# Republic of Serbia

# Second National Report

# Convention on Nuclear Safety

August 2022

**NOTE:** The updated information on matters covered in the previous Report and the changes thereof are marked in light blue rectangle.

Report prepared by: Serbian Radiation Protection and Nuclear Safety and Security Directorate

Terazije 41a

11000 Beograd

SERBIA

www.srbatom.gov.rs

# Contents

# Section A. Introduction

There are no significant changes in the basic information presented in the First National Report except the information about the population in the Republic of Serbia which has decreased by about 160,000 people.

The Republic of Serbia is located in the central part of the Balkan Peninsula (Figure 1), on the most important route linking Europe and Asia, occupying the area of 88,499 square kilometres. The length of Serbia's border is 2,361.7 kilometres [1]. Serbia borders Bulgaria to the east, Romania to the north-east, Hungary to the north, Croatia and Bosnia-Herzegovina to the west, Montenegro to the south-west and Albania and North Macedonia to the south [2].

The population in the Republic of Serbia without the province of Kosovo-Metohija in January 2022 was 6,797,105 [3].

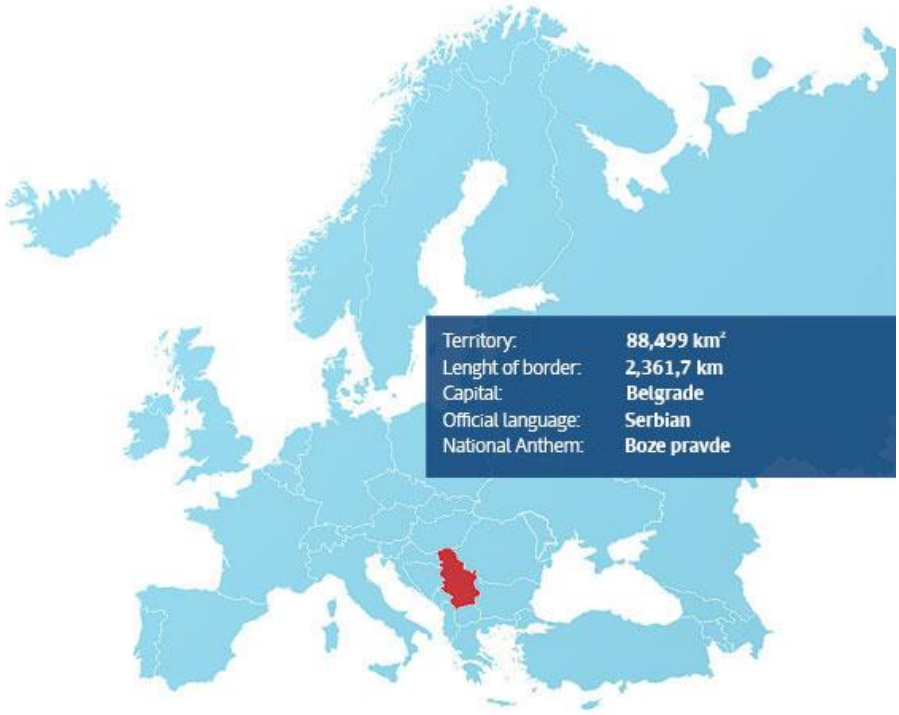


*Figure 1. The Republic of Serbia on the map of Europe*

SFR Yugoslavia became the Member State of the International Atomic Energy Agency in September 1967. After the break-up of SFR Yugoslavia in the early 1990s, and its suspension from the UN, the memebership to the IAEA was also suspended. The State Union of Serbia and Montenegro (former FR Yugoslavia established in 1992) became the Memeber State of the IAEA in 2001. The Republic of Serbia is a legal successor of the State Union of Serbia and Montenegro after its break-up in 2006.

The Republic of Serbia has no nuclear installations on its territory and there are no plans for their construction in near future.

The document titled „Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030"[4] adopted by the Parliament in 2015 (*Official Gazette of RS*, No. 101/15) states:

> *"As for possibility to use nuclear energy, for which the Law that prohibits the construction of nuclear power plants is still valid, transferred based on the succession with SFRY, currently there is no regulatory or administrative framework which would regulate the*

*construction and operation of nuclear power plants. Also, there are no scientific or expert human resources that would monitor the construction and operation of these plants, and educating human resources needed for nuclear energy was terminated. Similar situation is in administrative and regulatory and scientific and expert terms and with the treatment of highly radioactive waste and spent nuclear fuel. Also, it should also be noted, that this is the case of energy based on import fuels. However, the construction of nuclear power plants should not be excluded as an option, having in mind the environmental limitations for the existing generation and future needs. Estimation is that 10-15 years from the moment of abolishing the Law that prohibits the construction of nuclear power plants, would be the minimum period to overcome all listed problems and deficiencies, until the beginning of possible operation of such plant in the Republic of Serbia."*

## A.1 An overview of the national nuclear programme

There are no significant changes in the overview of the national nuclear programme presented in the First National Report except the information on the status of the facility for the treatment of radioactive waste.

There are no nuclear installations in the Republic of Serbia in terms of the definition of such installations in Nuclear Safety Convention.

The construction of nuclear power plants, nuclear fuel production plants and plants for spent nuclear fuel processing for nuclear power plants has been forbidden in the Republic of Serbia since 1989.

The research into the application of nuclear energy in the Republic of Serbia started in the late 1940s shortly after the Vinca Institute of Nuclear Sciences near Belgrade was established. The Vinca Institute was established on 10 January 1948, with direct governmental management. During the first several years, the basic infrastructure for research in physics, chemistry and biology was built. The multidisciplinary research within the Institute was shaped through the construction and the beginning of the operation of RA and RB research reactors at the end of the 1950s, the establishment of laboratories for high activity chemistry, reactor materials, radiation and medical protection and nuclear reactor technology. During its history, Vinca Institute has been significantly reorganized several times. Finally, the establishment of the Public Company Nuclear Facilities of Serbia (PC NFS) in 2009 was the last organizational change when all nuclear facilities were again put under direct state control.

The break-up of former Yugoslavia in the early 1990s, accompanied by the economic crisis, led to a significant decrease in all research activities in nuclear field. The lack of human resources due to aging and brain drain also had a great impact on the loss of knowledge and experience.

The first regulatory body for nuclear safety in the former Yugoslavia was the Federal Commision for Nuclear Energy (FCNE) established in 1955. Based on the decision of Federal Government on cessation of FCNE, the function of the regulatory body was transferred to different ministries in 1970. Serbian Radiation Protection and Nuclear safety Agency (SRPNA) was established as regulatory body in 2009. The inspection control over the implementation of the radiation protection and nuclear safety measures was performed by two Ministries until 2018. The Parliament of the Republic of Serbia adopted the new Law on Radiation and Nuclear Safety and Security in November 2018. Based on the provisions of the new Law, SRPNA was transformed into Serbian Radiation and Nuclear Safety and Security Directorate[1] whose additional responsibilities incorporated the inspection oversight as well.

Nuclear facilities in the Republic of Serbia are research reactors RA and RB on Vinca site near Belgrade, radioactive waste management facilities on the same site, and a former uranium mine and associated

[1] In the text below: Directorate

hydrometallurgical plant in Gabrovnica near Kalna. PC NFS is the operator of all nuclear facilities in the Republic of Serbia.

The information on the research reactors and other non-nuclear power facilities is provided for the purpose of completeness.

**RA Research reactor**

RA nuclear research reactor (Figure 2) was constructed in the second half of the 1950s, based on the Soviet design [5]. The main reactor components were manufactured in the former Soviet Union. The reactor was designed as a multi-purpose research reactor providing a relatively high neutron flux in the core. RA research reactor is a tank type reactor using heavy water as a primary coolant and a moderator. Its full power was 10 MW, and a nominal one 6.5 MW.

The facility went critical in December 1959. During the period of operation, the reactor was successfully used for scientific research and commercial purposes. Although temporarily shut down in August 1984 for modernization and preparation for further operation, RA research reactor has never re-started. In 2002, the Government of the Republic of Serbia adopted the Decision on its final shutdown. Fresh HEU fuel elements were transferred to the Russian Federation as the country of origin in 2002. In 2004, the Government of the Republic of Serbia adopted the Decision on repatriation of spent nuclear fuel from RA research reactor and its decommissioning. The spent nuclear fuel was repatriated to the Russian Federation in 2010.

*Figure 2. RA Research reactor*

Prepartion for decommissioning was partially conducted through the radiological characterization of the components and materials. The radiation levels and contamination mapping inside the reactor facility was mostly completed before the process of repackaging the spent nuclear fuel. Since the shipment of the spent nuclear fuel, no decommissioning activities have been performed on the research reactor RA.

**RB Research reactor**

In the very beginning, RB reactor (Figure 3) was designed and constructed as an unreflected zero power heavy water - natural uranium critical assembly. The first criticality was reached in April 1958. Later, 2% enriched metal uranium fuel and 80% enriched $UO_2$ fuel were obtained and used in the reactor core [6].

*Figure 3. Research reactor RB*

The modifications of the reactor control, safety and dosimetry systems were conducted in 1960, 1976 and 1988, which converted the RB critical assembly to a flexible heavy water reflected experimental reactor with 1 W nominal power, operable up to 50 W. For the purpose of research in fast reactors physics, several coupled fast-thermal systems were designed and constructed at RB reactor in the early 1990s.

The reactor is currently out of operation due to a lack of scientific and research interest.

**Radioactive waste management facilities**

The solid radioactive waste, including the spent sealed radioactive sources, is stored in four storage facilities, namely hangars H0, H1, H2 and H3 and Secure Storage for sealed radioactive sources. The liquid waste is stored in four underground liquid waste tanks, namely VR1, VR2, VR3 and VR4.

Hangar H3, intended for the storage of solid radioactive waste and Secure Storage, intended for the storage of spent sealed radioactive sources, are operational. The radioactive waste not fulfilling the waste acceptance criteria for Hangar H3 can be temporarily kept in a separate licensed facility – Hangar H0 until the infrastructure for its treatment becomes available. Other facilities are closed and do not accept any radioactive waste.

The radioactive waste in the Republic of Serbia is currently being generated in medical, industrial and research activities.

The radioactive waste treatment facility was licenced for the trial run in February 2022.

**Uranium mine and hydrometallurgical plant**

The facility was constructed in 1963, in the village of Gabrovnica, in the vicinity of uranium mine Kalna in Eastern Serbia, and in the same year it was fully operational.

The ore from the mine was of poor quality with very low uranium content, and, thus required more expensive extraction and processing methods. Shortly after the completion of the research, due to multiple circumstances, the facility was closed in 1965.

There are no decisions regarding any future activities at this site. Remediation activities have to be performed in order to enhance safety on the site.

## A.2 Statement on the commitment of the Republic of Serbia to the Convention

The Republic of Serbia is strongly committed to achieving the highest level of nuclear safety and security. The protection of the public and the environment, ensuring the benefits of nuclear energy exclusively for peaceful purposes, and achieving global peace, prosperity and well-being of future generations, remain the priorities of the country.

## A.3 Preparation, structure and main features of the National Report

The First National Report was prepared by Serbian Radiation and Nuclear Safety and Security Directorate during spring and summer 2019. This, Second National Report was prepared by the same organization during spring and summer of 2022. The Report was prepared according to INFCIRC/572/Rev. 6 “Guidlines regarding National Reports under the Convention on Nuclear Safety”, Chapter E. Contracting Parties without Nuclear Installations.

**Vienna Declaration on Nuclear Safety** is not directly applicable. There are only research reactors in the Republic of Serbia which are not in operation.

## Section B. Summary

The Parliament of the Republic of Serbia adopted the Law on Ratification of Nuclear Safety Convention (*Official Gazzete of RS – International Agreements*, No. 10/17) in November 2017. The Convention entered into force in the Republic of Serbia on 18 March 2018.

This document is the second National Report on Nuclear Safety Convention prepared for the Joint 8th and 9th Review Meeting.

The information article by article of Nuclear Safety Convention relevant to the Republic of Serbia is provided in Section C of this Report. Section C.1 includes the information on the legislation in force, the system of licencing and regulatory inspection. Section C.2 provides the information on the regulatory body. The responsibilities of the licensees are described in Secton C.3. The arrangements giving due priority to nuclear safety are described in Section C.4. The arrangements and regulatory requirements concerning radiation protection are described in Section C.5. Section C.6 provides the information on the measures for the preparation and testing of emergency plans and the international arrangements in the event of an emergency.

Section D - Common Issues Identified during 7th Review Meeting and Section E - Challenges were added to this Report according to the results of the review presented in the Country Review Report for the Republic of Serbia (Draft Version 1, as of 17 February, 2020) prepared for the sessions of the Country Group 6 during 8th Review Meeting. Section F - Response to Covid-19 Pandemic was added according to the recommendation made in the letter from Ms Dana Drabova, President of the 8th Review Meeting, dated on 23 June, 2021.

**Participation in previous review meetings**

Taking into account that the 8th Review Meeting was canceled due to Covid-19 pandemic, the Republic of Serbia did not participate in the previous review meetings.

**International Peer Review missions**

The Republic of Serbia has not hosted the International Peer Review missions.

**Openness and transparency**

This national report is available on the website of the Serbian Radiation and Nuclear Safety and Security Directorate (www.srbatom.gov.rs).

# Section C. Reporting Article by Article

There are no significant changes in this Section except some improvements in the legislative framework relating to the authorization of radiation practices, radioactive waste management and decommissioning.

## C.1 Article 7 Legislative and Regulatory Framework

| |
|---|
| 1. Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations. |
| 2. The legislative and regulatory framework shall provide for: |
| (i) the establishment of applicable national safety requirements and regulations; |
| (ii) a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence; |
| (iii) a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licences; |
| (iv) the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation. |

### C.1.1 Article 7 (1) Establishing and maintaining legislative and regulatory framework

#### C.1.1.1 Primary legislative framework for nuclear safety, including interfacing national legislation

The primary legislative framework for nuclear safety in the Republic of Serbia consists of two main laws stated below:

1. *Law on Radiation and Nuclear Safety and Security* (*Official Gazette of RS*, Nos. 95/16 and 10/19)[2] which regulates the field of radiation and nuclear safety and security measures, conditions for conducting practices with radiation sources, response in case of planned, existing and emergency exposure to ionising radiation, and aims at ensuring proper protection of the members of the public, the public and the environment from the harmful effect of ionising radiation, now and in the future.
2. *Law banning the construction of nuclear power plants in the Federal Republic of Yugoslavia* (*Official Gazette of FRY*, No. 12/95 and *Official Gazette of RS*, No. 85/05) forbids the construction of nuclear power plants, nuclear fuel production plants and plants for reprocessing the spent nuclear fuel for nuclear power plants. It also forbids the investment decisions, investment programs and technical documentation for the construction of nuclear power plants, nuclear fuel production plants and plants for reprocessing spent nuclear fuel for nuclear power plants.

#### C.1.1.2 Ratification of international conventions and legal instruments related to nuclear safety

The Republic of Serbia has acceded to all relevant international conventions and legal instruments listed below:

[2] In the text below: the Law

1. The Convention on Early Notification of a Nuclear Accident;
2. The Convention on Assistance in the Case of a Nuclear Accident or a Radiological Emergency;
3. The Convention on Physical Protection of Nuclear Material and Amendments thereto;
4. The Vienna Convention on Civil Liability for Nuclear Damages;
5. The Treaty on Non-Proliferation of Nuclear Weapons;
6. The Agreement between SFRY and the IAEA for the Application of Safeguards in connection with the Treaty on Non- Proliferation on Nuclear Weapons.
7. The Additional Protocol to the Agreement for the Application of Safeguards in connection with the Treaty on Proliferation of Nuclear Weapons;
8. The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management;
9. The Convention on Nuclear Safety.

## C.1.2 Article 7 (2) (i) National safety requirements and regulations

### C.1.2.1 Secondary legislation for nuclear safety

There are three regulations in the field of nuclear safety and security adopted by the Serbian Government:

1. Regulation on determining the programme of nuclear safety and security (*Official Gazette of RS* 39/14)
2. Regulation on the security measures of nuclear facilities and nuclear materials (*Official Gazette of RS* 39/14)
3. Regulation on the establishment of the National Radiation Emergency Plan[3] (*Official Gazette of RS* 30/2018)

According to Art. 6 of the Law, the Government shall pass:

1. Radiation and Nuclear Safety Strategy
2. Spent Fuel and Radioactive Waste Management Strategy
3. Radiation and Nuclear Security Strategy
4. Existing Exposure Situation Management Strategy

All strategies shall be passed for the period of seven years.

The draft versions of all four strategies were prepared by the Directorate in the period 2020 – 2021 and reviewed by EU experts in the framevorek of PLAC III project (Policy and Legal Advice Centre).

### C.1.2.2 Regulations and guides issued by the regulatory body

Since its establishment in 2009, the regulatory body has issued the following rulebooks:

1. Rulebook on Performance of Nuclear Activities (*Official Gazette of RS* 37/11)
2. Rulebook on Conditions for Obtaining Licence to Perform Nuclear Activity (*Official Gazette of RS* 37/11)
3. Rulebook on Radioactive Waste and Spent Nuclear Fuel Management (*Official Gazette of RS* 127/21)[4]

[3] In the text below NREP

[4] Replaced the Rulebook on Radioactive Waste Management (*Official Gazette RS* 60/11)

4. Rulebook on Procedure for Keeping Records of Nuclear Materials (*Official Gazette of RS* 27/11)
5. Rulebook on Issuing Approvals for Performance of Radiation Protection Duties (*Official of Gazette RS* 127/21)[5]
6. Rulebook for Establishing Programme of Additional Training and Specialized Education of Occupationally Exposed Persons and Persons Responsible for Implementation of Radiation Protection Measures (*Official Gazette of RS* 31/11)
7. Rulebook on Notification and Registration of Radiation Sources (*Official Gazette of RS* Nos. 25/11 and 50/18)
8. Rulebook on Conditions for Obtaining Licence to Perform Radiation Practices (*Official Gazette of RS* Nos. 61/11, 101/16 and 50/18)
9. Rulebook on Application of Radiation Sources in Medicine (*Official Gazette of RS* 1/12)
10. Rulebook on Limits of Exposure to Ionizing Radiation and Measurements for Assessment of the Exposure Levels (*Official Gazette of RS* Nos. 86/11 and 50/18)
11. Rulebook on Records of Radiation Sources, Professionally Exposed Persons, Patients Exposure to Ionizing Radiation and Radioactive Waste (*Official Gazette of RS* Nos. 97/11 and 127/21)[6]
12. Rulebook on Limits of Radionuclide Content in Drinking Water, Food Stuffs, Feeding Stuffs, Drugs, Items of General Use, Building Materials and Other Goods to be Placed into Market (*Official Gazette of RS* No. 36/18)
13. Rulebook on Limits of Radioactive Contamination of People, Working and Living Environment and Ways of Performing Decontamination (*Official Gazette of RS* No. 38/11)
14. Rulebook on Radioactivity Monitoring (*Official Gazette of RS* No. 97/11)
15. Rulebook for Establishing Programme of Systematic Environmental Radioactivity Examination (*Official Gazette of RS* No.100/10)
16. Rulebook for Establishing Programme for Early Warning of Emergency (*Official Gazette of RS* No. 70/11)
17. Rulebook on Radioactivity Control of Goods During Import, Export and Transit (*Official Gazette of RS* Nos. 86/19 and 90/19 and Article 1. para. 2. and Articles 2-5 *Official Gazette of RS No. 44/11*)[7]
18. Rulebook on Nuclear Facilities Decommissioning (*Official Gazette of RS* No. 30/22)[8]
19. Rulebook on Practice Notification and Issuing Authorization for Radiation Practices (*Official Gazette of RS* No. 30/22)[8]
20. Rulebook on Categorization of Radiation Practices (*Official Gazette of RS* Nos. 94/19, 133/21 and 30/22)[9]

### C.1.2.3 Process of establishing and revising regulatory requirements, including the involvement of interested parties.

Under Art. 22 point 3, the Directorate is responsible to pass rulebooks and other guides pursuant to the Law.

[5] Replaced the Rulebook on Conditions for Obtaining Decisions to Perform Activities in the Field of Radiation Protection (*Official Gazette RS* 61/11 and 101/16) and the Rulebook on Records on Performing Activities in the Field of Radiation Protection (*Official Gazette RS* 17/11)

[6] Amended in 2021

[7] Adopted in 2019

[8] Adopted in 2022

[9] Adopted in 2019 and amended in 2021 and 2022

In the same Article, point 28 states that the Directorate is responsible to establish the appropriate mechanisms and procedures for informing the public and consulting other interested bodies and organizations in the field of radiation and nuclear safety and security.

### C.1.2.4 Article 7 (2) (ii) System of licensing

**Licensing system and processes**

By applying the graded approach principle, the Law has introduced categorization of practices based on the health risk of the exposed workers and members of the public, the public and the environment, as well as the type of the activity being performed.

Under Article 33 of the Law, all practices are classified into the four categories:

1. low-risk radiation practices;
2. moderate-risk radiation practices;
3. high-risk radiation practices;
4. nuclear activities.

The Rulebook on Categorization of Radiation Practices (*Official Gazette of RS* Nos. 94/19, 133/21 and 30/22) prescribes in detail the conditions for the categorization of radiation practises. The conditions for the categorization are determined in accordance with the risk assessment criteria and pertain to the impact of a radiation practise on the health of the exposed workers and staff, the public and the environment, as well as to the type of practise. The integral part of the Rulebook is the list of the approved radiation practices with their categorisation.

Nuclear activities (Article 5, point 71) are "phases of a lifetime of nuclear facility namely: siting, design, construction, trial run or commissioning, operation, decommissioning (except for radioactive waste disposal facility) or closure of nuclear facilities (except for radioactive waste disposal facility) and remediation of their sites".

Under Article 5, point 73 of the Law, a nuclear facility is defined as "a facility or several of facilities when they are functionally linked in the same geographically confined territory and managed by the same person for processing or for enrichment of nuclear materials or for production of nuclear fuel, a research reactor, a nuclear power-plant and heating plant, a facility for nuclear fuel management or radioactive waste management".

According to Article 31, a legal entity or an enterpreneur intending to start to perform a practice, prior to the practice commencement, shall notify the Directorate on the intention to perform the practice, on which the Directorate shall issue a notification.

The requirement to obtain the authorization to perform the practice is prescribed for any legal entity performing the practices regulated by the Law. The obligation to obtain the authorization from the Directorate is prescribed in Article 34. A holder of the notification for the intention to perform a practice, prior to the commencement of practice performance, shall obtain from the Directorate the authorization commensurate with the practice category. According to Article 30, the notified practices may be exempted from the authorization issuance based on the requirements prescribed by the Directorate.

The authorization is granted through either a registration or a licence. According to Article 34, the registration is issued to authorize low-risk radiation practices, while licence is issued to authorize moderate-risk and high-risk radiation practices as well as nuclear activities.

The Rulebook on Practice Notification and Issuing Authorization for Radiation Practices (*Official Gazette of RS* No. 30/22) prescribes in detail the conditions and necessary documentation for the issuance of an authorization for the performance of radiation practices.

By virtue of the graded approach principle and by the Law, the Directorate has different periods to decide on the applications for registration and licence issuance. Based on the same principle, the authorizations for different categories have different validity and the dates of expirations accordingly, which is illustrated in Table 1.

According to Articles 41, 47, 48 and 49, the Directorate shall issue a written decision on the registration or licence issuance only upon verification that all statutory requirements prescribed by the Law and the bylaws closely regulating the authorization issuance have been fulfilled.

*Table 1. Issuance of authorizations for different practice categories*

| Practice category | Written document to authorize the practice | Issuance period* | Validity |
|---|---|---|---|
| Low-risk radiation practices | Decision on registration | 30 days | Indefinite |
| Moderate-risk radiation practices | Decision on licence issuance | 60 days | 10 years |
| High-risk radiation practices | Decision on licence issuance | 90 days | 5 years |
| Nuclear activities | Decision on licence issuance | 180 days | Up to 10 years** |

* as of the day of duly submitted application

** except the licence for nuclear activity – trial-run of nuclear facility which is issued for the period of up to two years

Articles 51, 52 and 53 of the Law prescribe the possibility of suspension or revocation of a registration or licence, based on the authorization holder request or based on the findings of the inspection.

The scheme of the authorization process is presented in Figure 4.

Based on Article 54, a licence may be extended after expiration upon the licensee's request. The Directorate shall determine whether all requirements, as well as all radiation and nuclear safety and security measures, have been fulfilled prior to the license extension. Such decision is based on the result of a periodic safety review.

**Involvement of the public and interested parties**

According to Art. 206 para. 2, the Directorate shall establish procedures ensuring that the public, local authorities, population and other interested parties in close proximity of a nuclear facility have accurate and timely information about the safety of the nuclear facility, and the procedures ensuring that the public and the interested parties engaged in the process of licensing and all stages of a nuclear facility life cycle are informed and consulted.

**Legal provisions to prevent the operation of a nuclear facility without a valid licence**

Under Art. 4 para. 2 of the Law, it is prohibited to perform a practice without previously obtained authorization issued by the Directorate. In addition, under Art. 233 point 1, the fine amounting from RSD 1,500,000 to 3,000,000 shall be levied on a legal entity for a commercial offence if such legal entity performs practices without previously obtained authorization issued by the Directorate.

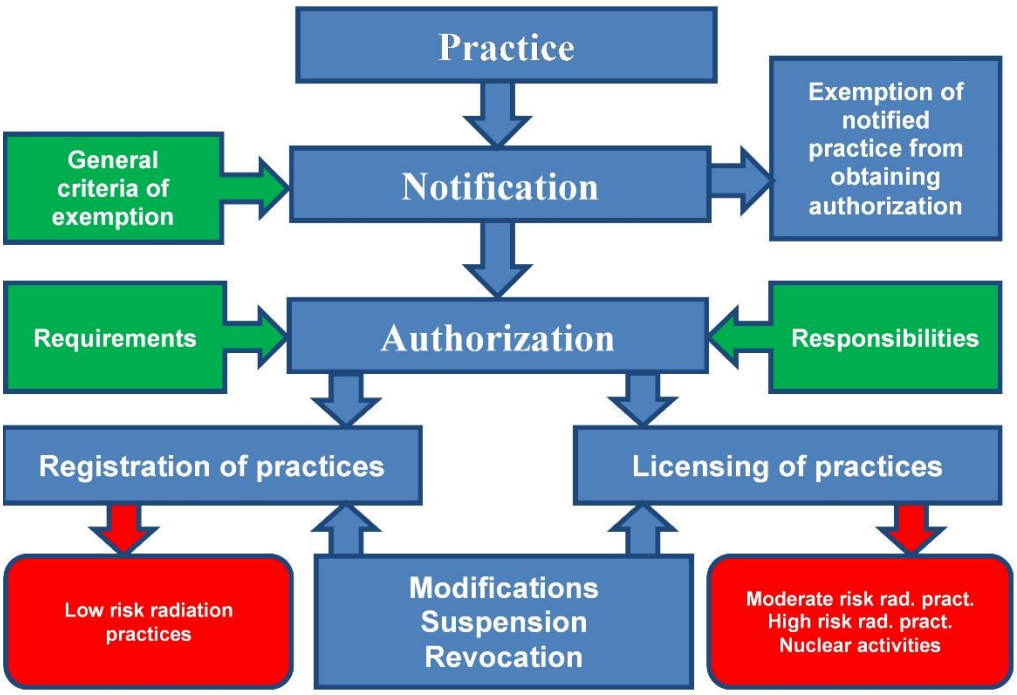


*Figure 4. Procedures for authorization of practices*

### C.1.2.5 Article 7 (2) (iii) System of regulatory inspection and assessment

**Regulatory inspection and assessment process with regard to the safety of nuclear facilities**

Art. 214 of the Law prescribes the performance of the inspection oversight over the implementation of nuclear safety and security measures. According to this article, the inspector has the right and the duty to determine whether:

1. the requirements for nuclear activity performance have been met;
2. the prescribed radiation protection measures for the exposed workers, the public and the environment have been implemented;
3. the prescribed nuclear safety and security measures have been implemented;
4. the records of nuclear material and any other records as prescribed by the Law and the applicable international agreements have been duly kept;
5. the other measures prescribed by this Law have been implemented.

**Basic features of inspection programmes.**

Under Art. 10 of the Law on Inspection Oversight (*Official Gazette of RS*, No.36/15, 44/18 – other law, 95/18), which is of general nature and applicable in the field of radiation and nuclear safety and security, the inspection plans shall be based on the findings in each field of inspection oversight, as well as on the risk assessment. Each inspection body shall be required to implement its inspection plan, except in the event that justifiable extraordinary circumstances prevent it from doing so.

Additionally, each inspection body shall be required to draft a strategic (multi-annual) and an annual inspection plan. The annual inspection plan shall be implemented through the operational (semi-annual, quarterly, and monthly) inspection plans.

In addition to common features shared by annual work plans of public administration bodies, the inspection plans must also define:

1. the frequency of inspection oversight by area and risk level;
2. the overview of the entities subject to inspection oversight covered by such inspection oversight;
3. where entities subject to oversight cannot be determined, or where their number is excessively high, such plans must contain information of importance for inspection oversight and determination of entities to be covered by such inspection oversight;
4. the estimated risk for entities subject to oversight or sectors or activities to be covered by such inspection oversight or geographical area or other geographical or similar unit, building, or group of buildings;
5. the period of inspection oversight;
6. the information regarding the types of inspection oversight to be performed;
7. the information about the resources of the inspection body to be allocated to inspection oversight.

The Inspection plan shall also contain:

1. the preventive measures and activities planned to be undertaken by the inspection body;
2. the planned measures and activities to prevent business operations or performance of activity by unregistered entities;
3. the volume of an extraordinary inspection oversight expected in the same period as scheduled oversight, with appropriate explanation;
4. any other issues of importance for the planning and performance of inspection oversight.

Depending on its organisational position in the public administration system, each inspection shall develop and/or formally adopt the inspection plans in line with the guidelines and instructions of the Co-ordinating Commission no later than 15 October of each year.

The Inspection plan shall be published on the web-site.

#### C.1.2.6 Article 7 (2) (iv) Enforcement of applicable regulations and terms of licences

**Power for legal actions**

According to Art. 215 of the Law, in performing the inspection oversight, the inspector shall be empowered to:

1. inspect the work premises, facilities, plants and sites that are in connection with the radiation practice performance;
2. inspect the sites, buildings and facilities that are in connection with the nuclear practice performance;
3. gain insight into the technical specification of the equipment;
4. gain insight into the employment documentation of the exposed workers;
5. gain insight into the documentation on vocational qualifications and fulfillment of health requirements for the exposed workers;
6. gain insight into the documentation on education and training of the exposed workers;
7. gain insight into ledgers, records, official documents, electronic documents and other documentation in connection with the practice;
8. scan and copy ledgers, records, official documents and electronic documents subject to inspectional supervision;
9. identify the exposed workers, ionizing radiation protection officers and other individuals found at locations where the inspectional supervision is performed by inspecting their personal photographic identification documents or other public photographic identification instruments;
10. extract written and oral statements from the persons performing the practice, *i.e.*, witnesses and officials, and instruct such persons to make statements on matters of significance for inspectional supervision;

11. take photographs and make video recordings of locations where inspectional supervision is performed, as well as the ionizing radiation sources, radioactive and nuclear material or other items subject to inspectional supervision;
12. collect data and information that are of relevance for the inspectional supervision;
13. request a court warrant to search the residential or work premises if in possession of information that such premises are being used for illicit or non-compliant practices;
14. request the assistance and presence of the police, *i.e.*, community police, if reasonably deemed as necessary by the circumstances of a particular case;
15. perform radioactivity measurements by means of radiation monitors;
16. attend reference sampling, measurements and decontamination of persons, work and living environment;
17. temporarily impound the goods subject to inspectional supervision, as well as the documentation and other items to ascertain the facts of a particular case and secure evidence, and issue a certificate of temporary impounding;
18. engage authorized legal entities to implement urgent measures, perform radioactivity measurements and give expert opinion in the area of radiation and nuclear safety and security;
19. engage experts in the area of radiation and nuclear safety and security;
20. engage court expert witnesses in the area of radiation and nuclear safety and security;
21. take other measures in accordance with this Law

**Overview of enforcement measures available to the regulatory body**

Under Art. 216 para. 2 of the Law, the inspector shall be empowered to order nuclear safety and security measures to be taken as follows:

1. forbid a nuclear activity unless all requirements have been met;
2. forbid the trade in nuclear materials unless all requirements have been met;
3. forbid the work of exposed workers in the nuclear facility not meeting the prescribed professional or health conditions, or not having the required training and education;
4. order the exposed worker to have the appropriate health examination in accordance with the regulations governing occupational medicine;
5. order the exposed worker to have periodic retraining and acquire the required skills and knowledge to implement radiation protection measures;
6. order the establishment of radiation protection service, except in case of the license for a nuclear facility siting, design and construction;
7. order the establishment and implementation of the integrated management system;
8. order the requirements to be met and the detected faults that can have harmful effect on the health of people, work and living environment to be remedied;
9. order the removal of deficiencies in connection with the radioactive waste management;
10. order the removal of deficiencies in connection with spent nuclear fuel management;
11. order the removal of deficiencies in physical protection and a nuclear facility security;
12. order the prescribed measures in case of nuclear emergency to be implemented;
13. order environmental radioactivity monitoring in the vicinity of the facility;
14. order record keeping of data on a nuclear facility and the site thereof, management of radioactive waste, nuclear and other material, and the entire documentation necessary to establish civil liability in accordance with the international convention on the civil liability for nuclear damage;
15. order decommissioning of a nuclear facility;
16. order the site and soil remediation;
17. order record keeping and control of nuclear material;
18. order the prescribed nuclear security to be implemented;
19. order other measures of nuclear safety and security.

## C.2 Article 8. Regulatory Body

1. Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.

2. Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.

### C.2.1 Article 8 (1) Establishment of the regulatory body

Under Art. 13 of the Law, Serbian Radiation and Nuclear Safety and Security Directorate shall be established as an independent and separate regulatory body with regulatory, expert and associated executive functions in the field of radiation and nuclear safety and security for the purpose of providing the environment for professional and efficient regulatory control of practices regulated by the Law.

According to Art. 22 of the Law, the functions of the Directorate are:

1. to prepare draft Strategies and Action plans for their implementation under Article 6 and 8 hereof;
2. to prepare draft regulations adopted by the Government pursuant to this Law;
3. to pass Rulebooks and other guides pursuant to this Law;
4. to pass the Environmental Radioactivity Monitoring Programme, monitor the level of radioactivity and the changes thereof, evaluate the effects of radioactivity on the public and the environment, give instructions on the implementation of the appropriate measures, monitor the implementation of such measures, and publish the annual report on the level of public exposure to ionizing radiation in the Republic of Serbia;
5. to prepare draft Response plan in case of nuclear and radiological emergency situation;
6. to lay down protective measures for a member of the public, the public and the environment from the harmful effect of ionizing radiation;
7. to establish requirements for protection against increased exposure of workers, members of the public and the public to naturally occurring radiation;
8. to bring decisions on issuing, suspending or revoking authorizations for practices, use of radiation sources, approvals to perform radiation protection, permits for trade in radiation sources and permits for the transport of dangerous goods class 7 ADR/RID/ADN (radioactive material), and for the exemption of duty to obtain authorization pursuant to the Law;
9. to issue, suspend or revoke certificates pursuant to the Law;
10. to issue certificate of entry into records and deletion from the records of radiation sources;
11. to lay down criteria for the exemption from the obligation of notification;
12. to lay down criteria for the release from regulatory control
13. to verify the competence of persons responsible for the implementation of radiation protection measures;
14. to define the obligations, including the financial ones, of authorization holders;
15. to ensure continuous professional cooperation in the performance of duties by engaging consultants, preparing projects or establishing permanent and ad hoc advisory bodies;
16. to establish and keep registry of applications, issued authorization and certificates and persons responsible for the implementation of radiation protection measures, registry of radiation sources and their users, exposed workers, external workers and other data relevant for radiation protection and radiation and nuclear safety;
17. to establish and keep records of facilities, radiation sources and radioactive waste, as well as other data relevant for radiation and nuclear safety and security;

18. to establish a system of control over radiation sources and devices with such sources as their integral part to ensure their safe and secure management and protection during and at the end of their useful lives;
19. to establish categorization of radiation sources based on their possible impact and harmful effect on the health and lives of people and the environment;
20. to establish categorization of nuclear and radioactive material based on the evaluation of possible damage in case of theft or unauthorized use of certain type and amount of material, or in case of sabotage of the facility where nuclear or radioactive material is generated, processed, used, stored or disposed, and to prescribe appropriate protective measures for different categories of material;
21. to lay down the requirements for security of nuclear and radioactive material and facilities in which such material is used, including the measures of prevention, detection and response in case of unauthorized and malicious activities involving such material and facilities;
22. to participate in defining design bases and design basis accidents for the purpose of implementing radiation and nuclear safety and security measures;
23. to cooperate with other state bodies and organizations within their competences;
24. to cooperate, independently or in coordination with other competent state bodies and organizations, with the International Atomic Energy Agency and other international organizations, bodies and competent authorities of other countries with respect to the enforcement of this Law and other international obligations assumed by the Republic of Serbia;
25. to establish and implement, in cooperation with the ministries and services responsible for foreign affairs, defense, internal affairs, economy and customs, a system of control of the export and import of nuclear and other radioactive material, radiation sources, equipment, special equipment and non-nuclear material, information, and technology for the purpose of fulfilling international obligations assumed by the Republic of Serbia;
26. to cooperate with other relevant institutions of the Republic of Serbia in establishing and maintaining nuclear and radiological emergency response plan in accordance with the National Emergency Protection and Rescue Plan;
27. to give opinion at the request of competent state authorities regarding joining the international conventions and other agreements in the area of radiation and nuclear safety and security;
28. to establish appropriate mechanisms and procedures for informing the public and consulting other interested bodies and organizations in the area of radiation and nuclear safety and security;
29. to fulfil any other commitments deemed as necessary to establish protection of the public and the environment in the Republic of Serbia;
30. to initiate enhancement of the national framework in the area of radiation and nuclear safety and security, based on operational experience, insights gained in the decision-making process and technology and research related development;
31. to carry out regulatory control and inspectional supervision of the implementation of radiation and nuclear safety and security measures;
32. to control the fulfilment of conditions serving as the basis for the issuance of authorizations pursuant to the Law;
33. to review, observe and assess the practices to verify their compliance with this Law, applicable regulations and the requirements for obtaining authorizations;
34. to take actions, require and monitor the implementation thereof in the event of noncompliance with the law, bylaws and other applicable regulations regarding the requirements for obtaining authorizations;
35. to establish and maintain the system of accountancy and control of nuclear material;
36. to perform other statutory duties.

Under Art. 20 para. 3, 4, 5 and 6 of the Law, the Directorate shall take into employment the appropriate number of employees with relevant qualifications, experience and expertise.

The Directorate may also use external resources and expertise in support of its regulatory functions.

The Directorate shall ensure staff training programmes in the field of radiation and nuclear safety and security, and ensure preparedness to respond in case of an emergency event.

All rights, duties and responsibilities of the employees of the Directorate are subject to the general regulations governing employment, general acts of the Directorate and the employment contract.

According to the Decision of the Serbian Government adopted in May 2019, the maximum number of employees in the Directorate is 48 which is deemed as fairly sufficient. The organizational scheme of Directorate is presented in Figure 5.

At the time of writing this Report, there were 38 employees in the Directorate, which is an increase by 9 employees in comparison with the previous Report.

Under Art. 20 para. 1 and 2 of the Law, the financial resources of the Directorate are provided from the budget of the Republic of Serbia.

The Directorate shall independently use the aforementioned resources. Over the past three years the financial resources have been constantly increasing and at the moment are at a satisfactory level.

According to Art. 25 of the Law, the Directorate may hire legal entities and persons with necessary scientific and technical qualifications, expertise, specialized knowledge and skills as consultants in the field of analyzing, improving and regulating radiation and nuclear safety and security measures.

Under Art. 28 of the Law, the Directorate shall establish, implement, continuously assess and improve the integrated management system, which is aligned with safety goals and contributes to their achievement.

The Directorate shall implement regulatory process based on the procedures incorporated in the integrated management system and, thus, ensure stable and consistent regulatory control.

In order to fulfil the aforementioned, the management of the Directorate shall:

1. demonstrate leadership for and commitment to safety;
2. be responsible for the establishment, implementation, sustainability and continuous improvement of the integrated management system;
3. establish goals, strategies and plans of the Directorate that are aligned with the safety policies of the Directorate;
4. ensure adequate interaction with the interested parties;
5. determine and ensure competences and resources necessary for a safe activity performance within the Directorate.

The integrated management system of the Directorate shall be documented, developed and applied in accordance with the principle of graded approach.

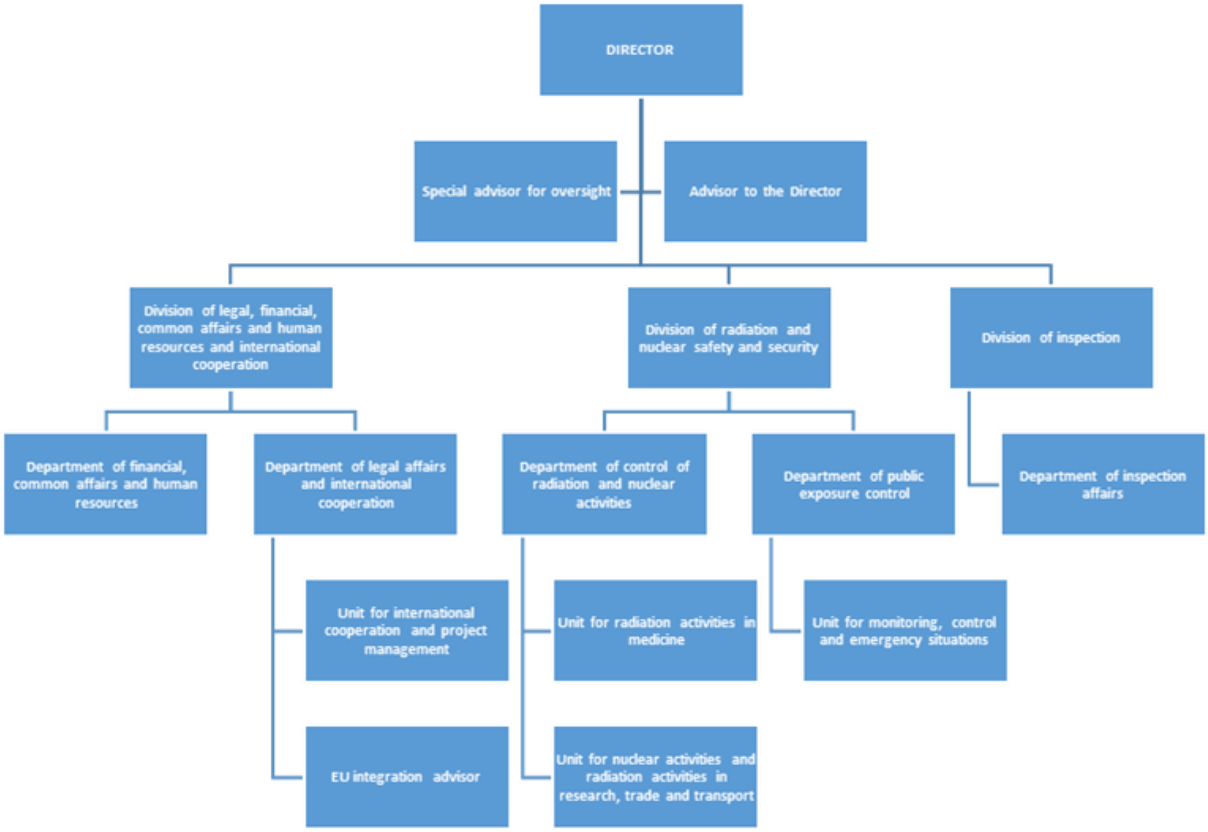


*Figure 5. Organizational sheme of the Directorate*

Under Art. 206 of the Law, the Directorate shall establish procedures ensuring that:

1. the public, local authorities, population and other interested parties in close proximity of a nuclear facility have accurate and timely information about the safety of the nuclear facility;
2. the public, including the interested parties in the process of licensing and all stages of a nuclear facility life cycle, are informed and consulted;
3. every issued authorization and all requirements for the issuance thereof, apart from security sensitive and classified data, are made public.

The Directorate shall cooperate with the competent regulatory bodies in other countries in the field of radiation and nuclear safety and security by exchanging and/or sharing information.

The Directorate, within its remit and pursuant to the Law, shall inform the public on any unauthorized use of radiation sources or any breech of the prescribed procedures in the facilities that can lead to an emergency event.

According to Art. 26 of the Law, the Directorate shall engage the consultants without compromising its own independence by ensuring that there is no conflict of interest for the consultants that provide a scientific and technical support to the Directorate.

The consultants shall provide the Directorate with a scientific and technical support without commercial, financial or any other kind of leverage from the other interested parties, and without the influence from any other organization regarding the results of their work.

The consultants shall provide the Directorate with the scientific and technical support based solely on their technical knowledge, analyses results and regulatory requirements.

## C.2.2 Article 8 (2) Status of the regulatory body

Under Article 14 of the Law, the Directorate shall be responsible only to the Government of the Republic of Serbia. The Directorate is a legal entity. The head office of the Directorate is in Belgrade. The internal organization, remit and manner of work, manner of planning, performing duties and other issues of relevance for the Directorate shall be regulated by the Statute of the Directorate and other general legal enactments pursuant to the Law.

According to Art. 15 of the Law, the bodies of the Directorate are the Board and the Director, appointed by the Government.

## C.3 Article 9 Responsibility of the Licence Holder

| |
|---|
| Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility. |

According to Art. 66 of the Law, one of the fundamental principles of radiation and nuclear safety is:

> *"Prime responsibility for radiation and nuclear safety must rest with the legal entity or enterpreneur responsible for practices and facilities that give rise to the elevated radiation risk".*

According to Article 36, the authorization holder shall:

1. apply the fundamental principles of radiation and nuclear safety;
2. take all necessary steps to protect people's health and the environment from the harmful effect of ionizing radiation, now and in future, by keeping the exposure level below the specified limits, and take all reasonable steps to minimize, now and in future, the harmful effect on the public;
3. plan and implement technical and organizational measures necessary to ensure the adequate level of radiation and nuclear safety and security;
4. prepare and implement the plan in case of an emergency event in accordance with the Law;
5. keep relevant records and report to the Directorate on emergency events in accordance with the Law;
6. ensure compliance with the prescribed dose limits and monitor the exposure of workers to ionizing radiation;
7. obtain adequate financial and human resources with adequate qualifications and competences necessary to conduct the prescribed radiation and nuclear safety and security measures when conducting practices;
8. ensure that their subcontractors, whose activities can affect radiation and nuclear safety and security, throughout the practice performance, provide for required staffing with appropriate qualifications and competences necessary to carry out their work;
9. provide for continuous education and training of staff participating in the practice performance;
10. provide for adequate financial resources to handle disused radiation sources, radioactive waste management, decommissioning and liability in case of radiological or nuclear damage;
11. enable the inspectors of the Directorate to carry out their work without impediment and to have access to the facilities and sites where the practice is conducted;
12. not modify the manner of performance of the authorized practices in a manner that could affect the protection of workers, the public or the environment without previously notifying and obtaining the appropriate authorization from the Directorate, and;

13. provide, upon the request of the Directorate or in accordance with the requirements, all information regarding the practice performance that the Directorate deems necessary or relevant for radiation and nuclear safety and security.

Article 38 prescribes that the Directorate shall issue the authorization for practices to legal entities or enterpreneurs provided they fulfil general and specific requirements in accordance with the Law.

## C.4 Article 10 Priority to Safety

| |
|---|
| Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear installations shall establish policies that give due priority to nuclear safety. |

Article 35 prescribes that the authorization holder shall bear prime responsibility for radiation and nuclear safety and security, and shall be responsible for all activities conducted by legal entities, natural persons and enterpreneurs they engage, the practices of which can affect radiation and nuclear safety and security. The responsibilities cannot be delegated. The authorization holder shall ensure that the radiation doses for the exposed workers, apprentices, students and the public, as well as the environmental impact of radiation are, in terms of social and economic factors, as low as reasonably achievable. The authorization holder shall be responsible for the safety and security of the facility where the practice is performed, even if the authorization has expired, until the facility, the site, and the parts thereof are released form the regulatory control.

According to Article 42, the implementation of radiation and nuclear safety and security measures shall be confirmed based on the Safety Analysis Report, Radiation Protection Programme and other documentation specified by the Directorate.

The Safety Analysis Report shall particularly include (Article 43):

1. the description of the practice;
2. the description and features of the premises, facility and site, and any other location where the practice is performed;
3. the conditions for and limitations to the performance of the practice;
4. the safety assessment of the practice performance for normal and abnormal operations, including emergency events, and assessment of possible initial events that could lead to non-compliance with the intended manner of work;
5. the evaluation of potential emergency events and measures for their prevention and mitigation, as well as remediation in case of emergency.

The licensee undertakes to modify and supplement the Safety Analysis Report commensurate with the changes occurring as the practice is performed so that the Report would always reflect the current status of the practice performance.

According to Article 115, the licensee for a nuclear activity shall take measures to improve and develop nuclear safety and security culture by implementing the integrated management system.

According to Article 28, the Directorate shall establish, implement, continuously assess and improve the integrated management system, which is in accordance with the safety goals and contributes to their achievement. Among other things, the management of the Directorate shall demonstrate leadership for and commitment to safety, and establish goals, strategies and plans of the Directorate that are in accordance with the safety policies of the Directorate.

## C.5 Article 15 Radiation Protection

| |
|---|
| Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits. |

The fundamental principles of radiation protection as listed in Article 29 are:

1. Justification,
2. Optimization and
3. Dose limitation.

The general requirements concerning the radiation protection as listed in Article 39 are:

1. that the facilities, the premises and the sites where the practice is performed fulfil technical, safety, security and other requirements ensuring the protection of the exposed workers, members of the public, the public and the environment from the harmful effect of ionising radiation;
2. that the exposed workers handling radiation sources are provided with the adequate radiation protection equioment and ionising radiation measuring devices;
3. to designate a radiation protection officer or a radiation protection service;
4. depending on the type of a practice, to have staff with the adequate education and training in the field of radiation protection that fulfil the health requirements necessary for the work with radiation sources;
5. to implement the measures preventing the contamination of the working environment and the environment by the practice performance, excluding the practices using ionising radiation generators;
6. to use and trade in radiation sources in a safe and secure manner and in accordance with the relevant regulations;
7. to implement other radiation protection measures prescribed by the Law.

The implementation of the radiation protection measures shall be confirmed based on the Radiation Protection Programme. This programme shall particularly include (Article 46):

1. the assignment of responsibilities to all management levels in case of occupational exposure to ionizing radiation, which in case of external workers can also include the appropriate organizational cooperation and the allocation of responsibilities between the external workers and the legal entities or enterpreneurs as authorization holders;
2. the designation of controlled and supervised areas;
3. the establishment of rules for workers to follow and the supervision of their work;
4. the arrangements for the individual monitoring of exposed workers and the working environment, including the acquisition and maintenance of radiation protection instruments;
5. the system of recording and reporting of all relevant information related to the control of ionizing radiation exposure, decisions on radiation protection measures, and the individual monitoring of the exposed workers;
6. the education and training programme on the nature of hazards, radiation protection measures and radiation and nuclear safety measures;
7. the methods and schedule for periodically reviewing and auditing the performance of the Radiation Protection Programme;
8. th eplans to be implemented in case of emergency events;
9. the health surveillance programme;
10. the requirements for the implementation and assurance of quality control.

All practices performed by an authorization holder are subject to the regulatory control during the process of issuing authorization and the inspection control in accordance with the Law.

## C.6 Article 16 Emergency Preparedness

1. Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency.

For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation arc provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.

### C.6.1 Article 16 (3) Emergency preparedness for Contracting Parties without nuclear installations

Serbian Radiation and Nuclear Safety and Security Directorate is the national coordinating authority in terms of preparedness for radiological and nuclear emergencies in the Republic of Serbia.

The basic document for preparedness for and response to a nuclear or radiological emergency is the Law on Radiation and Nuclear Safety and Security.

The responsibilities of the Directorate under Article 22 of the Law, among others, are the implementation of the Programme for Early Warning of Emergency and preparation of the draft National Radiation Emergency Plan (NREP) which has to be adopted by the Government, as well as setting up the Environmental Radioactivity Monitoring Programme and coordination of its implementation. The Directorate is responsible for the analysis of the monitoring results and the evaluation of radioactivity impact on the public and the environment.

The Law on Disaster Risk Reduction and Emergency Management (*Official Gazette of RS* No. 87/2018), as a fundamental document for all emergency situations, defines the activities, declaration and the management in emergency situations; the system of protection and rescue of citizens, material and cultural goods from the natural and manmade disasters; the rights and the obligations of citizens, state agencies, autonomous provinces, local governments, companies and other legal persons and entrepreneurs; the inspection and supervision of the international cooperation and other issues relevant to the organization and functioning of the protection and rescue system.

The Republic of Serbia adopted the National Radiation Emergency Plan (NREP) in 2018 (*Official Gazette of RS* No. 30/18), which was prepared in accordance with the national laws and regulations, and the relevant IAEA and the European Commission documents. The Plan is to be updated every three years.

The process of implementation of the decision support system (JRodos) is under way. This system will significantly improve the national emergency preparedness and response as it will be used in the preparedness phase to support the development of the protection strategy, prepare for the implementation of protective actions in potentially affected areas, for trainings and exercises, as well as during the response.

**Cooperation with international community and neighbouring States**

The Republic of Serbia has been a Party to the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency since 2002.

The Directorate is the National Competent Authority for these Conventions and, with the Ministry of Interior's Sector for Emergency Management as the Warning Point, a registered user for Serbia in the IAEA Unified System for Information Exchange (USIE).

The Republic of Serbia has signed the following bilateral agreements:

1. The Agreement between the Government of Hungary and the Government of the Republic of Serbia for the Early Exchange of Information in the Event of Radiological Emergency (2015)
2. The Agreement between the Government of Bulgaria and the Government of the Republic of Serbia for the Early Exchange of Information in the Event of Radiological Emergency (2019)

The Republic of Serbia has been submitting the environmental monitoring data from the national network of automatic monitoring stations to the European Radiological Data Exchange Platform (EURDEP) since January 2011. All environmental monitoring data are available on the Directorate website *http://www.srbatom.gov.rs*.

The Republic of Serbia, as an official candidate for EU accession, requested ECURIE membership by regular diplomatic means in March 2019.

**Protection strategy**

The protection strategy is in compliance with the *Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Requirements No GSR Part 7, IAEA, Vienna (2015)*. The protective actions for population and emergency workers, as well as the criteria for their implementation have been set in NREP, and the types of hazards have been recognized. No reference level has been established. The transition from an emergency to existing exposure situation is not clearly defined.

**Decision making**

According to the Law on Disaster Risk Reduction and Emergency Management, the coordinating bodies for all emergencies, including the nuclear and radiological emergencies, are the national, regional and local Disaster Response Headquarters (DRH), depending on the scale of an emergency.

The members of DRH are the representatives of state administration, local communities and professional experts from special organizations, scientific and other institutions, companies and other legal entities, whose competencies and duties relate to protection and rescue.

According to NREP, and as proposed by the Directorate or based on the available information, the Republic Disaster Response Headquarters convenes to bring decisions on the response to an emergency on the territory of the Republic of Serbia. The Directorate, together with an expert operational team, is responsible for the assessment of the situation in cases of transboundary release of radioactive material.

The Directorate is a part of the Republic Disaster Response Headquarters**.**

**Criteria for the implementation of radiation protection measures**

The criteria for the protective and other response actions that are expected to be undertaken to minimize severe deterministic effects or to reduce the risk of stochastic effects as foreseen by NREP are equal to the criteria given in: *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, General Standards Guide No. GSG-2, IAEA, Vienna (2011)* and *Council Regulation (Euratom) 2016/52 of 15 January 2016 laying down maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency.*

There are eight NPPs on a distance shorter than 500 km from the Serbian border. In line with the requirements of IAEA Safety Standards publication GSR Part 7, Serbian territory is within emergency planning distances (extended planning distance and ingestion and commodities planning distance) of two NPPs in neighbouring countries, NPP „Paks" in Hungary which is 70 km from Serbian border and NPP „Kozloduy" in Bulgaria which is 90 km from Serbian border (Figure 6).

The use of Iodine Thyroid Blocking (ITB) as an urgent protective measure is not assumed on the territory of the Republic of Serbia.


*Figure 6. NPP in vicinity of Serbian border*[10]

[10] https://www.google.com/maps/

# Section D. Common Issues Identified during 7th Review Meeting

## D.1 Safety Culture

The safety culture is not explicitly recognized in the regulatory framework in the Republic of Serbia. The systematic approach to the oversight of a licensee's safety culture is missing.

## D.2 International Peer Reviews

The Republic of Serbia did not host International Peer Review missions. Considering the great importance and benefit of these missions, their careful planning is necessary. The Republic of Serbia is facing lack of experienced and educated staff and this resource-intensive activity need to be well coordinated. Regardless of the difficulties, the Republic of Serbia plans to host the International Peer Revew missions. Taking into account the infrastructure, the priorities are IRRS and ARTEMIS missions.

## D.3 Legal Framework and Independence of Regulatory Body

The establishment of the legislative and regulatory framework that meets the obligations stemming from the Convention is one of the priority activities of the regulatory body. The Law adopted in 2018 is a good foundation for the secondary legislation that is planned to be adopted in near future. The same Law also prescribed the establishment of the independent regulatory body which is effectively separated from any other body or organisation concerned with the promotion or utilisation of nuclear energy. The Directorate is established in conjuction with the above mentioned.

## D.4 Financial and Human Resources

The regulatory body is funded through the state budget and currently the financing is at a satisfactory level. The operator is funded through the state budget and through service fees (mainly radioactive waste management) on the market. Human resourcing is a permanent challenge in the Republic of Serbia, both for the regulatory body and for the operator. This issue is also connected with the implementation of knowledge management.

## D.5 Knowledge Management

The regulatory body and the operator are continuously faced with the difficulties in finding suitably qualified and experienced staff. Loss of experience is mainly the result of the lack of interest in the educational programmes at universities and ageing and brain-drain of the educated staff. Lack of interest in the educational programmes for nuclear safety is mainly the result of the implementation of the *Law banning the construction of nuclear power plants in the Federal Republic of Yugoslavia*.

## D.6 Supply Chain

The Republic of Serbia is a non-NPP country and there are no plans for embarking on a nuclear power programme, so this issue is not of relevance.

## D.7 Managing the Safety of Ageing Nuclear Facilities and Plant Life Extension

The Republic of Serbia is a non-NPP country and the issue relating to the plant life extension is not of relevance. The management of the safety of the ageing nuclear facilities other than nuclear installations (in terms of the definition of such installations in the Nuclear Safety Convention) remains the issue, taking into account that the safety of research reactors (built more than 60 years ago) and the safety of the old radioactive waste management facilities (built more than 40 years ago) needs to be improved.

## D.8 Emergency Preparedness

The Republic of Serbia uses the existing IAEA standards and guidances to improve the emergency preparedness and response capabilities. Multi- and bilateral arrangements lead to a better coordination of the activities between potentially affected countries. Entering into the bilateral arrangements with the other neighbouring countries is a continuous effort.

## D.9 Stakeholder Consultation and Communication

An open and transparent communication with the public is recognized in the regulatory body as an important issue both in the process of the development of new legislation, and in emergency situations. The public hearings or debates is a common practice implemented by the regulatory body in the process of adopting new policy documents and rulebooks. The communication with the public is performed through the web-site and e-mails on a regular basis and, usually in some extraordinary situations, through TV and other media. The communication of comprehensible, accurate and transparent information to the public and the decision-makers during emergency situations is an issue at the time when rapid access to the social media information is widely available.

# Section E. Challenges

## E.1 Chalenges identified in the Republic of Serbia

The lack of human resources and insufficient knowledge retention in the field of nuclear safety are the main challenges identified in the Republic of Serbia. Regardless of the fact that the nuclear facilities in the Republic of Serbia are out of the scope of the Convention, it has to be mentioned that the improvement of their safety is of paramount importance.

## E.2 Chalenges faced by Non-NPP and Embarking Countries identified during 7th Review Meeting

The lack of suitably qualified and experienced staff contributed both to the difficulties in preparing the country reports and to the capability to comment on the national reports from the other Contacting Parties, which is recognized as a challenge in the work of the regulatory body in the Republic of Serbia.

## Section F. Response to Covid-19 Pandemic

During the Covid-19 pandemic, the Directorate gave priority to the licensing of medical practices, with a focus on the diagnostic equipment for Covid hospitals. Due to remote work arrangements and, thus, fewer opportunities to have meetings, the process of issuing new bylaws was slowed down. Low intensity of activities at nuclear facilities in Serbia provided for no influence of the pandemic to the regular conditions.

## References


[1] The Government of the Republic of Serbia, www.srbija.gov.rs
[2] The Republic of Serbia, Ministry of Foreign Affairs, www.mfa.gov.rs
[3] Statistical Office of the Republic of Serbia, www.stat.gov.rs
[4] Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with projections by 2030, Republic of Serbia Ministry of Mining and Energy, Belgrade, 2016
[5] Draft Decommissioning Plan, Vinca Institute, Belgrade, Serbia, Centre for Nuclear Technologies and Research – NTI, IAEA TC PROJECTS YUG/4/028, SCG/4/004, SRB/3/002 Decommissioning of the Research Reactor RA in Vinca Institute, February 2009
[6] M. Pešić, S. Cupać, Z. Vukadin, *Management of Aging Research Reactors in the Vinca Institute*, IAEA, International symposium on Research Reactor Utilisation and Management, Lisbon, Portugal, 6-10 September 1999