Република Србија
Директорат за радијациону и нуклеарну
сигурност и безбедност Србије

Republic of Serbia
Serbian Radiation and Nuclear
Safety and Security Directorate

8th Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

National Presentation by the Republic of Serbia

Country Group 3
Vienna, Austria, 21 March 2025

Outline of the Presentation

- Summary of basic information on the national programme, including the Matrix
- Changes in the national programme since the last Review Meeting
- Action on Suggestions and Challenges from the 7th Review Meeting
- Current Challenges
- Significant events since the last Review Meeting
- Potential Good Practices and Areas of Good Performance
- Relevant overarching issues agreed at the 7th Review Meeting
- Questions and comments received on the National Report
- Planned measures to improve safety beyond the Convention itself
- Conclusions

Basic information on the National Programme

BASIC INFORMATION

- Instrument of accession to Joint Convention deposited on December 18, 2017.
- Entry into force March 18, 2018.
- Serbia’s First National Report to the Joint Convention was presented on the 6th Review Meeting in May 2018

Official Name: Republic of Serbia
Landmass: 88 499 km²
Population: 6.6 million (est. 2024)

Basic information on the National Programme

Organizational framework

Regulatory body

- Serbian Radiation and Nuclear Safety and Security Directorate – SRBATOM
- 36 employees
  - 20 university degree in electrotechnics/nuclear, physics, chemistry, physical-chemistry, technology/chemical engineering, law, finance

Operator – Centralised RW Storage, research reactors, former uranium mine

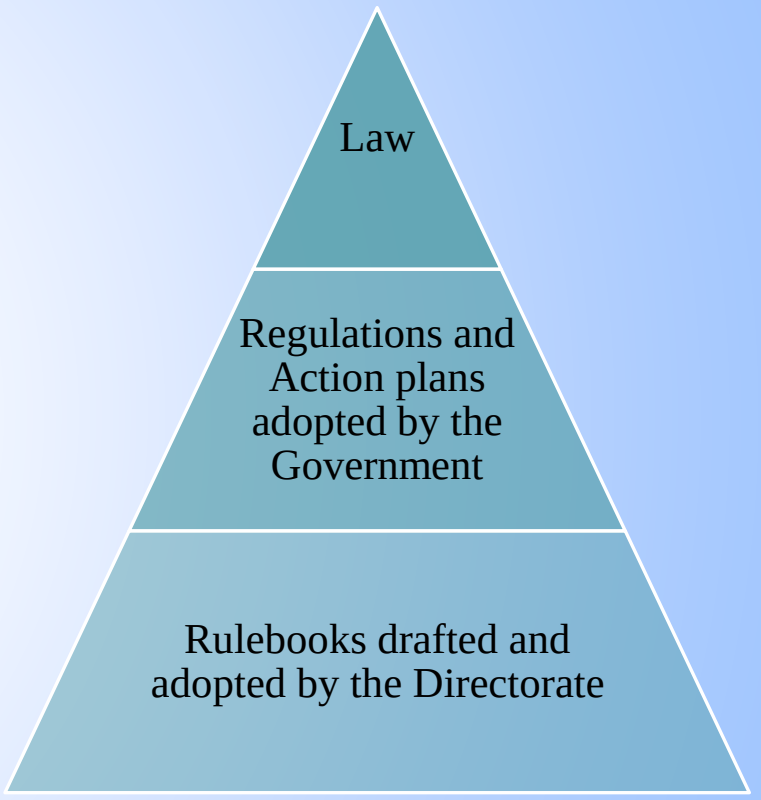
- Public Company „Nuclear Facilities of Serbia“
- about 120 employees, 30 in RW Management Unit
  - university degree in electrotechnics/nuclear, physics, chemistry, physical-chemistry, technology/chemical engineering, mechanical

Basic information on the National Programme

Legal Framework

- Law on Radiation and Nuclear Safety and Security ("Official Gazette od RS" 95/18 and 10/19)
- Regulation on determining the Programme of nuclear safety and security
- Regulation on the security measures of nuclear facilities and nuclear materials
- Action plan in case of an accident
- 22 rulebooks adopted for implementation of the Law (some need review and changes)

- National Spent Fuel and Radioactive Waste Management Strategy – **drafted**



Updates since the submission of previous report in October 2020 – reported at the 7th RM

- Rulebook on radiactive waste and spent nuclear fuel management (December 2021)
- Rulebook on decommissioning (January 2022)

Basic information on the National Programme

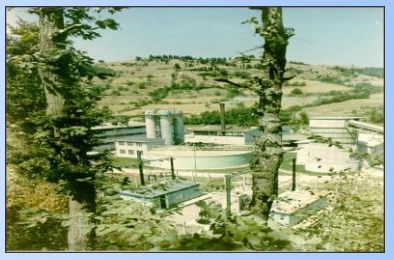
Waste categorization - Rulebook on RW and SNF management

Radioactive waste category	Description
Exempted waste (EW)	Radioactive waste fulfilling the requirements for the exemption or release from the regulatory control.
Very short lived waste (VSLW)	Radioactive waste containing radionuclides whose half-life is equal to or shorter than 100 days.
Very low level waste (VLLW)	Radioactive waste with specific or total activity which is up to one order of magnitude above the exempt radioactive waste for volatile radionuclides or up to two orders of magnitude for other radionuclides.
Low and intermediate level waste – short lived (LILW – SL)	Radioactive waste containing radionuclides whose half-life is shorter than 30 years rounded to the first smaller digit representing an entire year whose activity concentration for long lived radionuclides is lower than 4000 Bq/g for a single package or 400 Bq/g for the total amount of radioactive waste.
Low and intermediate level waste – long lived LILW - LL	Radioactive waste containing radionuclides whose half-life is equal to or longer than 30 years rounded to the first smaller digit representing an entire year whose activity concentration for long lived radionuclides is higher than 4000 Bq/g for a single package or 400 Bq/g for the total amount of radioactive waste.
High level waste (HLW)	Radioactive waste containing long lived radionuclides whose activity concentration is higher than 10^4 TBq/m^3.

Basic information on the National Programme

Overview of national activities

- Uranium mining and milling activities - performed in 1960's, closed
- Research reactors RA and RB - operated since late 1950's providing production of radioisotopes as well as research and trainning activities.
  - RA reactor – 6.5 MW, heavy water, graphite reflector, LEU and HEU
    - Shut down for the reconstruction in 1984, never restarted.
    - Spent nuclear fuel repatriated to Russian Federation in December 2010
    - Govermant decision on decommissioning
  - RB reactor – Unreflected zero power heavy water, natural uranium and LEU
    - Last criticality achieved in 2009



Basic information on the National Programme

Overview of national activities – Cont.

- Radioactive waste management facilities – old facilities
  - Hangars H1 and H2
    - Build in 1968 (H1) and in 1984 (H2)
    - Low and intermediate level waste from the research reactors, medical and industrial aplications, spent sealed sources, materials contaminated during the Chernobyl accident, SNF repackaging activities, cleanning the sites affected with depleted uranium ammunition during NATO bombing, etc.
    - Ceased operation in 1982 (H1) and 2012 (H2)
    - Preparatory activites for the decommissioning – licencing process ongoing, IAEA TC Project SRB3004
    - **Licence for decommissioning – target: May 2025**
    - **500 drums retrieved from H2 and processed in Waste Processing Facility – target: end of 2025**



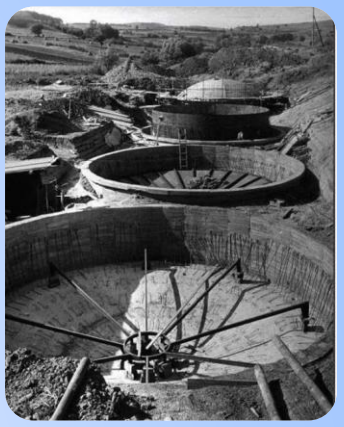


Basic information on the National Programme

Overview of national activities – Cont.

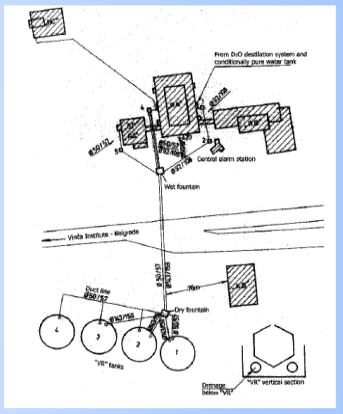
- Radioactive waste management facilities – old facilities
  - Hangar H0
    - Used for temporary storage of sealed radioactive sources used in Laboratory for Radioisotopes of the Vinča Institute.
    - One room is now used for temporary keeping of up to 900 liters of liquid radioactive waste

Basic information on the National Programme



Overview of national activities – Cont.

- Radioactive waste management facilities – old facilities
  - Underground liquid waste tanks VR1 – VR4
    - Liquid radioactive waste from the RA research reactor (VR1-VR3) and from the Laboratory for radioisotopes (VR4)
    - Made of stainless steel with a concrete shielding
    - Tanks currently do not accept waste
    - Liquid content 869.8 m^3
  - Radium bunker
    - Various forms of radium sources
    - Concrete facility constructed in 1960's on the ground level covered with lead plates. During NATO bombing in 1999 an additional concrete bunker without entrance was constructed surrounding existing bunker and was covered with soil.



Basic information on the National Programme

Overview of national activities – Cont.

- Radioactive waste management facilities – operating facilities
  - Hangar H3 and Secure Storage
    - built in the period from 2007 to 2010
    - licenced for operation since September 2012
    - Hangar H3
      - low and intermediate level waste
      - capacity: 4363 drums (220 liters) – arround 870 m^3 in current arrangement, posibility to increase the capacity with different arrangement
    - Secure Storage
      - sealed radioactive sources and nuclear material
      - capacity limited by the dose rate in the central corridor

Basic information on the National Programme

Overview of national activities – Cont.

- Radioactive waste management facilities – planned facilities
  - Waste processing facility - IAEA SRB3004 TC Project
    - licensed for trial run in 2022
    - Segregation, compaction and immobilization of RW
    - Conditioning of sealed radioactive sources Cat. 3, 4 and 5
    - Cold trial run – ongoing
    - Hot trial run – planned in May 2025
    - **Operational licence – target: July 2025**
  - Mobile units - IAEA SRB9005 TC Project
    - PC NFS together with the IAEA procured, constructed and equipped three mobile units for a segregation of radioactive waste and conditioning of sealed radioactive sources.

Matrix

Type of Liability	Long-Term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	No decision on future use of research reactor RB. Once permanently removed from the reactor fuel can be stored in Secure Storage. Policy in preparation	State budget	None	None
Nuclear Fuel Cycle Wastes	No nuclear fuel cycle waste	Not applicable	Not applicable	Not applicable
Application Wastes	Treatment, long term storage and disposal	Users and State Budget	Centralized storage	Waste Processing Facility
Decommissioning	Decommissioning of old storage facilities, research reactor RA and Radium bunker	State budget	Decision issued by Government for decommissioning of old storage facilities and research reactor RA No activities on site	Radium bunker
Disused Sealed Sources	Return to the supplier, reuse, recycle or secure storage	Users and State Budget	Return to the supplier, secure storage	Waste Processing Facility

Changes in the National Programme since the last Review Meeting

Changes in Laws and Regulations

- Repealed
  - Law banning construction of NPPs in FRY („Official Gazette of RS“, 85/05) - first adopted in 1989 as Law banning construction of NPPs in SFRY, then in 1995 as Law banning construction of NPPs in FRY)
    - Repealed in December 2024
    - The road to the construction of a nuclear power plant is open

Action on Suggestions and Challenges from the 7th Review Meeting

- Response to Challenges from the 7th Review Meeting

- Human resources – ongoing
  - This challenge is still valid, Serbia is facing a lack of human resources needed for an ambitious programme of improvements.
- Aging and brain-drain and the ability to retain technically knowledgeable and experienced staff – ongoing
  - This challenge is still valid, aging and brain-drain is a continuous problem.
- Incomplete inventories for legacy waste storage facilities – ongoing
  - This challenge is still valid, progress has been made on the inventory of radium sources.

Action on Suggestions and Challenges from the 7th Review Meeting

- Response to Challenges from the 7th Review Meeting

- Adoption of legal framework (rulebook) for DSRS
  - This challenge is still valid. A relevant bylaw is drafted and needs to be adopted.
- Condition of old waste facilities – ongoing
  - This challenge is still valid.
  - The licencing process for the decommissioning of old hangars H1 and H2 is in its final stages.
  - Commissioning of the Waste Processing Facility will significantly improve the possibility to solve the problem of historical waste.

Action on Suggestions and Challenges from the 7th Review Meeting

- Response to Suggestions from the 7th Review Meeting

- Establish formal processes for public involvement
  - This suggestion is still valid.
- Official adoption of policy and strategy for SF and RW management and radiation and nuclear safety strategy
  - This suggestion is still valid.
- Serbia encouraged to invite IAEA missions for IRRS & ARTEMIS
  - Invitation of IRRS and ARTEMIS missions is planned after drafting the relevant bylaws and strategies.

Current challenges

- Lack of human resources, aging and brain-drain and the ability to retain technically knowledgeable and experienced staff is becoming a bigger challenge every year – middle-aged staff left both organizations (regulatory body and operator)

- All challenges identified in the 7th Review Meeting is still valid.

Significant events since the last Review Meeting

- **Repeal of the Law banning construction of NPPs**
  - Initiated a discussion about the radioactive waste disposal and the condition of the old storage facilities

- **Progress in implementation of the project for decommissionig of H1 and H2 and commissioning of WPF**

Relevant overarching issues agreed at the previous Review Meeting

Competence and staffing linked to the timetable for spent fuel and radioactive waste management programmes • availability of suitably qualified and experienced human resources across all organizations involved in the management of spent fuel and radioactive waste
Current chalenge

Inclusive public engagement on radioactive waste management and on spent fuel management programmes • Inclusive, open and transparent engagement with the public
Public hearing in the process of adopting strategic documents is prescribed by the law. Additional activities through the media, organization of talks and visits are necessary

Relevant overarching issues agreed at the previous Review Meeting

Ageing management of packages and facilities for radioactive waste and spent fuel, considering extended storage periods • absence of the timely availability of disposal facilities
Current chalenge

Long term management of disused sealed sources, including sustainable options for regional as well as multinational solutions. • The availability of disposal routes and uncertainties in availability of trans-border solutions for disused sources
Licensee has to formally declare a sealed source to be disused and take all required measures to return this source to its supplier. If it is not possible, a disused source can be recycled, its ownership transferred to another licensee, or declared to be radioactive waste.

Potential Good Practices and Areas of Good Performance

- Areas of Good Performance

- Good and transparent cooperation with users on all topics and issues related to radioactive waste management

- Good Practices

- None identified

Questions and comments received on the National Report

- Questions

- 38 questions received on the National Report
  - Inventory, plans for improvement, plans for disposal, adoption of Strategy, etc.

- Comments
- One comment received on the National Report
  - Suggestion for the improvement

Planned measures to improve safety beyond the Convention itself

- International peer review missions
  - The Republic of Serbia invited Occupational Radiation Protection Appraisal Service (ORPAS) mission.
  - Mission is planned for 19-27 May 2025
  - PC „Nuclear Facilities of Serbia“ is one of the participants – decommissioning activity is included in the ORPAS mission for the first time

Conclusions

- Concluding remarks
  - The 3rd National Report of the Republic of Serbia contains the updated informations on the matters covered in the First and Second Report.
  - It also addresses the safety issues that were identified in the previous reports, as well as the issues raised during the latest review meeting.
  - The major development in Serbia in the period after issuing the previous National Report is the adoption of two rulebooks (reported in 7th Review Meeting):
    - Rulebook on Radioactive Waste and Spent Nuclear Fuel Management
    - Rulebook on Decommissioning of Nuclear Facilities

Conclusions

- Succinct closing statement about the National Report
  - Report prepared by Serbian Radiation and Nuclear Safety and Security Directorate (SRBATOM)
  - Data provided by Public Company „Nuclear Facilities of Serbia“
  - National Report will be available on web-site of SRBATOM (www.srbatom.gov.rs) after the 8th Review Meeting

Јавно предузеће
Нуклеарни објекти Србије
Nuclear Facilities of Serbia

Thank you for your attention!