waste management; […] (GSR Part 5, para 3.11)*

P-24:

The licensee's record management system shall include up-to-date information on the radioactive waste inventory within the facility.

*Related **IAEA** safety standard:*

3.42. The operator should appoint an appropriately qualified person with overall responsibility for day to day control over the management of radioactive waste. […] This person may have the following responsibilities: […]
(c) To establish and maintain a detailed record keeping system for all stages of radioactive waste management, including the inventory of radioactive waste; […] (SSG-45, para 3.42)A tracking system for waste packages should be developed and implemented. The system should provide for the identification of waste packages and their locations and an inventory of waste stored. […] (WS-G-6.1, para 4.11)

P-25:

The licensee shall establish the provisions to allow for unequivocal identification of each outgoing product.

*Related **IAEA** safety standard:*

[…] Waste packages should have a system of identification that is unique, that enables the packages to be linked to their associated records and that takes account of the need to be readable in the long term future, up to disposal of the waste. (SSG-40, para 6.3, & SSG-41, para 6.3)

2.1.5 Safety issue: Product quality

P-26:

The licensee's quality assurance programme (see P-21) shall include

(a) specifications of the properties for the incoming waste for the purposes of operational safety and product quality;
(b) determination of any process variables relevant to product quality and establishment of the limits or tolerances for those process variables;
(c) specifications of procured items or services relevant to product quality; and
(d) determination of adequate control methods, including the nature and frequency of required sampling or testing.

*Related **IAEA** safety standard:*

Waste packages and unpackaged waste that are accepted for processing, storage and/or disposal shall conform to criteria that are consistent with the safety case. (GSR Part 5, Requirement 12)

Each process shall be developed and shall be managed to ensure that requirements are met without compromising safety. […] (GSR Part 2, para 4.28)

New processes or modifications to existing processes shall be designed, verified, approved and applied so that safety is not compromised. Processes, including any subsequent modifications to them, shall be aligned with the goals, strategies, plans and objectives of the organization. (GSR Part 2, para 4.30)

Any activities for inspection, testing, and verification and validation, their acceptance criteria and the responsibilities for carrying out such activities shall be specified. It shall be specified when and at what stages independent inspection, testing, and verification and validation are required to be conducted. (GSR Part 2, para 4.31)

Each process or activity that could have implications for safety shall be carried out under controlled conditions, by means of following readily understood, approved and current procedures, instructions and drawings. These procedures, instructions and drawings shall be validated before their first use and shall be periodically reviewed to ensure their adequacy and effectiveness. Individuals carrying out such activities shall be involved in the validation and the periodic review of such procedures, instructions and drawings. (GSR Part 2, para 4.32)

The verification of process outputs should include establishing and implementing an appropriate testing and monitoring programme with which to verify the quality of the outputs at each stage of the waste management programme (e.g. radioactive substances discharged, materials cleared from regulatory control, waste, waste forms and waste packages for storage and disposal). The rationale for the design of the testing and monitoring programme should be documented. (GSG-16, para 5.113.)

2.2

Safety area: Process and product requirements

-

2.2.1 Safety Issue: General principles

P-27:

The licensee shall process radioactive waste in a form suitable for the subsequent steps of waste management.

*Related **IAEA** safety standard:*

[...] The processing of radioactive waste shall be based on appropriate consideration of the characteristics of the waste and of the demands imposed by the different steps in its management (pretreatment, treatment, conditioning, transport, storage and disposal). […]

(GSR Part 5, Requirement 10)

The main purpose of processing radioactive waste is to enhance safety by producing a waste form, packaged or unpackaged, that fulfils the acceptance criteria for safe processing, transport, storage and disposal of the waste.[…] (GSR Part 5, para 4.13)

P-28:

In addition to radioactivity, the licensee shall take into account all properties of the radioactive waste that may affect safety during processing.

*Related **IAEA** safety standard:*

Radioactive waste has to be characterized in terms of its physical, mechanical, chemical, radiological and biological properties. (GSR Part 5, para 4.10)

Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including: (…)

- *Consideration of non-radiological hazards and conventional health and safety issues.*

(GSR Part 5, para 3.11)

2.2.2 Safety Issue: Selection of process

P-29:

The licensee shall consider all relevant factors when selecting the processing options, including:

- nuclear and radiation safety
- discharges
- minimisation of secondary waste

*Related **IAEA** safety standard:*

Various methods are applied for processing radioactive waste of different types. Consideration has to be given to identifying suitable options and to assessing the appropriateness of their application. Decisions have to be taken within the overall approach to the predisposal management of radioactive waste on the extent to which the waste has to be processed, with account taken of the quantities, activity and physical and/or chemical nature of the radioactive waste to be treated, the technologies available, the storage capacity and the availability of a disposal facility. (GSR Part 5, para 4.15)

The design of the facility, the arrangements for operational management and the systems and processes that are used have to be considered and justified in the safety case. This has to involve the identification of waste arisings and the establishment of an optimal programme of waste management to minimize the amount of waste generated and to determine the design basis and operational basis for the treatment of effluents, the control of discharges and clearance procedures. The primary aim of the safety case is to ensure that the safety objectives and criteria set by the regulatory body are met.

(GSR Part 5, para 5.5)

The requirement for minimization and control of waste generation should also be taken into account in the selection of approaches to storage and processing, in order to minimize the generation of secondary radioactive waste. […] (SSG-40, para 6.8, & SSG-41, para 6.8)

In order to determine appropriate arrangements for the handling, processing and storage of radioactive waste, consideration should be given to the following:

(a) The origin of the waste, the waste type and the physical state of the raw waste (solid, liquid or gaseous);
(b) The criticality risk;
(c) The radiological properties of the waste (e.g. half-life, activity and concentration of radionuclides, dose rates from the waste, heat generation);
(d) Other physical properties (e.g. size, mass, compactibility);
(e) Chemical properties (e.g. the composition of raw waste, water content, solubility, corrosiveness, combustibility, gas generation properties, chemical toxicity);
(f) Biological properties (e.g. biological hazards associated with the waste);
(g) Intended methods of processing, storage and disposal.

(SSG-40, para 6.18, & SSG-41, para 6.11)

2.2.3 Safety Issue: Properties of processed waste

P-30:

The licensee shall describe the required product in a specification defining the following properties:

- radiological,
- physical,
- chemical,
- biological
- geometrical
- traceability/labelling.

*Related **IAEA** safety standard:*

Radioactive waste has to be characterized in terms of its physical, mechanical, chemical, radiological and biological properties. (GSR Part 5, para 4.10)

The characterization serves to provide information relevant to process control and assurance that the waste or waste package will meet the acceptance criteria for processing, storage, transport and disposal of the waste. The relevant characteristics of the waste have to be recorded to facilitate its further management. (GSR Part 5, para 4.11)

P-31:

The organisation responsible for selecting the type of waste packaging shall ensure its compatibility with the properties of the waste form and with the subsequent steps of waste management.

*Related **IAEA** safety standard:*

[...]The processing of radioactive waste shall be based on appropriate consideration of the characteristics of the waste and of the demands imposed by the different steps in its management (pretreatment, treatment, conditioning, transport, storage and disposal). Waste packages shall be designed and produced so that the radioactive material is appropriately contained both during normal operation and in accident conditions that could occur in the handling, storage, transport and disposal of waste. (GSR Part 5, Requirement 10)

Radioactive waste has to be processed in such a way that the resulting waste form can be safely stored and retrieved from the storage facility up until its ultimate disposal. (GSR Part 5, para 4.16)

2.3

Safety area: Design

-

2.3.1 Safety issue: Facility design requirements

P-32:

The licensee shall design the facility to fulfil the fundamental applicable safety functions including:

- control of sub-criticality,
- removal of heat,
- radiation shielding; and,
- confinement of radioactive material.

These will apply during normal operation, anticipated operational occurrences and design basis accident conditions.

*Related **IAEA** safety standard:*

The design shall be such that the following main safety functions are met for all facility states of the nuclear fuel cycle facility:

(a) Confinement and cooling of radioactive material and associated

harmful materials;

(b) Protection against radiation exposure;

(c) Maintaining subcriticality of fissile material.

(SSR-4, requirement 7)

Facilities should be designed to prevent interactions between different materials that may compromise the containment of the waste or compromise safety at the facility. (SSG-41, para 6.86)

The design and operation of predisposal radioactive waste management facilities should be carried out in such a way as to ensure subcriticality both in operational states (normal operation and anticipated operational occurrences) and in accident conditions, by means of safe geometrical configurations, limitations on concentrations and inventories of fissile material or the use of neutron poisons. […]

(SSG-41, para 6.89)

The design of a facility for the predisposal management of high level (heat generating) radioactive waste should incorporate systems that are capable of maintaining the temperature of the waste or the waste form within acceptable limits in all stages of predisposal management of radioactive waste, both in operational states and in accident conditions. […] (SSG-41, para 6.90)

P-33: DELETED

~~The licensee shall design the facility in such a way that product quality can be assured.~~

*Related **IAEA** safety standard:*

~~*To ensure the safety of predisposal radioactive waste management facilities and the fulfilment of waste acceptance criteria, management systems are to be applied to the siting, design, construction, operation, maintenance, shutdown and decommissioning of such facilities and to all aspects of processing, handling and storage of waste. […] (GSR Part 5, para 3.24)*~~

P-34:

The licensee shall in its design of the facility take into account the expected operational lifetime of the facility to ensure that the safety conditions and the operational limits and conditions identified in the safety documentation will be met.

*Related **IAEA** safety standard:*

Predisposal radioactive waste management facilities shall be located and designed so as to ensure safety for the expected operating lifetime under both normal and possible accident conditions, and for their decommissioning. (GSR Part 5, Requirement 17)

P-35:

The licensee shall design the facility to ensure that safety is achieved through the use of safety features with preference of passive safety features as far as practicable. The licensee shall give preference to prevention over mitigation.

*Related **IAEA** safety standard:*

The following hierarchy of design measures shall be used for protection against potential hazards:
(1) Selection of operating processes such that inherent hazards are avoided;
(2) Passive design features;
(3) Active design features;
(4) Administrative controls.

(SSR-4 para 6.68)

The primary means of preventing accidents at a nuclear fuel cycle facility and mitigating the consequences of accidents if they do occur is the application of the concept of defence in depth (SF-1 [1],

Principle 8). This concept is applied to all safety related activities, whether organizational, behavioural or design related, in all operational states, and including activities with chemical hazards. […] (SSR-4, para 2.10)

P-36:

The licensee shall base the design of the facility on applicable standards, appropriately proven techniques and the use of appropriate materials to ensure that the safety requirements will be met.

*Related **IAEA** safety standard:*

Design criteria corresponding to relevant physical parameters shall be specified for each operational state of the facility and for each design basis accident or equivalent. Engineering design rules shall be applied to provide for safety margins such that no significant consequences would occur even if the operational limits were exceeded within these margins. (SSR-4, requirement 17)
The operating organization shall identify the criteria, codes and standards applicable to items important to safety and shall justify their use, using a graded approach. (SSR-4 para 6.55)

P-37:

The licensee shall establish a design basis for the facility taking into account normal operation, anticipated operational occurrences and possible accidents derived from a relevant set of Postulated Initiating Events (PIEs).

*Related **IAEA** safety standard:*

The design basis for items important to safety for a nuclear fuel cycle facility shall specify the necessary capability, reliability and functionality for the relevant operational states, for accident conditions and for conditions arising from internal and external hazards, to meet the specific acceptance criteria over the lifetime of the facility. (SSR-4, requirement 14)

Hazards shall be considered in designing the layout of the facility and in determining the postulated initiating events and generated loadings for use in the design of relevant items important to safety. Adequate space shall be provided for operations and processes involving radioactive material, to satisfy requirements for ergonomic design (e.g. for maintenance) and for the optimization of protection and to minimize the risk of collisions that may affect safety. (SSR-4, para 6.11)

P-38:

The licensee shall make design arrangements for fire safety on the basis of a fire safety analysis and implementation of defence in depth (prevention, detection, control and mitigation of a fire).

*Related **IAEA** safety standard:*

The arrangements for ensuring fire safety made by the operating organization shall cover the following: adequate management for fire safety; preventing fires from starting; detecting and extinguishing quickly any fires that do start; preventing the spread of those fires that have not been extinguished (e.g. fire zoning of the facility, with adequate fire barriers between zones); and

providing sufficient protection from fire to permit the facility to be brought to a safe and stable state. Such arrangements shall include, but are not limited to:

(a) Application of the principle of defence in depth

(SSR-4 para 9.109)

P-39:

The licensee shall identify and classify Structures, Systems and Components (SSCs) in accordance with their importance for operational safety, applying a graded approach.

*Related **IAEA** safety standard:*

All items important to safety for a nuclear fuel cycle facility shall be identified and shall be classified on the basis of their safety function and their safety significance. (SSR-4, Req 13)

The safety significance of structures, systems and components shall be used for grading the application of safety requirements for design. (SSR-4, Para 6.37)

P-40:

The licensee shall make design provisions for maintenance, testing, and inspection of Structures, Systems and Components (SSCs).

*Related **IAEA** safety standard:*

The design and layout of items important to safety shall include provisions to optimize protection in maintenance, inspection and testing activities. The term 'maintenance' includes both preventive actions and corrective actions. (SSR-4, para 6.105)The need for operational maintenance, testing, examination and inspection has to be addressed from the conceptual design stage onward. (GSR Part. 5, para 5.14)

2.4

Safety area: Operation

–

2.4.1 Safety issue: General requirements

P-41:

The licensee shall establish, substantiate, document and implement Operational Limits and Conditions (OLCs) for the facility in accordance with the conditions of the licence and the relevant regulatory requirements to maintain its safety.

*Related **IAEA** safety standard:*

The operator has to ensure an adequate level of protection and safety by various means, including: […] Derivation of operational limits, conditions and controls, including waste acceptance criteria, to assist with ensuring that the predisposal radioactive waste management facility is operated in accordance with the safety case; […] (GSR Part 5, para 3.11)

[…] All operations and activities important to safety have to be subject to documented limits, conditions and controls, and have to be carried out by trained, qualified and competent personnel.

(GSR Part 5, 5.19)

P-42:

The licensee shall operate the facility in accordance with documented procedures.

*Related **IAEA** safety standard:*

Predisposal radioactive waste management facilities shall be operated in accordance with national regulations and with the conditions imposed by the regulatory body. Operations shall be based on documented procedures. […] (GSR Part 5, Requirement 19)

P-43:

The licensee shall process the radioactive waste in such a way that safety is ensured during normal operation, that measures are taken to prevent the occurrence of incidents or accidents, and that provisions are made to mitigate the consequences if accidents occur.

*Related **IAEA** safety standard:*

Waste has to be processed in such a way that safety is appropriately ensured during normal operation, that measures are taken to prevent the occurrence of incidents or accidents, and that provisions are made to mitigate the consequences if accidents occur.[…] (GSR Part 5, para 4.14)

P-44:

The licensee shall establish provisions for identifying, assessing and dealing with products that do not meet product specifications.

*Related **IAEA** safety standard:*

Provisions have to be established by the operator for identifying, assessing and dealing with waste and/or waste packages that do not meet process specifications and requirements for its and/or their safe handling, transport, storage and/or disposal. (GSR Part 5, para 4.17)

P-45:

The licensee shall make arrangements for managing any secondary waste created during processing.

*Related **IAEA** safety standard:*

Consideration has to be given to the consequences of dealing with any secondary waste (both radioactive and non-radioactive) that is created during processing. (GSR Part 5, para 4.18)

2.4.2 Safety issue: Emergency preparedness

P-46:

Based upon an assessment of reasonably foreseeable events and situations that may require protective measures, the licensee shall develop arrangements for responding effectively to events requiring protective measures at the scene for:

- regaining control of any emergency arising at the site, including events related to combinations of non-nuclear and nuclear hazards;
- preventing or mitigating the consequences; and,
- co-operating, where necessary with external emergency response organizations in preventing adverse health effects in workers and the public.

*Related **IAEA** safety standard:*

Arrangements must be made for emergency preparedness and response for nuclear or radiation incidents. (SF-1, Principle 9)

The primary goals of preparedness and response for a nuclear or radiation emergency are:

- *To ensure that arrangements are in place for an effective response at the scene and, as appropriate, at the local, regional, national and international levels, to a nuclear or radiation emergency;*

- *To ensure that, for reasonably foreseeable incidents, radiation risks would be minor;*
- *For any incidents that do occur, to take practical measures to mitigate any consequences for human life and health and the environment. (SF-1, para 3.34)*

Arrangements shall be developed, as appropriate, for the coordination of emergency preparedness and response and of protocols for operational interfaces between operating organizations and authorities at the local, regional and national levels, including those organizations and authorities responsible for the response to conventional emergencies and to nuclear security events. […] Arrangements shall be put in place to ensure effective working relationships among these organizations, both at the preparedness stage and in an emergency. (GSR Part 7, para 6.12)

P-47:

The licensee shall:

- prepare an on-site emergency plan as a basis for the preparation and implementation of emergency measures;
- establish the necessary organizational structure for clear allocation of responsibilities, authorities and arrangements for coordinating facility activities and cooperating with emergency response organizations throughout all phases of an emergency; and,
- ensure that trained and qualified personnel, together with the facilities and equipment needed to control an emergency, are available should they be required.

*Related **IAEA** safety standard:*

The appropriate responsible authorities shall ensure that:

(a) emergency plans [are] prepared and approved for any practice or source which could give rise to a need for emergency intervention;

(b) [response organizations are] involved in the preparation of emergency plans, as appropriate;

(c) the content, features and extent of emergency plans take into account the results of any [threat assessment] and any lessons learned from operating experience and from [emergencies] that have occurred with sources of a similar type […];

(d) emergency plans [are] periodically reviewed and updated." […] (GS-R-2, para 5.17)

The emergency arrangements shall include clear assignment of responsibilities and authorities, and shall provide for coordination and for communication in all phases of the response. These arrangements shall include:

- *Ensuring that for each response organization a position in the response hierarchy has the authority and responsibility to direct and to coordinate its response actions;*
- *Clearly assigning the authority and responsibility for the direction and coordination of the entire response (see para. 5.7) and for the prevention and resolution of conflicts between response organizations;*
- *Assigning to an on-site position the authority and responsibility for notifying the appropriate response organization(s) of an emergency and for taking immediate on-site actions;*
- *Assigning to an on-site position the responsibility for directing the entire on-site emergency response (see paras 5.2 and 5.7).*

[…] (GSR Part 7, para 6.5)

Personnel who are assigned to positions in all operating organizations and response organizations to perform the functions necessary to meet the requirements […] shall be qualified and shall be assessed for their initial fitness and continuing fitness for their intended duties.

(GSR Part 7, para 6.9)

The appropriate responsible authorities shall ensure that:

(b) Emergency plans and procedures are prepared and, as appropriate, approved for any facility or activity, area or location that could give rise to an emergency warranting protective actions and other response actions.

(GSR Part 7, para 6.18)

The operating organization, as part of its management system […], and response organizations, as part of their emergency management system, shall establish a programme to ensure the availability and reliability of all supplies, equipment, communication systems and facilities, plans, procedures and other arrangements necessary to perform functions in a nuclear or radiological emergency […]. The programme shall include arrangements for inventories, resupply, tests and calibrations, to ensure that these are continuously available and are functional for use in a nuclear or radiological emergency. (GSR Part 7, para 6.34)

P-48:

The licensee shall submit to the regulatory body the on-site emergency plan for approval. At regular intervals, the licensee shall carry out emergency exercises, some of which shall include the participation of external emergency response organizations. The plan shall be subject to review and updating in the light of experience gained.

*Related **IAEA** safety standard:*

In developing the emergency response arrangements, consideration has to be given to all reasonably foreseeable events. Emergency plans have to be exercised periodically to ensure the preparedness of the organizations having responsibilities in emergency response. (SF-1, para 3.37)

(…) Emergency preparedness and response plans, if developed by the operator, are subject to the approval of the regulatory body. (GSR Part 5, Requirement 19)

2.4.3 Safety issue: Operating experience feedback

P-49:

The licensee shall establish and conduct an Operating Experience Feedback (OEF) programme to systematically collect, screen, analyse and document operating experience relevant to safety and product quality as well as events at the facility. Relevant operational experience and events reported by other facilities shall be considered as appropriate.

*Related **IAEA** safety standard:*

The feedback of operating experience from facilities and activities - and, where relevant, from elsewhere - is a key means of enhancing safety. Processes must be put in place for the feedback and analysis of operating experience, including initiating events, accident precursors, near misses, accidents and unauthorized acts, so that lessons may be learned, shared and acted upon. (SF-1, para 3.17)

The safety assessment and the management systems within which it is conducted have to be periodically reviewed at predefined intervals in accordance with regulatory requirements. In addition to such predefined periodic reviews, the safety assessment has to be reviewed and updated: […]

- *When there are significant developments in knowledge and understanding (such as developments arising from research or operational experience feedback); […] (GSR Part 5, para. 5.12)*

P-50:

The licensee shall respond to relevant operating experience by implementing, where necessary, appropriate measures to improve operating practices.

*Related **IAEA** safety standard:*

The process of safety assessment for facilities and activities is repeated in whole or in part as necessary later in the conduct of operations in order to take into account changed circumstances (such as the application of new standards or scientific and technological developments), the feedback of operating experience, modifications and the effects of ageing. [...] (SF-1, para 3.16)

The feedback of operating experience from facilities and activities - and, where relevant, from elsewhere - is a key means of enhancing safety. Processes must be put in place for the feedback and analysis of operating experience, including initiating events, accident precursors, near misses, accidents and unauthorized acts, so that lessons may be learned, shared and acted upon. (SF-1, para 3.17)

2.4.4 Safety issue: Facility modification

P-51:

The licensee shall establish and implement arrangements to control modifications, e. g. of design, equipment, waste processing conditions, waste characteristics, control or management. Proposed modifications shall be subject to planning, assessment, review and authorization arrangements proportionate to the importance to safety of the modification. These arrangements shall ensure that the modifications will not have an unacceptable effect on the safety of the facility or associated facilities, or the quality of the product.

*Related **IAEA** safety standard:*

The safety assessment and the management systems within which it is conducted have to be periodically reviewed at predefined intervals in accordance with regulatory requirements. In addition to such predefined periodic reviews, the safety assessment has to be reviewed and updated:

- *When there is any significant change that may affect the safety of the facility or activity;*

- *When there are significant developments in knowledge and understanding (such as developments arising from research or operational experience feedback);*
- *When there is an emerging safety issue owing to a regulatory concern or an incident;*
- *When there have been significant improvements in assessment techniques such as computer codes or input data used in the safety analysis. (GSR Part 5, para 5.12)*

The operating organization shall establish and implement a programme for the control of modifications to the facility. (SSR-4, Requirement 61)

The operating organization shall be responsible for ensuring that: (a) For multifacility sites, a modification in the nuclear fuel cycle facility will not adversely affect the operability or safety of associated or adjacent facilities […] (c) The relevant safety documentation (e.g. the safety assessment report and operational limits and conditions) of the facility is applied by all individuals involved in making a modification, and protection of the public and protection of the environment are optimized. […] (SSR-4, para 9.57)

P-52:

Before implementing a modification according to P-51, the licensee shall update all affected documents and train the staff in the revised procedures.

*Related **IAEA** safety standard:*

The safety assessment and the management systems within which it is conducted have to be periodically reviewed at predefined intervals in accordance with regulatory requirements. In addition to such predefined periodic reviews, the safety assessment has to be reviewed and updated:

- *When there is any significant change that may affect the safety of the facility or activity; […]*

(GSR Part 5, para 5.12)

The operator has to ensure an adequate level of protection and safety by various means, including: […]

- *Ensuring that staff are trained, qualified and competent, and, where applicable, licensed by the regulatory body; […] (GSR Part 5, para 3.11)*

2.4.5 Safety issue: Maintenance, periodic testing and inspection

P-53:

The licensee shall conduct a maintenance, periodic testing and inspection programme according to written procedures in order to ensure that SSCs are able to function in accordance with the design intents and safety requirements.

*Related **IAEA** safety standard:*

The licensing documentation shall specify the required intervals for periodic testing and inspection of items important to safety. (SSR-4, para 3.9)

Maintenance, periodic testing and inspection shall be conducted to ensure that items important to safety are able to function in accordance with their design intent and safety requirements, in compliance with the operational limits and conditions, and shall support the long term safety of the facility. (SSR-4, para 9.74)

P-54:

The licensee shall ensure that the programme for maintenance, periodic testing and inspection of SSCs is in accordance with the facility safety case.

*Related **IAEA** safety standard:*

The licensing documentation shall specify the required intervals for periodic testing and inspection of items important to safety. (SSR-4, para 3.9)

Programmes based on the safety assessment report shall be established for the maintenance, periodic testing and inspection of all items important to safety and shall be documented. (SSR-4, para 9.76)

The frequency of maintenance, periodic testing and inspection of individual items important to safety shall be adjusted on the basis of experience and shall be such as to ensure adequate reliability. (SSR-4, para 9.80)

P-55:

The licensee shall ensure that the results of maintenance, periodic testing and inspection are recorded and assessed to identify any effect on safety and product quality and take any necessary measures for improvement as soon as it is reasonably practicable.

*Related **IAEA** safety standard:*

The frequency of maintenance, periodic testing and inspection of individual items important to safety shall be adjusted on the basis of experience and shall be such as to ensure adequate reliability. The operating organization shall assess the results of maintenance, periodic testing and inspection, and shall incorporate the feedback for continuous improvement. (SSR-4, para 9.80)

Any failure to comply with these requirements shall, in a timely manner, be recorded, investigated and reported to the regulatory body in accordance with national requirements and effective improvement actions shall be taken to prevent recurrence. (SSR-4, para 9.82)

P-56:

The licensee shall ensure that the maintenance, periodic testing and inspection programmes are reviewed at regular intervals to incorporate the lessons learned from experience.

*Related **IAEA** safety standard:*

The maintenance, periodic testing and inspection programmes and their performance shall be reviewed at regular intervals to incorporate lessons learned from experience (see Requirement 73).
(SSR-4, para 9.75)

2.4.6 Safety issue: Acceptance of incoming waste

P-57:

The licensee shall implement procedures for the receipt of radioactive waste to ensure that the characteristics of the waste accepted for processing comply with the waste acceptance criteria of the facility.

*Related **IAEA** safety standard:*

Waste packages and unpackaged waste that are accepted for processing, storage and/or disposal shall conform to criteria that are consistent with the safety case. (GSR Part 5, Requirement 12)

P-58:

The licensee shall provide contingency procedures to deal with incoming waste not compliant with the waste acceptance criteria of the facility.

*Related **IAEA** safety standard:*

Waste packages and unpackaged waste that are accepted for processing, storage and/or disposal shall conform to criteria that are consistent with the safety case. (GSR Part 5, Requirement 12)

Provisions have to be established by the operator for identifying, assessing and dealing with waste and/or waste packages that do not meet process specifications and requirements for its and/or their safe handling, transport, storage and/or disposal. (GSR Part 5, para 4.17)

The operators' procedures for the reception of waste have to contain provisions for safely managing waste that fails to meet the acceptance criteria; for example, by taking remedial actions or by returning the waste. (GSR Part 5, para 4.26)

2.4.7 Safety issue: Operational records and verification of product properties

P-59:

The licensee shall make and keep records for incoming waste accepted for processing according to the record management system specified in P-22.

*Related **IAEA** safety standard:*

Radioactive waste has to be characterized in terms of its physical, mechanical, chemical, radiological and biological properties. (GSR Part 5, para 4.10)

The characterization serves to provide information relevant to process control and assurance that the waste or waste package will meet the acceptance criteria for processing, storage, transport and

disposal of the waste. The relevant characteristics of the waste have to be recorded to facilitate its further management. (GSR Part 5, para 4.11)

The operating organization should develop and maintain a records system on the generation, processing, storage and transfer of radioactive waste (e.g. for further processing, storage or disposal), which should cover, among other aspects, the radioactive inventory, the location and characteristics of the radioactive waste, and information on its ownership, origin and place of transfer. Such records should be preserved and updated, to enable the implementation of the facility specific radioactive waste management programme. *[…] (SSG-40, para 3.29, & SSG-41, para 3.29)*

Data on the type of radioactive waste to be processed (i.e. pretreated, treated and conditioned) or stored, as well as on material that is to be cleared or discharged at the facility or within the activity, should be collected with respect to the volume and form of the waste, the radionuclides of concern, the radioactive content, the presence of fissile materials, and other physical, chemical and pathogenic properties. Secondary waste streams that may arise from waste processing should be included. (GSG-3, Para 4.44)

P-60:

The licensee shall make and keep records of operational data that are of relevance to safety of product quality.

*Related **IAEA** safety standard:*

The operating organization shall make arrangements for generating and controlling records and reports that have safety significance for the operation and decommissioning stages, including: […]

(d) Procedures and operating instructions;
(e) History of and data on modifications;
(f) Operational data for the facility;
(g) Data from maintenance, testing, surveillance and inspection;
(h) Reports on events and incidents; […]
(n) Records of the main work activities performed in each location of the facility.

(SSR-4, para 9.62)

Traceability refers to the possibility of following the information that is provided in the documentation and that has been used in developing the safety case. For the purposes of both justification and traceability, a well documented record is necessary of the decisions and assumptions that were made in the development and operation of the facility, and of the models and data used in the safety assessment to obtain the set of results. […] (GSR Part 5, para 5.9)

Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including: […]

- *Maintenance of records and reporting as required by the regulatory body, including those records and reports necessary to guarantee the accountability for and traceability of radioactive waste throughout the different processes of radioactive waste management; […] (GSR Part 5, para 3.11)*

P-61:

The licensee shall implement procedures to ensure that the product complies with the specifications and make and keep the relevant records.

*Related **IAEA** safety standard:*

Radioactive waste has to be characterized in terms of its physical, mechanical, chemical, radiological and biological properties. (GSR Part 5, para 4.10)

The characterization serves to provide information relevant to process control and assurance that the waste or waste package will meet the acceptance criteria for processing, storage, transport and disposal of the waste. The relevant characteristics of the waste have to be recorded to facilitate its further management. (GSR Part 5, para 4.11)

Provisions have to be established by the operator for identifying, assessing and dealing with waste and/or waste packages that do not meet process specifications and requirements for its and/or their safe handling, transport, storage and/or disposal. (GSR Part 5, para 4.17)

P-62:

The licensee shall use the record management system as established in P-22 for the documentation of the characteristics of every outgoing product.

*Related **IAEA** safety standard:*

The operating organization should develop and maintain a records system on the generation, processing, storage and transfer of radioactive waste (e.g. for further processing, storage or disposal), which should cover, among other aspects, the radioactive inventory, the location and characteristics of the radioactive waste, and information on its ownership, origin and place of transfer. […]

(SSG-41, para 3.29)

2.4.8 Safety issue: Use of mobile waste processing equipment

P-63:

Mobile processing equipment used by the licensee shall have clearly defined, safe interfaces to the hosting facility.

*Related **IAEA** safety standard:*

The scope of the safety case should be clearly defined. It should identify whether the safety case considers an entire facility or a single activity within a larger facility. It should also consider site boundaries and interfaces with neighbouring activities and facilities. (GSG-3, para 4.21)

The operating organization shall ensure that safety related structures and resources shared between facilities on the same site (including pipebridges, trenches and other transfer systems) are considered. Boundaries between different facilities shall be unambiguously defined. Arrangements for the use of shared resources shall be clearly defined and effective communication routes between different relevant organizations shall be established. (SSR-4, para 9.3)

P-64:

The licensee shall provide a safety case for the use of the mobile waste processing equipment. The safety case shall take into account among other things the installation, maintenance, decontamination and de-installation phases, as well as the operational phase.

*Related **IAEA** safety standard:*

The safety case should address how the principles of good engineering practice have been applied, and the operator should demonstrate in the safety case that the materials, equipment and processes foreseen for the facility or activity are well understood and that knowledge gained from similar applications confirms that these materials, equipment and processes are well suited for the intended use. (GSG-3, para 4.60)

The operator shall prepare a safety case and a supporting safety assessment. In the case of a step by step development, or in the event of modification of the facility or activity, the safety case and its supporting safety assessment shall be reviewed and updated as necessary.

(GSR Part 5, Requirement 13)

The safety case for a predisposal radioactive waste management facility shall include a description of how all the safety aspects of the site, the design, operation, shutdown and decommissioning of the facility, and the managerial controls satisfy the regulatory requirements. The safety case and its supporting safety assessment shall demonstrate the level of protection provided and shall provide assurance to the regulatory body that safety requirements will be met. (GSR Part 5, Requirement 14)

2.5

Safety area: Safety verification

–

2.5.1 Safety issue: Contents and updating of the facility safety case

P-65:

The licensee shall provide a facility safety case and use it as a basis for continuous support of safe operation throughout the lifetime of a facility and for assessing the safety implications of changes to the facility or to operating practices.

*Related **IAEA** safety standard:*

[…] The safety case provides the basis for safety decisions with respect to siting and location, design, construction, operation and decommissioning of a facility, including for the justification of changes with a significant impact on safety. […] (GSG-3, para 2.2)

P-66:

The licensee shall ensure the facility safety case covers the facility itself, the radioactive waste, new or modified systems, structures and components and their respective safety-relevant features. The safety case shall include a description of how all the safety aspects of the site, the design, construction and operation, as well as provisions for decommissioning of the facility, and the managerial controls satisfy the regulatory requirements.

*Related **IAEA** safety standard:*

The safety case for a predisposal radioactive waste management facility shall include a description of how all the safety aspects of the site, the design, operation, shutdown and decommissioning of the facility, and the managerial controls satisfy the regulatory requirements. The safety case and its supporting safety assessment shall demonstrate the level of protection provided and shall provide assurance to the regulatory body that safety requirements will be met. (GSR Part 5, Requirement 14)

The safety case has to address operational safety and all safety aspects of the facility and activities. The safety case has to include considerations for reducing hazards posed to workers, members of the public and the environment during normal operation and in possible accident conditions.
(GSR Part 5, para. 5.6)

[…] The safety case should include: a full description of the structures, systems and components of the facility and their importance for safety; the quantity and characteristics of the waste to be handled at the

facility; the range of conditions under which the facility may operate; the hazards to which the facility may be exposed; and the required performance criteria. (GSG-3, para 4.36)

P-67:

The licensee shall provide assurance through the facility safety case that workers and members of the public are and will remain adequately protected against the hazards associated with all activities related to the processing of radioactive waste.

*Related **IAEA** safety standard:*

The safety case for a predisposal radioactive waste management facility shall include a description of how all the safety aspects of the site, the design, operation, shutdown and decommissioning of the facility and the managerial controls satisfy the regulatory requirements. The safety case and its sup-porting safety assessment shall demonstrate the level of protection provided and shall provide assurance to the regulatory body that safety requirements will be met. (GSR Part 5, Requirement 14)

The safety case has to address operational safety and all safety aspects of the facility and activities. The safety case has to include considerations for reducing hazards posed to workers, members of the public and the environment during normal operation and in possible accident conditions.

(GSR Part 5, para. 5.6)

P-68:

The licensee shall update the facility safety case to reflect

- revised or new regulatory requirements and relevant standards;
- results of the periodic safety review; and,
- results from the operational feedback programme and analysis of incidents.

Updates shall be carried out as soon as reasonably practicable and in accordance with safety significance.

*Related **IAEA** safety standard:*

The operator shall carry out periodic safety reviews and shall implement any safety upgrades required by the regulatory body following this review. The results of the periodic safety review shall be reflected in the updated version of the safety case for the facility. (GSR Part 5, Requirement 16)

The safety assessment and the management systems within which it is conducted have to be periodically reviewed at predefined intervals in accordance with regulatory requirements. In addition to such predefined periodic reviews, the safety assessment has to be reviewed and updated:

- *When there is any significant change that may affect the safety of the facility or activity;*
- *When there are significant developments in knowledge and understanding (such as developments arising from research or operational experience feedback);*
- *When there is an emerging safety issue owing to a regulatory concern or an incident;*

- *When there have been significant improvements in assessment techniques such as computer codes or input data used in the safety analysis. (GSR Part 5, para. 5.12)*

[…] [T]he safety case and supporting safety assessment are to be reviewed and updated periodically as necessary to reflect actual experience and increasing knowledge and understanding (e.g. knowledge gained from scientific research), with account taken of any relevant operational experience feedback or other aspects that are relevant for safety. Following commencement of facility operation, revisions or updates to the safety case and supporting assessment have to be carried out when there are significant changes that may affect the safety of the facility or activity, e.g. changes to operational practices, waste forms and design. The regulatory body should consider the types and/or magnitude of changes and the time frames for which an update would be required. Typical periods range between five and ten years, with account taken of factors such as the availability of new information, significant design or operational modifications, improvements in knowledge and advances in assessment techniques. (GSG-3, para 4.15)

[…] The safety case should also be updated periodically to reflect new information acquired according to regulatory requirements. (GSG-3, para 7.21)

2.5.2 Safety issue: Periodic safety reviews

P-69:

The licensee shall carry out a Periodic Safety Review (PSR) of the facility at regular intervals. The review shall be carried out at a frequency which shall be established by the national regulatory framework (e. g. every ten years).

*Related **IAEA** safety standard:*

The operator shall carry out periodic safety reviews and shall implement any safety upgrades required by the regulatory body following this review. The results of the periodic safety review shall be reflected in the updated version of the safety case for the facility. (GSR Part 5, Requirement 16)

The safety assessment and the management systems within which it is conducted have to be periodically reviewed at predefined intervals in accordance with regulatory requirements. […] (GSR Part 5, para 5.12)

P-70:

The licensee shall ensure that the scope and methodology of the PSR is clearly defined and justified. The PSR shall confirm compliance with the licensing requirements. It shall also identify and evaluate the safety significance of differences from applicable current safety standards and good practices and take into account the cumulative effects of changes to procedures, modifications to the facility and the operating organization, technical developments, operational experience accumulated and ageing of SSCs.

*Related **IAEA** safety standard:*

The periodic safety review shall confirm that the safety analysis report and other documents (such as the operational limits and conditions and documentation on maintenance and training) remain valid in view of current regulatory requirements, or shall indicate where improvements may be necessary. In such reviews, changes in the site characteristics, changes in the utilization programme (particularly for research and development facilities), the cumulative effects of ageing and modifications, changes to procedures, feedback from operating experience and technical developments shall be considered. It shall also be verified that items and software important to safety comply with the design requirements.

(SSR-4, para 4.27)

P-71:

The licensee shall document the results of the PSR, shall submit the results to the regulatory body, and shall develop and implement an action plan for all reasonably practicable improvements to safety.

*Related **IAEA** safety standard:*

[…] On the basis of the results of such periodic safety reviews, the operating organization shall implement any necessary corrective actions and shall consider the need for modifications to enhance safety.

(SSR-4, Requirement 5)

The findings of safety assessments and periodic safety reviews shall be considered by the safety committee (see Requirement 6). The operating organization shall report to the regulatory body as required, in a timely manner, the confirmed findings of the periodic safety review that have implications for safety. Any modifications that arise from these findings shall be implemented in a timely manner, in accordance with the safety categorization of the modification. (SSR-4, para 4.28)

Part 3
Benchmarking Results and Action Plans

Part III of the Processing Report provides information on the process of benchmarking, i.e. the verification of the application of processing SRLs in WENRA Member States using a systematic appraisal procedure in the working group.

The benchmarking process compassed two main steps of evaluation. In the first step participating countries have to perform a self-assessment of their national regulatory system with regard to the WENRA safety reference levels (SRLs). In accordance with WENRA's Reactor Harmonisation Working Group (RHWG) a code of three degrees for evaluation has been applied:

- **A** – The requirement is covered explicitly by national regulatory system: no action required.
- **B** – A difference exists but can be justified from the safety point of view: no action required.
- **C** – A difference exists and should be addressed by the member.

For the self-assessment each country has to perform the rating level by level and to justify the proposed rating by quoting the relevant text sections from the corresponding national regulatory requirements in an evaluation table. In the second step of the benchmarking the results of the self-assessment are reviewed by other countries and unclear aspects are discussed in the plenary sessions. The benchmarking results are finally endorsed by the WGWD plenary.

The list of SRLs for which implementation in the regulatory framework has been found to be lacking or insufficient – the so-called 'C' ratings – define the National Action Plan. It is each member's responsibility to resolve any such deficiencies in their national regulations and then present it back to their WENRA peers, essentially starting a new benchmarking process for the contents of its National Action Plan. While the details of benchmarking have undergone some changes with time – in particular an increase in the use of online technologies in the wake of Covid and international conflicts – the principles stayed the same since the inception of the process some 20 years ago, so that benchmarking as a form of regulatory peer review, based on set of requirements tailor-made for a specific group of countries in a specific situation, has

become one of the cornerstones of WENRA's efforts to develop a harmonized international approach to nuclear safety.

This report tries to highlight the results of the benchmarking processes done since the publication of the last report version in 2018, when the first exercises started. So far, not every WENRA member has been able to prepare its own self-assessment. This report reflects the results of the benchmarking processes done for those countries that have prepared its own self-assessment on processing SRLs.

Belgium

The requirements for the processing of radioactive waste in Belgium are defined in several regulations from the regulatory body (FANC) and the Belgian Waste Agency (ONDRAF/NIRAS). Some SRLs related to the product quality and ownership are related to competences of the Belgian Waste Agency ONDRAF/NIRAS, and not of the regulatory body FANC. The FANC and ONDRAF/NIRAS legislation has evolved to strengthen the allocation of roles and responsibilities between ONDRAF/NIRAS and FANC.

The compliance of the Belgian nuclear legislation with the WENRA safety reference levels has been initially presented at the WGWD41 meeting. The results of an updated self-assessment have been discussed in 2024 and are reflected in the Table below. Further benchmarking is necessary to assess the remaining C.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	NIRAS 08/08/1980 Article 179 NIRAS 30/03/1981 Article 3
P-02	**B**	FANC 20/07/2001 Articles 5 and 12 NIRAS 30/03/1981 Article 3
P-03	**C**	NIRAS 08/08/1980 Article 179 NIRAS 30/03/1981 Article 2
P-04	**C**	FANC 30/11/2011 Article 4 NIRAS 08/08/1980 Article 179 NIRAS 30/03/1981 Article 2 NIRAS 18/11/2002
P-05	**C**	FANC 20/07/2001 Article 23 FANC 30/11/2011 Article 5 NIRAS 08/08/1980 Article 179 NIRAS 30/03/1981 Articles 2 and 3
P-06	**C**	NIRAS 30/03/1981 Article 3
P-07	**A**	FANC 30/11/2011 Article 4
P-08	**A**	FANC 20/07/2001 Article 6 FANC 30/11/2011 Articles 3 and 4
P-09	**A**	FANC 30/11/2011 Articles 3, 4 and 11
P-10	**A**	FANC 30/11/2011 Article 5
P-11	**A**	FANC 30/11/2011 Articles 5 and 6
P-12	**A**	FANC 30/11/2011 Article 4, 7 and 13
P-13	**A**	FANC 30/11/2011 Article 16
P-14	**A**	FANC 30/11/2011 Articles 4, 5 and 6
P-15	**A**	FANC 30/11/2011 Article 4 and 6

# SRL	Current status	Relevant regulations
P-16	**A**	FANC 30/11/2011 Articles 4 and 6 NIRAS 3/06/2014 Article 4
P-17	**A**	FANC 30/11/2011 Article 4
P-18	**A**	FANC 30/11/2011 Article 5
P-19	**A**	FANC 30/11/2011 Article 5
P-20	**A**	FANC 30/11/2011 Article 5
P-21	**A**	FANC 30/11/2011 Article 5
P-22	**C**	FANC 20/07/2001 Articles 23, 27bis and 28 NIRAS 30/03/1981 Articles 2 and 3 NIRAS 18/11/2002 Article 5
P-23	**C**	FANC 30/11/2011 NIRAS 30/03/1981 Articles 2 and 3 NIRAS 18/11/2002 Article 5
P-24	**A**	FANC 20/07/2001 Articles 27bis and 37 NIRAS 30/03/1981 Articles 2 and 3
P-25	**C**	FANC 30/11/2011 FANC 20/07/2001 Article 27bis
P-26	**A (RW) / C (SF)**	NIRAS 18/11/2002 Article 5
P-27	**A (RW) / C (SF)**	NIRAS 18/11/2002 Article 5
P-28	**C**	FANC 20/07/2001 Article 5 FANC 30/11/2011 Articles 7 and 13
P-29	**C**	FANC 20/07/2001 NIRAS 18/11/2002 article 5
P-30	**C**	NIRAS 30/03/1981 Articles 2 and 3 NIRAS 18/11/2002 Article 2
P-31	**C**	
P-32	**C**	FANC 30/11/2011 Article 33
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	FANC 30/11/2011 Article 8
P-35	**C**	FANC 30/11/2011 Articles 7 and 34
P-36	**A**	FANC 30/11/2011 Articles 4, 7 and 8
P-37	**A**	FANC 30/11/2011 Article 7
P-38	**A**	FANC 30/11/2011 Articles 7 and 17
P-39	**C**	FANC 30/11/2011 Article 8 NIRAS 18/11/2002 Articles 4, 5 and 6
P-40	**A**	FANC 30/11/2011 Article 12
P-41	**C**	FANC 30/11/2011 Article 9 NIRAS 18/11/2002 Articles 4, 5 and 6
P-42	**C**	FANC 20/07/2001 Articles 5 and 23 FANC 30/11/2011 Article 5
P-43	**C**	FANC 20/07/2001 Article 5 FANC 30/11/2011 Articles 3/1 and 9

# SRL	Current status	Relevant regulations
P-44	C	FANC 30/11/2011 Articles 5 and 9 NIRAS 08/08/1980 Article 179
P-45	A	FANC 20/07/2001 Article 33
P-46	A	FANC 30/11/2011 Article 16
P-47	A	FANC 30/11/2011 Article 16
P-48	C	FANC 20/7/2001 Article 6 FANC 30/11/2011 Article 16
P-49	C	FANC 30/11/2011 Article 11 NIRAS 18/11/2002 Article 5
P-50	A	FANC 30/11/2011 Article 11
P-51	C	FANC 30/11/2011 Article 15 NIRAS 18/11/2002 Article 8
P-52	A	FANC 30/11/2011 Article 15
P-53	A	FANC 30/11/2011 Article 12
P-54	A	FANC 30/11/2011 Article 12
P-55	C	FANC 30/11/2011 Article 12 NIRAS 18/11/2002 Article 5
P-56	A	FANC 30/11/2011 Article 12
P-57	C	NIRAS 18/11/2022 Articles 3, 4 and 5
P-58	C	FANC 30/11/2011 Articles 9, 14 and 15
P-59	C	FANC 20/07/2001 Article 27bis NIRAS 08/08/1980 Article 179 NIRAS 18/11/2002 Article 5
P-60	C	FANC 20/07/2001 Article 27bis NIRAS 08/08/1980 Article 179 NIRAS 30/03/1981 Articles 2 and 3 NIRAS 18/11/2002 Article 5
P-61	C	NIRAS 18/11/2022 Articles 4 and 5
P-62	C	NIRAS 18/11/2022 Articles 4 and 5
P-63	B	FANC 30/11/2011 Articles 5, 6, 13 and 15
P-64	B	FANC 30/11/2011 Articles 5, 6, 13 and 15
P-65	A	FANC 30/11/2011 Articles 8, 9, 12 and 13
P-66	A	FANC 20/07/2001 Article 5 FANC 30/11/2011 Article 13 NIRAS 3/06/2014 Article 4
P-67	A	FANC 30/11/2011 Article 13
P-68	A	FANC 30/11/2011 Articles 13 and 14
P-69	C	FANC 30/11/2011 Article 14
P-70	A	FANC 30/11/2011 Article 14
P-71	A	FANC 30/11/2011 Article 14

List of references:

- **FANC 20/07/2001:** Royal Decree of 20 July 2001: General Radioprotection Regulation for the protection of the workers, the population and the environment against the danger of ionising radiations
- **FANC 30/11/2011**: Royal Decree of 30 November 2011 on the safety requirements for nuclear installations
- **FANC 02/12/2021**: Law of 2 December 2021 amending the law of 15 April 1994 on the protection of the population and the environment against the dangers from ionising radiation and on the competences of the Federal Agency for Nuclear Control, concerning the competences of the Agency related to the general rules and acceptance criteria as stated in article 179, § 2, 4°, of the law of 8 Augustus 1980 on the budgetary proposals for 1979–1980
- **FANC 20/11/2022**: Law of 20 November 2022 on the management of soils contaminated with radioactive substances
- **NIRAS 08/08/1980**: Law of August 8, 1980 relating to the budgetary proposals 1979-1980
- **NIRAS 30/03/1981**: Royal Decree of 30 March 1981: Mission and working modalities of NIRAS/ONDRAF
- **NIRAS 18/11/2002**: Royal Decree of 18 November 2002 governing the qualification by NIRAS of facilities for the storage, treatment and conditioning of radioactive waste and also concerns the facilities and equipment (including methodologies) for radiological characterization of radioactive waste.
- **NIRAS 03/06/2014**: Law of 3 June 2014 amending Article 179 of the Law of 8 August 1980 on the budgetary proposals for 1979–1980 for the purposes of transposing Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste into domestic law.
- **NIRAS 07/11/2021**: Law of 7 November amending Article 179 of the Law of 8 August 1980 on the budgetary proposals for 1979–1980
- **NIRAS 28/10/2022**: Royal decree of 28 October 2022 on the first part of the National Policy for the long-term management of high radioactive and long-lived waste and the stepwise process to defining the other parts of this National Policy

Bulgaria

Has not yet officially submitted a national self-assessment for benchmarking.

Czech Republic

The requirements for the management of radioactive waste (radioactive waste from nuclear installations and institutional radioactive waste) are defined in the Atomic Act (Act No.

263/2016 Coll.) and in Decree No. 377/2016 Coll. on the requirements for the safe management of radioactive waste and on the decommissioning of nuclear installations or category III or IV workplaces. The Atomic Act and Decree No. 377/2016 Coll. were drafted taking into account the working version of SRLs published in this report and the preliminary results of the benchmarking were also taken into account when the decree was amended in 2025.

Compliance of the national regulations with the SRLs has been assessed in 2021 with a grade of A or B, with the exception of three SRLs or their parts that were awaiting further consideration by the WGWD (highlighted in red; SRL P-29 on quality assurance in the selection of processing technology, P-61 on ensuring that the product meets specifications and that appropriate records are made and maintained, and P-68 on updating safety cases). This took place at the 54th meeting of the WGWD working group in Trnava, Slovakia, where the WGWD working group agreed to assign an A rating to these SRLs.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	Act No. 263/2016 Coll., Article 5, Section 1, letter b); Article 90, Section 1
P-02	**B**	Decree No. 377/2016 Coll., Article 10, Section 5
P-03	**A**	Act No. 263/2016 Coll., Article 111, Section 1, letter a), e)
P-04	**A**	Act No. 263/2016 Coll., Article 5, Section 5, letter b), Section 7; Article 11, Section 3, letter c); Article 111, Section 1, letter a)
P-05	**A**	Act No. 263/2016 Coll., Article 111 Section 2, letter d)
P-06	**B**	N/A
P-07	**A**	Act No. 263/2016 Coll., Article 5, Section 1, letter b)
P-08	**A**	Decree No. 408/2016 Coll., Article 14, letter a); Article 15, Section 3, letter a);
P-09	**A**	Act No. 263/2016 Coll., Article 5, Section 5, 7; Article 11, Section 3; Article 111, Section 1
P-10	**A**	Act No. 263/2016 Coll., Article 29, Section 1, letter a) Section 3 letter b), c); Article 30, Section 3 – 4
P-11	**A**	Act No. 263/2016 Coll., Article 29, Section 5; Article 49, Section 1, letter a), n)
P-12	**A**	Act No. 263/2016 Coll., Article 48, Section 1; Annex 1, Part 3, letter a) 5
P-13	**A**	Act No. 263/2016 Coll., Article 5, Section 8; Article 49, Section 1 letter j)
P-14	**A**	Act No. 263/2016 Coll., Article 29, Section 3, letter f) Decree No. 408/2016 Coll., Article 14, letter b)
P-15	**A**	Act No. 263/2016 Coll., Article 30, Section 6; Article 49, Section 1, letter a), n)
P-16	**A**	Act No. 263/2016 Coll., Article 30, Section 6; Article 49, Section 1, letter a), n)

# SRL	Current status	Relevant regulations
		Decree No. 408/2016 Coll., Article 12, Section 3, 4
P-17	**A**	Decree No. 408/2016 Coll., Article 14, letter b) 3
P-18	**A**	Decree No. 408/2016 Coll., Article 3, Section 1, letter a), b)
P-19	**A**	- Decree No. 408/2016 Coll., Article 3 Section 1, letter a), b) - Decree No. 408/2016 Coll., Article 3 Section 3 - Decree No. 408/2016 Coll., Article 3 Section 5, letter d), e)
P-20	**A**	Act No. 263/2016 Coll., Article 29, Section 1, letter a); Section 3
P-21	**A**	- Decree No. 408/2016 Coll., Article 14, letter a) - Act No. 263/2016 Coll., Article 29, Section 3, letter c) - Act No. 263/2016 Coll., Article 29, Section 3, letter d) - Act No. 263/2016 Coll., Article 29, Section 3, letter a); Decree No. 408/2016 Coll., Article 4, Section 2, letter a) 2 - Act No. 263/2016 Coll., Article 29, Section 3, letter f); Decree No. 408/2016 Coll., Article 14, letter b) 2 - Act No. 263/2016 Coll., Article 29, Section 3, letter d); Decree No. 408/2016 Coll., Article 14, letter b) 3 - Act No. 263/2016 Coll., Article 29, Section 3, letter c); Decree No. 408/2016 Coll., Article 14, letter b) 4 - Decree No. 408/2016 Coll., Article 14, letter b) 5; letter c)
P-22	**A**	- Act No. 263/2016 Coll., Article 111, Section 1, letter f) Decree No. 377/2016 Coll., Article 10, Section 1, letter a), b) - Decree No. 377/2016 Coll., Article 10, Section 1, letter e), f) - Decree No. 377/2016 Coll., Article 10, Section 1, letter h), i) - Decree No. 377/2016 Coll., Article 10, Section 1, letter a) - Decree No. 377/2016 Coll., Article 10, Section 1, letter n), Section 7 letter a) - Decree No. 377/2016 Coll., Article 10, Section 1, letter a) - Decree No. 377/2016 Coll., Article 7, Section 7, letter b)
P-23	**A**	Decree No. 377/2016 Coll., Article 10, Section 1, letter a) 2
P-24	**A**	Decree No. 377/2016 Coll., Article 9, Section 3, letter a); Section 4, letter a) 2
P-25	**A**	Decree No. 377/2016 Coll., Article 9, Section 3, letter a) 4; Article 10, Section 5, 6 letter a), c)
P-26	**A**	Decree No. 377/2016 Coll., Article 10, Section 1 - Decree No. 377/2016 Coll., Article 10, Section 1, letter a) - Decree No. 377/2016 Coll., Article 9, Section 3, letter d) - Act No. 263/2016 Coll., Article 30, Section 5 - Decree No. 408/2016 Coll., Article 4, Section 2, letter e) 2
P-27	**A**	Act No. 263/2016 Coll., Article 111, Section 1, letter e)
P-28	**A**	Act No. 263/2016 Coll., Article 109, Section 2
P-29	**A**	Act No. 263/2016 Coll., Article 111, Section 1, letter e) Decree No. 329/2017 Coll., Article 4, Section 1, letter d) - Decree No. 377/2016 Coll., Article 2, Section 2, letter c) - Decree No. 329/2017 Coll., Article 17, Section 1 - Decree No. 329/2017 Coll., Article 2, Section 2, letter c) - Decree No. 408/2016 Coll., Article 4, Section 2, letter e) 2

# SRL	Current status	Relevant regulations
P-30	**A**	Act No. 263/2016 Coll., Article 109, Section 2 Decree No. 377/2016 Coll., Article 10, Section 6 letter a) – o)
P-31	**A**	Act No. 263/2016 Coll., Article 111, Section 1, letter e) Decree No. 377/2016 Coll., Article 5, Section 4, letter a) – c), 5
P-32	**A**	- Act No. 263/2016 Coll., Article 45, Section 3, letter a) - Act No. 263/2016 Coll., Article 45, Section 3, letter b) - Act No. 263/2016 Coll., Article 45, Section 3, letter c) Decree No. 329/2017 Coll., Article 48, Section 4, letter a), c) - Act No. 263/2016 Coll., Article 45, Section 3, letter c) - Decree No. 377/2016 Coll., Article 2, Section 1, letter a) – e)
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	Act No. 263/2016 Coll., Article 46, Section 1; Section 49, Section 1, letter b) 1-3 Decree No. 377/2016 Coll., Article 9, Section 1
P-35	**A**	Decree No. 329/2017 Coll., Article 12, Section 2, letter b) Decree No. 377/2016 Coll., Article 2, Section 1, letter a) – e)
P-36	**A**	Act No. 263/2016 Coll., Article 46, Section 3; Section 75, Section 1, letter a), b) Decree No. 183/2006 Coll., Article 119, Section 2
P-37	**A**	Act No. 263/2016 Coll., Section 75, Section 1, letter a); Annex 1, Part 2, letter b) 6 Decree No. 359/2016 Coll., Annex 1, Section 2, letter a) Decree No. 329/2017 Coll., Article 10, Section 1, letter a)
P-38	**A**	Act No. 263/2016 Coll., Article 49, Section 1, letter k) Decree No. 23/2008 Coll., Article 2, Section 1, letter a) – e); Section 2, letter a), b)
P-39	**A**	Act No. 263/2016 Coll., Article 46, Section 2, letter j) Decree No. 377/2016 Coll., Article 2, Section 3, letter a) – i)
P-40	**A**	Decree No. 329/2017 Coll., Article 1 Decree No. 377/2016 Coll., Article 2, Section 3
P-41	**A**	Act No. 263/2016 Coll., Annex 1, Part 3, letter a) 6
P-42	**A**	Act No. 263/2016 Coll., Article 29, letter c); Article 49, Section 1, letter g)
P-43	**A**	Act No. 263/2016 Coll., Article 49, Section 1, letter b) 1, u) Decree No. 377/2016 Coll., Article 2, Section 1, letter a) – e)
P-44	**A**	Decree No. 377/2016 Coll., Article 2, Section 2, letter e) Decree No. 408/2016 Coll., Article 4, letter c); Article 11, Section 1, letter a) – d)
P-45	**A**	Decree No. 377/2016 Coll., Article 2, Section 2, letter c)
P-46	**A**	- Act No. 263/2016 Coll., Article 5, Section 1, letter a); Article 49, Section 1, letter r); Article 153, Section 2; Annex 2, letter b) 7 - Act No. 263/2016 Coll., Article 151, letter a) - Act No. 263/2016 Coll., Article 151, letter a) - Act No. 263/2016 Coll., Article 151, letter h)

# SRL	Current status	Relevant regulations
P-47	A	- Act No. 263/2016 Coll., Article 5, Section 1, letter a); Article 49, Section 1, letter r); Article 153, Section 2; Annex 2, letter b) 7 - Decree No. 359/2016 Coll., Article 5, letter i) - Decree No. 359/2016 Coll., Article 5, letter f); Annex 5, letter b), e), f)
P-48	A	Act No. 263/2016 Coll., Article 156, Section 2, letter h), i); Annex 1, Part 2, letter b) 7; Annex 1, Part 3, letter a) 9 Decree No. 359/2016 Coll., Article 12, Section 6; Article 18, Section 1, letter a), b), Section 2
P-49	A	Act No. 263/2016 Coll., Article 5, Section 7 Decree No. 162/2017 Coll., Article 2, letter i) Decree No. 408/2016 Coll., Article 11, Section 3, letter c)
P-50	A	Decree No. 408/2016 Coll., Article 11, Section 3, letter c), d)
P-51	A	Act No. 263/2016 Coll., Article 9, Section 1, letter h), Section 2 letter c); Annex 1, Part 1, letter h) 1 - 6; Annex 1, Part 2, letter c) 1 - 6
P-52	A	Act No. 263/2016 Coll., Article 9, Section 1, letter h), Section 2 letter c); Annex 1, Part 1, letter h) 1, 4, 5; Annex 1, Part 2, letter c) 1, 4, 5 Decree No. 408/2016 Coll., Article 12, letter b) – d)
P-53	A	Decree No. 377/2016 Coll., Article 2, Section 3 Decree No. 408/2016 Coll., Article 16, letter c)
P-54	A	Decree No. 377/2016 Coll., Article 2, Section 3 Decree No. 408/2016 Coll., Article 16, letter c)
P-55	A	Decree No. 21/2017 Coll., Article 18, Section 2, 3, letter a), b) Decree No. 377/2016 Coll., Article 2, Section 3, letter a) – i), Section 4
P-56	A	Decree No. 21/2017 Coll., Article 22, Section 7 Decree No. 377/2016 Coll., Article 2, Section 4
P-57	A	Decree No. 377/2016 Coll., Article 2, Section 2, letter b); Article 9, Section 3, letter a) 1, 2
P-58	A	Decree No. 377/2016 Coll., Article 2, Section 2, letter e)
P-59	A	Act No. 263/2016 Coll., Article 111, Section 1, letter f) Decree No. 377/2016 Coll., Article 10, Section 1, letter a)
P-60	A	Act No. 263/2016 Coll., Article 24, Section 4; Article 25, Section 1, letter f) Decree No. 377/2016 Coll., Article 2, Section 4, letter c) 1 - 3 Decree No. 408/2016 Coll., Article 14, letter c) 1, d), e)
P-61	A	Decree No. 377/2016 Coll., Article 9, Section 3, letter a) 1, 2
P-62	A	Act No. 263/2016 Coll., Article 111, Section 2, letter d) Decree No. 377/2016 Coll., Article 10, Section 5
P-63	A	Decree No. 377/2016 Coll., Article 2, Section 5, letter a)
P-64	A	Decree No. 377/2016 Coll., Article 2, Section 5, letter b), c)
P-65	A	Act No. 263/2016 Coll., Article 24, Section 1, 2

# SRL	Current status	Relevant regulations
P-66	**A**	Act No. 263/2016 Coll., Annex 1, Part 1, letter a) 2, b) 4, e) 4, f) 4, g) 3; Annex 1, Part 2, letter b); Annex 1, Part 3, letter a) 1 - 3
P-67	**A**	Act No. 263/2016 Coll., Article 48, Section 1 ; Annex 1, Part 2, letter b) 3, 13
P-68	**A**	- Act No. 263/2016 Coll., Article 229, Section 1 Decree No. 408/2016 Coll., Article 2, letter a); Article 4, Section 1 - Decree No. 162/2017 Coll., Article 22, Section 7 - Act No. 263/2016 Coll., Article 5, Section 5, letter a); Article 5, Section 7 Decree No. 162/2017 Coll., Article 13, Section 2, letter i) - Act No. 263/2016 Coll., Article 5, Section 8 letter a) – c); Article 24, Section 4
P-69	**A**	Act No. 263/2016 Coll., Article 69, Section 1, letter a) Decree No. 162/2017 Coll., Article 13, Section 2; Article 15, Section 1, 2
P-70	**A**	Act No. 263/2016 Coll., Article 69, Section 1, letter a) Decree No. 162/2017 Coll., Article 13, Section 1, 2 letter h), i), n); Article 18, letter b) 1 Decree No. 422/2016 Coll., Article 54, Section 1, letter a) – c), d) – f)
P-71	**A**	Act No. 263/2016 Coll., Article 25, Section 1, letter a), b); Article 69, Section 1, letter a) Decree No. 162/2017 Coll., Article 121 Section 5, 6 letter e), f); Article 18, letter b) 1 Decree No. 422/2016 Coll., Article 54, Section 1, letter a), b)

Reference documents:

1. Act No. 263/2016 Coll. of 14 July 2016, Atomic Act
2. Decree No. 377/2016 Coll. of 18 November 2016, on the requirements for the safe management of radioactive waste and on the decommissioning of nuclear installations or category III or IV workplaces
3. Decree No. 378/2016 Coll. of 18 November 2016, on siting of nuclear installation
4. Decree No. 408/2016 Coll., on management system
5. Decree No. 21/2017 Coll., on assurance of nuclear safety of nuclear installations
6. Decree No. 329/2017 Coll., on the requirements for nuclear installation design
7. Decree No. 162/2017 Coll., on requirements for safety assessment according to the Atomic Act
8. Decree No. 359/2016 Coll., on details of ensuring radiation extraordinary event management
9. Decree No. 23/2008 Coll., on technical conditions for fire protection of buildings
10. Decree No. 183/2006 Coll., on site planning and builiding code (Building Act)

Finland

Finland's regulations on radioactive waste treatment and processing are mostly in accordance with the WENRA reference levels. Room for improvement was found in the requirements on the waste acceptance criteria for institutional waste, clarity of inspection programme requirements, and handling of non-radioactive aspects of possible radioactive waste streams. The Finnish nuclear legislation is currently being renewed and the remaining issues are to be solved in the new legislation and regulations.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	A	NEA Sections 6,9,10
P-02	A	NEA Section 30, NED Section 48
P-03	A	NEA Section 9, STUK Y/4/2018 Section 8
P-04	A	NEA Section 7a, 7e, STUK Y/1/2018 Sections 3 and 21
P-05	B	NED Section 116, STUK Y/1/2018 Section 24, STUK Y/4/2018 Section 29, YVL D.4 419
P-06	A	NEA Section 0, STUK Y/4/2018 Section 16
P-07	A	NEA Sections 3 and 9
P-08	A	NEA Section 7a, STUK Y/1/2018 Section 25, STUK Y/4/2016 Section 38, YVL A3. 322
P-09	A	NEA Section 7a, STUK Y/4/2018 Section 25, STUK Y/1/2018 Section 21
P-10	A	NEA Section 9, Y/4/2018 Section 38, STUK Y/1/2018 Section 25
P-11	A	STUK Y/4/2018 Section 38, STUK Y/1/2018 Section 25
P-12	A	NEA Section 7 e
P-13	A	NEA Section 7p, STUK Y/2/2018 Section 10, YVL A.10 701
P-14	A	NEA Section 7j, STUK Y/4/2018 Section 38, STUK Y/1/2018 Section 25, YVL A.3 302, 310, 322, 323,
P-15	A	YVL A.4 301, 302, 308
P-16	A	YVL A.3 508, YVL A.4 306, 316, 331
P-17	A	YVL A.3 505
P-18	A	YVL A.3 301
P-19	A	NEA Section 7a, STUK Y/4/2018 Section 38, STUK Y/1/2018 Section 25, YVL A.3 301, 323,601
P-20	A	STUK Y/4/2018 Section 38, STUK Y/1/2018 Section 25, YVL A.3 301, 328, 605
P-21	A	STUK Y/4/2018 Section 38, Y/1/2018 Section 25, YVL A.3 302, 307, 322, 328, 329, 402, 602, 605, 607, 613
P-22	A	STUK Y/4/2018 Section 29, STUK Y/1/2018 Section 24, YVL D.4 419
P-23	A	Y/1/2018 Section 24, YVL D.4 402, 419, YVL D.1 313

# SRL	Current status	Relevant regulations
P-24	A	Y/1/2018 Section 24, YVL D.4 402, 419, YVL D.1 313
P-25	A	YVL D.4 413, 421, D.1 413
P-26	A	YVL A.3 601, 604, 622, 623, 624
P-27	A	Y/4/2018 Section 16 , Y/1/2018 Section 13, YVL D.4 402
P-28	A	YVL D.4 419, 443, 444, 445, 446
P-29	A	NEA Sections 7 a, 7 c, 27 a, Y/4/2018 Section 38, Y/1/2018 Section 25, YVL D.4 402
P-30	C	YVL D.4 402, 421, 504
P-31	A	Y/4/2018 Section 16 , Y/1/2018 Section 13, YVL D.4 402
P-32	A	NEA Section 7 d, Y/1/2018 Section 12, Y/4/2018 Section 15, Y/1/2018 Section 7 , Y/4/2018 Section 9, YVL D.4 434
~~P-33~~	-	Deleted by decision of WGWD
P-34	A	Y/1/2018 Section 3, YVL B.1 305, 312, 319, 320
P-35	A	NEA Section 7 d, Y/1/2018 Section 11, Y/4/2018 Section 15, YVL D.4 435
P-36	A	Y/4/2018 Section 5, Y/1/2018 Section 4, YVL B.1 311, 348
P-37	A	NEA Section 7 d, Y/1/2018 Sections 3, 14,15, Y/4/2018 Sections 3, 17, 18
P-38	A	YVL B.8 308, 312
P-39	A	NEA Section 7 a, Y/1/2018 Section 4, Y/4/2018 Section 5
P-40	A	Y/1/2018 Section 23, Y/4/2018 Section 27, YVL D.4 434
P-41	A	Y/1/2018 Section 22, Y/4/2018 Section 27, YVL A.1 A22
P-42	A	YVL A.3 605, YVL A.6 502
P-43	A	NEA Sections 7 h, 7 d, YVL D.4 434
P-44	A	YVL A.3 604, 717
P-45	A	NEA Section 7 h, YVL D.4 443
P-46	A	NEA Section 7 p, Y/2/2018 Section 3, 4
P-47	A	NEA Section 7 p, Y/2/2018 Sections 5, 6
P-48	A	NED Section 36, Y/2/2018 Section 8
P-49	A	Y/1/2018 Section 21, Y/4/2018 Section 25
P-50	A	Y/1/2018 Section 21, Y/4/2018 Section 25
P-51	A	NED Section 112, Y/1/2018 Section 19, Y/4/2018 Section 23
P-52	A	NED Section 112, YVL A.1 386, 387, YVL A.3 601, 602, 603, 604, 605
P-53	A	Y/1/2018 Section 23, Y/4/2018 Section 27, YVL A.6 307, YVL YVL A.6 307
P-54	A	Y/1/2018 Section 23, Y/4/2018 Section 27
P-55	C	NEA Section 7 a, Y/1/2018 Section 23, Y/4/2018 Section 27, YVL A.3 612, YVL A.10 516, 610
P-56	C	YVL A.3 704, 708, YVL A.6 511, YVL A.10 606
P-57	A	Y/4/2018 Section 16, Y/1/2018 Section 13, YVL A.3 617, YVL D.4 442, 504, YVL D.5 603a
P-58	C	YVL A.3 319, 617, YVL A.6 306

# SRL	Current status	Relevant regulations
P-59	**B**	STUK Y/4/2018 Section 29, STUK Y/1/2018 Section 24, YVL D.4 419, 420, 421
P-60	**A**	YVL A.3 609, YVL D.4 402, YVL D.4 421, 422, YVL A.10 302
P-61	**A**	YVL A.3 319, 617, YVL D.4 421
P-62	**A**	YVL D.4 420, 421
P-63	**A**	NEA Sections 7 a, 7 c, 27 a, Y/4/2018 Section 38, Y/1/2018 Section 25, YVL D.4 402, Y/4/2018 Section 3, Y/1/2018 Section 3
P-64	**A**	NEA Sections 7 a, 7 c, 27 a, Y/4/2018 Section 38, Y/1/2018 Section 25, YVL D.4 402, Y/4/2018 Section 3, Y/1/2018 Section 3
P-65	**A**	NED Section 36, Y/1/2018 Section 3, Y/4/2018 Section 3
P-66	**A**	NED Sections 35, 36, Y/1/2018 Section 3, Y/4/2018 Section 3
P-67	**A**	NEA Section 7 c, NED Section 36, Y/4/2018 Section 9, Y/1/2018 Section 7
P-68	**A**	NEA Sections 7 a, 7 e, 7 r, Y/4/2018 & Y/1/2018 Section 3, YVL A.1 353, 387
P-69	**A**	NEA Section 7 e
P-70	**A**	YVL A.1 353
P-71	**A**	YVL A.1 353

List of references:

- Nuclear energy act (NEA)
- Nuclear energy decree (NED)
- STUK Y/1/2018 Radiation and Nuclear Safety Authority Regulation on the Safety of a Nuclear Power Plant
- STUK Y/2/2018 Radiation and Nuclear Safety Authority Regulation on the Emergency Arrangements of a Nuclear Power Plant
- STUK Y/4/2018 Radiation and Nuclear Safety Authority Regulation on the Safety of Disposal of Nuclear Waste
- YVL A.1 Regulatory oversight of safety in the use of nuclear energy
- YVL A.3 Leadership and management for safety
- YVL A.4 Organisation and personnel of a nuclear facility
- YVL A.10 Operating experience feedback of a nuclear facility
- YVL B.1 Safety design of a nuclear power plant
- YVL B.8 Fire protection at a nuclear facility
- YVL D.1 Regulatory control of nuclear safeguards
- YVL D.3 Handling and storage of nuclear fuel
- YVL D.4 Predisposal management of low and intermediate level nuclear waste and decommissioning of a nuclear facility
- YVL D.5 Disposal of nuclear waste

France

The main principles of waste conditioning operations are laid down in Article 6.7 of the Ministerial Decree of 7 February 2012 on general rules regarding nuclear facilities.

These principles concern the need to package waste according to the subsequent management methods. Waste destined for existing disposal facilities must comply with the Waste Acceptance Criteria (WAC) of these facilities. In the case of waste for which a disposal facility is under development, the processing specifications are submitted to the ASNR for approval. Waste that does not comply with the WAC of the corresponding disposal facility must be taken back and reconditioned as soon as possible (Article 6.8 of the Ministerial Order of 7 February 2012).

In 2017, the ASN published a specific resolution on processing and conditioning activities (resolution 2017-DC-0587 of 3 March 2017), which specifies the requirements relating to the conditioning standard, the link with the safety case, the procedure to be followed depending on whether the waste has a final disposal solution or not, and the obligations of the operators of disposal facilities to monitor the activities of producers of radioactive waste packages.

All SRLs are implemented in French legislation. Only SRL P-35 is not fully in line with the ASNR practice/position, and France will propose an amendment for the next version.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	Environment code
P-02	**A**	Environment code and Resolution n° 2017-DC-0587
P-03	**A**	Ministerial order of 7th February 2012
P-04	**A**	Ministerial order of 7th February 2012
P-05	**A**	Environment code & Ministerial order of 7th February 2012
P-06	**A**	Resolution 2017-DC-0587
P-07	**A**	Environment code
P-08	**A**	Ministerial order of 7th February 2012
P-09	**A**	Ministerial order of 7th February 2012
P-10	**A**	Ministerial order of 7th February 2012
P-11	**A**	Ministerial order of 7th February 2012
P-12	**A**	Resolution 2015-DC-0532
P-13	**A**	Ministerial order of 7th February 2012 & Resolution 2017-DC-0592
P-14	**A**	Ministerial order of 7th February 2012
P-15	**A**	Ministerial order of 7th February 2012 & Resolution n° 2017-DC-0587

# SRL	Current status	Relevant regulations
P-16	A	Ministerial order of 7th February 2012 & Resolution 2017-DC-0587
P-17	A	Ministerial order of 7th February 2012 & Resolution 2017-DC-0587
P-18	A	Ministerial order of 7th February 2012
P-19	A	Ministerial order of 7th February 2012
P-20	A	Ministerial order of 7th February 2012
P-21	A	Ministerial order of 7th February 2012
P-22	A	Ministerial order of 7th February 2012 & Resolution 2017-DC-0587 & Resolution 2015-DC-0532
P-23	A	Ministerial order of 7th February 2012
P-24	A	Ministerial order of 7th February 2012
P-25	A	Ministerial order of 7th February 2012
P-26	A	Resolution 2017-DC-0587
P-27	A	Resolution 2017-DC-0587
P-28	A	Resolution 2017-DC-0587
P-29	A	Resolution 2015-DC-0532
P-30	A	Resolution 2017-DC-0587
P-31	A	Resolution 2017-DC-0587
P-32	A	Ministerial order of 7th February 2012
~~P-33~~	-	Deleted by decision of WGWD
P-34	A	Ministerial order of 7th February 2012 & Resolution 2015-DC-0532
P-35	C	
P-36	A	Ministerial order of 7th February 2012
P-37	A	Ministerial order of 7th February 2012
P-38	A	Ministerial order of 7th February 2012
P-39	A	Ministerial order of 7th February 2012
P-40	A	Ministerial order of 7th February 2012
P-41	A	Ministerial order of 7th February 2012
P-42	A	Environment code and Ministerial order of 7th February 2012
P-43	A	Ministerial order of 7th February 2012
P-44	A	Resolution 2017-DC-0587
P-45	A	Ministerial order of 7th February 2012
P-46	A	Environment code and Ministerial order of 7th February 2012
P-47	A	Environment code and Ministerial order of 7th February 2012 and Resolution 2017-DC-0587
P-48	A	Ministerial order of 7th February 2012
P-49	A	Ministerial order of 7th February 2012
P-50	A	Ministerial order of 7th February 2012
P-51	A	Resolution 2017-DC-0587

# SRL	Current status	Relevant regulations
P-52	**A**	Ministerial order of 7th February 2012
P-53	**A**	Ministerial order of 7th February 2012
P-54	**A**	Resolution n° 2015-DC-0532
P-55	**A**	Ministerial order of 7th February 2012
P-56	**A**	Ministerial order of 7th February 2012
P-57	**A**	Resolution 2017-DC-0587 and Ministerial order of 7th February 2012
P-58	**A**	Resolution 2017-DC-0587 and Ministerial order of 7th February 2012
P-59	**A**	Ministerial order of 7th February 2012 & Resolution 2017-DC-0587 & Resolution 2015-DC-0532
P-60	**A**	Ministerial order of 7th February 2012 & Resolution 2017-DC-0587
P-61	**A**	Resolution 2017-DC-0587
P-62	**A**	Resolution 2017-DC-0587
P-63	**A**	Resolution 2017-DC-0587
P-64	**A**	Resolution 2017-DC-0587
P-65	**A**	Resolution n° 2015-DC-0532
P-66	**A**	Environement code
P-67	**A**	Ministerial order of 7th February 2012
P-68	**A**	Ministerial order of 7th February 2012 and Environement code
P-69	**A**	Environement code
P-70	**A**	Environement code
P-71	**A**	Environement code

List of references:

1. Environment code
2. Order of 7 February 2012 setting the general rules relative to basic nuclear installations
3. ASN resolution 2017-DC-0587 of 23rd March 2017 concerning the packaging of radioactive waste and the conditions for acceptance of radioactive waste packages in disposal BNIs
4. ASN Resolution 2015-DC-0532 of 17th November 2015 relative to the safety analysis report for the basic nuclear installations
5. ASN Resolution 2015-DC-0508 of 21th april 2015 relative to waste management study and waste assessment produced in the basic nuclear installations
6. ASN Resolution n ° 2017-DC-0592 of the Nuclear Safety Authority of 13 June 2017 on the obligations of the operators of basic nuclear installations in the field of emergency preparedness and management and the content of the internal emergency plan

Germany

Early in the process of WGWD's engagement with treatment and conditioning, which resulted in the formulation of this report's Safety Reference Levels, Germany initiated a comprehensive internal regulatory review to identify possible discrepancies between national regulations and WENRA requirements. This was mainly necessary to formalize requirements that had historically been implemented through direct interaction between the regulatory body and operators, i.e. licensing and supervision, elevating them to a regulatory level that meets WENRA's formal review criteria.

Following this internal review, Germany asked its Nuclear Waste Management Commission (ESK), an advisory body to the Federal Government, to develop additional guidelines for radioactive waste processing in Germany. These guidelines have been published in December 2020; they have been adopted by the Federal Government and published in the German Federal Gazette in 2021 and have thereby become binding and enforceable in licensing and supervision by the regulatory body.

Based on the German regulatory framework including the newly adopted ESK guidelines, Germany submitted its self-assessment to WGWD in 2021. WGWD conducted an online pre-benchmarking in early 2022, and the results were discussed and confirmed at WGWD 48 in September 2022, completing the German benchmarking process. WGWD found full compliance between German regulations and the requirements defined in WGWD's processing SRLs. The results and referenced regulatory documents are presented in the table below.

Exception: Spent fuel treatment and conditioning

Germany has concluded its phase out of commercial nuclear energy production with the shutdown of its last three operating NPPs in April 2023. The spent fuel that has accrued during Germany's era of nuclear energy production has been loaded into dual-purpose casks and is kept under safe storage in dedicated storage facilities. A small amount of recently removed spent fuel remains in the plants' spent fuel pools for further decay until they can be loaded into casks and handed over into storage. It is not planned to perform any further processing of the spent fuel elements in Germany. Against this background the German benchmarking in this report only addresses the treatment and conditioning of other radioactive waste.

Radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	BGB, AtG, EntsorgÜG, AtEV,
P-02	**B**	AtEV, EntsorgÜG, StrlSchV
P-03	**A**	AtG, AtEV, ESK-LL K
P-04	**A**	ESK-LL K

# SRL	Current status	Relevant regulations
P-05	**A**	AtEV
P-06	**A**	AtEV, ESK-LL K
P-07	**A**	AtG
P-08	**A**	AtG, StrlSchG
P-09	**A**	ESK-LL K
P-10	**A**	AtG, StrlSchG, ESK-LL K
P-11	**A**	AtG
P-12	**A**	AtG, StrlSchG, AtVfV
P-13	**A**	AtG, AtSMV, StrlSchV
P-14	**A**	AtG, ESK-LL K
P-15	**A**	AtG, StrlSchG, StrlSchV
P-16	**A**	AtG, StrlSchV, ESK-LL K
P-17	**A**	AtG, ESK-LL K
P-18	**A**	AtG, ESK-LL K
P-19	**A**	ESK-LL K
P-20	**A**	ESK-LL K
P-21	**A**	ESK-LL K
P-22	**A**	StrlSchG, AtEV, ESK-LL K
P-23	**A**	AtEV
P-24	**A**	AtEV
P-25	**A**	AtEV
P-26	**A**	ESK-LL K
P-27	**A**	EntsorgÜG, AtEV, ESK-LL ZL
P-28	**A**	ESK-LL K
P-29	**A**	StrlSchG, ESK-LL K
P-30	**A**	AtEV, ESK-LL K
P-31	**A**	AtEV, ESK-LL K, ESK-LL ZL
P-32	**A**	ESK-LL K
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	ESK-LL K
P-35	**A**	ESK-LL K
P-36	**A**	AtG, StrlSchG, ESK-LL K
P-37	**A**	StrlSchV, ESK-LL K
P-38	**A**	ESK-LL K
P-39	**A**	StrlSchV, ESK-LL K
P-40	**A**	AtG, StrlSchG, StrlSchV, ESK-LL K
P-41	**A**	AtG, ESK-LL K
P-42	**A**	AtG, ESK-LL K
P-43	**A**	AtG, StrlSchG, ESK-LL K
P-44	**A**	ESK-LL K, ESK-LL ZL
P-45	**A**	AtEV
P-46	**A**	AtG, StrlSchV, ESK-LL K
P-47	**A**	AtG, ESK-LL K
P-48	**A**	AtG, ESK-LL K

# SRL	Current status	Relevant regulations
P-49	**A**	ESK-LL K
P-50	**A**	ESK-LL K
P-51	**A**	AtG, StrlSchG, AtEV
P-52	**A**	AtG, StrlSchG, AtVfV
P-53	**A**	StrlSchV, ESK-LL K
P-54	**A**	ESK-LL K
P-55	**A**	ESK-LL K
P-56	**A**	ESK-LL K
P-57	**A**	AtEV, ESK-LL K
P-58	**A**	ESK-LL K
P-59	**A**	AtEV
P-60	**A**	ESK-LL K
P-61	**A**	EntsorgÜG, AtEV, ESK-LL K
P-62	**A**	AtEV
P-63	**A**	ESK-LL K
P-64	**A**	StrlSchG, AtVfV, ESK-LL K
P-65	**A**	ESK-LL K
P-66	**A**	ESK-LL K
P-67	**A**	StrlSchG, StrlSchV, ESK-LL K
P-68	**A**	ESK-LL K
P-69	**A**	AtG
P-70	**A**	ESK-LL K
P-71	**A**	AtG, ESK-LL K

Referenced laws, ordinances and regulations:

AtG — *Atomic Energy Act* (Atomgesetz – Gesetz über die friedliche Verwendung der Kernenergie und den Schutz gegen ihre Gefahren in der Fassung vom 15. Juli 1985)

BGB — *Code of Civil Law* (Bürgerliches Gesetzbuch in der Fassung vom 2. Januar 2002)

EntsorgÜG — *Waste Management Transfer Act* (Entsorgungsübergangsgesetz – Gesetz zur Regelung des Übergangs der Finanzierung- und Handlungspflichten für die Entsorgung radioaktiver Abfälle der Betreiber von Kernkraftwerken vom 27. Januar 2017)

StrlSchG — *Radiation Protection Act* (Strahlenschutzgesetz – Gesetz zum Schutz vor der schädlichen Wirkung ionisierender Strahlung vom 27. Juni 2017)

AtEV — *Nuclear Waste Management Ordinance* (Atomrechtliche Entsorgungsverordnung – Verordnung über Anforderungen und Verfahren zur Entsorgung radioaktiver Abfälle vom 29. November 2018)

AtSMV — *Nuclear Safety Officer and Reporting Ordinance* (Atomrechtliche Sicherheitsbeauftragten- und Meldeverordnung – Verordnung über den kerntechnischen Sicherheitsbeauftragten und über die Meldung von Störfällen und sonstigen Ereignissen vom 14. Oktober 1992)

AtVfV — *Nuclear Licensing Procedure Ordinance* (Atomrechtliche Verfahrensverordnung – Verordnung über das Verfahren bei der Genehmigung von Anlagen nach § 7 des Atomgesetzes in der Fassung vom 3. Februar 1995)

StrlSchV — *Radiation Protection Ordinance* (Strahlenschutzverordnung – Verordnung über den Schutz vor Schäden durch ionisierende Strahlen vom 29. November 2018)

ESK-LL K — *ESK guidelines for the processing of radioactive waste with negligible heat generation* (Leitlinien für die Konditionierung von radioaktiven Abfällen mit vernachlässigbarer Wärmeentwicklung vom 10.12.2020)

ESK-LL ZL — *ESK guidelines for the storage of radioactive waste with negligible heat generation* (Leitlinien für die Zwischenlagerung von radioaktiven Abfällen mit vernachlässigbarer Wärmeentwicklung, revidierte Fassung vom 10. Juni 2013)

Hungary

In Hungary, different legal regulations apply to nuclear facilities (1/2022 HAEA Decree) and to radioactive waste repositories (9/2022 HAEA Decree). Since radioactive waste treatment and conditioning are carried out in both cases, during the self-assessment the safety reference levels (SRLs) of the Processing Report were assessed against both regulations.

The full Hungarian self-assessment was submitted in July 2025, and the online pre-benchmark exercise was conducted in three rounds in January and February 2026. This process demonstrated that the current Hungarian regulatory framework largely covers the requirements set by the SRLs. Where significant non-compliances are identified, they are mainly related to the issue of ownership. Similar issues have already arisen in the benchmarking exercises of some other countries.

The concept of “ownership” is not explicitly used in the Hungarian framework, discussions regarding these SRLs are still ongoing. This issue will be discussed at the WGWD-55 plenary meeting (P-01-04), along with the assessing of those safety reference levels for which an “A” rating has not yet been achieved (P-22; P-46; P-58; P-63; P-64).

No compliance has been made for the treatment and conditioning of spent fuels, because in Hungary there is only interim storage.)

Radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	Act on Atomic Energy; 1/2022 HAEA Decree; 3/2022 HAEA Decree 9/2022 HAEA Decree;
P-02	**B**	Act on Atomic Energy; 2/2022 HAEA Decree; 3/2022 HAEA Decree 9/2022 HAEA Decree;
P-03	**B**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-04	**A**	Act on Atomic Energy, 1/2022 HAEA Decree; 9/2022 HAEA Decree;
P-05	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree

# SRL	Current status	Relevant regulations
P-06	**B**	not applicable
P-07	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-08	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-09	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-10	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-11	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-12	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-13	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-14	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-15	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-16	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-17	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-18	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-19	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-20	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-21	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-22	**A**	1/2022 HAEA Decree; 3/2022 HAEA Decree; 9/2022 HAEA Decree; 309/2014. Govt Decree
P-23	**A**	1/2022 HAEA Decree; 3/2022 HAEA Decree; 9/2022 HAEA Decree
P-24	**A**	1/2022 HAEA Decree; 3/2022 HAEA Decree; 9/2022 HAEA Decree
P-25	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-26	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-27	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-28	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-29	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-30	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-31	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-32	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree; Act C of 2023; 280/2024
P-35	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-36	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-37	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-38	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-39	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-40	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-41	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-42	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-43	**A**	1/2022 HAEA Decree; 9/2022 HAEA Decree

# SRL	Current status	Relevant regulations
P-44	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-45	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-46	A	1/2022 HAEA Decree; 9/2022 HAEA Decree, Act on Atomic Energy
P-47	A	1/2022 HAEA Decree; 2/2022 HAEA Decree; 9/2022 HAEA Decree; Act on Atomic Energy
P-48	A	1/2022 HAEA Decree; 9/2022 HAEA Decree; Act on Atomic Energy
P-49	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-50	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-51	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-52	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-53	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-54	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-55	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-56	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-57	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-58	A	9/2022 HAEA Decree
P-59	A	1/2022 HAEA Decree; 3/2022 HAEA Decree; 9/2022 HAEA Decree
P-60	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-61	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-62	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-63	B	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-64	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-65	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-66	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-67	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-68	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-69	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-70	A	1/2022 HAEA Decree; 9/2022 HAEA Decree
P-71	A	1/2022 HAEA Decree; 9/2022 HAEA Decree

.

Legislative references	Abbreviations used in the table
Act CXVI of 1996 on Atomic Energy	Act on Atomic Energy
HAEA Decree No. 1/2022. (IV. 29.) on the nuclear safety requirements of nuclear facilities and related regulatory activities	1/2022 HAEA Decree

Legislative references	Abbreviations used in the table
(Former: Government decree 118/2011 on the nuclear safety requirements of nuclear facilities and on related regulatory activities)	
"HAEA Decree No. 9/2022. (XII. 29.) on the safety requirements of interim storage and final disposal facilities of radioactive waste and the related regulatory activities	9/2022 HAEA Decree
(Former: Government decree 155/2014 on the safety requirements of interim storage and final disposal facilities of radioactive waste and the related regulatory activities)	
HAEA Decree 2/2022. (IV. 29.) on the protection against ionising radiation and the corresponding licensing, reporting (notification) and inspection system	2/2022 HAEA Decree
HAEA Decree 3/2022 on transport, telecommunication and energy on the rules of accountancy for and control of radioactive materials, and on the corresponding data provisions	3/2022 HAEA Decree
(Former Ministerial Decree 11/2010. (III.4.) KHEM issued by the Minister of transport, telecommunication and energy on the rules of accountancy for and control of radioactive materials, and on the corresponding data provisions)"	
30/2023. (XII. 14.) Parliamentary decision on the national policy on spent fuel and radioactive waste management OGY Decision 21/2015 (4 May 2015)	30/2023. (XII. 14.)
Govt. Decree 34/2009. (II. 20.) on licensing of the transboundary movement of radioactive waste and spent fuel	Govt. Decree 34/2009
"Act C of 2023 on Hungarian Architecture	Act C of 2023
Government Decree 280/2024 (IX. 30.) on the Basic Regulations of Settlement Planning and Building Requirements	280/2024

Italy

During the 51st WGWD Italy presented the benchmarking of the Italian legal system to the WGWD safety reference levels for processing.

ISIN, which regulates the use of nuclear energy in Italy and gives detailed guidance in the form of legally binding technical guides according to the article 236 of Legislative Decree n. 101/2020, published in January 2023 the Technical Guide n. 33 - “Safety and radiation

protection criteria for radioactive waste management", to comply with the processing safety reference levels.

This Technical Guide:

- defines the general criteria that must be met, according to a graded approach, for the proper management of radioactive waste, taking into account the nature and radiological risk associated with each type of waste and their classification in accordance with the Decree 7th August 2015;
- establishes the minimum requirements for the conditioning of radioactive waste for storage and disposal, according to waste classification and type of conditioning, in accordance with the Decree 7th August 2015;
- defines the general criteria that must be met, according to a graded approach, for the proper management of radioactive waste, taking into account the nature and radiological risk associated with each type of waste and their classification in accordance with the Decree 7th August 2015;
- establishes the minimum requirements for the conditioning of radioactive waste for storage and disposal, according to waste classification and type of conditioning, in accordance with the Decree 7th August 2015.

The implementation of the remaining C-ratings processing safety reference levels will be completed by the publication of a specific Technical Guide foreseen in 2026, as described in the Technical Guide n. 33 at point 1.4 ("safety and radiation protection criteria for treatment and conditioning facilities will be established by specific technical guide to be issued by ISIN").

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	Technical Guide ISIN n. 33
P-02	**A**	Legislative Decree No. 101/2020
P-03	**A**	Technical Guide ISIN n. 33
P-04	**A**	Technical Guide ISIN n. 33
P-05	**A**	Technical Guide ISIN n. 33
P-06	**A**	Technical Guide ISIN n. 33
P-07	**A**	Legislative Decree No. 101/2020 and Act No. 1860/62
P-08	**A**	Legislative Decree No. 101/2020 and Technical Guide ISIN n. 33
P-09	**A**	Technical Guide ISIN n. 33

# SRL	Current status	Relevant regulations
P-10	A	Technical Guide ISIN n. 33
P-11	A	Legislative Decree No. 101/2020 , Technical Guide ISIN n. 33 and Decree of the President of the Republic 30 December 1970, No. 1450
P-12	C	
P-13	A	Legislative Decree No. 101/2020
P-14	A	Legislative Decree No. 101/2020 and Technical Guide ISIN n. 33
P-15	A	Legislative Decree No. 101/2020
P-16	A	Legislative Decree No. 101/2020, Technical Guide ISIN n. 33 and Act No. 1860/62
P-17	A	Technical Guide ISIN n. 33
P-18	A	Technical Guide ISIN n. 33
P-19	A	Technical Guide ISIN n. 33
P-20	A	Technical Guide ISIN n. 33
P-21	A	Technical Guide ISIN n. 33
P-22	C	
P-23	A	Technical Guide ISIN n. 33
P-24	A	Technical Guide ISIN n. 33
P-25	A	Technical Guide ISIN n. 33
P-26	A	Technical Guide ISIN n. 33
P-27	A	Technical Guide ISIN n. 33
P-28	A	Technical Guide ISIN n. 33
P-29	A	Technical Guide ISIN n. 33
P-30	A	Technical Guide ISIN n. 33
P-31	A	Technical Guide ISIN n. 33
P-32	C	
~~P-33~~	-	Deleted by decision of WGWD
P-34	C	
P-35	C	
P-36	C	
P-37	C	
P-38	C	
P-39	C	
P-40	C	
P-41	C	
P-42	C	
P-43	C	
P-44	C	
P-45	C	
P-46	C	
P-47	C	

# SRL	Current status	Relevant regulations
P-48	A	Legislative Decree No. 101/2020
P-49	C	
P-50	C	
P-51	C	
P-52	C	
P-53	C	
P-54	C	
P-55	C	
P-56	C	
P-57	A	Technical Guide ISIN n. 33
P-58	C	
P-59	A	Legislative Decree No. 101/2020 and Technical Guide ISIN n. 33
P-60	A	Technical Guide ISIN n. 33
P-61	A	Technical Guide ISIN n. 33
P-62	A	Technical Guide ISIN n. 33
P-63	C	
P-64	C	
P-65	C	
P-66	C	
P-67	C	
P-68	C	
P-69	C	
P-70	C	
P-71	C	

List of references:

1. Technical Guide n. 33 – ISIN “Safety and radiation protection criteria for radioactive waste management”;

2. Legislative Decree No. 101/2020 - "IMPLEMENTATION OF DIRECTIVE 2013/59/EURATOM, WHICH ESTABLISHES BASIC SAFETY STANDARDS RELATING TO PROTECTION AGAINST THE DANGERS ARISING FROM EXPOSURE TO IONIZING RADIATION, AND REPEALING DIRECTIVES 89/618/EURATOM, 90/641/EURATOM, 96/29/EURATOM, 97/43/EURATOM AND 2003/122 / EURATOM AND REORGANIZATION OF THE SECTOR LEGISLATION IN IMPLEMENTATION OF ARTICLE 20, PARAGRAPH 1, LETTER A), OF THE LAW OF 4 OCTOBER 2019, N. 117";

3. Act 31 December 1962 No. 1860 - "Peaceful uses of nuclear energy";

4. Decree of the President of the Republic 30 December 1970, No. 1450 “Regulation for the recognition of suitability for the technical operation of nuclear plants”

Lithuania

The Lithuanian self-assessment was first presented at the 50th WGWD meeting. During the 54th WGWD meeting, Lithuania presented the final updates for the remaining SRLs to be benchmarked. The Lithuanian framework demonstrates compliance with the processing SRL.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	LNE Art. 5 (p.2) and 25 (p.1(1-5)). BSR-3.1.2 Art. 13
P-02	**A**	BSR-3.1.2 Art. 14
P-03	**B**	unclear obligations to the waste owner. Ignalina NPP is the state owner and licensee of RW in both cases. No changes.
P-04	**A**	LMRW Art. 10 (p.1(1-4)). MoE Art. 4 (p. 4). BSR-3.1.2 Art. 9
P-05	**A**	LMRW Art. 9 (p. 1). BSR-3.1.2 Art. 187
P-06	**A**	LNE Art. 5 (p.2). BSR-3.1.2 Art. 13
P-07	**A**	LNS Art. 16. LNE Art. 30. LMRW Art. 9 (p.1,3,4) and Art. 10 (p.1)
P-08	**A**	LNS Art. 18 and 17 (p.2(5)). BSR-1.4.1 Art. 5,9,25 and 40 (p.1(2))
P-09	**A**	BSR-3.1.2 Art. 78^{1}, 78^{2}, 78^{4}
P-10	**A**	LNS Art. 17 (p.2(5)). BSR-1.4.1 Art. 5,13, 15 and 37
P-11	**A**	BSR-1.4.1 Art. 66-70 (p.1,2). BSR-3.1.2 Art. 12 (p.4)
P-12	**A**	LNS Art. 30 (p.1,3) and 32 (p. 2,4)
P-13	**A**	LNS Art. 36 (p.2). BSR-1.3.1 Art. 6 (p.1-7). BSR-3.1.1 Art. 125. BSR-3.1.2 (p.191)
P-14	**A**	LNS Art. 18. BSR-1.4.1 Art. 3 (p.4), 15, 40 (p.1(3)) and 82
P-15	**A**	See P-11
P-16	**A**	BSR-1.4.1 Art. 67, 68 and 70 (p.2). BSR-1.4.3 Art. 7, 22, 23 (p.1,2)
P-17	**A**	BSR-1.4.1 Art. 15, 37, 70(p.1), 82, 86 (p.6,8), 87 and 88
P-18	**A**	LNS Art. 17 (p.2(5)). BSR-1.4.1 Art. 5, 39, 51 and 62
P-19	**A**	LNS Art. 22 (p.1 (6,7)). BSR-1.4.1 Art. 3 (p.1), 8,13,16 and 39
P-20	**A**	BSR-1.4.1 Art. 13, 39, 77, 80 and 81
P-21	**A**	BSR-3.1.2 Art. 91 (p.6,7), 179 (p.2), 182 (p.8) and annex 4 (p.18). BSR-1.4.1 Art. 11-13, 37,39,40 (p.1,2), 42 (p.1), 48, 50 and 92
P-22	**A**	BSR-3.1.2 Art. 187 (p.2-6)
P-23	**A**	LNE Art. 2 (p.1). BSR-3.1.2 Art. 182 (p.3), 183 and 187
P-24	**A**	BSR-3.1.2 Art. 187 and 188
P-25	**A**	BSR-3.1.2 Art. 79 and 179 (p. 4)
P-26	**A**	BSR-3.1.2 Art. 10 (p.2), 89, 91 (p. 6,7), 92, 179 (p.2-7), 181, 182 (p.8) and annex 4 (p. 18). BSR-1.4.1 Art. 40 (p.2) and 92

# SRL	Current status	Relevant regulations
P-27	A	BSR-3.1.2 Art. 95
P-28	A	BSR-3.1.2 Art. 94
P-29	A	BSR-3.1.2 Art. 12 (p.1-3), 179, 181 (p.5), 182 (p.8) and annex 4 (p.18)
P-30	A	BSR-3.1.2 Art. 91
P-31	A	BSR-3.1.2 Art. 12 (p.1), 88 and 96
P-32	A	BSR-3.1.2 Art. 49 (p. 1-4)
~~P-33~~	-	Deleted by decision of WGWD
P-34	A	BSR-3.1.2 Art. 17, 52, 138 and annex 4 (p.8). BSR-3.1.1 Art. 14 (p.2), 33 and 34 (p.11)
P-35	A	BSR-1.8.7 Art. 10 (p.23). BSR-3.1.2 Art. 21, 157 and 190
P-36	A	LNS Art. 35 (p.2). BSR-3.1.1 Art. 72 and 73. BSR-3.1.2 Art. 17 and annex 4 (p.3)
P-37	A	BSR-3.1.2 Art. 16 (p.4), 25 and 31
P-38	A	BSR-3.1.2 Art. 155 and 157. BSR-1.7.1 Art. 8 (p.1-3)
P-39	A	BSR-3.1.2 Art. 22 and 23
P-40	A	BSR-3.1.2 Art. 57
P-41	A	BSR-3.1.2 Art. 52 and annex 4 (p. 9)
P-42	A	LMRW Art. 17 (p.2 (2)). BSR-3.1.2 Art. 74 and 75
P-43	A	LNS Art. 2 (p. 2) and 15. BSR-3.1.2 Art. 11, 12 (p.2), 15, 190 and 191
P-44	A	BSR-3.2.1 Art. 38 and 40. BSR-3.1.2 Art. 149, 151 and 152
P-45	A	BSR-3.1.2 Art. 51 and 127
P-46	A	BSR-1.3.1 Art. 6 (p. 1-7), 7, 8, 9 (p.6), 11, 12 (p.4), 13, 14 (p.1,3), 17 (p.3), 23 (p.11), 24 (p.1), 25 (p.2,4,5), 52 (p.3(5))
P-47	A	LNS Art. 38 (p.5). BSR-1.3.1 Art. 7, 8
P-48	A	LNS Art. 38 (p.4). LNE Art. 15 (p.12). BSR-1.3.1 Art. 25 (p. 13), 61, 62 (p.1-5), 63
P-49	A	LMRW Art. 17 (p.2 (5)). BSR-3.1.2 Art. 12 (p.3). BSR-1.4.4 Art. 4. BSR-1.4.1 Art. 78 (p.9)
P-50	A	BSR-1.4.4 Art. 5 (p.1), 12, 17. BSR-3.1.2 Art. 78[1], and 78[2]
P-51	A	BSR-1.4.1 Art. 78 (p.10). BSR-3.1.2 Art. 80[1]. BSR-1.8.2 Art. 4, 6, 10, 31 and 37
P-52	A	BSR-1.8.2 Art. 6, 17 and 74
P-53	A	BSR-1.8.6 Art. 2, 5 (p.2) and 12. BSR-3.1.2 Art. 73
P-54	A	BSR-3.1.2 Art. 73
P-55	A	BSR-3.1.2 Art. 73. BSR-1.8.6 Art. 19, 20 (p.7), 22 and 23
P-56	A	BSR-1.8.6 Art. 16. BSR-1.4.1 Art. 44
P-57	A	BSR-3.1.2 Art. 92
P-58	A	BSR-3.1.2 Art. 149 and 152
P-59	A	BSR-3.1.2 Art. 182 (p.1) and 187
P-60	A	BSR-3.1.2 Art. 148 and 182 (p.5)
P-61	A	BSR-3.1.2 Art. 92 and 182 (p.5)

# SRL	Current status	Relevant regulations
P-62	**A**	BSR-3.1.2 Art. 188
P-63	**A**	BSR-3.1.2 Art. 156[1]
P-64	**A**	BSR-3.1.2 Art. 156[1]
P-65	**A**	BSR-3.1.2 Art. 153, 156 and 161
P-66	**A**	BSR-3.1.2 Art. 6, 153, 156, 165, 179 (p.1) and annex 4 (p. 2,6,7,8,14,17)
P-67	**A**	BSR-3.1.2 Art. 49 (p.2), 158, 160, 169 and annex 4 (p.9)
P-68	**A**	LNS Art. 31. LMRW Art. 17 (p.2(1)). BSR-3.1.2 Art. 161-163
P-69	**A**	LNS Art. 32 (p.7[1] (1-3)). BSR-3.1.2 Art. 175
P-70	**A**	LNS Art. 5 (p.1(4)) and 32 (p.1,2). BSR-1.4.1 Art. 40 (p.2). BSR-1.8.2 Art. 16 (p.5). BSR-3.1.2 Art. 178 and annex 5 (p.4(3,7), 5,7),
P-71	**A**	LNS Art. 32 (p.7(2)). BSR-3.1.2 Art. 78[1], 78[2], 78[5] and 175

List of references:

- BSR 3.1.2 - Nuclear Safety Requirements BSR-3.1.2-2017, Regulation on the Pre-disposal Management of Radioactive Waste at the Nuclear Facilities (2017)
- BSR-3.2.1 - Radioactive Waste Acceptance Criteria for Near Surface Disposal Facilities, 2015
- BSR 3.1.1 - Nuclear Safety Requirements BSR-3.1.1-2016, The General Requirements for Dry Type Storage for Spent Nuclear Fuel (2016)
- LMRW - Law on the Management of Radioactive Waste, 1999.
- LNE - Law on Nuclear Energy, 1996.
- LNS - Law on Nuclear Safety, 2011.
- MoE - Ministry of Energy Order No. 1-6, Description of the Procedure for Preparation of the Radioactive Waste Management Development Program,
- BSR-1.4.1 - Nuclear Safety Requirements BSR-1.4.1-2016, Management system, 2016
- BSR-1.3.1 - Enforcement of Emergency Preparedness in Nuclear Installations, 2020
- BSR-1.8.2-2015 – Nuclear Safety Requirements BSR-1.8.2-2015, Requirements for Modifications of Nuclear Facilities, 2015
- BSR-1.4.3 - Nuclear Safety Requirements BSR-1.4.3-2017, Human Resources of Organisations Implementing Licensed Activities in the Area of Nuclear Energy, 2017
- BSR-1.4.4 - Nuclear Safety Requirements BSR-1.4.4-2019, Use of Operating Experience in the Field of Nuclear Power, 2019
- BSR-1.7.1 - Nuclear safety requirements BSR-1.7.1-2014, Fire Safety of Structures, Systems and Components Important to Safety of Nuclear Facility, 2014
- BSR-1.8.6 - Nuclear Safety Requirements BSR-1.8.6-2019, Maintenance, Surveillance and Inspection of Structures, Systems and Components Important for Safety of a Nuclear Power Facility, 2019

The Netherlands

The Netherlands committed itself in 2011 to implement the WENRA Safety Reference Levels (SRLs) on radioactive waste management in its legal system.

The most relevant elements of the Dutch legal system on nuclear safety and radiation protection regarding radioactive waste management are given by the Nuclear Energy Act, the Nuclear Installations, Fissionable Materials and Ores Decree (implementation on 2011/70/Euratom), the Decree on Basic Safety Standards for radiation protection (implementation of 2013/57/Euratom and 2011/70/Euratom), the Regulation on Nuclear Safety for Nuclear Installations (implementation of 2009/71/Euratom and 2014/87/Euratom) and the ANVS Regulation on Basic Safety Standards for Radiation Protection. This legislation provides for a system of mainly general goal-oriented rules and regulations. It also establishes a licensing system. The Netherlands has a national program for the management of radioactive waste and spent fuel as required by Directive 2011/70/Euratom. The next National Program is expected to be published in 2026.

The Netherlands has a small nuclear program with one national radioactive waste management organization, i.e. the Central Organisation for Radioactive Waste (COVRA), located at one site where the radioactive waste is collected awaiting disposal. COVRA is responsible for the collection, processing, storage and disposal of radioactive waste. The single and unique role of COVRA in the Netherlands has been established in legislation. Due to this fact, The Netherlands has decided in the past to regulate treatment and conditioning of radioactive waste mainly by means of the COVRA license conditions rather than by means of generic legislation.

In the table with the benchmark results the most relevant regulations and licence requirements in relation to the SLR, are stated. The following abbreviations are used:

NPRA: National program for the management of radioactive waste and spent fuel;

KeW: Kernenergiewet / Nuclear energy act

BKSE: Besluit kerninstallaties, splijtstoffen en ertsen / Nuclear installations, fissionable materials and ores decree;

RNVK: Regeling nucleaire veiligheid kerninstallaties / Regulation on Nuclear Installations Safety;

RBONI: Regeling buitengebruikstelling en ontmanteling nucleaire inrichtingen / Nuclear facilities shutdown and decommissioning regulation;

Bbs: Besluit basisveiligheidsnormen stralingsbescherming / Basic safety standards for radiation protection decree;

Rbs: Regeling basisveiligheidsnormen stralingsbescherming / Regulation on basic safety standards for radiation protection;

Vbs: ANVS-verordening basisveiligheidsnormen stralingsbescherming / ANVS regulation on basic safety standards for radiation protection;

The implementation of the SRLs into the Dutch legal system was benchmarked for the first time at the 52nd WGWD meeting in 2024. In this meeting it was decided to omit SRLs P-32 to P-40 on facility design criteria from the benchmark, because since 1984 Dutch policy has been based on safe management of radioactive waste by one centralized waste management organisation, COVRA. This implies that the Netherlands will not design a new waste management facility and thus does not need to implement the facility design criteria.

As a result of the benchmark, fifty-eight SRLs were rated A or B, nine SRLs were rated as B/not-applicable and four SRLs were rated C. The C-rated SRLs deal with 1) detailed record keeping of the characteristics of radioactive waste, 2) having a detailed quality assurance program, 3) dealing with products that do not comply with the product specifications and 4) ensuring that waste accepted for processing does comply with the facility acceptance criteria.

These four SRLs will be considered in the ongoing ANVS-project which investigates the further implementation of the relevant international requirements (i.e. the IAEA requirements and the WENRA SRLs) in the national legal system and the foreseen renewal of the COVRA licence.

Radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	NPRA; Governement Gazette 2007, no. 246, p48; COVRA licence B1
P-02	**B**	Bbs 3.6, 10.8, 10.9; COVRA licence E35
P-03	**B**	NPRA; BKSE 30.f; Rbs 5.29; Vbs 3.4, 3.5; COVRA licence B1
P-04	**B**	KeW 15b.2; RNVK 11; COVRA licence B1, C32, C33
P-05	**A**	Bbs 4.2; Vbs 4.1
P-06	**B**	Waste owner and the licensee are the same organization.
P-07	**A**	RNVK 3; Bbs 4.4, 5.4
P-08	**A**	KeW 15b.2; RNVK 1, 3, 6, 8, 9, 11, 13
P-09	**A**	RNVK 11
P-10	**A**	RNVK 3, 9
P-11	**A**	RNVK 4, 10
P-12	**A**	BKSE 6, 8
P-13	**A**	KeW 39; Bbs 6.1, 6.2, 6.7; Rbs 4.2, 6.2; RNVK 14
P-14	**A**	Bbs 4.7, 6.7; Rbs 4.2, 6.2
P-15	**A**	RNVK 10
P-16	**A**	RNVK 4, 10; Bbs 5.4, 5.7
P-17	**A**	RNVK 4; Bbs 7.27

# SRL	Current status	Relevant regulations
P-18	**A**	RNVK 8, 9, 11
P-19	**A**	RNVK 9
P-20	**B**	RNVK 8, 9; COVRA licence C4, C31, C32
P-21	**A**	RNVK 9, 13
P-22	**C**	
P-23	**A**	Bbs 4.2
P-24	**B**	Bbs 4.2; COVRA licence B8
P-25	**B**	Bbs 4.2; COVRA licence B8, Technical specifications
P-26	**C**	
P-27	**B**	COVRA licence B1, B2, B3, Technical specifications
P-28	**B**	COVRA licence B8, B13, B16, Safety report
P-29	**A**	Bbs 7.1, 10.2; RNVK 9
P-30	**B**	Bbs 4.2, 7.1; BKSE 8; COVRA licence B2, B8
P-31	**B**	COVRA licence B1, Safety report + Technical specifications
P-32	**B or N/A**	Not applicable
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**B or N/A**	Not applicable
P-35	**B or N/A**	Not applicable
P-36	**B or N/A**	Not applicable
P-37	**B or N/A**	Not applicable
P-38	**B or N/A**	Not applicable
P-39	**B or N/A**	Not applicable
P-40	**B or N/A**	Not applicable
P-41	**B**	BKSE 6, 8; COVRA licence B13, B15, B16, Technical specifications
P-42	**B**	BKSE 6, 8; COVRA licence B13, C1, C5, C6, C8, Safety report
P-43	**A**	Bbs 4.2, 6.1, 7.1; BKSE 8
P-44	**C**	
P-45	**B**	Bbs 10.2, 10.7; COVRA licence E53
P-46	**A**	Bbs 6.1, 6.2, 6.6, 6.8; RNVK 14
P-47	**A**	Bbs 5.13, 6.7, 6.8; Rbs 4.2, 6.2; RNVK 10, 14
P-48	**A**	Bbs 6.7; RNVK 14
P-49	**B**	Bbs 4.2; RNVK 11; COVRA licence C31, C32
P-50	**A**	RNVK 8, 11, 12
P-51	**A**	BKSE 11
P-52	**B**	RNVK 4, 8, 10; COVRA licence A2, A3, C2, C3
P-53	**B**	COVRA licence C4
P-54	**B**	COVRA licence C4
P-55	**B**	COVRA licence B6, B16, C4
P-56	**B**	COVRA licence C30
P-57	**C**	
P-58	**B**	COVRA licence C6

# SRL	Current status	Relevant regulations
P-59	**A**	Bbs 4.2
P-60	**B**	RNVK 8; COVRA licence B7
P-61	**B**	COVRA licence B8, C5, Safety report
P-62	**B**	Bbs 4.2; COVRA licence B8
P-63	**B**	BKSE 11 and licences
P-64	**B**	BKSE 11 and licences
P-65	**B**	BKSE 6, 8, 11; COVRA licence B7, B13
P-66	**B**	BKSE 6, 8, 10, 25; RBONI 2; COVRA licence B7, B13, Safety report
P-67	**A**	Bbs 7.3, 7.4, 7.11, 9.2, 9.6
P-68	**A**	Bbs 6.2, RNVK 11, 12
P-69	**A**	RNVK 11, 12
P-70	**A**	RNVK 11
P-71	**B**	RNVK 13, COVRA licence C33

Romania

Nuclear safety legislation in Romania was subject to a continuous development process both due to the planning of new nuclear facilities and due to implementation of the European legislation. Romania committed itself to implement the WGWD safety reference levels on RW and decommissioning in its legal system.

In order to meet the requirements of COUNCIL DIRECTIVE 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, CNCAN as the nuclear regulatory authority of Romania developed new regulations and revised the existing regulations in the field of predisposal and disposal of radioactive waste and in the field of decommissioning of nuclear and radiological facilities.

In order to meet the requirements of Council Directive 2014/87/EURATOM from 06 July 2014, establishing a common European framework for nuclear safety CNCAN developed new basic regulation on nuclear safety for nuclear facilities (CNCAN Order No. 114/2017 - NSN 21).

The Council Directive 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionizing radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom has been transposed and implemented into the legal and regulatory framework by issuing the new regulation regarding the basic requirements for radiation safety (approved by the joint order of the Ministry of Health, Ministry of National Education and CNCAN, No. 752/3978/136/2018) and a series of new regulations and revision of the existing ones.

The nuclear regulatory control in Romania is established by the Law no. 111/1996 on the safe deployment, regulation, licensing and control of nuclear activities and on the regulations issued

by CNCAN Orders. The law clearly stipulates that the prime responsibility for the safety rests with the licensees.

Romania has completed the revision of the entire regulatory framework on the safety of predisposal and disposal of radioactive waste and on the safety of decommissioning of nuclear facilities.

In the field of predisposal of radioactive waste, the process was finalized in 2017 by publishing the Regulations on the safety requirements for the predisposal activities of radioactive waste, disused radioactive sources and spent nuclear fuel (NDR-08), approved by the CNCAN Order no. 148/2017, updated by the new CNCAN Order 103/2022 with amendments of the new regulation regarding the basic requirements for radiation safety.

The safety and licensing requirements on predisposal of radioactive waste, spent fuel and disused radioactive sources cover both nuclear and radiological facilities. Graded approach is applying and for the nuclear facilities they are applying together with the nuclear safety regulations.

This regulation contains safety requirements as well as licensing requirements for predisposal management of radioactive waste, disused radioactive sources and spent nuclear fuel. The regulation contains requirements for management system such as responsibilities of licensee, integrated management system, safety culture, record keeping, reporting as well as interdependencies among steps of predisposal management of radioactive waste, disused sources and spent nuclear fuel. Specific requirements for each step of the predisposal management chapter details the control of generation of radioactive waste and disused radioactive sources, characterization and classification, segregation, waste acceptance criteria, treatment, conditioning and storage of radioactive waste.

The regulation details requirements for the development of predisposal facilities, includes requirements for siting and design, construction, operation and decommissioning. The clearance and discharge requirements are also defined.

Safety verification chapter introduced the concept of safety case and safety assessment and contains general requirements for development of these documents.

The last chapter dedicated to licensing is based on national nuclear law and it details the content of application and necessary supporting documents which have to be submitted by an applicant.

The regulation is based on the IAEA recommendations provided in the General Safety Requirements Part 5 - Predisposal of Radioactive Waste and WGWD – Processing SRLs.

At the 42th WGWD meeting in Prague, in September 2019, CNCAN presented the benchmarking of the Romanian legal system to the WGWD safety reference levels for processing. The implementation of the remaining C-ratings processing safety reference levels will be completed, awaiting further consideration by the WGWD.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	See references in P-07 for allocation of responsibilities (Law 111/1996 and NDR-08)
P-02	**C**	Find reference for making it a licensing conditioning to report it to the regulatory body (also, if necessary, where EU directive is transposed into national regulations to make it binding to the licensee)
P-03	**A**	NDR-08, NDR-01
P-04	**C**	NDR-01-add better reference on how experience feedback is considered and consequences thereof
P-05	**A**	NDR-08
P-06	**A**	NDR-08
P-07	**A**	Law 111/1996, NDR-08
P-08	**A**	NDR-08
P-09	**A**	NDR-08
P-10	**A**	NDR-08
P-11	**A**	NDR-08
P-12	**A**	NDR-08
P-13	**A**	NDR-08
P-14	**A**	NDR-08
P-15	**A**	NDR-08
P-16	**A**	NDR-08
P-17	**C**	Find better reference
P-18	**A**	NDR-08
P-19	**C**	Add better/new reference on last bullet point
P-20	**A**	NDR-08
P-21	**C**	Implement quality assurance programme in the management system
P-22	**A**	NDR-08
P-23	**A**	NDR-08
P-24	**A**	NDR-08
P-25	**A**	NDR-08
P-26	**C**	Implement quality assurance programme in the management system
P-27	**A**	NDR-08
P-28	**A**	NDR-08
P-29	**C**	Add reference addressing discharges and for quality assurance during selection process
P-30	**A**	NDR-08
P-31	**A**	NDR-08
P-32	**A**	NDR-08
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	NDR-08
P-35	**A**	NDR-01, NDR-08
P-36	**C**	Reference need to reflect the requirements of the SRL

# SRL	Current status	Relevant regulations
P-37	A	NDR-01, NDR-08
P-38	C	Find better reference for fire safety
P-39	A	NDR-08
P-40	A	NDR-08
P-41	A	NDR-08
P-42	A	NDR-08
P-43	A	NDR-08
P-44	C	Reference does not reflect SRL requirements for processing
P-45	A	NDR-08
P-46	A	Order CNCAN 146/2018
P-47	C	Clarify reference, maybe cite order 61 directly, if all bullet points are covered
P-48	A	Order CNCAN 146/2018
P-49	C	Outside operating experience is not covered in the reference given
P-50	C	"events" does not cover the full range of operating experience which is asked for in the SRL (including normal operations)
P-51	A	NDR-08
P-52	A	NDR-08
P-53	A	NDR-08
P-54	C	Link to safety case is not explicitly made - justify, for example by referring to licensing conditions
P-55	C	References do not address the SRL requirements on maintenance, testing, inspections
P-56	C	Review of programs is not actually covered by the references
P-57	A	NDR-08
P-58	A	NDR-08
P-59	A	NDR-08
P-60	A	NDR-08
P-61	C	Justify applicability of WAC to waste product specifications
P-62	A	NDR-08
P-63		to be benchmarked after SRL discussion has been resolved
P-64		to be benchmarked after SRL discussion has been resolved
P-65	A	NDR-08
P-66	A	NDR-08
P-67	A	NDR-08
P-68	C	Add explanation/reference for keeping the safety case up to date (see last requirement of SRL)
P-69	A	NDR-08
P-70	C	Reference does not reflect the SRL
P-71	A	NDR-08, NDR-01

References:

- Law 111/1996, with subsequent completions and modifications, on the safe deployment, regulation, licensing and control of nuclear activities
- NDR-01: Fundamental norms on the safe management of radioactive waste and spent nuclear fuel - Order CNCAN 56/2004, republished, with subsequent completions and modifications, the last update – Order CNCAN 74/2022
- NDR-08: Regulations on the safety requirements for the predisposal activities of radioactive waste, disused radioactive sealed sources and spent nuclear fuel, CNCAN Order no. 115/2017, replaced by Order CNCAN 103/2022
- Order CNCAN 146/2018: Regulation on emergency prevention, preparedness and response
- Order MAI/CNCAN 61/113/2018, with subsequent modifications: Regulation on the management of emergency situations specific to nuclear or radiologic risks

Slovakia

The main principles for processing and conditioning of radioactive waste are laid down in the Atomic Act (Act No. 541/2004 Coll., as amended), particularly in § 21and in the Decree of the Nuclear Regulatory Authority of the Slovak Republic (NRA SR) No. 30/2012 Coll., as amended. These provisions require that radioactive waste be processed into a final form meeting the Waste Acceptance Criteria (WAC) of the intended disposal facility or, where applicable, long-term storage facility. Waste producers must ensure that the processing, conditioning, and packaging methods are compatible with the requirements of subsequent management stages.

The principal waste owner, Nuclear and Decommissioning Company (JAVYS, a. s.), is responsible for implementing the strategy for disposal, long-term storage, processing into a final form meeting WAC, and decommissioning of radioactive waste, in accordance with § 3(11) of the Atomic Act. This strategy must be consistent with the overall national radioactive waste and spent fuel management strategy, prepared and updated by the Ministry of Economy under § 6 of Act No. 308/2018 Coll. (Act on the National Nuclear Fund).

While the national legislation provides a comprehensive framework for processing and conditioning of waste, it does not explicitly require continuous improvement of the strategy by considering operational experience, feedback, and scientific and technological progress. This reference is currently absent from the legal framework.

Mobile waste processing facilities are not explicitly defined in legislation, but they are covered as classified equipment under Annex No. 1 to Decree No. 430/2011 Coll., as amended. When connected to a hosting facility, such equipment is licensed as a safety significant modification, and interfaces must be demonstrated to preserve the safety functions of the hosting facility, comply with classification provisions, and meet the requirements for safety assessment of modifications under § 9 of Decree No. 431/2011 Coll. The current Slovak legal framework

already provides a clear and comprehensive licensing basis for such mobile facilities; no additional legislative amendments are necessary.

Out of 71 SRLs, Slovakia complies with all except SRL P-04 and Slovakia will consider addressing this in future legislative updates. Three SRLs (P-03, P-63, P-64) were rated B, meaning no further legislative changes are necessary.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	- Atomic Act: Section 21 (1), (2) + Section 3 (11)
P-02	**A**	- Atomic Act: Section 3 (6) + Section 10 (9); - Decree of the NRA SR No. 30/2012 Coll. as amended: Section 13 (1), (2) + Section 14 (1), (5), (6) n)
P-03	**B**	- Atomic Act: Section 21 (15), (17) - Decree of the NRA SR No. 30/2012 Coll. as amended: Section 2 (1) + Section 4 (4) In the Slovak Republic, JAVYS, a. s., as the major waste owner, is responsible for the strategy covering disposal, long-term storage, processing into final form meeting WAC for disposal and decommissioning of radioactive waste in accordance with § 3(11) of the Atomic Act. This strategy must align with the overall national radioactive waste and spent fuel management strategy prepared by the Ministry of Economy under § 6 of Act No. 308/2018 Coll.
P-04	**C**	In Slovakia, the Ministry of Economy of the Slovak Republic is the authority responsible for the preparation and updating of the overall national radioactive waste and spent fuel management strategy, as defined in the Act on the National Nuclear Fund (Act No. 308/2018 Coll.), specifically in § 6 – National Policy and National Programme. However, this provision does not explicitly require the strategy to be continuously improved by considering experience feedback and advances in science and technology**.** This reference is currently missing from the legal framework.
P-05	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 13 + Section 14 - Decree of the NRA SR No. 430/ 2011 Coll. as amended: Annex 4, part B, I. A (19) letter b) 3, letters c), d) 8 and (20) - Atomic Act: Section 10 (1) letter m)
P-06	**A**	- Atomic Act: Section 21 (1), (2) - Decree of the NRA SR No. 58/2006 Coll. as amended: Section 21 (2) letter e) - Decree of the NRA SR No. 431/2011 Coll. as amended: Annex 1, letter an)
P-07	**A**	- Atomic Act: Section 10 (1) a) + Section 21 (1) + Section 23 (1) + Section 25 (1)

# SRL	Current status	Relevant regulations
		- Decree of the NRA SR No. 431/2011 Coll. as amended: Section 4, (1) letter c) + (2) letter c)
P-08	**A**	- Atomic Act: Section 10 (1) letter t) + Section 23 (2) letter c) + Section 25 (1) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 4 (1) letter c) + (2) letters a), b)
P-09	**A**	- Atomic Act: Section 10 (1) t) + Section 23 (2) letters q), r), s), t)
P-10	**A**	- Atomic Act: Section 25 (1) - Decree of the NRA SR No. 431/2011 Coll. as amended: Annex 1 – letters s), y), z), aa), ab), ac) ad)
P-11	**A**	- Atomic Act: Section 10 (1) +Section 24 (1), (2), (4), (5) + Annex 1 to the Atomic Act, part C, letters a), o), p), q), r) - Decree of the NRA SR No. 58/2006 Coll. as amended: Section 14 (1) f) + part III., B. Readiness for start-up (3) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 3 (11)
P-12	**A**	- Atomic Act: Section 23 (2) letter f) + Annex 1 to the Atomic Act, part C, letters i), l) - Decree of the NRA SR No. 58/2006 Coll. as amended: Section 19 (2) letter j), (3) + Section 28 (1), (2)
P-13	**A**	- Atomic Act: Section 27 (1-4) + Section 28 (5), (20), (21)
P-14	**A**	- Atomic Act: Section 2 letter n) + section 25 (1) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 4 (2) d) + Annex 1 – letters p), ae), an)
P-15	**A**	- Atomic Act: Section 6 (1), (2) letters e), f), g) i) + Section 25 (5), (20), (21)
P-16	**A**	- Atomic Act: Section 25 (1) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 4 (2) d) + Annex 1 – letters p), an)
P-17	**A**	- Decree of the NRA SR No. 431/2011 Coll. as amended: Section 3 (12) d) + Annex 1 – letters y), z), ab), ac), ad), ae)
P-18	**A**	- Atomic Act: Section 25 (1)
P-19	**A**	- Atomic Act: Section 25 (5) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 3 (2) letters a), b)
P-20	**A**	- Decree of the NRA SR No. 431/2011 Coll. as amended: Section 2 (2), (6) + Section 3 (2) a), b) + (3), (5), (8) + Section 4 (2)e) + Annex 7: letters j), k), l)2), m), n) + Annex 8: A. letter e)
P-21	**A**	- Atomic Act: Section 4 (2) b) - Decree of the NRA SR No. 431/2011 Coll. as amended, Sections 3 – 6 + Annex 1 – letters p), an); Annex 2 – part B; Annex 4 – part II. letter c)
P-22	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 9 (6); Section 13 (1), (2); Section 14 (6)

# SRL	Current status	Relevant regulations
		- Decree of the NRA SR No. 431/2011 Coll. as amended: Annex 4- part A (19) + part D (2)
P-23	**A**	- Decree No.30/2012 Coll. as amended: Section 13 (1) + Section 14 (1)
P-24	**A**	- Decree No.30/2012 Coll. as amended: Section 13 - Decree of the NRA SR No. 431/2011 Coll. as amended: Annex 4- part B (19)
P-25	**A**	- Decree No.30/2012 Coll. as amended: Section 14 (1), (5), (6) letters a) to d)
P-26	**A**	-Decree No.30/2012 Coll. as amended: Section 8 (2), Section 12 (2). 13 (2), 14 (1-5) - Decree of the NRA SR No. 431/2011 Coll. as amended: Section 3 (12) + Annex 1, letters t), u), ac)
P-27	**A**	-Decree No.30/2012 Coll. as amended: Sections 2 (1)
P-28	**A**	-Decree No.30/2012 Coll. as amended: Sections 6 (2) and Section 8 (3)
P-29	**A**	- Atomic Act: Section 20 (9) + Section 21 (4), (5), (15) - Decree No.30/2012 Coll. as amended: Section 3 (5), Section 7 (2),(4); Section 8 (3), Section 12 (2)
P-30	**A**	- Decree No.30/2012 Coll. as amended: Section 6 (1), (2); Section 7,(4); Section 8 (2-4), Section 14 (6)
P-31	**A**	- Decree No.30/2012 Coll. as amended: Section 2 (1), Section 8 (1-4)
P-32	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part B, subpart I., letter A (10), (13), (14) + letter B (5) letters a), b), c) + letter J (1) letters a), b) + letter G (1-4) - Decree No.30/2012 Coll. as amended: Section 2 (2) letter c)
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part A (6), (13),
P-35	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part B, subpart I., letter B (3) b)
P-36	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part B, subpart I., letter A (2), (22) and D (1)
P-37	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part B, subpart I., letter B (2), (3)
P-38	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 5 (2) + Annex 3, part B, subpart I., letter H (6), letter I (1-6)
P-39	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 3 (1-3) + Section 5 (3) + Annex 3, part B, subpart I., letter A (3), (7), (13)
P-40	**A**	- Atomic Act: Section 25 - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 3 (3) + Annex 3, part B, subpart I., letter A (3), (17)

# SRL	Current status	Relevant regulations
P-41	**A**	- Atomic Act: Section 10 (1) letter e) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 3 (3) + Annex 3, part B, subpart I., letter A (16) + Annex 4, part B, subpart I., letter B
P-42	**A**	- Atomic Act: Section 10 (1) letter b) + Section 23 (2) letter h) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 3 (3) + Annex 4, part B, subpart I., letter G (1), (2)
P-43	**A**	- Atomic Act: Section 23a) (8) letters a), b)
P-44	**A**	- Decree No.30/2012 Coll. as amended: Section 8 (2), (3) + Section 12 (2) letters a) to d) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 3 (12) + Annex 1, letters ak), al)
P-45	**A**	- Decree No.30/2012 Coll. as amended: Section 2 (2) letter d) + Section 7 (2) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 4 (13) + Annex 3, part B, subpart I., letter A (8) - Decree of the NRA SR No. 58/2006 Coll. as amended: Section 21 (1), (2) letters a), b) e) + Section (4)
P-46	**A**	- Atomic Act: Section 23 (2) letter o) + Section 27 (4) + Section 28 - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 4 (13) + Annex 3, part B, subpart I., letter H (7), (10) + letter J (1), (2) b) + letter G (7) - Decree of the NRA SR No. 55/2006 Coll. as amended: Section 4 (1)
P-47	**A**	- Atomic Act: Section 10 (1) letter z) + Section 28 (2), (6), (7), (10), (11), (15) letter a), (18) + Section 27 (4) + Section 28 - Decree of the NRA SR No. 55/2006 Coll. as amended: Section 4 (2) letter b)
P-48	**A**	- Atomic Act: Section 28 (11), (15) letter a), (23), (24) - Decree of the NRA SR No. 55/2006 Coll. as amended: Section 10 (2-5)
P-49	**A**	- Atomic Act: Section 10 (1) letter t) + Section 23 (2) letters g), s), t) + Section 25 (1)
P-50	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 6 (2) + Annex 4, part B, subpart I., letter G (18)
P-51	**A**	- Atomic Act: Section 2 letters w), x) + Section 4 (2) letter f) point 1 + letter g) point 2 + Section 10 (1) letters k), l)
P-52	**A**	- Decree of the NRA SR No. 431/2011 Coll. as amended: Section 9
P-53	**A**	- Atomic Act: Section 23 (2) letter h)
P-54	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 6 (2) + Annex 4, part B, subpart I., letter H (1)
P-55	**A**	- Atomic Act: Section 23 (2) letters s), t) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 6 (2) + Annex 4, part B, subpart I., letter D (2) letter d) + letter H (1), (2), (6), (7)

# SRL	Current status	Relevant regulations
P-56	**A**	- Decree of the NRA SR No. 430/2011 Coll. as amended: Section 6 (2) + Annex 4, part B, subpart I., letter H (1), (2)
P-57	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 12 (2) letter c) + (3)
P-58	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 12 (2) letter d)
P-59	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 13 (2) letter a), b), c)
P-60	**A**	- Atomic Act: Section 19 (8) - Decree of the NRA SR No. 30/2012 Coll. as amended: Section 13 (2) letter b) + (3) - Decree of the NRA SR No. 430/2011 Coll. as amended: Section 6 (2) + Annex 4, part B, subpart I., letter D
P-61	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 8 + Section 13 + Section 14
P-62	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 13 + Section 14
P-63	**B**	In Slovakia, mobile waste processing facilities are not explicitly defined in legislation; however, they fall under classified equipment according to Annex No. 1 to Decree No. 430/2011 Coll., as amended. When connected to a hosting facility, such equipment is licensed as a safety significant modification. The interfaces between the mobile facility and the hosting must be documented, verified, and demonstrated to: 1. Maintain the safety functions and operational limits of the hosting facility; 2. Comply with the classification provisions of Annex No. 1 to Decree No. 430/2011 Coll.; 3. Fulfil the requirements for the modification of changes, including their nuclear safety impact assessment, under Section 9 of Decree No. 431/2011 Coll. The current legislation already provides a clear and comprehensive licensing basis for mobile waste processing facilities; no further legal changes are necessary.
P-64	**B**	See answer to P-63. The safety case for using mobile waste processing equipment is governed by **Section 9** of Decree No. 431/2011 Coll., as amended; **no further legal changes are necessary**.
P-65	**A**	- Atomic Act: Section 5 (1), (3) + Section 6 (2) letter h) + Section 23 (2) letter d)
P-66	**A**	- Atomic Act: Section 23 (2) letter d) + Annex No. 1 - part C – letters f), i), l), m)

# SRL	Current status	Relevant regulations
		- Decree of the NRA SR No. 58/2006 Coll. as amended: Section 19 (1) letters a), b), g), i), r) + Section 21 + Section 22
P-67	**A**	- Decree of the NRA SR No. 30/2012 Coll. as amended: Section 12 (2) a), b)
P-68	**A**	- Atomic Act: Section 3 (5) + Section 10 (1) letter c) + Section 23 (2) letters f), g) - Decree of the NRA SR No. 431/2011 Coll. as amended: Annex 1 – letter ar)
P-69	**A**	- Atomic Act: Section 23 (2) f), g) - Decree of the NRA SR No. 33/2012 Coll. as amended: Section 2 (1), (2) + Section 3
P-70	**A**	- Decree of the NRA SR No. 33/2012 Coll. as amended: Section 2 (4), (5)
P-71	**A**	- Decree of the NRA SR No. 33/2012 Coll. as amended: Section 2 (8) + Section 19 + Section 20.

List of references:

- Act No. 541/2004 Coll. on the Peaceful use of nuclear energy (Atomic Act) and on the amendments and supplements to some acts as amended. Amendments of the Atomic Act: Act. No. 541/2004 Coll., Act No. 238/2006 Coll., Act No. 21/2007 Coll., Act No. 94/2007 Coll., Act No. 335/2007 Coll., Act No. 408/2008 Coll., Act No. 120/2010 Coll., Act No. 137/2010 Coll. (indirect amendment), Act No. 145/2010 Coll., Act No. 350/2011 Coll., Act No. 143/2013 Coll., Act No. 314/2014 Coll., Act No. 54/2015 Coll., Act No. 91/2016 Coll., Act No. 125/2016 Coll., Act No. 96/2017 Coll., Act No. 18/2018 Coll., Act No. 87/2018 Coll., Act No. 177/2018 Coll., Act No. 308/2018 Coll., Act No. 279/2019 Coll., Act No. 363/2021 Coll., Act No. 310/2021 Coll., Act. No. 146/2023 Coll., 205/2023 Coll., Act No. 309/2023 Coll. – effective until 31 March 2025, Act. No. 161/2024 Coll. and 366/2024 Coll.

List of Decrees:

- Decree of the NRA SR No. 48/2006 Coll. as amended by Decree No. 32/2012 Coll. Laying Down Details on the Manner of Reporting Operational Events and Events in Transportation and Details of Ascertaining Causes Thereof (consolidated version)
- Decree of the NRA SR No. 51/2006 Coll. Laying Down Details of Requirements for Provision of Physical Protection (consolidated version)
- Decree of the NRA SR No. 52/2006 Coll. effective from 1. 1. 2024 as amended by Decree No. 34/2012 Coll., Decree No. 410/2019 Coll. and Decree No. 355/2023 Coll. on professional competence (consolidated version)
- Decree of the NRA SR No. 54/2006 Coll. on Record Keeping and Checking of Nuclear Materials and on Notification of Selected Activities (consolidated version)

- Decree of the NRA SR No. 55/2006 Coll. as amended by Decree No. 35/2012 Coll., Decree No. 9/2018 Coll. and Decree No. 310/2022 Coll. Laying down details in emergency planning for the event of an incident or an accident (consolidated version)
- Decree of the NRA SR No. 57/2006 Coll. as amended by Decree No. 105/2016 Coll. laying down details of the requirements for the transportation of radioactive materials (consolidated version)
- Decree of the NRA SR No. 58/2006 Coll. as amended by Decree No. 31/2012 Coll., Decree No. 102/2016 Coll. and Decree No. 155/2022 Coll. Laying Down Details on the Scope, Contents, and Manner of Maintaining Documentation of Nuclear Installations Necessary for Individual Decisions (consolidated version)
- Decree of the NRA SR No. 430/2011 Coll. as amended by Decree No. 103/2016 Coll. on nuclear safety requirements (consolidated version)
- Decree of the NRA SR No. 431/2011 Coll. on a quality management system as amended by Decree No. 104/2016 Coll., Decree No. 154/2022 Coll. (consolidated version) and Decree No. 204/2025 Coll.
- Decree of the NRA SR No. 30/2012 Coll. as amended by Decree No. 101/2016 Coll. laying down details of requirements for the handling of nuclear materials, radioactive waste and spent nuclear fuel (consolidated version)
- Decree of the NRA SR No. 33/2012 Coll. as amended by Decree No. 106/2016 Coll. and Decree No. 71/2019 Coll. on the regular, comprehensive and systematic evaluation of the nuclear safety of nuclear installations (consolidated version)
- Decree of the NRA SR No. 112/2020 Coll. laying down the special materials and equipment falling under the supervision of the Nuclear Regulatory Authority of the Slovak Republic (consolidated version)

Slovenia

At the 45th WGWD meeting, Slovenia reported on the implementation of waste treatment and conditioning SRLs. Slovenian regulations were found to be in full agreement with the requirements mandated by the WGWD SRLs.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	ReNPROIG23-32, Arts. 4 and 121 of ZVISJV-1, Art. 11 of JV2SV2, BHRNEK
P-02	**A**	Art. 121 of ZVISJV-1, Art. 15 of JV7
P-03	**A**	Art. 121 of ZVISJV-1, Art. 27 of JV5, Arts. 6 and 7 of JV7, ReNPROIG23-32

# SRL	Current status	Relevant regulations
P-04	A	Arts. 90, 111 and 122 of ZVISJV-1, Arts 6 of JV7, ReNPROIG23-32
P-05	A	Art. 121 of ZVISJV-1, Art. 23 of JV7
P-06	A	Art. 9 of JV7
P-07	A	Arts. 4, 54 and 87 of ZVISJV-1
P-08	A	Art. 93 of ZVISJV-1, Arts. 53, 60 and 63 of JV5
P-09	A	Art. 90 of ZVISJV-1, Art. 53 of JV5
P-10	A	Art. 93 of ZVISJV-1, Arts. 54 and 67 of JV5
P-11	A	Art. 92 of ZVISJV-1, Art. 65 of JV5
P-12	A	Arts. 40 and 101 of ZVISJV-1
P-13	A	Arts.130 and 135 of ZVISJV-1, Art. 67 of JV9
P-14	A	Art. 92 of ZVISJV-1, Arts. 63, 56 and 67 of JV5
P-15	A	Art. 92 of ZVISJV-1, Art. 64 of JV5
P-16	A	Art. 65 of JV5, Arts. 3 and 5 of JV4
P-17	A	Art. 67 of JV5, Art. 3 of JV4
P-18	A	Art. 93 of ZVISJV-1, Art. 53 of JV5
P-19	A	Art. 53 of JV5
P-20	A	Arts. 93 and 116 of ZVISJV-1, Art. 66 of JV5
P-21	A	Art. 60 of JV5
P-22	A	Arts. 8, 13, 20 and 23 of JV7
P-23	A	Arts. 23 and 24 of JV7
P-24	A	Arts. 23 and 25 of JV7
P-25	A	Art. 11 of JV7
P-26	A	Arts. 5, 9 and Annex 1 of JV7
P-27	A	Art. 111 of ZVISJV-1, Arts. 6, 7, 14, 19 and 22 of JV5
P-28	A	Art. 8 of JV7
P-29	A	Arts. 9, 10 and 17 of JV7
P-30	A	Arts. 9, 10 and 20 of JV7
P-31	A	Art. 9 of JV7
P-32	A	Art. 4 of ZVISJV-1, Arts. 2, 4, 7 and 8 of JV5
~~P-33~~	-	Deleted by decision of WGWD
P-34	A	Arts. 4 and 47 of JV5
P-35	A	Arts. 4 and 6 of JV5
P-36	A	Art. 4 of JV5
P-37	A	Art. 4 of JV5
P-38	A	Art. 4 of JV5
P-39	A	Art. 8 of JV5
P-40	A	Art. 8 of JV5
P-41	A	Art. 111 of ZVISJV-1, Arts. 44, 47 and 48 of JV5
P-42	A	Art. 111 of ZVISJV-1
P-43	A	Arts. 4 and 111 of ZVISJV-1, Art. 44 of JV5

# SRL	Current status	Relevant regulations
P-44	A	Art. 9 of JV7
P-45	A	Art. 9 of JV7
P-46	A	Art. 130 of ZVISJV-1, Art. 67 of JV9
P-47	A	Arts. 67, 68, 69 and 70 of JV9
P-48	A	Art. 71 of JV9, Art. 26 of JV5, National Emergency Response Plan for Nuclear and Radiological Accidents
P-49	A	Art. 90 of ZVISJV-1, Chapter II of JV9, Arts. 43 and 53 of JV5
P-50	A	Art. 6 of JV9
P-51	A	Art. 116 of ZVISJV-1, Arts. 39, 43 and 44 of JV9
P-52	A	Art. 47 of JV9
P-53	A	Art. 18 of JV9
P-54	A	Art. 44 of JV5
P-55	A	Arts. 17 and 18 of JV9
P-56	A	Art. 18 of JV9
P-57	A	Art. 15 of JV7
P-58	A	Art. 15 of JV7
P-59	A	Art. 23 of JV7
P-60	A	Art. 23 of JV7
P-61	A	Arts. 9 and 23 of JV7
P-62	A	Art. 23 of JV7
P-63	A	Art. 9 of JV7
P-64	A	Art. 9 of JV7
P-65	A	Art. 43 of JV5
P-66	A	Art. 44 of JV5
P-67	A	Art. 44 of JV5
P-68	A	Arts. 114 and 116 of ZVISJV-1, Art. 43 of JV5
P-69	A	Art. 112 of ZVISJV-1, Art. 53 of JV9
P-70	A	Art. 52 of JV9
P-71	A	Arts. 112 and 114 of ZVISJV-1, Arts. 53 and 55 of JV9

Abbreviations used in a table:

- ZVISJV-1: Ionising Radiation Protection and Nuclear Safety Act (Official Gazette RS, Nos. 76/17, 26/19, 172/21 and 18/23 – ZDU-1O)
- ReNPROIG23-32: Resolution on the National Programme on Radioactive Waste and Spent Fuel Management for the Period 2023-2032
- JV2/SV2: Rules on the Use of Radiation Sources and on Activities Involving Radiation (Official Gazette RS, No. 27/18)
- JV4: Rules on Providing Qualifications for Workers in Radiation and Nuclear Facilities (Official Gazette RS, No. 162/20)
- JV5: Rules on Radiation and Nuclear Safety Factors (Official Gazette RS, No. 56/24)

- JV7: Rules on Radioactive Waste and Spent Fuel Management (Official Gazette RS, Nos. 125/21 and 74/24)
- JV9: Rules on the Safety Assurance of Radiation and Nuclear Facilities (Official Gazette RS, No. 27/24)
- BHRNEK: Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on the Regulation of the Status and Other Legal Relations Regarding the Investment, Exploitation and Decommissioning of the Krško NPP

Spain

Spanish Benchmarking exercise summarized in the table below was presented during WGWD Meetings #51 and #52. During this exercise, Spain limited the scope to the treatment and conditioning of low and intermediate radioactive wastes. Spain presented the extension of the scope to include spent fuel and high level radioactive waste during WGWD Meetings #54 and #55, where it was accepted.

Spanish regulatory framework is generally aligned with WGWD SRLs on treatment and conditioning, it has been found that 60 out of 71 SRLS are rated as A or B.

The main regulations applied in the exercise are the Nuclear Energy Act (25/1964), the Royal Decrees on nuclear and radioactive facilities (RD 1836/1999), on the responsible and safe management of spent fuel and radioactive waste (RD 102/2014), on nuclear safety in nuclear facilities (RD 1400/2018), on health protection against the derived risk off the exposition to ionizing radiations(RD 1029/2022); and on the following CSN (Nuclear Safety Council) Instructions: on the criteria to be applied by nuclear power plants in order to report events to the Council (IS-10), on the requirements of the nuclear facilities management system (CSN IS 19), on the requirements applicable to modification at nuclear power plants (CSN IS 21), on regulating the filing ad periods of retention of the documents and records of nuclear facilities (CSN IS 24), on the basic nuclear safety requirements applicable to nuclear installations (CSN IS 26), on safety criteria at spent fuel and high-level radioactive waste storage facilities (IS 29) and on requirements of emergency planning, preparedness and response in nuclear facilities (CSN IS 44).

SRLs P-24, P-28 P-49, P-50, P-52, P-53, P56, P-56, P-58, P-68, P-69, P-70, and P-71 were rated as B because, under a graded approach, the compliance with this SRLs is different for NPP, where there are generic regulations listed on the table below and for El Cabril facility, unique low and intermediate waste disposal, where it is demonstrated through the terms and conditions of its license.

The Spanish National Action Plan to comply with the 11 remaining SRLs rated as C is based on putting on force a CSN (Nuclear Safety Council) Instruction named “On safety requirements for radioactive waste predisposal activities” that will cover the safe treatment and conditioning of the low and intermediate radioactive wastes. The draft of this CSN Instruction is now in a consultation period and will be in force within the next year.

Spent fuel and Radioactive waste treatment and conditioning

#SRL	Current Status	Relevant Regulations/National Action Plan
P-01	**A**	RD 102/2014.
P-02	**B**	RD 102/2014.
P-03	**B**	RD 102/2014
P-04	**B**	RD 1836/1999 , CSN IS 26 and RD 102/2014
P-05	**A**	RD 1836/1999 and CSN IS 24
P-06	**A**	RD 102/2014
P-07	**A**	RD 1836/1999
P-08	**A**	Act 25/1964, RD 1836/1999, CSN IS 19 and RD 102/2014
P-09	**A**	RD 1836/1999 and CSN IS 26
P-10	**A**	CSN IS 19
P-11	**A**	RD 1836/1999 and IS 19
P-12	**A**	RD 102/2014 and RD 1836/1999
P-13	**A**	RD 1836/1999 and IS-10
P-14	**A**	RD 1836/1999 and CSN IS 19
P-15	**A**	RD 1836/1999 and CSN IS 19
P-16	**A**	CSN IS 19 and RD 1836/1999
P-17	**A**	CSN IS 19
P-18	**A**	CSN IS 19
P-19	**A**	CSN IS 19
P-20	**A**	CSN IS 19
P-21	**A**	CSN IS 19
P-22	**C**	NAP: CSN Instruction on predisposal activities.
P-23	**C**	NAP: CSN Instruction on predisposal activities.
P-24	**B**	CSN IS 26, CSN IS 29 andRD 102/2014
P-25	**A**	CSN IS 19 and CSN IS 29
P-26	**C**	NAP: CSN Instruction on predisposal activities.
P-27	**A**	RD 102/2014 art 3.
P-28	**B**	Act 25/1964, RD 102/2014 and RD 102/2014
P-29	**A**	RD 1836/1999, RD 102/2014, RD 102/2014 and RD 1029/2022
P-30	**C**	NAP: CSN Instruction on predisposal activities.
P-31	**C**	NAP: CSN Instruction on predisposal activities.
P-32	**C**	NAP: CSN Instruction on predisposal activities.
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**C**	NAP: CSN Instruction on predisposal activities.
P-35	**A**	CSN IS 26
P-36	**C**	NAP: CSN Instruction on predisposal activities.
P-37	**A**	RD 1836/1999 and CSN IS 44
P-38	**C**	NAP: CSN Instruction on predisposal activities.
P-39	**A**	RD 1836/1999
P-40	**A**	CSN IS 26
P-41	**A**	RD 1836/1999
P-42	**A**	CSN IS 19

#SRL	Current Status	Relevant Regulations/National Action Plan
P-43	**A**	RD 1836/1999, RD 102/2014 and RD 1400/2018
P-44	**A**	CSN IS 19
P-45	**A**	RD 1400/2018, RD 1836/1999 and RD 102/2014
P-46	**A**	RD 1836/1999 and CSN IS 44
P-47	**A**	RD 1836/1999 and CSN IS 44
P-48	**A**	RD 1836/1999 and CSN IS 44
P-49	**B**	RD 1836/1999 , CSN IS 19 and RD 1400/2018
P-50	**B**	CSN IS 19 and RD 1400/2018
P-51	**A**	RD 1836/1999 arts 25.1 and 25.2.
P-52	**B**	RD 1836/1999 and CSN IS 21
P-53	**B**	RD 1400/2018
P-54	**C**	NAP: CSN Instruction on predisposal activities.
P-55	**A**	CSN IS 19
P-56	**B**	CSN IS 26 and CSN IS 19
P-57	**C**	NAP: CSN Instruction on predisposal activities.
P-58	**B**	CSN IS 19
P-59	**A**	CSN IS 24
P-60	**A**	CSN IS 24 and IS 24
P-61	**A**	RD 102/2014 and CSN 19
P-62	**A**	CSN IS 24 and CSN IS 19
P-63	**A**	RD 1836/1999
P-64	**A**	RD 1836/1999
P-65	**A**	RD 102/2014 , RD 1836/1999 and RD 1400/2018
P-66	**A**	RD 1836/1999
P-67	**A**	RD 1836/1999
P-68	**B**	RD 1400/2018
P-69	**B**	RD 1400/2018
P-70	**B**	RD 1400/2018
P-71	**B**	RD 1400/2018.

References:

- Act 25/1964: Act on Nuclear Energy
- RD 1836/1999: Royal Decree on nuclear and radioactive facilities
- RD 102/2014: Royal Decree on the responsible and safe management of spent fuel and radioactive waste,
- RD 1400/2018: Royal Decree on nuclear safety in nuclear facilities
- RD 1029/2022: Royal Decree on health protection against the derived risk off the exposition to ionizing radiations
- CSN IS10: on the criteria to be applied by nuclear power plants in order to report events to the Council

- CSN IS 19: Instruction on the requirements of the nuclear facilities management system
- CSN IS 21:on the requirements applicable to modification at nuclear power
- CSN IS 24: on regulating the filing ad periods of retention of the documents and records of nuclear facilities
- CSN IS 26: on the basic nuclear safety requirements applicable to nuclear installations
- CSN IS 29: on safety criteria at spent fuel and high-level radioactive waste storage facilities
- CSN IS 44: on requirements of emergency planning, preparedness and response in nuclear facilities.

Sweden

Benchmarking of implementation of the Processing SRLs in the Swedish framework was initiated at WENRA WGWD meeting 41 and the result is reflected in the table below. The initial benchmarking resulted in a substantial number of SRLs requiring additional or revised references to the legal and regulatory framework. Those SRLs are marked (*). Additional/supplementary references was provided but the continued benchmarking process was postponed, not least with reference to the challenges related to the Covid pandemic.

As a consequence of the change in Government in 2022 the Swedish nuclear policy was revised. The new policy envisages establishment of new nuclear power reactors and a substantial revision of the nuclear legal and regulatory framework is underway. An expected consequence of this development was that current references underpinning the implementation of the Processing SRLs would be substantially affected. It was therefore concluded to postpone the update of relevant references to the legal and regulatory framework. Such update will be performed when the revised framework is formally established.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	Act on Nuclear Activities (1984:3)
P-02	**B**	Act on Nuclear Activities (1984:3)
P-03	**B**	Act on Nuclear Activities (1984:3) Sections 5, 8 and 10a*
P-04	**B**	Act on Nuclear Activities (1984:3) Sections 5, 8 and 10a*
P-05	**B**	Act on Nuclear Activities (1984:3) Sections 5, 8 and 10a*
P-06	**B**	Act on Nuclear Activities (1984:3)
P-07	**A**	Act on Nuclear Activities (1984:3) Section 10
P-08 (*)	**C**	SSMFS 2008:1 Chapter 2 Section 9
P-09 (*)	**C**	SSMFS 2008:1 Chapter 2 Section 9 SSMFS 2008:1 Chapter 5 Section 3

# SRL	Current status	Relevant regulations
P-10 (*)	C	SSMFS 2008:1 Chapter 2 Section 8
P-11 (*)	C	SSMFS 2008:1 Chapter 2 Section 9
P-12 (*)	C	SSMFS 2008:1 Chapter 4 Sections 1 and 2
P-13 (*)	C	SSMFS 2014:2 Chapter 2 Sections 2 and 4
P-14 (*)	C	Act on Nuclear Activities (1984:3) Section 13 SSMFS 2008:1 Chapter 2 Section 7
P-15 (*)	C	SSMFS 2008:1 Chapter 2 Section 9
P-16 (*)	C	SSMFS 2008:1 Chapter 2 Section 9
P-17 (*)	C	SSMFS 2008:1 Chapter 2 Section 9
P-18 (*)	C	SSMFS 2008:1 Chapter 2 Section 8
P-19 (*)	C	Act on Nuclear Activities (1984:3) Section 13
P-20 (*)	C	SSMFS 2008:1 Chapter 5 Sections 2 and 3a
P-21 (*)	C	SSMFS 2008:1 Chapter 2 Sections 8 and 9
P-22	A	SSMFS 2008:1 Chapter 6 Sections 3 and 10
P-23 (*)	C	SSMFS 2008:1 Chapter 6 Section 10
P-24 (*)	C	SSMFS 2008:1 Chapter 6 Section 10
P-25	A	SSMFS 2008:1 Chapter 6 Section 10
P-26 (*)	C	SSMFS 2008:1 Chapter 2 Section 8, Chapter 5 Section 1 and Chapter 6 Section 11 and 12
P-27 (*)	C	SSMFS 2008:1 Chapter 6 Sections 1 and 11
P-28 (*)	C	SSMFS 2008:1 Chapter 2 Section 8, Chapter 6 Section 11
P-29 (*)	C	SSMFS 2008:1 Chapter 2 Section 8, Chapter 6 Sections 1 and 3
P-30 (*)	C	SSMFS 2008:1 Chapter 6 Section 3
P-31	A	SSMFS 2008:1 Chapter 2 Section 8 SSMFS 2008:1 Chapter 6 Section 1
P-32 (*)	C	SSMFS 2008:1 Chapter 2 Section 1
~~P-33~~	-	Deleted by decision of WGWD
P-34 (*)	C	SSMFS 2008:1 Chapter 2 Section 1 and Chapter 4 Section 2
P-35	C	SSMFS 2008:1 Chapter 3 Sections 1 and 3 and Chapter 6 Section 2
P-36 (*)	C	SSMFS 2008:1 Chapter 3 Section 2 SSMFS 2008:1 Chapter 4 Section 2
P-37 (*)	C	SSMFS 2008:1 Chapter 2 Section 1 SSMFS 2008:1 Chapter 4 Section 2
P-38 (*)	C	SSMFS 2008:1 Chapter 3 Section 1
P-39 (*)	C	SSMFS 2008:1 Chapter 3 Section 4
P-40 (*)	C	SSMFS 2008:1 Chapter 3 Section 3
P-41	C	SSMFS 2008:1 Chapter 2 Section 1 and 8 and Chapter 5 Section 1
P-42	A	SSMFS 2008:1 Chapter 2 Section 8
P-43	A	SSMFS 2008:1 Chapter 5 Section 2

# SRL	Current status	Relevant regulations
P-44	C	SSMFS 2008:1 Chapter 5 Section 1
P-45 (*)	C	Act on Nuclear Activities (1984:3) Section 1
P-46 (*)	C	SSMFS 2014:2 Chapter 2 Section 1
P-47 (*)	C	SSMFS 2014:2 Chapter 2 Section 2
P-48 (*)	C	SSMFS 2014:2 Chapter 10 Section 2
P-49 (*)	C	SSMFS 2008:1 Chapter 2 Section 9
P-50 (**)	C	SSMFS 2008:1 Chapter 2 Section 9 and Chapter 5 Section 3
P-51 (*)	C	SSMFS 2008:1 Chapter 4 Section 5
P-52 (*)	C	SSMFS 2008:1 Chapter 4 Section 2
P-53 (*)	C	SSMFS 2008:1 Chapter 5 Section 3
P-54 (*)	C	SSMFS 2008:1 Chapter 5 Section 3
P-55	A	SSMFS 2008:1 Chapter 5 Section 3
P-56	A	SSMFS 2008:1 Chapter 5 Section 3
P-57	A	SSMFS 2008:1 Chapter 6 Section 12
P-58	A	SSMFS 2008:1 Chapter 6 Section 12
P-59 (*)	C	SSMFS 2008:1 Chapter 6 Section 10
P-60 (*)	C	SSMFS 2008:1 Chapter 6 Section 10
P-61 (*)	C	SSMFS 2008:1 Chapter 2 Section 8 , Chapter 5 Section 1 and Chapter 6 Sections 3 and 10
P-62 (*)	C	SSMFS 2008:1 Chapter 6 Section 10
P-63 (*)	C	SSMFS 2008:1 Chapter 2 Section 8a, Chapter 4 Section 5 and Chapter 5 Sections 1 and 3
P-64 (*)	C	
P-65 (*)	C	SSMFS 2008:1 Chapter 4 Section 2
P-66 (*)	C	SSMFS 2008:1 Chapter 4 Section 2
P-67 (*)	C	SSMFS 2008:1 Chapter 4 Section 1
P-68 (*)	C	SSMFS 2008:1 Chapter 4 Section 2
P-69 (*)	C	Act on Nuclear Activities (1984:3) Section 10
P-70 (*)	C	SSMFS 2008:1 Chapter 4 Section 4
P-71 (*)	C	Act on Nuclear Activities (1984:3) Section 10a

List of references:

- Act On Nuclear Activities (1984:3)
- Regulations and general advice concerning safety in certain nuclear facilities (SSMFS 2008:1)
- Regulations on emergency preparedness at certain nuclear facilities (SSMFS 2014:2)

Switzerland

Switzerland's regulatory framework on radioactive waste treatment and processing is mostly in accordance with the WENRA reference levels. The minor remaining issues are related to the periodic safety review of this type of facilities and its compliance requires a small change in the Swiss Nuclear Energy Ordinance which has already been implemented.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**A**	NEA
P-02	**A**	NEA, NEO
P-03	**A**	NEA
P-04	**A**	NEA, NEO
P-05	**A**	ENSI-B05
P-06	**B**	NEA
P-07	**A**	NEA
P-08	**A**	NEA
P-09	**A**	NEA
P-10	**A**	ENSI-G07
P-11	**A**	ENSI-G07
P-12	**A**	NEO, ENSI G-09
P-13	**A**	NEO
P-14	**A**	NEA, NEO, ENSI-G07
P-15	**A**	ENSI-G07
P-16	**A**	NEO, RPO, ENSI-G07
P-17	**A**	NEO
P-18	**A**	NEO, ENSI-G07
P-19	**A**	NEO, ENSI-G07
P-20	**A**	ENSI-G07
P-21	**A**	ENSI-G07
P-22	**A**	NEO, ENSI-B02, ENSI-B05, ENSI-B17
P-23	**A**	NEO
P-24	**A**	NEO, ENSI-B02, ENSI-G07
P-25	**A**	NEO, ENSI-B02, ENSI-G07
P-26	**A**	ENSI-B05
P-27	**A**	NEO
P-28	**A**	ENSI-B05
P-29	**A**	ENSI-B05
P-30	**A**	NEO, ENSI-B05
P-31	**A**	ENSI-B05
P-32	**A**	ENSI-G23
~~P-33~~	-	Deleted by decision of WGWD
P-34	**A**	NEA

# SRL	Current status	Relevant regulations
P-35	A	NEO, ENSI-G23
P-36	A	NEO, ENSI-G23
P-37	A	NEO, ENSI-G23
P-38	A	ENSI-B05, ENSI-G23
P-39	A	NEO, ENSI-G09, ENSI-G23
P-40	A	NEO, ENSI-B01, ENSI-G23
P-41	A	ENSI-G09
P-42	A	NEO
P-43	A	ENSI-B05
P-44	A	ENSI-B05
P-45	A	NEO, ENSI-B05
P-46	A	NEO, NFSV, ENSI-A01, ENSI-B12
P-47	A	NEO
P-48	A	NEO
P-49	A	NEO, ENSI-G08
P-50	A	NEO, ENSI-G07, ENSI-G08
P-51	A	NEO, ENSI-G07
P-52	A	ENSI-G07
P-53	A	NEA, NEO
P-54	A	NEO
P-55	A	NEO
P-56	A	NEO, ENSI-G08
P-57	A	ENSI-B05, ENSI-B17
P-58	C	
P-59	A	NEO
P-60	A	NEO
P-61	A	ENSI-B05
P-62	A	ENSI-B05
P-63	A	ENSI-A04
P-64	A	ENSI-A04
P-65	A	NEO, ENSI-G09
P-66	A	NEO, ENSI-G09
P-67	A	ENSI-G09
P-68	A	NEO
P-69	C	
P-70	C	
P-71	C	

List of references:

- Nuclear energy act (NEA)
- Nuclear energy ordinance (NEO)
- Radiation protection ordinance (RPO)
- Emergency prepardness ordinance (NFSV)
- regulatory Guide ENSI-B05, Requirements for the conditioning of radioactive waste
- regulatory Guide ENSI-G07, The Organisation of Nuclear Installations
- regulatory Guide ENSI-G09, Construction and operating documentation
- regulatory Guide ENSI-B02, Periodic reporting of the nuclear facilities
- regulatory Guide ENSI-G23, Design requirements for other nuclear facilities
- regulatory Guide ENSI-B01, Aging monitoring
- regulatory Guide ENSI-B12, Emergency protection in nuclear facilities
- regulatory Guide ENSI-G08, Systematic safety assessments of the operation of nuclear facilities
- regulatory Guide ENSI-A01, Technical Safety Analysis for Existing Nuclear Installations: Scope, Methodology and Boundary Conditions

Ukraine

The State Nuclear Regulatory Inspection of Ukraine (SNRIU) establishes regulatory requirements in the area of radioactive waste (RAW) management in Ukraine, including requirements for radioactive waste treatment and conditioning (radwaste processing).

The regulatory system contains a quite big number of documents that regulate radwaste processing.

The main of them in is “General safety provisions for predisposal radioactive waste management” (NP306.4.213-2017). This document came into force in 2017 and aims to harmonize the Ukrainian regulations with the European Union requirements and the WENRA safety reference levels.

The SNRIU performed the self-assessment of the Ukrainian regulations for radioactive waste treatment and conditioning and presented the results of self-assessment at the WGWD-43 meeting in September - October 2019 in Cordoba, Spain.

The SNRIU presented additional explanations and updated self-assessment on March (online, pre-screening) and May 2025 at the WGWD-53 plenary meeting.

The results of the review at the WGWD-53 meeting are presented in the table.

Radioactive waste treatment and conditioning

# SRL	Current status	Relevant regulations
P-01	**B**	Law № 1688-III, art.21 Law № 1370-XIV, art.7 Law № 39/95-VR, art.32, art.53 Low No 255/95-VR, art.12 NP 306.4.213-2017 (III/1, p.6; II/3, p.5)
P-02	**B**	NP 306.4.213-2017 (III/1, p.8; III/1, p.6)
P-03	**B**	NP 306.4.213-2017 (II/3, p.2; III/1, p.2, p.4; II/1, p.3)
P-04	**B**	NP 306.4.213-2017 (II/11, p.1, p.3; III/1, p.4) NP 306.1.190-2012 (p. 4.1, p.7.7.6)
P-05	**A**	NP 306.5.04/2.060-02 (p.2.17) NP 306.4.213-2017 (II/3, p.5; III/2, p.3, p.4)
P-06	**B**	NP 306.5.04/2.060-02 (p.4.5) NP 306.4.213-2017 (III/1, p.6)
P-07	**A**	Law № 39/95-VR, art.32; Law № 255/95-VR, art. 11; NP 306.4.213-2017 (II/6, p.1).
P-08	**A**	NP 306.4.213-2017 (II/9, p.3); NP 306.1.190-2012 (p. 4.2, p. 2.2).
P-09	**A**	NP 306.1.190-2012 (p. 6.1); NP 306.4.213-2017 (II/1, p.4; II/11 p.1, p. 3; II/7, p.3).
P-10	**A**	NP 306.1.190-2012 (p. 2.1, p.4.8, p.4.12); NP 306.4.213-2017 (II/9, p.4, p.2).
P-11	**A**	NP 306.5.04/2.060-02 (p.2.1); NP 306.4.213-2017 (II/9, p.3; VII/2, p.2, p.3, p.4).
P-12	**A**	NP 306.5.04/2.060-02 (p.2.4); NP 306.4.213-2017 (II/14, p.1).
P-13	**A**	NP 306.5.04/2.060-02 (p.2.19); NP 30.5.01/3.083-2004 (p.8.5); NP 306.5.04/2.060-02 (p.2.20, p.2.21).
P-14	**A**	NP 306.4.213-2017 (II/6, p.2; II/9, p.3, p.4); NP 306.1.190-2012 (p.4.2, p.4.7, p.4.12).
P-15	**A**	NP 306.5.04/2.060-02 (p.2.1); NP 306.4.213-2017 (VII/2, p.1, p.2).
P-16	**A**	NP 306.5.04/2.060-02 (p.2.3); NP 306.4.213-2017 (VII/2, p.2, p.3, p.4).
P-17	**A**	NP 306.5.04/2.060-02 (p.2.23).
P-18	**A**	NP 306.4.213-2017 (II/9, p.1); NP 306.1.190-2012 (p.2.1).
P-19	**A**	NP 306.4.213-2017 (II/9, p.3); NP 306.1.190-2012 (p. 5.2, p.4.7, p.4.4, p.4.2, p.4.8, p.5.2, p.2.6).
P-20	**A**	NP 306.1.190-2012 (p.4.8, p.2.1, p.2.2, p.5.2, p.5.4); NP 306.4.213-2017 (VII/3, p.5, p.2, p.3, p.4).

# SRL	Current status	Relevant regulations
P-21	**A**	NP 306.1.190-2012 (p.4.3, p.4.8, p.4.7, p.4.2, p.4.8, p.4.8, p.4.12, p.4.1, p.4.11, p.7.4.3, p.7.4.4).
P-22	**A**	NP 306.4.213-2017 (II/3, p.5; III/2, p.3, p.4).
P-23	**A**	NP 306.4.213-2017 (II/3, p.5); NP 306.5.04/2.060-02 (p.2.17).
P-24	**A**	NP 306.4.213-2017 (VII/5, p. 1, p. 2, p. 3); NP 306.5.04/2.060-02 (p. 2.17).
P-25	**A**	NP 306.4.213-2017 (III/6, p. 7).
P-26	**A**	NP 306.4.213-2017 (III/2, p.1; III/6, p.2); NP 306.1.190-2012 (p.4.8); NP 306.4.213-2017 (III/6, p.5); NP 306.4.225-2020 (VI/4, p.3, VI/5, p.4) NP 306.4.213-2017 (II/11, p.4); NP 306.1.190-2012 (p.7.5.5); NP 306.4.213-2017 (III/6, p.8, p.5)
P-27	**A**	NP 306.4.213-2017 (III/6, p.1; III/1, p.2).
P-28	**A**	NP 306.4.213-2017 (III/1, p.4; III/2, p.4).
P-29	**A**	NP 306.4.213-2017 (III/6, p.1; III/2, p.1, p.7; II/9, p.3; II/1, p.2; V/1, p.3; III/6, p.5)
P-30	**A**	NP 306.4.213-2017 (III/6, p.4; III/2, p.3, p.4; III/6, p.6, p.7)
P-31	**A**	NP 306.4.213-2017 (III/10, p.1, p.3).
P-32	**A**	NP 306.4.213-2017 (V/3, p.2; III/9, p.1; III/2, p.4; V/1, p.3; II/7, p.1, p.4).
~~P-33~~	**-**	Deleted by decision of WGWD
P-34	**A**	NP 306.4.213-2017 (IV, p.1; V/1, p.1, p.2, p.7).
P-35	**C**	NP 306.4.213-2017 (V/3, p.2; II/7, p.1, p.3; II/14, p.9).
P-36	**A**	Law. № 255/95-VR, art. 24; NP 306.4.213-2017 (II/8, p.2, p.1, p.3).
P-37	**B**	NP 306.4.213-2017 (V/1, p.1, p.3, p.2; V/2, p.2).
P-38	**A**	NP 306.4.225-2020 (IV/8, p.1, p.2) NP 306.4.213-2017 (II/7, p.2, p.3; VII/1, p.2).
P-39	**A**	NP 306.4.213-2017 (V/1, p.4; V/2, p.5, p.1, p.6, p.7).
P-40	**A**	NP 306.4.213-2017 (V/7, p.1, p.2).
P-41	**A**	NP 306.4.213-2017 (I, p.6; V/1, p.3; VII/1, p.3; VII/3, p.2; III/6, p. 5).
P-42	**A**	NP 306.4.213-2017 (VII/1, p.1; VII/3, p.2, p.3).
P-43	**A**	NP 306.4.213-2017 (IV, p.1; II/7, p.1, p.2, p.3, p.4; II/11, p.2; VII/1, p.1; VII/8, p.1)
P-44	**A**	NP 306.4.213-2017 (III/6, p.8).

# SRL	Current status	Relevant regulations
P-45	A	NP 306.4.213-2017 (V/1, p.3; VII/5).
P-46	A	NP 306.4.213-2017 (VII/8, p.1, p.2, definitions) NP 305.5.01/3.083-2004 (definitions) NP 306.4.225-2020 (VIII/2, p.2)
P-47	A	NP 306.4.213-2017 (VII/8, p.3 ; VII/8, p.1; II/9, p.3); NP 306.5.01/3.083-2004 (V, p.5.3); NP 306.4.213-2017 (VII/8, p.4; VII/2, p.3; II/7, p.3).
P-48	A	NP 306.5.04/2.060-02 (p.2.19); NP 306.4.213-2017 (VII/8, p.5); NP 30.5.01/3.083-2004 (p.8.5).
P-49	A	NP 306.4.213-2017 (II/11, p.1, p.2, p.3).
P-50	A	NP 306.4.213-2017 (II/11, p.2, p.3, p.4, p.5); NP 306.1.190-2012 (p.4.1, p.7.7.6, p.8.1, p.8.2.1).
P-51	A	NP 306.4.213-2017 (VII/9, p.1, p.2, p.3, p.6).
P-52	A	NP 306.4.213-2017 (VII/9, p.4, p.5).
P-53	A	NP 306.4.213-2017 (VII/6, p.2).
P-54	A	NP 306.4.213-2017 (VII/6, p.1)
P-55	A	NP 306.4.213-2017 (VII/6, p.2, p.5) NP 306.1.190-2012 (p.5.2)
P-56	A	NP 306.4.213-2017 (VII/3, p.4).
P-57	A	NP 306.4.225-2020 (VI/4, p.1) NP 306.4.213-2017 (III/1, p.5, p.6; III/6, p.2).
P-58	A	NP 306.4.213-2017 (III/1, p. 5); NP 306.4.225-2020 (VI/4, p.1) NP 306.4.213-2017 (II/7, p.3).
P-59	A	NP 306.5.04/2.060-02 (II, p.2.17) NP 306.4.213-2017 (III/2, p.3); NP 306.4.225-2020 (VI/2, p.3)
P-60	A	NP 306.4.213-2017 (II/9, p.3; VII/5, p.1, p.2; VII/7, p.3); NP 306.1.190-2012 (p.7.4.3).
P-61	A	NP 306.4.213-2017 (III/6, p.5); NP 306.5.04/2.060-02 (IV, p.4.5, p.4.6); NP 306.4.213-2017 (II/9, p.3).
P-62	A	NP 306.5.04/2.060-02 (II, p.2.17, p.4.6); NP 306.4.213-2017 (VII/5, p.1, p.2).
P-63	C	NP 306.5.04/2.060-02 (I)
P-64	C	NP 306.5.04/2.060-02 (I; II, p. 2.4)
P-65	A	NP 306.4.213-2017 (II/14, p.1, p.4, p.6, p.7).
P-66	A	NP 306.4.213-2017 (II/14, p.9; VIII, p.2); NP 306.4.225-2020 (p.2/1)
P-67	A	NP 306.5.04/2.060-02 (II, p. 2.4) NP 306.4.225-2020 (II/1, p.2; VIII/2, p.2; II/10, p.1; III/7, p.1)

# SRL	Current status	Relevant regulations
P-68	A	NP 306.4.213-2017 (II/14, p.11, p.12; VII/9, p.6) NP 306.4.225-2020 (II/1, p.4)
P-69	A	NP 306.4.213-2017 (II/14, p.11).
P-70	A	NP 306.5.04/2.060-02 (II, p. 2.24, p. 2.26) NP 306.4.213-2017 (II/14, p.7, p.8) NP 306.4.225-2020 (II/1, p.4; VI/8, p.1, p.2, p.3)
P-71	A	NP 306.5.04/2.060-02 (II, p.2.24, p.2.25).

The main documents that also regulate radwaste management are:

- Law of Ukraine "On Nuclear Energy Use and Radiation Safety" (1995) (Low № 39/95-VR);
- Law of Ukraine "On Radioactive Waste Management"(1995) (Low No 255/95-VR);
- Law of Ukraine "On Authorizing Activity in Nuclear Energy" (2000) (Low No. 1370-XIV);
- Law of Ukraine "On Ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste" (2000) (low No. 1688-III);
- "Safety Conditions and Requirements (Licensing Conditions) for Activities in Radioactive Waste Management" (2002) (NP 306.5.04/2.060-02);
- "Plan of Response to Radiological Accidents" (2004) (NP 305.5.01\3.083-2004)
- "General Requirements for the Management System in Nuclear Energy" (2012) (NP 306.1.190-2012);
- "Requirements for the Structure and Contents of the Safety Analysis Report for Radioactive Waste Treatment Facilities" (2020) (NP 306.4.225-2020)

United Kingdom

The initial benchmarking of the radioactive waste treatment and conditioning SRLs showed that the UK regulatory system was largely compliant with the SRLs. There were 59 SRLs scored in categories A and B out of a total of 71. Twelve SRLs were scored category C. The UK was one of the first countries to be benchmarked against these SRLs after publication and since then three of the SRLs have been revised. The changes to these SRLs are consistent with the UK's regulatory system and therefore no changes to the regulatory system are needed.

UK Government policy concerning nuclear installations including nuclear safety, security and safeguards, health and safety at work, and import and export control of radioactive substances is reserved, and regulated by the Office for Nuclear Regulation (ONR). Radioactive substances, including policy on the management of radioactive waste and environmental protection, are devolved matters. The Welsh Government, Northern Ireland Executive and Scottish Government each has responsibility for these matters in their respective devolved administration and each is regulated separately. Where required the benchmarking was undertaken against the Environmental Permitting (England and Wales) Regulations.

Equivalent legislation is provided through the Environmental Authorisations (Scotland) Regulations 2018. There are no nuclear power plants in Northern Ireland.

ONR reviews and updates its guidance for radioactive waste, periodically and as necessary, in conjunction with the UK's environmental regulators. Recent updates to ONR's Technical Assessment Guides (TAGs) and in particular the TAG on the management of radioactive material and radioactive waste on nuclear licensed sites, have been made to address nine of the SRLs scored as category C.

The UK is in the process of submitting evidence pertaining to all twelve of the SRLs scored category C, to be re-benchmarked by the WGWD.

Two tables are presented below. The first table shows the SRLs that the UK is compliant with and references the relevant underpinning evidence supporting the scores. The second table shows the SRLs on the National Action Plan and the UK's plans to address them.

Spent fuel and radioactive waste treatment and conditioning

# SRL	Current status	Actions taken / relevant regulations
P-01	**B**	Licence Conditions and Safety Assessment Principles; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-02	**B**	Licence Conditions and Safety Assessment Principles; The Environmental Permitting Regulations 2010.
P-03	**B**	Licence Conditions and Safety Assessment Principles; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-04	**A**	Licence Conditions and Safety Assessment Principle; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-05	**A**	Licence Conditions and Safety Assessment Principles; The Environmental Permitting Regulations 2010 and Regulation Environmental Principles.
P-06	**A**	Licence Conditions and Safety Assessment Principles.
P-07	**A**	Licence Conditions and Safety Assessment Principles.
P-08	**A**	Licence Conditions and Safety Assessment Principles Regulation Environmental Principles.
P-09	**A**	Licence Conditions and Safety Assessment Principles.
P-10	**A**	Licence Conditions and Safety Assessment Principles.
P-11	**A**	Licence Conditions and Safety Assessment Principles; The Environmental Permitting Regulations 2016.

# SRL	Current status	Actions taken / relevant regulations
P-12	**A**	Licence Conditions and Safety Assessment Principles.
P-13	**A**	Radiation (Emergency Preparedness and Public Information) Regulations 2019; The Ionising Radiations Regulations 2017; Licence Conditions and Safety Assessment Principles.
P-14	**A**	Licence Conditions and Safety Assessment Principles.
P-15	**A**	Licence Conditions and Safety Assessment Principles.
P-16	**A**	Licence Conditions and Safety Assessment Principles.
P-17	**A**	Licence Conditions and Safety Assessment Principles.
P-18	**A**	Licence Conditions and Safety Assessment Principles.
P-19	**A**	Licence Conditions and Safety Assessment Principles.
P-20	**A**	Licence Conditions and Safety Assessment Principles.
P-21	**A**	Licence Conditions and Safety Assessment Principles.
P-22	**A**	Licence Conditions and Safety Assessment Principles.
P-23	**A**	Licence Conditions and Safety Assessment Principles.
P-24	**A**	Licence Conditions and Safety Assessment Principles.
P-25	**A**	Licence Conditions and Technical Inspection Guide.
P-31	**A**	Licence Conditions and Safety Assessment Principles.
P-32	**A**	Licence Conditions and Safety Assessment Principles.
P-34	**A**	Licence Conditions and Safety Assessment Principles.
P-35	**A**	Licence Conditions and Safety Assessment Principles.
P-36	**A**	Licence Conditions and Safety Assessment Principles.
P-37	**A**	Licence Conditions and Safety Assessment Principles.
P-38	**A**	Safety Assessment Principles.
P-39	**A**	Licence Conditions and Safety Assessment Principles.
P-40	**A**	Licence Conditions and Safety Assessment Principles.
P-41	**A**	Licence Conditions
P-42	**A**	Licence Conditions.
P-43	**A**	Licence Conditions and Safety Assessment Principles.
P-45	**A**	Licence Conditions and Safety Assessment Principles; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-46	**A**	Licence Conditions and Safety Assessment Principles.
P-47	**A**	Licence Conditions and Safety Assessment Principles.
P-48	**A**	Licence Conditions and Safety Assessment Principles.

# SRL	Current status	Actions taken / relevant regulations
P-49	**A**	Licence Conditions and Safety Assessment Principles; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-50	**A**	Licence Conditions and Safety Assessment Principles.
P-51	**A**	Licence Conditions and Safety Assessment Principles.
P-52	**A**	Licence Conditions and Technical Inspection Guide.
P-53	**A**	Licence Conditions and Safety Assessment Principles.
P-54	**A**	Licence Conditions and Safety Assessment Principles.
P-55	**A**	Licence Conditions and Technical Inspection Guide.
P-58	**A**	Licence Conditions and Safety Assessment Principles.
P-59	**A**	Licence Conditions and Safety Assessment Principles.
P-60	**A**	Licence Conditions and Safety Assessment Principles.
P-62	**A**	Licence Conditions and Safety Assessment Principles; Joint regulatory guidance on The Management of Higher Activity Radioactive Waste on Nuclear Licensed Sites.
P-63	**B**	Safety Assessment Principles.
P-64	**B**	Licence Conditions and Safety Assessment Principles.
P-65	**A**	Licence Conditions.
P-66	**A**	Licence Conditions.
P-67	**A**	Licence Conditions and Safety Assessment Principles; The Environmental Permitting Regulations 2010 and Regulation Environmental Principles.
P-68	**A**	Licence Conditions and Safety Assessment Principles.
P-69	**A**	Licence Conditions and Safety Assessment Principles.
P-70	**A**	Licence Conditions and Safety Assessment Principles.
P-71	**A**	Licence Conditions and Technical Assessment Guide.

# SRL	Current status	Actions taken / relevant regulations
P-26	**C**	Processes around product quality of waste packages, as required by the SRL, are assured by Nuclear Waste Services, the UK's national operator for geological radioactive disposal. The requirement of the SRL is therefore met by the operator and not the regulator. The UK is compiling the evidence for resubmission.
P-27	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.

# SRL	Current status	Actions taken / relevant regulations
P-28	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.
P-29	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.
P-30	**C**	Processes around product quality of waste packages, as required by the SRL, are assured by Nuclear Waste Services, the UK's national operator for geological radioactive disposal. The requirement of the SRL is therefore met by the operator and not the regulator. The UK is compiling the evidence for resubmission.
~~P-33~~	**-**	Deleted by decision of WGWD
P-39	**C**	The UK has no further action beyond resubmission – existing reference publications meet the criteria of the recently revised SRL.
P-41	**C**	The UK has no further action beyond resubmission – existing reference publications meet the criteria of the recently revised SRL.
P-44	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.
P-56	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.
P-57	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.
P-61	**C**	The UK has no further action beyond resubmission – new reference publications meet the criteria of the SRL.