

Pursuant to Articles 160, 162, 163, 164, 165, 166, 167, 168, 170, 171, 172, 174,176 and Article 22, point 3) of the Law on Radiation and Nuclear Safety and Security (“Official Gazette of RS”, Nos. 95/18 and 10/19), and Article 15, paragraph 1, point 4) of the Statute of Serbian Radiation and Nuclear Safety and Security Directorate (“Official Gazette of RS”, No. 9/19), the Board of Serbian Radiation and Nuclear Safety and Security Directorate, on its session held on 14 December 2021, passes

## **THE RULEBOOK ON RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL MANAGEMENT**

### **Article 1**

This Rulebook shall prescribe in detail:

- 1) the contents of the declaration of radioactive material or spent nuclear fuel as radioactive waste;
- 2) the requirements for the management, manner of packing and marking of radioactive waste or spent nuclear fuel;
- 3) the conditions for the collection, record-keeping and the control of radioactive waste and spent nuclear fuel generation;
- 4) the manner and timeframes of temporary retention of radioactive waste and spent nuclear fuel;
- 5) the criteria for characterization of radioactive waste and spent nuclear fuel;
- 6) the radioactive waste categories and the criteria for radioactive waste categorization;
- 7) the requirements for radioactive waste processing;
- 8) the manner of maintaining the records of the stored radioactive waste and spent nuclear fuel, and the timeframes for delivering data to Serbian Radiation and Nuclear Safety and Security Directorate (hereinafter: The Directorate);
- 9) the requirements for radioactive waste and spent nuclear fuel storing;
- 10) the requirements for radioactive waste disposal;
- 11) the scope and the contents of the Plan on Radioactive Waste and Spent Nuclear Fuel Management;
- 12) the requirements for, manner and timeframes of maintaining the records of radioactive waste and spent nuclear fuel at the authorization holder, and data submission.

### **Article 2**

This Rulebook shall pertain to the radioactive waste that:

- 1) has been generated in an authorized practise;
- 2) has been generated during an emergency event or interventions;
- 3) has been generated due to expiry of an authorization, absence of an authorization or termination of an authorized radiation practise or a nuclear activity;
- 4) has been generated during the decontamination of the workplace and the environment, staff decontamination, and the removal of orphan sources.

### **Article 3**

For the purposes of this Rulebook, the following definitions shall apply:

- 1) *generator* means a legal entity or an entrepreneur whose practise generates radioactive waste, or a legal entity or an entrepreneur whose practise generates spent nuclear fuel;
- 2) *immobilization* means the conversion of waste into a waste form by solidification, embedding or encapsulation;
- 3) *international recommendations and standards* are the recommendations and standards by the International Atomic Energy Agency, the International Commission on Radiological Protection, the International Organization for Standardization, and any other relevant organizations;

- 4) *operator* means the licensee responsible for the operations of the radioactive waste and spent nuclear fuel management facility;
- 5) *package* means radioactive waste in a suitable container;
- 6) *handling* means any action or procedure that implies the movement and placement of radioactive waste or a radioactive waste package, or its introduction into the process of radioactive waste management;
- 7) *secondary radioactive waste* means radioactive waste that has been generated as by-product during processing, storing or disposal of radioactive waste.

The remaining definitions in this Rulebook have the meaning defined in the Law on Radiation and Nuclear Safety and Security.

#### **Article 4**

Radioactive waste and spent nuclear fuel management shall be conducted with due care of the following mandatory measures:

- 1) avoidance of radioactive waste generation, *i.e.* keeping the generated radioactive waste as low as reasonably achievable;
- 2) prevention of criticality;
- 3) prevention of unauthorized access and handling;
- 4) controlled storage and disposal;
- 5) keeping logs and records;
- 6) provision of the Response Plan in case of Emergency Event.

All procedures of the radioactive waste and spent nuclear fuel management shall be conducted in such a manner that they ensure the prevention of:

- 1) the contamination of the environment;
- 2) the harmful effect on the wildlife;
- 3) the uncontrolled disposal and handling of radioactive waste and spent nuclear fuel;
- 4) the harmful effect of the ionizing radiation on the exposed workers and the public.

Where radioactive waste has the properties of another hazardous substance which may harm the lives and the health of people, wildlife or the environment, the generator and the operator, when dealing with such radioactive waste, shall implement the measures in accordance with the regulations governing the conduct with hazardous waste.

The radioactive waste management shall be conducted commensurate with the category and the type of radioactive waste.

#### **Article 5**

The generator or the operator shall determine the type and the category of radioactive waste according to the physical, chemical and biological characteristics of the material determined during characterization.

The radioactive waste characterization serves to determine:

- 1) the origin of the waste;
- 2) the risk from reaching criticality;
- 3) the radiological characteristics:
  - (1) radionuclide content;
  - (2) radionuclide half-life;
  - (3) radionuclide activity;
  - (4) heat generation;

- (5) type of radiation;
- (6) surface contamination;
- (7) ambient dose equivalent rate;
- (8) decay products;
- 4) the physical characteristics:
  - (1) physical state (liquid, solid or gaseous);
  - (2) size and mass;
  - (3) compressibility;
  - (4) dispersibility;
  - (5) solubility;
  - (6) miscibility;
  - (7) free liquids content;
- 5) the chemical characteristics:
  - (1) chemical composition;
  - (2) solubility and chelating agents;
  - (3) potential chemical harm;
  - (4) corrosion resistance;
  - (5) corrosiveness;
  - (6) organic content;
  - (7) combustibility and flammability;
  - (8) chemical reactivity and swelling potential;
  - (9) gas generation;
  - (10) sorption of radionuclides;
- 6) the biological characteristics:
  - (1) potential biological hazards;
  - (2) bio-accumulation.

#### **Article 6**

The type of radioactive waste is determined based on:

- 1) physical state: solid, liquid or gaseous;
- 2) compressibility: compressible or incompressible;
- 3) volatility: volatile or non-volatile;
- 4) solubility: soluble or insoluble;
- 5) combustibility: combustible or incombustible;
- 6) corrosiveness: corrosive or non-corrosive;
- 7) other physical, chemical and biological properties relevant for radioactive waste management.

#### **Article 7**

Based on the quantity and the characteristics of the radioactive isotopes, the radioactive waste is classified into the following categories:

- 1) Exempt waste (*EW*);
- 2) Very short lived waste (*VSLW*);
- 3) Very low level waste (*VLLW*);
- 4) Low and intermediate level short lived waste (*LILW-SL*);
- 5) Low and intermediate level long lived waste (*LILW-LL*);
- 6) High level waste (*HLW*).

The waste categorization criteria are given under Appendix 1 of this Rulebook, which makes its constituent part.

## **Article 8**

The generator shall declare all radioactive waste not intended for further use, a disused source to be handed over to a central storage, and spent nuclear fuel not deemed as usable resource as radioactive waste.

The declaration under paragraph 1 shall contain in particular:

- 1) the unique code of the container containing packed radioactive waste;
- 2) the date of radioactive waste packing;
- 3) the origin;
- 4) the mass and the volume of the radioactive waste;
- 5) the radioactive waste category;
- 6) the type of radioactive waste;
- 7) the list of radionuclides contained in the material;
- 8) the presence of nuclear materials subject to notification;
- 9) the maximum value of ambient dose equivalent rate measured on the container surface;
- 10) the photograph of the radioactive waste;
- 11) any special notes on the radioactive waste properties such as the properties of another hazardous substance, likelihood of sustaining injuries during handling, etc.;
- 12) the name and the signature of the responsible person.

The generator shall submit the declaration under paragraph 1 of this Article to the operator during the radioactive waste handover.

The structure and the contents of the Declaration of the radioactive material or spent nuclear fuel as radioactive waste is given in П25-01 form under Appendix 2 hereof, which makes its constituent part.

## **Article 9**

The generator and the operator shall manage the radioactive waste and spent nuclear fuel in accordance with this Rulebook, the Radioactive Waste Management Plan and the Spent Nuclear Fuel Management Plan.

The scope and the contents of the Radioactive Waste Management Plan and the Spent Nuclear Fuel Management Plan, which are prepared by the generator and the operator, are given under Appendices 3, 4 and 5 of this Rulebook, which makes its constituent part.

The Radioactive Waste Management Plan by the operator pertains to the secondary radioactive waste.

The Radioactive Waste Management Plan and the Spent Nuclear Fuel Management Plan shall be reviewed at least once every five years.

The Directorate may require the generator and the operator to conduct an extraordinary review of the Radioactive Waste Management Plan and the Spent Nuclear Fuel Management Plan.

## **Article 10**

The generator shall bear full substantive responsibility for the generated radioactive waste and spent nuclear fuel until their handing over to the operator.

The operator shall bear full substantive responsibility for the radioactive waste and spent nuclear fuel taken from the generator.

The responsibility over radioactive waste and spent nuclear fuel management cannot be delegated to another legal entity, except in the instances and manner provided by the Law.

The generator shall keep radioactive waste generation as low as reasonably achievable in terms of the activity, chemical properties and the volume.

The generator and the operator shall implement the radiation and nuclear security measures for the material and the facility.

The generator and the operator shall immediately inform the Directorate in case of loss, theft, considerable dispersion or spill, unauthorized use or discharge into the environment of the radioactive waste and spent nuclear fuel.

#### **Article 11**

The generator shall emplace all radioactive waste into the containers meeting the radioactive waste acceptance criteria of the radioactive waste processing or storage facility.

Where the dimensions of the radioactive waste are larger than the container dimensions prescribed by the operator's radioactive waste acceptance requirements, the generator shall emplace the radioactive waste in accordance with the special instructions from the operator.

The operator shall, at the request and the cost of the generator, provide the generator of the radioactive waste, with the standard radioactive waste containers and the instructions for its collecting, sorting, marking, retaining and preparing for radioactive waste transport.

The generator shall enter into contract with the operator on taking the radioactive waste until the handover of the radioactive waste to the operator.

#### **Article 12**

The generator shall emplace all spent nuclear fuel into the containers specially designed and certified in accordance with the international standards.

The operator shall, at the request and cost of the generator provide the generator with the containers for spent nuclear fuel.

#### **Article 13**

The container holding radioactive waste and spent nuclear fuel shall bear a standard radioactivity symbol and the identification.

The symbol and the identification under paragraph 1 of this Article shall be placed in manner that makes them readily apparent and legible.

The symbol and the identification under paragraph 1 of this Article shall be durable and resistant to any physical and chemical impact, and contain relevant information ensuring the traceability of the data in accordance with the data contained in the radioactive waste records.

The symbol and the identification under paragraph 1 of this Article shall be removed from the container once it has been emptied and decontaminated.

#### **Article 14**

The identification marking on the radioactive waste container shall include the following data:

- 1) the unique code;
- 2) the UN number;
- 3) the name of the radioactive waste generator;
- 4) the mass of radioactive waste package;
- 5) the radioactive waste category;

- 6) the type of radioactive waste;
- 7) the inventory of radionuclides contained in the material;
- 8) the nuclear material subject to notification;
- 9) the date of radioactive waste emplacement;
- 10) maximum ambient dose equivalent rate measured on the container surface;
- 11) the value of surface contamination;
- 12) the date of ambient dose equivalent rate measurement and surface contamination check;
- 13) the signature of a person performing the measurement of ambient dose equivalent and surface contamination check.

The appearance of the identification under paragraph 1 of this Article is given under П25-02 form under Appendix 6 of this Rulebook, which makes its constituent part.

#### **Article 15**

The identification of the spent nuclear fuel container shall contain in particular:

- 1) the unique code;
- 2) the UN number;
- 3) the name of the spent nuclear fuel generator;
- 4) the mass of package;
- 5) the inventory of radionuclides contained in the material;
- 6) the date of packing;
- 7) the maximum ambient dose equivalent rate measured on the container surface;
- 8) the value of surface contamination;
- 9) the date of ambient dose equivalent rate measurement and surface contamination check;
- 10) the signature of a person performing the measurement of ambient dose equivalent rate and surface contamination check.

#### **Article 16**

In the course of radioactive waste collection, the generator shall perform its segregation according to the manner and the place of radioactive waste generation, and the type and category of radioactive waste.

#### **Article 17**

Very low level solid radioactive waste shall be collected into the packing or containers or emplaced in the location with the proper engineering barriers serving to prevent, reduce and delay radionuclide migration into the surrounding biosphere, and ensure the fulfilment of the radiation and nuclear safety and security measures.

The radioactive waste under paragraph 1 of this Article may be retained in the place of its generation if protected from the external impact, or any other location under the conditions established by the Directorate until the provision of conditions for its disposal.

#### **Article 18**

Low and intermediate level solid radioactive waste shall be collected into polyethylene packaging or packaging made of other suitable material and emplaced into the containers fulfilling the acceptance criteria of the waste processing or a storage facility.

The radioactive waste under paragraph 1 of this Article that, due to its mass, shape, dimensions or dose rate cannot be emplaced into a container fulfilling the waste acceptance criteria, shall be retained in separate premises fulfilling the requirements of radiation safety and security until the provision of the

conditions for its safe and secure transport to the radioactive waste processing facility, but not longer than three months.

The radioactive waste under paragraph 1 of this Article which contains alpha emitters shall be collected into a polyethylene bag, or a bag of any other suitable material which is emplaced into a metal container containing sorbents of the appropriate radioactive isotopes.

The radioactive waste under paragraph 1 of this Article which contains biological material, prior to processing, shall be emplaced in a polyethylene bag or a bag of any other suitable material or immersed into formalin, under the condition that the time of its retention in bags cannot be longer than three days after which period it must be processed.

The radioactive waste under paragraph 1 that contains syringes or any other sharp objects, glass or plastic susceptible to breaking during handling or transport shall be collected into specially marked puncture resistant containers.

### **Article 19**

Low and intermediate level short-lived liquid radioactive waste, the generation of which is not continuous, shall be collected in portable vessels with polyethylene lids or lids of any other suitable material which is resistant to breakage and chemical agents.

The volume of the vessel under paragraph 1 of this Article cannot be above 100 litres.

The vessel under paragraph 1 of this Article, the volume of which is above 25 litres, has to have handles facilitating its carrying and handling.

The vessel under paragraph 1 of this Article has to be sealed, marked and emplaced into a suitable secondary container whose volume can accommodate the entire volume of the liquid radioactive waste.

### **Article 20**

Low and intermediate level long-lived and high level liquid radioactive waste generated in the laboratories and experimental facilities whose volume is lower than 100 litres per day, shall be collected into containers with inner stainless steel vessel and a protective shield.

The container under paragraph 1 of this Article is hermetically sealed.

### **Article 21**

High level radioactive waste and radioactive waste containing fissile material and spent nuclear fuel shall be collected in accordance with the special international recommendations and standards.

The container intended for high level radioactive waste has a cooling system and other characteristics prescribed by the international standards depending on the activity, chemical composition, the amount of material, and the time of radioactive waste retention.

### **Article 22**

Liquid radioactive waste generated continuously during operation, the amount of which per day is above 200 litres, in case of low and intermediate level short lived radioactive waste, and 100 litres, in case of low and intermediate level long lived radioactive waste and high level radioactive waste, shall be

transferred from the place of generation to the reception tank by means of a sealed and separate special sewer system.

The sewer system and reception tank under paragraph 1 of this Article are detached from the other sewer systems, bear a radioactivity symbol and kept accessible for inspection, control and maintenance.

The material used in the construction of the sewer system and the reception tank under paragraph 1 of this Article shall be commensurate with the properties of the liquid radioactive waste reaching or expected to reach such sewer system.

### **Article 23**

The generator shall retain radioactive waste in a temporary storage until its handover to the operator.

The radioactive waste under paragraph 1 of this Article, excluding very short lived, very low level and high level radioactive waste, shall be retained in a temporary storage until a sufficient amount suitable for transport has been accumulated and with due respect of radiation and nuclear safety and security measures, but not longer than six months.

Very short lived radioactive waste shall be retained in a temporary storage in its original protective container, a device in which it was incorporated or specially marked containers and vessels until the conditions for its release into the environment have been fulfilled.

The operator shall retain any unprocessed radioactive waste until a sufficient amount for its processing has been accumulated.

In the period of radioactive waste retention, the generator and the operator shall ensure proper radiation and nuclear safety and security measures and conduct radioactivity monitoring inside the premises and buildings where radioactive waste is retained, as well as in the vicinity of such premises and buildings.

The generator shall retain high level radioactive waste and spent nuclear fuel in a temporary storage which is a constituent part of the facility where it has been generated, in accordance with the international standards and ratified international conventions.

### **Article 24**

The temporary storage shall fulfil the following requirements:

- 1) the generator or the operator are the owners of the building or premises, or have a building or premises use agreement;
- 2) is supervised by the generator or the operator;
- 3) has ensured conditions in terms of radiation and nuclear safety and security;
- 4) its use is authorized within the scope of the authorization for a practise performance;
- 5) bears a readily apparent radioactivity symbol.

### **Article 25**

Radioactive waste processing shall be conducted in a manner that fulfils the requirements for reception of radioactive waste forms into a radioactive waste storage or disposal facility.

The hazardous characteristics of radioactive waste, in accordance with the provisions regulating the waste management, should be kept as low as reasonably achievable in each processing stage, taking into account the known and foreseeable requirements of the transport, storage or disposal of radioactive waste.

The stages in radioactive waste processing are:

- 1) pre-treatment;



- 2) treatment;
- 3) conditioning.

#### **Article 26**

The pre-treatment comprises all procedures of pre-treating radioactive waste that facilitate the selection and the use of the proper technology for the treatment and conditioning.

The procedures in the pre-treatment are:

- 1) characterization;
- 2) segregation and sorting;
- 3) decontamination;
- 4) chemical adjustment

The segregation and sorting of radioactive waste includes:

- 1) separating of radioactive and non-radioactive material in order to reduce its volume;
- 2) grouping of radioactive material with similar or identical properties for simplified treatment, conditioning, storage or disposal;
- 3) dividing the material intended for re-use and recycling.

#### **Article 27**

The treatment of radioactive waste comprises the procedures that enhance the safety and the economy of the radioactive waste management by changing the properties of the radioactive waste.

The treatment of radioactive waste shall include:

- 1) reducing its volume;
- 2) decontamination or separation of radionuclides;
- 3) changing physical or chemical properties.

#### **Article 28**

The conditioning of radioactive waste comprises the procedures to achieve a waste form fulfilling the criteria for transport, storage and disposal.

The conditioning of radioactive waste includes:

- 1) its immobilization into a proper matrix or package;
- 2) emplacement of radioactive waste into containers;
- 3) providing an additional canister or an overpack.

#### **Article 29**

Radioactive waste shall be stored in the radioactive waste storage facilities until the conditions for its disposal have been ensured.

Radioactive waste shall be stored in the radioactive waste storage facilities which are specially designed and operate so as to ensure the optimal protection from the ionizing radiation to the exposed workers and the public, prevent unauthorized access, as well as ensure the isolation of the radioactive waste package from the environment and enable its taking out.

Radioactive waste shall be stored in accordance with the passive safety requirements prescribing that:

- 1) radioactive waste has been immobilised;
- 2) radioactive waste and container are physically and chemically stable;
- 3) removal of heat and prevention of criticality, if necessary, has been ensured;

- 4) the multibarrier approach has been in use;
- 5) radioactive waste package is resistant to external influences with negative impact on its properties relevant for safety;
- 6) the conditions in the storage facility have been optimized in relation to the lifecycle of the radioactive waste package;
- 7) the need for active safety systems ensuring safety is as low as reasonably achievable;
- 8) the need for maintenance systems ensuring safety is as low as reasonably achievable;
- 9) the need for human intervention ensuring safety is as low as reasonably achievable;
- 10) the storage facility is resistant to any foreseeable situations that can impact safety and security;
- 11) the storage facility is accessible for actions during an emergency event;
- 12) the need for urgent corrective measures in case of an emergency event is as low as reasonably achievable;
- 13) the radioactive waste package is available for examination and inspection oversight;
- 14) the radioactive waste package can be taken out for examination and additional processing;
- 15) the lifecycle of the storage facility is sufficiently long so as to provide for the storage prior to disposal;
- 16) the characteristics of radioactive waste package cannot affect adversely its future disposal.

### **Article 30**

The radioactive waste storage facility can accommodate only the radioactive waste packages that meet the acceptance criteria for the reception of radioactive waste into a storage.

The operator shall:

- 1) periodically check if the radioactive waste packages meet the storage requirements;
- 2) store the radioactive waste packages in a manner that allows for the implementation of the assumed international obligations arising from the ratified conventions and treaties governing the control of nuclear material.

### **Article 31**

Radioactive waste, excluding very low level radioactive waste, shall be disposed of in a separate radioactive waste disposal facility that ensures the following:

- 1) containment of radioactive waste;
- 2) isolation of the radioactive waste from the accessible biosphere and a substantial reduction of the likelihood and all possible consequences of an inadvertent human intrusion into the waste;
- 3) inhibition, reduction and delay of the migration of radionuclides from the waste into the accessible biosphere;
- 4) that the amounts of radionuclides reaching the accessible biosphere due to any migration from the disposal facility are such that possible radiological consequences are acceptably low at all times;
- 5) prevention of criticality and removal of heat, if necessary.

The disposal facility can accommodate radioactive waste packages that fulfil the established acceptance criteria into the disposal facility.

Very low level waste can be disposed of as non-radioactive waste, recycled or re-used provided that such disposal, recycling or re-use leads to the elevation of the effective dose of exposure for a member of the public, which is lower than 10  $\mu$ Sv per year.

The fulfilment of the requirements under paragraph 3 of this Article pertaining to the disposal as other waste, recycling or re-use shall be demonstrated in the process of obtaining the consent from the Directorate for the release from regulatory control.

### **Article 32**

The radioactive waste and spent nuclear fuel acceptance criteria for the emplacement in the radioactive waste and spent nuclear fuel management facilities are established in the Safety Analysis Report.

The operator is responsible to state the Acceptance Criteria in a separate document that is publically available.

The Acceptance Criteria serve to determine the restrictions for:

- 1) the radionuclide content and the specific activity;
- 2) the dose rate on the surface of a radioactive waste or a spent nuclear fuel package and the dose rate one meter from the package surface;
- 3) a specific surface contamination;
- 4) strength;
- 5) leakage;
- 6) corrosiveness;
- 7) chemical stability;
- 8) heat generation;
- 9) radiation resistance of the material;
- 10) combustibility;
- 11) gas generation and types of gas;
- 12) the presence of toxic substances;
- 13) the presence of organic substances that may affect biological degradation;
- 14) the presence of free radicals;
- 15) the presence of chelating and other agents;
- 16) explosiveness;
- 17) combustibility or flammability;
- 18) corrosion resistance;
- 19) nuclear criticality;
- 20) the adequacy of radioactive waste and spent nuclear fuel package markings;
- 21) the adequacy of containers and radioactive waste and spent nuclear fuel packing methods;
- 22) any other criteria relevant for safety.

### **Article 33**

The generator shall maintain the records of the radioactive waste and spent nuclear fuel which is generated, placed in a temporary storage or handed over to the central storage, as well as of the radioactive waste released from the regulatory control.

The records under paragraph 1 shall be maintained for every package, and shall include the following data:

- 1) the unique code of a radioactive waste or a nuclear fuel package;
- 2) UN number;
- 3) the origin of the radioactive waste and spent nuclear fuel;
- 4) the radioactive waste category and class or the type of fuel;
- 5) the date, place and manner of generation;
- 6) the number of items in case of collective radioactive waste and spent nuclear fuel packages;
- 7) the volume and mass;

- 8) the total specific activity and/or the activity and the date of the measurement or the evaluation, as well as the content of radionuclides whose activity exceeds 1% of the total activity;
- 9) the ambient dose equivalent rate on the radioactive waste and spent nuclear fuel package surface;
- 10) the place and the manner of retention;
- 11) the date of handing over into the central storage or the release of the radioactive waste from the regulatory control.

The operator shall maintain the records on the received, processed, stored and disposed radioactive waste and spent nuclear fuel.

The records under paragraph 3 shall be maintained for every package, and shall include the following data:

- 1) the unique code;
- 2) the UN number;
- 3) the origin;
- 4) the radioactive waste category and class or the type of fuel;
- 5) the date, place and manner of generation;
- 6) the number of items in case of collective packages;
- 7) the volume and the mass;
- 8) the total specific activity and/or the activity and the date of the measurement or the evaluation, as well as the content of radionuclides whose activity exceeds 1% of the total activity;
- 9) the ambient dose equivalent rate on the radioactive waste and spent nuclear fuel package surface;
- 10) the date of reception for processing, storage or disposal;
- 11) the manner of processing and treatment;
- 12) the location of the radioactive waste or spent nuclear fuel or the date of release of the radioactive waste from the regulatory control.

#### **Article 34**

The generator and the operator shall compile the inventory of the radioactive waste and spent nuclear fuel every year prior to 31 December of the current year.

The report on the inventory for the previous year shall be delivered to the Directorate prior to 01 March of the following year the latest.

The report shall include the information on the changes related to:

- 1) radioactive waste and spent nuclear fuel under regulatory control;
- 2) radioactive waste released from the regulatory control and discharged into the environment;
- 3) radioactive waste discharged into the environment as an authorized effluent release;
- 4) radioactive waste and spent nuclear fuel handed over into the central storage;
- 5) processed, stored or disposed radioactive waste;
- 6) exported radioactive waste and spent nuclear fuel.

In addition to the report under paragraph 2 of this Article, the generator and the operator shall deliver to the Directorate the reports on the radioactive waste inventory in accordance with the issued authorization or a special request.

#### **Article 35**

The generator shall retain the documentation and the records on:

- 1) the radioactive waste and spent nuclear fuel retained in the storage, for at least two (2) years following the end of their retention period;

- 2) the radioactive waste and spent nuclear fuel handed over to the operator, for at least five (5) years following the handover;
- 3) the radioactive waste released from the regulatory control and discharged into the environment, for at least ten (10) years following the discharge;
- 4) the radioactive waste discharged into the environment as an authorized effluent release, for at least ten (10) years following the discharge.

The operator shall retain the documentation and the records on:

- 1) the radioactive waste and spent nuclear fuel retained in the temporary storage, for at least two (2) years following the end of their retention period;
- 2) the radioactive waste released from the regulatory control and discharged into the environment, for at least ten (10) years following the discharge;
- 3) the radioactive waste discharged into the environment as an authorized effluent release, for at least ten (10) years following the discharge;
- 4) the processed radioactive waste, for at least twenty (20) years following its emplacement into the storage;
- 5) the stored radioactive waste and spent nuclear fuel, for at least twenty (20) years following the emplacement into the disposal facility;
- 6) the disposed radioactive waste and spent nuclear fuel, permanently;
- 7) the stolen or exported radioactive waste and spent nuclear fuel, permanently.

#### **Article 36**

On the day of the entry into force of this Rulebook, the Rulebook on Radioactive Waste Management (“Official Gazette of RS”, No. 60/11) and Articles 19 and 20 of the Rulebook on the Records of Radiation Sources, Professionally Exposed Persons, Patients Exposure to Ionizing Radiation and Radioactive Waste („Official Gazette RS“, No. 97/11) shall cease to exist.

#### **Article 37**

This Rulebook shall enter into force on the eighth day of its publication in the ““Official Gazette of the Republic of Serbia””.

Belgrade, 14 December 2021

Ref. No. 110-00-19/2021-02

**THE BOARD OF THE DIRECTORATE**

**CHAIRPERSON**

**Maja Gojkovic, LLB**

## APPENDIX 1

### Radioactive waste categories with the description of distinctive features

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 radionuclides long lived radionuclides whose activity concentration is higher than $10^4$ TBq/m <sup>3</sup> .

## APPENDIX 2

### Form II25-01

#### Declaration of radioactive material or spent nuclear fuel for radioactive waste

##### I Data on a legal entity/entrepreneur

Business name			Registration number		
			TIN		
Place			Municipality		
Address					
Postal code		Telephone		e-mail	
Radiation Protection Officer / Radiation Protection Service Manager					
Name of practise					
Authorization Ref. No			Date of issuance		

##### II Data on radioactive waste

Unique code	<i>(provided by central storage operator)</i>	
UN number		
Date of emplacement		
Origin		
Package mass [kg]		
Package volume [l]		
Radioactive waste category	<input type="checkbox"/> very short lived (VSLW) <input type="checkbox"/> very low level (VLLW) <input type="checkbox"/> low and intermediate level short lived ( <i>LILW – SL</i> ) <input type="checkbox"/> low and intermediate level long lived ( <i>LILW – LL</i> ) <input type="checkbox"/> high level (HLW)	
Radioactive waste class	Physical state	<input type="checkbox"/> solid <input type="checkbox"/> liquid <input type="checkbox"/> gaseous
	Compressibility	<input type="checkbox"/> compressible <input type="checkbox"/> incompressible
	Volatility	<input type="checkbox"/> volatile <input type="checkbox"/> non-volatile
	Solubility	<input type="checkbox"/> soluble <input type="checkbox"/> insoluble
	Combustibility	<input type="checkbox"/> combustible <input type="checkbox"/> incombustible
	Corrosiveness	<input type="checkbox"/> corrosive <input type="checkbox"/> non-corrosive

	Other physical, chemical and biological properties of relevance (list)	
Material radionuclide inventory		
Presence of nuclear material subject to notification		
Maximum ambient dose equivalent rate measured on container surface		
Any special notes on radioactive waste properties such as properties of other hazardous substances, possibility of injuries during handling, etc.		

### III Photographs of radioactive waste

### IV Certification

We hereby confirm under full substantive and criminal liability the accuracy of the above stated information.

	<b>Name</b>	<b>Date</b>	<b>Signature</b>
Radiation Protection Officer / Radiation Protection Service Manager			
Approved person with a legal entity/entrepreneur			



## **APPENDIX 3**

### **The scope and contents of the Radioactive Waste Management Plan by the generator**

#### **THE RADIOACTIVE WASTE MANAGEMENT PLAN BY THE GENERATOR**

The document shall contain the following information:

1. Document name,
2. Review number
3. Names, signatures and dates of the persons compiling, reviewing and approving the document.

The document shall contain at least the following sections:

##### **1. Introduction**

The purpose and the scope of the document, and the description of the practises generating radioactive waste.

##### **2. Organizational structure for radioactive waste management**

The organization of procedures for radioactive waste management, maintaining records and reporting, the list of responsible persons and prerequisite education of the responsible persons and staff engaged in the radioactive waste management.

##### **3. List of written procedures and other documents for radioactive waste management**

The decisions by the legal entity's management, regulations, standards, procedures and other documents.

##### **4. Radioactive waste arisings, categories and assumed annual amounts of generated radioactive waste**

The description of procedures generating radioactive waste, categories and assumed amounts of generated radioactive waste.

##### **5. The manner of radioactive waste management**

The list of stages and the description of the process of radioactive waste management.

##### **6. Description, location and technical specification of temporary storage**

The description, dimensions and drawings of the temporary storage, the drawing of the location of access roads and construction properties.

##### **7. Technical, organizational and other measures to reduce radioactive waste generation**

The technical, organizational and other measures which are implemented to reduce the amount of the radioactive waste generated during practise performance.

##### **8. Requirements for radioactive waste handover to operator**

The data on the containers, transport organization and the contract with the operator.

##### **9. Requirements for environmental discharges**

The verification of the fulfilment of the requirements for a discharge into the environment, the manner in which discharge is conducted, the procedure for obtaining the consent from the Directorate.

**10. The manner of maintaining records of generated radioactive waste or the one in the temporary storage**

The procedure of entering into the records, the manner of retaining data and ensuring log secrecy.

## **APPENDIX 4**

### **The scope and contents of the Radioactive Waste Management Plan by the operator**

#### **THE RADIOACTIVE WASTE MANAGEMENT PLAN BY THE OPERATOR**

The document shall contain the following information:

1. Document name,
2. Review number
3. Names, signatures and dates of the persons compiling, reviewing and approving the document.

The document shall contain at least the following sections:

##### **1. Introduction**

The purpose and the scope of the document, and the description of the operators practises.

##### **2. Organizational structure for radioactive waste management**

The organization of procedures for secondary radioactive waste management, maintaining records and reporting.

##### **3. List of written procedures and other documents for radioactive waste management**

The decisions by the legal entity's management, regulations, standards, procedures and other documents according to the quality management system.

##### **4. Radioactive waste arisings, categories and assumed annual amounts of generated radioactive waste**

The description of procedures generating secondary radioactive waste, categories and assumed amounts of generated secondary radioactive waste.

##### **5. The manner of radioactive waste management**

The list of stages and the description of the process of secondary radioactive waste management.

##### **6. Description, location and technical specification of temporary storage**

The description, dimensions and drawings of the temporary storage, the drawing of the location of access roads and construction properties.

##### **7. Technical, organizational and other measures to reduce radioactive waste generation**

The technical, organizational and other measures which are implemented to reduce the amount of the secondary radioactive waste generated during practise performance.

##### **8. Requirements for environmental discharges**

The verification of the fulfilment of the requirements for a discharge into the environment, the manner in which discharge is conducted, the procedure for obtaining the consent from the Directorate.

##### **9. The manner of maintaining records of generated radioactive waste or the one in the temporary storage**

The procedure of entering into the records, the manner of retaining data and ensuring log secrecy.

## **APPENDIX 5**

### **The scope and contents of the Spent Nuclear Fuel Management Plan by the operator**

#### **THE SPENT NUCLEAR FUEL MANAGEMENT PLAN BY THE OPERATOR**

The document shall contain the following information:

1. Document name,
2. Review number
3. Names, signatures and dates of the persons compiling, reviewing and approving the document.

The document shall contain at least the following sections:

#### **1. Introduction**

The scope and the contents of the document and the description of the practise generating spent nuclear fuel.

#### **2. Organizational structure for spent nuclear fuel management**

The organization of procedures for spent nuclear fuel management, maintaining of the records and reporting, the list of responsible persons and prerequisite education of the responsible persons and staff engaged in the spent nuclear fuel management.

#### **3. List of written procedures and other documents for spent nuclear fuel management**

The decisions by the legal entity's management, regulations, standards, written procedures and other documents.

#### **4. The manner of spent nuclear fuel generation and assumed annual amounts**

The description of the process generating spent nuclear fuel and assumed amounts of generated spent nuclear fuel.

#### **5. The manner of spent nuclear fuel management**

The description of the process of spent nuclear fuel management.

#### **6. Description, location and technical specification of temporary storage**

The description, dimensions and the drawing of the temporary storage, the drawing of the location of access roads and construction features including the proof of the fulfilment of the conditions in accordance with the special regulations governing the facility construction.

#### **7. The requirements for handover of spent nuclear fuel to operator**

The information on the containers, transport organization and the contract with the operator

#### **8. The manner of maintaining records of generated spent nuclear fuel or the one emplaced in the temporary storage**

The procedure of entering into the records, the manner of retaining data and ensuring log secrecy.

**APPENDIX 6****II25-02**

The appearance of the radioactive waste package identification label

<b>Unique code</b>		<b>UN number</b>		
<b>RAW generator</b>				
<b>Date of RAW packing</b>				
<b>RAW class</b>				
<b>RAW category</b>				
<b>Mass [kg]</b>				
<b>Radioisotopes</b>				
<b>Nuclear material subject to notification</b>				
<b>Date of control</b>	<b>Ambient dose equivalent rate [<math>\mu\text{Sv/h}</math>]</b>		<b>Surface contamination [<math>\text{Bq/cm}^2</math>]</b>	<b>Signature</b>
	<b>In the place of contact</b>	<b>At 1 m distance</b>		