



NATIONAL REPORT
OF BOSNIA AND HERZEGOVINA *for*
the Joint 8th and 9th Review Meeting
on the implementation of the obligations under the
CONVENTION ON NUCLEAR SAFETY

**State Regulatory Agency for Radiation and
Nuclear safety**

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A – INTRODUCTION

Although not a nuclear country, Bosnia and Herzegovina decided to initiate procedure in order to access the Convention on Nuclear Safety (CNS) in 2008. The legislative procedures relating to the acceptance of this international agreement ended on 28.10.2009 when Bosnia and Herzegovina ratified the CNS. The International Atomic Energy Agency (IAEA) officially received the instrument of accession on 21.6.2010, and the CNS entered into force in Bosnia and Herzegovina on 19.9.2010. In that way, the country has joined the group of other non-nuclear countries that are committed to this very important international instrument. The CNS is important to Bosnia and Herzegovina because it recognizes that nuclear safety is a matter for all of us. The potential transboundary impact of a nuclear accident means that nuclear safety in any country is a matter of concern for all other countries, whether or not they have chosen to develop a nuclear energy industry. The risks to human health and the environment that a nuclear accident carries and the possible transboundary consequences mean that international cooperation is essential to provide assurance that the right measures are in place. Bosnia and Herzegovina places great importance on the effective communication between governments and the CNS review process, and looks forward to working with all other countries to improve cooperation and ensure that the CNS is effective.

The first participation of Bosnia and Herzegovina at the regular meetings and its first presentation of the regular report were in 2014, at the sixth regular meeting. So this is the fourth regular report submitted by Bosnia and Herzegovina in accordance with the CNS. In addition, Bosnia and Herzegovina participated in the Second Extraordinary Meeting of the Contracting Parties in Vienna in August 2012, regarding the nuclear accident in Fukushima, Japan, in March 2011.

The Framework Energy Strategy of Bosnia and Herzegovina until 2035 was adopted on August 29th 2018 by the Council of Ministers of Bosnia and Herzegovina. This Strategy provided for that Bosnia and Herzegovina does not have plans to use nuclear power plants for electricity generation until 2035. For now, the country has sufficient energy resources and licencing of any kind of nuclear facility has never in our history been on the agenda for the consideration by the relevant authorities. At this time, the regulatory body does not have information about a possible interest of any entity for the construction and operation of a nuclear facility.

Sources of ionizing radiation (hereinafter: radiation sources) in Bosnia and Herzegovina are mainly used in medicine, industry, science and education, and less in some other fields. Medical practices such as radiotherapy, nuclear medicine, diagnostic and interventional radiology use telecobalt machines with Co-60, brachytherapy machines Ir-192, linear accelerators and other radiation sources. Nuclear medicine uses I-131 for therapy and most often Tc-99. X-ray machines (conventional X-ray apparatus, mammography, computerized tomography, etc.) are used in diagnosis. Industry uses industrial radiography cameras (i.e. defectoscopes), most often with Ir-192, industrial X-ray machines and industrial gauges. Scanners with X-ray generators are used for checking packages and baggage. These radiation sources have a very low likelihood of a larger scale radiation emergency.

Bearing in mind the above and in accordance with the CNS provisions, this report includes only the data required to describe the situation in the field of implementing the CNS obligations in

Bosnia and Herzegovina. As the body responsible for the CNS implementation, the State Regulatory Agency for Radiation and Nuclear Safety (hereinafter: SRARNS) believes that Bosnia and Herzegovina is fully committed to the obligations arising from the Convention.

B – SUMMARY

Bosnia and Herzegovina submits this report pursuant to Articles 7, 8 and 16 of the CNS, as recommended by the Guidelines regarding National Reports under the Convention on Nuclear Safety (INFCIRC/572/Rev.6).

This is the fourth regular report submitted by Bosnia and Herzegovina in relation to the CNS, and joint report for the 8th and 9th Review Meeting.

This report is modified as necessary in regard to the previous report prepared for the 8th Review Meeting and includes additional information relating to the period since 15th August 2019 to date. Italic writing in the Report pertains to the period of 15th August 2019 to 5th August 2022.

Since 2007, when the Law on Radiation and Nuclear Safety was adopted, Bosnia and Herzegovina has made significant progress in radiation and nuclear safety in the country. Particularly significant is the progress in establishing the regulatory body and strengthening its capacities, as well as in adopting bylaws in the field of radiation and nuclear safety. It is also important to emphasize that Bosnia and Herzegovina has ratified most major international instruments in the nuclear field and is fully committed to the implementation of its international obligations.

This report gives an overview of the state institutional framework and general legislation governing nuclear and radiological matters in Bosnia and Herzegovina. In addition, the contents of the report focus on the establishment and the status of the regulatory body, as well as on the preparation and response to radiological and nuclear emergencies.

The main developments since the national report for the 7th CNS Review Meeting are:

- In 2016, with the support of the US Export Control and Related Border (EXBS) program (Security - Export Control and Border Security) SRARNS has prepared draft standard operational procedures for dealing with the detection of a radioactive source and the prevention of smuggling; and illicit traffic of radioactive material at the Bijača border crossing. It is ongoing process which has for the objective that the Indirect Taxation Administration (Customs) and the Border Police, with the assistance of the SRARNS, define similar procedures for each border crossing point in Bosnia and Herzegovina, prioritizing the most important border crossings with the largest traffic towards smaller crossings. *These procedures unfortunately have not finished during the period since August 2019 to date.*
- Several standard operating procedures (SOP) in accordance with the national emergency preparedness and response plan have been drafted. These procedures were made within the IAEA TC Project BOH9007 as well as BOH9008. *In 2021 and 2022 SRARNS finalized and put in place the following procedures:*

- i *SRARNS Emergency Plan*
- ii *SRARNS procedures for notification and activating*
- iii *SRARNS procedures for Response*
- iv *SRARNS Emergency Response Handbook*
- v *SRARNS Maintaining Emergency Preparedness*

- SRARNS was working on the new Regulation on monitoring of radioactivity in Bosnia and Herzegovina. The Regulation is not adopted yet.
- In 2016 SRARNS has published Regulation on radiological emergency events in practices involving radioactive sources (Official Gazette BiH, No. 30/16)
- In 2018 SRARNS published the Regulation on amending the Regulation on training in ionizing radiation protection (Official Gazette BiH, No. 37/18)
- The SRARNS has been carrying out activities related to revision of the national legislation to be in accordance with IAEA GSR Part 3. These activities included the introduction of the transition from emergency exposure situation to the exiting exposure situation as requested by IAEA GSR Part 3 (Requirement 46). *New regulations related to the improvement pertaining to the new safety standards have not adopted yet. We expected them to be adopted in 2023.*
- In 2017 Bosnia and Herzegovina has appointed a point of contact for the Unified System for Information Exchange in Incidents and Emergencies – USIE.
- In 2017 two expert missions (EM) within the national IAEA TC Project BOH9007 had been conducted. First EM was relating to the abovementioned drafting of the SOPs. Second EM was relating to the evaluation of the existing early warning system as a part of the activities for upgrading and extending this system. The objectives of the mission were to assess the needs and requirements for Bosnia and Herzegovina to establish a national radiation monitoring network and to propose a suitable solution, taking into account current situation, specific requirements of the counterpart and international monitoring data exchange. During this EM Bosnia and Herzegovina were presented information regarding international best practices and international monitoring data exchange by Finnish expert. In addition operational experiences on the Finnish monitoring network of 256 stations as well as on EPR arrangements were transferred to the Bosnia and Herzegovina. The follow up of the second EM was the procedure for the procurement of the new monitoring stations during 2018 within the IAEA TC Project BOH9007. These monitoring stations should be procured by the end of 2019. *In the first quarter of 2022, 11 gamma monitoring stations delivered to Bosnia and Herzegovina.*¹

¹ Picture 0 shows locations where several of these stations were installed. The reason why the north part of Bosnia and Herzegovina is chosen is due to the concern of the intention of Republic of Croatia to storage nuclear waste at the very vicinity of the border at the north part of Bosnia and Herzegovina.

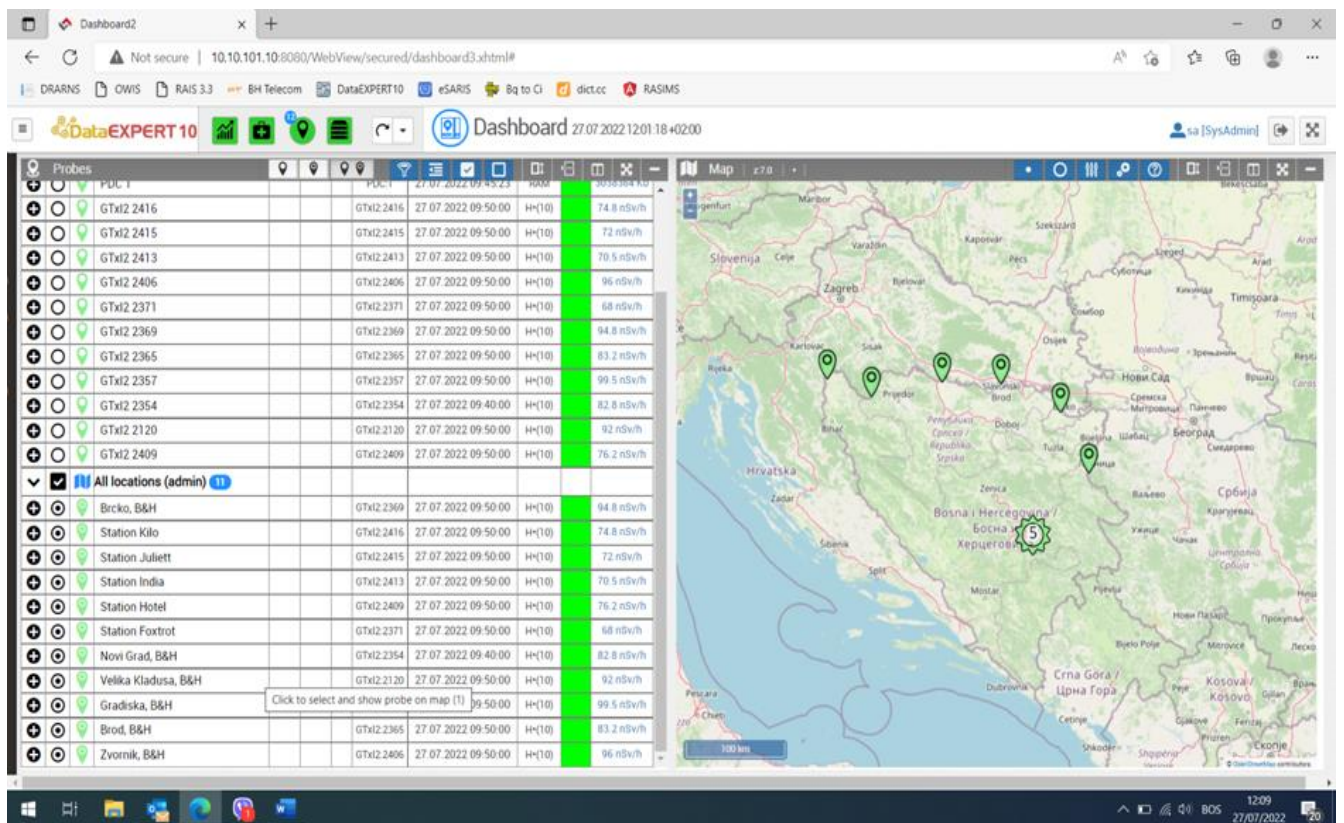
- *In 2020, as part of the cooperation with the Administration for Indirect Taxation of Bosnia and Herzegovina (Customs), SRARNS signed a cooperation agreement for the installation of radioactivity monitoring stations at border crossings in order to receive timely information about possible radiation accidents in the surrounding countries.*
- *As potential candidate for EU membership, in 2017 SRARNS as the regulatory body of Bosnia and Herzegovina for radiation and nuclear safety, has established communication with the Directorate-General for International Cooperation and Development (DG DEVCO) of European Commission for possible cooperation in areas of its duties. Consequently, in 2018 Bosnia and Herzegovina was proposed a project for upgrading the existing monitoring system of radioactivity on its territory. This project is defined as Provision of radiation monitoring equipment to upgrade the national monitoring and detection system in Bosnia and Herzegovina, including a decision support system (DSS). Under this project 12 gamma monitoring stations will be delivered to Bosnia and Herzegovina. In addition, 2 gamma spectrometric stations will be delivered of which one is fixed and one is mobile.*
- *In reported period Bosnia and Herzegovina has participated in convention exercises (ConvEx) organized by IAEA which provided opportunity to evaluate adequacy of established communication and co-operation protocols as well as identify shortcomings in international and national response systems (ConvEx-3 (June 2017), ConvEx-2b (December 2017) and ConvEx-2c Exercise (November 2018)). In October 2019 Bosnia and Herzegovina has participated ConvEx - 2d Exercise, in March 2020 ConvEx - 2b, in May 2020 ConvEx – 2a, in December 2020 ConvEx - 2c, in October 2021 ConvEx 3, and in March 2022 ConvEx 2b. These exercises were carried out in cooperation of SRARNS with other institutions of Bosnia and Herzegovina responsible for the system of protection against natural and other disasters, primarily with the Operational and Communication Center 112, as well as with the laboratories of public health institutions.*
- *In November 2016 Bosnia and Herzegovina did have exercise within the DG DEVCO project (P-44) “Strengthening CBRN first response capabilities and regional cooperation in South East Europe, Southern Caucasus, Moldova and Ukraine”*
- *The consequence management field exercise “BOSNA I HERCEGOVINA 2017” has been conducted from 25th to 29th September 2017, in and around the city of Tuzla, Bosnia and Herzegovina. The aim of the exercise was to improve interoperability in international disaster response operations. The exercise was jointly conducted by NATO’s Euro-Atlantic Disaster Response Coordination Centre (EADRCC) and the Ministry of Security of Bosnia and Herzegovina, as the 17th EADRCC consequence management field exercise and the first to be hosted by Bosnia and Herzegovina. The*

scenario has included water rescue, urban search and rescue, medical/paramedical teams, and Chemical Biological Radiological Nuclear (CBRN) protection, as well as decontamination teams. The representatives of SRARNS have participated as member of team for detection and response to the radiological incidents.

- In October 2018 Bosnia and Herzegovina hosted the IAEA ORPAS mission. The ORPAS Team was impressed with the remarkable progress made by Bosnia and Herzegovina in a relatively short period of time since the drafting of legislation and implementation of it into practice. With hosting the ORPAS Mission Bosnia and Herzegovina has demonstrated its willingness to further improve and expand the safety culture across a range of sectors and within the country. The ORPAS Team noticed open communication and adequate cooperation between the different radiation protection actors – regulator, TSOs and end users and commended SRARNS for their work.
- In reporting period Bosnia and Herzegovina has emphasized its cooperation with Serbia, Montenegro and Croatia regarding the exchange of experience on problem solving projects, which are similar or common to all countries, such as the project for measuring the presence of radon in the environment, then the project of environmental analysis in areas affected by depleted uranium, control of borders and illicit traffic of radioactive sources and others.
- Discussions were held with Croatia regarding their plans on possible building of the radioactive waste management facility on the border with Bosnia and Herzegovina. *In the period of 15th August 2019 to date SRARNS had a lot of activities pertaining to this issue. In this context, we are constantly exhausting our existing capacities, which are not even sufficient to perform the basic functions assigned to us in accordance with the Law. In the matter of this issue, SRARNS has constant cooperation with the ministries in Bosnia and Herzegovina which are in charge of the environment and with the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, which is in charge of the ESPOO Convention and the Aarhus Convention.*
- *In October 2020, the Council of Ministers of Bosnia and Herzegovina enacted a Decision on the appointment of an Expert Team to monitor the situation and activities related to the disposal of radioactive waste and spent nuclear fuel at the Trgovska Gora location and the Decision on the appointment of the Legal Team for the development of a strategy for the legal protection of the interests of BiH in connection with the issue of disposal of radioactive waste and spent nuclear fuel at the location of Trgovska Gora. These two teams were conducting its duties supported by the SRARNS.*
- *In 2020, 2021 and 2022, in addition to difficult work due to the COVID-19 pandemic and lack of workforce, SRARNS was fulfilling its obligations*

under ratified international conventions and was implementing the law and by-laws in the field of its work. It continued with the updating of the State Register of sources of ionizing radiation, inspection supervision and implementation of measures by state inspectors for radiation and nuclear safety and security to the extent that it was possible to go to the field for inspection supervision. In 2020, SRARNS weakened in terms of human resources due to the leave of an experienced physicist who held the position of state inspector. Due to the prohibition of employment without the approval of the Council of Ministers of Bosnia and Herzegovina, the SRARNS was unable to employ anyone in this period.

Picture No 0.



Challenges identified at the 7th Review Meeting were:

- Challenge 1: To make further progress toward providing adequate financial and human resources to the Regulatory Body.
- Challenge 2: In light of resource challenges of the Regulatory Body, to effectively prepare for and host an IRRS Mission in 2019
- Challenge 3: To resolve resource and technical issues related to accession to ECURIE and EURDEP.
- Challenge 4: To improve programs on training, justification to the exposure to ionising radiation in medicine.

Regarding challenge 1 some progress has been made but number of staff is still inadequate as described in paragraph on Article 8 (1). *Unfortunately, during the period since 2019 to date there was no progress on this matter too. As mentioned above, we even faced with the leave of experienced staff.*

Regarding challenge 2, the IRRS Mission was requested and should be held Q3 or Q4 of 2020. Our representative will attend as observer the IRRS Mission to be held in Latvia due to preparation for Bosnia and Herzegovina mission. *Due to the pandemic of COVID 19, IRRS is moved and scheduled for the Q4 of 2022. Preparations for the mission are underway.*

Regarding challenge 3 some progress has been made as indicated above. However, Bosnia and Herzegovina is not yet a member of ECURIE and EURDEP. *The procedure to become a member of ECURIE is initiated in 2022 and is underway. Regarding EURDEP, we are in the process of establishing technical communication with the Joint Research Centre in Ispra, Italy, in order to test data exchange.*

Regarding challenge 4 regular trainings of workers in medicine are organized in line with existing regulations from 2016.

C – REPORTING ARTICLE BY ARTICLE

Article 7 Legislative and Regulatory Framework

Article 7 (1) Establishment and maintaining a legislative and regulatory framework

In November 2007, the Law on Radiation and Nuclear Safety in Bosnia and Herzegovina (hereinafter: the Law) entered into force. The Law established a general framework of the system of control over the radiation sources, the protection of the people, present and future generations and the environment from exposure or potential exposure to ionizing radiation. Detailed regulation of radiation and nuclear safety was left to future bylaws issued by SRARNS.

According to Article 2 of the Law, the objective is to provide protection against ionizing radiation, and radiation and nuclear safety of the citizens of the country through:

- a) establishment and implementation of the system that enables the development and use of radiation sources in accordance with the requirements for the protection of human health and safety,
- b) establishment and maintenance of a regulatory program for radiation sources, thereby ensuring compatibility with international standards of the safety of radiation sources and the protection from ionizing radiation,
- c) establishment of the national regulatory body for radiation and nuclear safety with an appropriate set of functions and responsibilities, and the necessary resources for establishing regulatory control.

The Law established SRARNS, which took over the radiation protection tasks from the entity ministries of health. This was the result of years of harmonizing the legislation on radiation protection and nuclear safety with the relevant international standards in cooperation with the International Atomic Energy Agency (IAEA) and the European Union (EU).

In addition, in 2013 the Parliamentary Assembly of Bosnia and Herzegovina adopted the Law on Civil Liability for Nuclear Damage, which was developed in accordance with the Vienna Convention on Civil Liability for Nuclear Damage (1997).

Other laws relating to the Law include the following:

- Framework Law on the Protection and Rescue of People and Property from Natural or Other Disasters in Bosnia and Herzegovina,
- Food Safety Law,
- Law on the Protection and Rescue of People and Property from Natural or Other Disasters in Federation of BiH,
- Law on Protection and Rescue in Emergencies in the Republic of Srpska,
- Law on Health Care in the Federation of BiH,
- Law on Health Care in the Republic of Srpska, □ Law on Health Care in the Brcko District of BiH.

SRARNS is authorized to provide opinions and recommendations for joining international conventions, as well as recommendations for adoption of other international instruments in the

field of radiation and nuclear safety, and to carry out the obligations that Bosnia and Herzegovina has assumed under these and bilateral agreements in this area. This is one of the essential activities of SRARNS.

In addition to the CNS, Bosnia and Herzegovina has ratified the following international treaties and conventions that are related to nuclear safety:

- Statute of the IAEA and the Amendments to Articles 6 and 14 of the Statute,
- Treaty on the Non-Proliferation of Nuclear Weapons,
- Agreement with the International Atomic Energy Agency on the application of safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons; Additional Protocol to the Agreement with the International Atomic Energy Agency on the application of safeguards in connection with the Treaty on Non-Proliferation of Nuclear Weapons,
- Revised Supplementary Agreement concerning the provision of technical assistance by the International Atomic Energy Agency to Bosnia and Herzegovina,
- Convention on Early Notification of a Nuclear Accident,
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency,
- Convention on the Physical Protection of Nuclear Material,
- Amendments to the Convention on the Physical Protection of Nuclear Material,
- International Convention for the Suppression of Terrorist Bombings,
- International Convention for the Suppression of Acts of Nuclear Terrorism,
- Vienna Convention on Civil Liability for Nuclear Damage,
- Protocol on Amendments to the Vienna Convention on Civil Liability for Nuclear Damage,
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management,
- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention),
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention).

Pursuant to Article 8 of the Law, SRARNS implements the commitments assumed by Bosnia and Herzegovina under international conventions and bilateral agreements relating to radiation and nuclear safety and the application of safeguards for the purpose of non-proliferation of nuclear weapons.

In addition to the above international instruments relevant for nuclear safety, it should be noted that bilateral cooperation has been established, and it mostly pertains to the countries in the region (Croatia, Slovenia, Montenegro, Macedonia, and Albania).

This especially pertains to the border control and illicit trafficking of radiation sources, the exchange of experiences during the establishment of the regulatory system and in the education of employees of regulatory agencies, which are priority fields for all neighbouring countries. The cooperation takes place through memorandums of understanding. Signing a similar document with Serbia is currently under negotiations.

SRARNS also cooperates with the United States administration, especially with the National Nuclear Security Administration that has implemented several projects related to the security of radioactive sources.

As for cooperation with the IAEA, in accordance with the Law SRARNS is the state partner of the IAEA for all radiation and nuclear safety matters. In addition to the activities toward the implementation of technical cooperation projects, SRARNS intensively cooperates with the IAEA in other areas of radiation and nuclear safety and security, such as control of sealed radiation sources, import and export control, transport safety, nuclear security, safety of radioactive waste management, and nuclear law. Bosnia and Herzegovina belongs to the group of priority countries that are recipients of IAEA assistance programs of technical cooperation, which is characterized through the support in establishing an adequate regulatory framework and improving the work of SRARNS and other relevant institutions in the country in the area of health care, industry, environmental protection, etc.

Cooperation of SRARNS with the EU institutions in the previous period took place mainly through the implementation of IPA projects in radiation protection and nuclear safety. Since 2017 SRARNS has established cooperation with the Directorate-General for International Cooperation and Development (DG DEVCO) of European Commission where the EU will finance Bosnia and Herzegovina in order to obtain radiation monitoring equipment to upgrade the national monitoring and detection system in Bosnia and Herzegovina, including a decision support system (DSS). This action will be financed from the EU Budget under the following basic act: Instrument for Nuclear Safety Cooperation.

SRARNS also has established cooperation with ECURIE (European Community Urgent Radiological Information Exchange). Following Bosnia and Herzegovina intentions to join EURDEP in 2014 our representatives have participated on several meetings within the EURDEP activities during the reported time. Also, Bosnia and Herzegovina has intention to become a member of the ECURIE.

Article 7 (2) (i) National safety requirements and regulations

Nuclear safety

Considering that Bosnia and Herzegovina is a non-nuclear country, the biggest challenge and the first task facing SRARNS was the development of radiation safety regulations and their compliance with the international standards established by the IAEA and the EU, having in mind that Bosnia and Herzegovina wanted to apply for the EU membership. Consequently, SRARNS did not consider nuclear safety regulations as a priority at the beginning.

Lately, the need for specific nuclear safety regulations governing the licensing and safe operation of nuclear installations was considered. Therefore, Bosnia and Herzegovina has reviewed its legal framework particularly related to nuclear safety, and concluded the following:

1. The legislation now contains the nuclear safety provisions only to cover the off-site emergency in case of a nuclear accident abroad.
2. Bosnia and Herzegovina is still considering the possibilities of preparing a specific nuclear safety regulation or incorporating some nuclear safety provisions into the Law.

3. SRARNS should also have an overall responsibility for the nuclear safety of nuclear installations in the country.
4. Under the Law, SRARNS is generally authorized to issue nuclear safety regulations, but as the country does not have a nuclear program, there are no national nuclear safety requirements. To achieve full compliance with the EU directives, the legislation could be amended to also include nuclear safety requirements for potential nuclear installations. Bosnia and Herzegovina will need to raise this question within the negotiations process with EU. It should be mentioned that the Framework Energy Strategy of Bosnia and Herzegovina provides for that nuclear power plants for electricity generation will not be considered as a possibility at least until 2035.
5. The Law contains adequate provisions on the SRARNS functional separation from the promoters of radiation technologies, but does not contains provisions on the separation from nuclear promoters.
6. The Law should be amended to include a provision that SRARNS makes its regulatory decisions founded on the robust and transparent nuclear safety related requirements. These requirements should be determined by SRARNS in a special regulation.
7. The Law should be amended to include a provision on human resources in SRARNS.
8. The national legislation generally establishes a system of regulatory enforcement actions, including licence suspension. To achieve full compliance with the EU directives, the system should also be established for nuclear installations, where appropriate.
9. The Policy on the Safety of Ionizing Radiation Sources in Bosnia and Herzegovina, which the Council of Ministers of BiH adopted in June 2012, partially addresses ensuring of the expertise and skills in radiation protection, but does not address nuclear safety. Part 5 of the Policy should be amended.
10. Active public participation in the decision-making process for the licensing of nuclear installations (environmental legislation, spatial planning legislation, building legislation) must be addressed in the legislation.
11. The Law should be amended to include requirements for a periodic self-assessment.

In the reported period SRARNS considered amending the Law but policy decision on this action has not yet been taken.

SRARNS has drafted a new Law on radiation and Nuclear Safety which is intended to replace the existing Law. The initiation of the procedure in front of the Parliamentary Assembly of Bosnia and Herzegovina is expected to occur in 2023.

Radiation safety

One of the country's strategic priorities is to regulate the safe and secure use of radiation sources in a sustainable and transparent manner. Drafting the regulations governing the process of issuing licenses for the possession and use of radiation sources and licenses for the transport of the sources establishes grounds for the system that enables the development and use of the sources in accordance with the requirements for the protection of human health and the environment from possible harmful effects of ionizing radiation.

Particularly significant is the Regulation governing radiation protection of the public and occupationally exposed workers, and also radiation protection in medicine, control of high activity sources and orphan sources, safe transport of radioactive material, security of radiation sources, etc.

One of the SRARNS important tasks was defining policies and principles in the field of radiation safety as the basis for its regulatory actions. In this regard, SRARNS prepared a draft policy on the safety of ionizing radiation sources in Bosnia and Herzegovina, which the Council of Ministers of BiH adopted in June 2012. This document is based on the highest international standards in this field.

Since its establishment, SRARNS has issued the following bylaws within its authority:

- Regulation on inspection monitoring in the field of radiation and nuclear safety (*Official Gazette of BiH*, No 65/10),
- Regulation on the notification and authorization of practices involving sources of ionizing radiation (*Official Gazette of BiH*, No 66/10),
- Regulation on the requirements for transfer and use of sources of ionizing radiation (*Official Gazette of BiH*, No 66/10),
- Regulation on the ionizing radiation protection in medical exposure (*Official Gazette of BiH*, No 13/11),
- Regulation on the categorization of radiation threats (*Official Gazette of BiH*, No 102/11),
- Regulation on the radiation protection in occupational exposure and public exposure (*Official Gazette of BiH*, No 102/11),
- Regulation on the control of high-activity sealed radioactive sources and orphan sources (*Official Gazette of BiH*, No 62/12),
- Regulation on record keeping for legal persons carrying out practices involving sources of ionizing radiation (*Official Gazette of BiH*, No 67/12),
- Regulation on the safety of transport of radioactive material (*Official Gazette of BiH*, No 96/12),
- Regulation on the security of nuclear material and radioactive sources (*Official Gazette of BiH*, No 85/13),
- Regulation on recognition of the qualified expert status (*Official Gazette of BiH*, No 84/14),
- Regulation on the monitoring of radioactivity in the environment (*Official Gazette of BiH*, No 54/14),
- Regulation on the concentration limits for radionuclides in food, feed, medicines, items of general use, building materials, and other goods placed on the market (*Official Gazette of BiH*, No 54/14),
- Regulation on the training in ionizing radiation protection (*Official Gazette of BiH*, No 68/15),
- Regulation on radioactive waste management (*Official Gazette of BiH*, No 68/15),
- Regulation on the medical surveillance of occupationally exposed workers (*Official Gazette of BiH*, No 68/15),
- Regulation on technical services for ionizing radiation protection (*Official Gazette of BiH*, No 68/15),
- Regulation on the radiation protection officer (*Official Gazette of BiH*, No 86/15)

- Regulation on the national register of individuals exposed to ionizing radiation (*Official Gazette of BiH, No 86/15*)
- Regulation on the radiation protection of outside workers (*Official Gazette of BiH, No 86/15*)
- Regulation on the radiation protection and medical physics service (*Official Gazette of BiH, No 86/15*)
- Regulation on radiological emergency events in practices involving radioactive sources (*Official Gazette BiH, No. 30/16*)
- Regulation on amending the Regulation on training in ionizing radiation protection (*Official Gazette BiH, No. 37/18*)

In addition to developing the above bylaws and for the purpose of radiation safety of users of radiation sources, exposed workers, patients and residents, SRARNS has issued several guides that are not legally binding but are important guidelines for the conduct of all categories of persons who in any way come into contact with radiation sources:

- Guide for the creation of the radiation protection program in diagnostic radiology and Guide for the creation of the radiation protection program in dental offices,
- Guide for the radiation protection of occupationally exposed workers, pregnant and breastfeeding women,
- Guide for the classification of controlled and supervised areas and the categorization of occupationally exposed workers, students, pupils, and persons in training,
- Guide for handling discovered orphan sources,
- Guide for the recognition of the qualified expert status,
- Guide on radiation safety procedure for technical services,
- Guide on the contents of radiation protection training for radiation protection officers, □ Guide for use of personal dosimeters.

Article 7 (2) (ii) System of licensing

In accordance with the Law, any activity with radiation sources must be approved by the SRARNS because any radiation source must be reported to SRARNS and recorded in the National Register of Radiation Sources. The process of notification and authorization system is regulated in the "Regulation on the notification and authorization of practices involving sources of ionizing radiation". Notified sources and authorized practices involving radiation sources are recorded in the national register.

SRARNS issues licenses for the following practices:

- Possession and use of radiation sources,
- Transport of radiation sources,
- Import and export of radiation sources,
- Technical services (TSO),
- Procurement and distribution of radiation sources, □ Production of radiation sources.

Registrations are mainly related to lightning conductors with an embedded radiation source, devices for controlling shipments and baggage, and other low-activity sources.

Pursuant to Article 8 of the Law that defines SRARNS functions and responsibilities, SRARNS establishes and maintains the national register of sources of ionizing radiation and persons exposed to ionizing radiation, and also the register of issued permits. This important activity is carried out through the collection and processing of information and data through the information management system RAIS (Regulatory Authority Information System), which was established with the support of the IAEA. SRARNS is currently using the web version RAIS 3.3.

Article 7 (2) (iii) System of regulatory inspection and assessment

In accordance with the Law and the "Regulation on internal organization and job classification", SRARNS has the Inspectorate whose inspectors control radiation and nuclear safety from the SRARNS's headquarters in Sarajevo and regional offices in Banja Luka and Mostar. The inspectors have special powers. Their scope of work and powers are defined in the Law, the Law on Administration, and the "Regulation on inspection monitoring in the field of radiation and nuclear safety".

All persons possessing radiation sources and nuclear material are subject to inspection. This also includes technical services authorized by the SRARNS in order to guarantee the maintenance of the authorization requirements and the quality of their performance.

SRARNS has established a planned and systematic inspection program for legal entities possessing radiation sources and nuclear material, and for technical services. Inspectors carry out continuous inspection on the basis of the inspection plan. The inspection plan is developed annually, taking into account the number of legal entities using radiation sources and the frequency of inspections based on the "Regulation on inspection monitoring in the field of radiation and nuclear security" and international recommendations. The annual work plan is the base for quarterly work plans for each inspectors, which are then divided into monthly work plans. The content of the inspection in the regulatory process depends on the size or nature of the risk associated with a controlled practice.

Since the establishment of SRARNS, the inspectors have conducted averagely about 250 inspections every year. In a small number of cases, the inspectors have imposed measures because of the risk to human health and the environment, and the measures have been implemented within the given deadline. The use of defective X-ray equipment has also been prohibited and the removal of orphan sources has been ordered also in a small number of cases.

The inspectors carried out control activities during emergency situations, which most frequently occurred at the scrap metal yards as well as border crossings regarding the discovery of radioactive material in the scrap metal shipments.

Article 7 (2) (iv) Implementation of the existing regulations and license conditions

Article 23 of Law on Radiation and Nuclear Safety lays down penalties for legal persons and the responsible person in the legal person (directors) for minor offenses in the field of radiation and nuclear safety.

It is provided for that the legal person will be fined between BAM 10,000 and BAM 30,000 (approximately 5.000 to 15.000 EUR) if:

- a) it begins to carry out a practice involving a radioactive source without the Agency's approval;
- b) continues with the practice after expiry of the approval period for the use of sources of ionizing radiation;
- c) the practice carried out is not in line with the terms of the granted approval.

For these offenses, in addition to fines, a measure prohibiting the director to carry out the practice for the period of up to three years may be imposed.

Also, the director may be fined between BAM 2,000 and BAM 6,000 (approximately EUR 1,000 to EUR 3,000). A measure prohibiting the director to carry out the practice involving radiation sources for the period from one to three years may be imposed if a damage occurs due to illegal operation.

Pursuant to Article 21 of the Law, state inspectors for radiation and nuclear safety impose provisional measures in the event of imminent danger to life and health.

So far, in practice there have not been any penalties for violations of Article 23 of the Law. The inspectors have acted more in terms of prevention and education, warning the users of radiation sources of the consequences that may arise in the event of non-compliance with the laws and regulations on radiation and nuclear safety. However, the inspectors sometimes had to impose measures to eliminate nonconformities in the use of radiation sources and to protect human health and the environment. All nonconformities have been removed within the deadlines given by the inspectors, so there has been no need for penalties.

Article 8 Regulatory Body

Article 8 (1) Establishment of the regulatory body

As already noted, the regulatory body (SRARNS) was established under the Law on Radiation and Nuclear Safety. SRARNS, independently and in accordance with the Law and other regulations, performs regulatory control of radiation safety, safety of radioactive waste, and transport safety. SRARNS defines a set of measures to mitigate the consequences of a nuclear accident in the countries of the region that may have an impact on Bosnia and Herzegovina. The set of measures includes evacuation plans and accommodation of the population, decontamination and other intervention measures.

SRARNS has the authority to:

- define the policy in radiation and nuclear safety, the principles of safety and appropriate criteria as the basis for its regulatory actions,
- prepare and issues regulations and instructions constituting the basis for its regulatory action,
- determine the exposures to radiation excluded from the scope of regulations on the grounds that they are not amenable to regulatory control,
- establish and implement procedures for notification, authorization, inspection and enforcement of regulatory requirements,

- require each operator to conduct a safety assessment,
- enters the premises or the facility at any time to conduct the state inspection of the safety of radiation sources,
- issue, amend, suspend or revoke and impose requirements for authorizations to import, export, production, purchase, receipt, possession, storage, use, transit, transportation, maintenance, recycling and final disposal, as well as for any other activity related to the sources of ionizing radiation,
- issue, amend, suspend or revoke approvals to technical services for radiation protection;
- determine exclusions and exemptions regarding the possession and use of radioactive sources, and issue a relevant document thereof,
- take appropriate measures in the event of a radiological emergency or nuclear accident,
- establish and maintain the national register of sources of ionizing radiation and persons exposed to ionizing radiation, and as well of the issued permits,
- cooperate with other administrative bodies and other institutions regarding the scope of the Agency's work,
- determine appropriate methods for dissemination of public information about the matters regarding ionizing radiation,
- determine the proposed amount of administrative taxes for issuing authorizations, that is, approvals, and ensuring the collection of taxes,
- cooperate with other countries, the International Atomic Energy Agency (IAEA) and other relevant international organizations,
- act as the country partner to the International Atomic Energy Agency,
- represent Bosnia and Herzegovina internationally regarding the matters in the field of radiation safety and nuclear safety,
- in cooperation with the relevant state agencies, take necessary measures for the security of radioactive and nuclear material and request other competent bodies to perform monitoring inside the country and at the necessary control locations with the aim of discovering sources out of regulatory control,
- be prepared to assist in emergency situations and react in line with the national action plan for emergency situations,
- establish official arrangements with other relevant agencies involved in the regulatory process,
- provide opinions and recommendations for accession to international conventions, as well as recommendations for adoption of other international documents in the field of radiation and nuclear safety,
- implement the obligations assumed by Bosnia and Herzegovina under the international conventions and bilateral agreements related to the radiation and nuclear safety and the application of safeguards for the purpose of non-proliferation of nuclear weapons.

SRARNS has the headquarters in Sarajevo and two regional offices, one in each entity. The seat in the Republic of Srpska is in Banja Luka, and in the Federation of Bosnia and Herzegovina it is in Mostar. The headquarters has the following four organizational units:

- Office of the Director;
- Department for General, Legal, Personnel and Financial Affairs; □ Department for Authorization;
- Inspectorate.

The "Rulebook on internal organization and job classification" provides for a total of 34 employees. Today SRARNS operates with 19 employees, which is approximately 55% of the estimated number under the rulebook. In addition to the employees, a significant support to the SRARNS work is provided by external experts who participate in the drafting of regulations and other documents adopted or proposed by SRARNS.

Article 8 (2) Status of the regulatory body

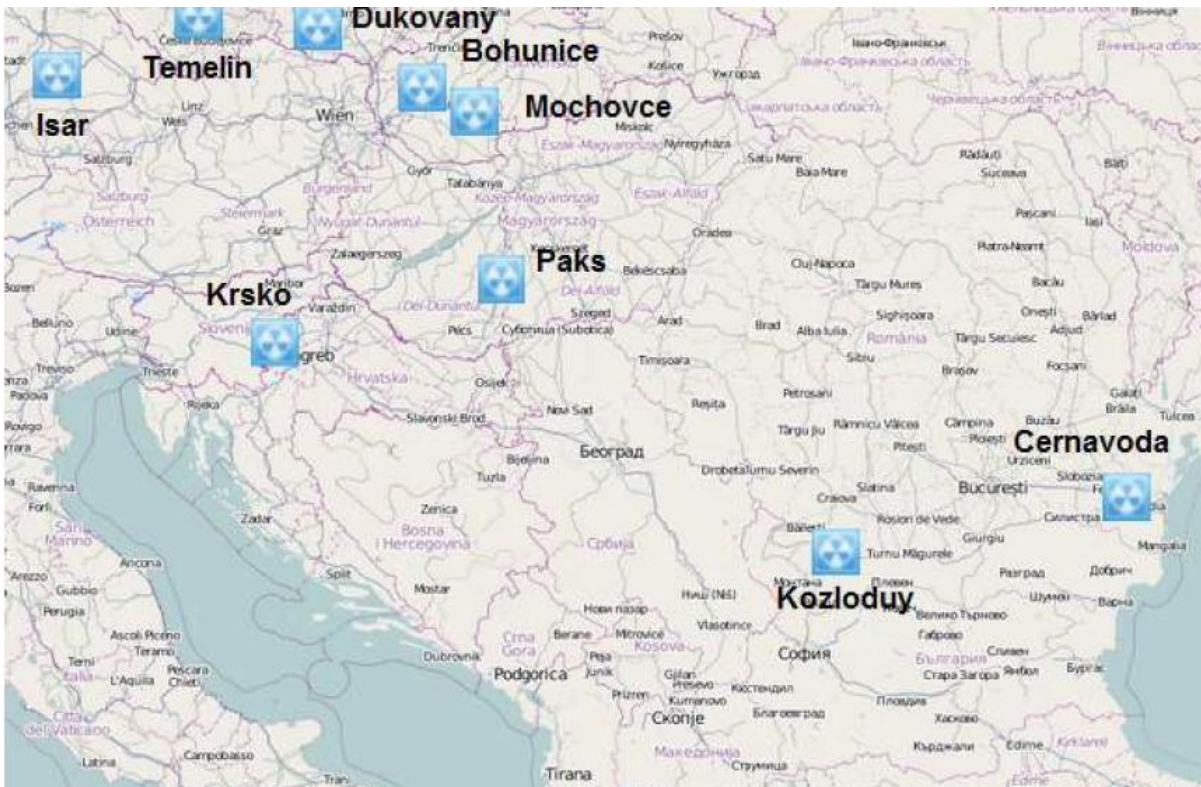
SRARNS is an independent administrative organization that performs its duties under the direct supervision of the Council of Ministers of BiH. Also, SRARNS carries out the activities provided for in the annual plan of the Council of Ministers. SRARNS is independent of other governmental and non-governmental organizations involved in the promotion of radiation technology. It is funded from the budget of the institutions of Bosnia and Herzegovina and from independent sources. The funding does not depend on collected taxes for authorization or inspection fines.

SRARNS annually reports to the Council of Ministers of BiH and also submits the report on radiation and nuclear safety in Bosnia and Herzegovina at least once a year to the Parliamentary Assembly of BiH.

Article 16 Emergency Preparedness

Article 16 (1) Emergency plans and programs

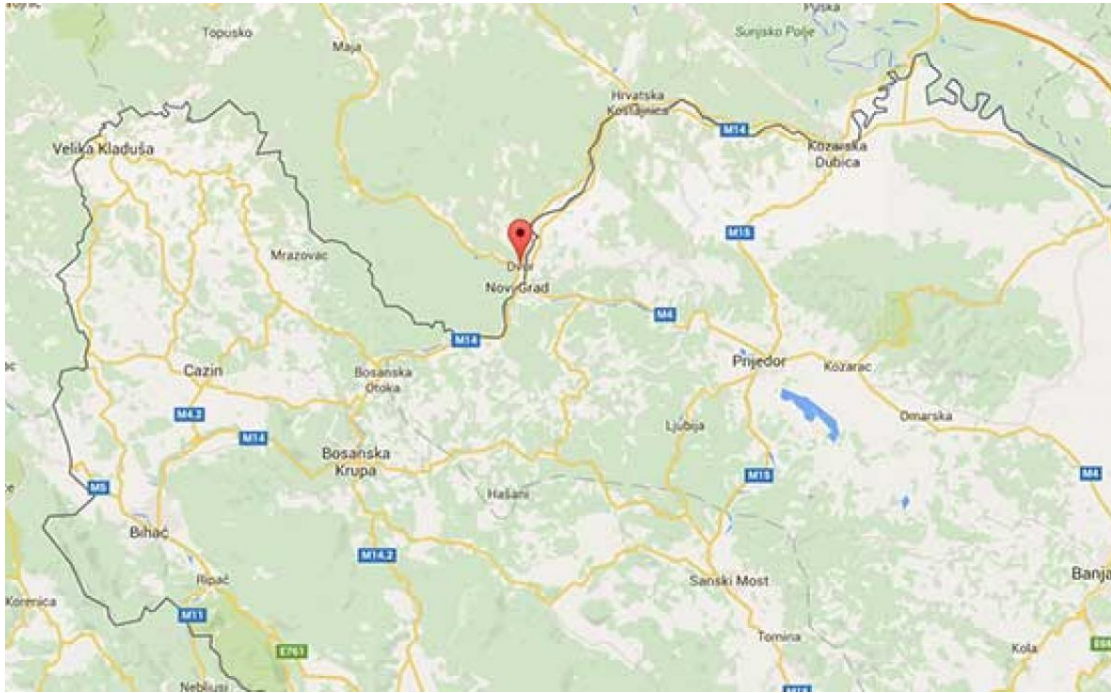
Although Bosnia and Herzegovina has no nuclear installations, there are many operational nuclear power plants (NPP) within 1,000 km from the border. The closest are Krsko NPP in Slovenia and Paks NPP in Hungary. Krsko NPP is 83 km away from the border of Bosnia and Herzegovina and Paks NPP about 170 km away.



Nuclear power plants around BiH

Severe accidents with large releases from the NPPs could cause serious consequences in the country. Besides such accidents, the following types of events might also trigger a nuclear or radiological emergency in the country: accident in transport of radioactive sources and nuclear materials; accident in a storage facility for radioactive waste; accident during the use of radioactive sources in industrial, medical, scientific research and other activities; re-entry of a satellite using radioisotopes for energy generation; accident related to the illicit transport of radioactive sources and nuclear materials; import of food or other materials polluted by radionuclides, and radioactive pollution or an increased exposure to ionizing radiation caused by other circumstances (including vandalism, sabotage and terrorism).

However, Bosnia and Herzegovina has concern because of the activities carried out by the Republic of Croatia, our neighbouring country, which relate to the establishment of a storage facility for radioactive and nuclear waste along the very border with Bosnia and Herzegovina. The material originates from the nuclear power plant Krsko in Slovenia, jointly owned by Slovenia and Croatia. Upon closing of the nuclear power plant, which is scheduled for the year 2043, Croatia intends to deposit its amounts of nuclear waste in the storage facility, which is only 3 km away from the town of Novi Grad in Bosnia and Herzegovina with population of about 30,000. Our country strongly opposes the establishment of the facility as planned by Croatia because the local community from the Bosnia and Herzegovina territory near the planned site is unanimously against this project. We believe that Croatia could have found a more adequate solution for these activities that does not harm good neighbouring relations. Also, these activities in Croatia have created additional obligations to our regulatory agency, and it is necessary to strengthen the SRARNS capacities in this sense provided that Croatia continues to implement the project.

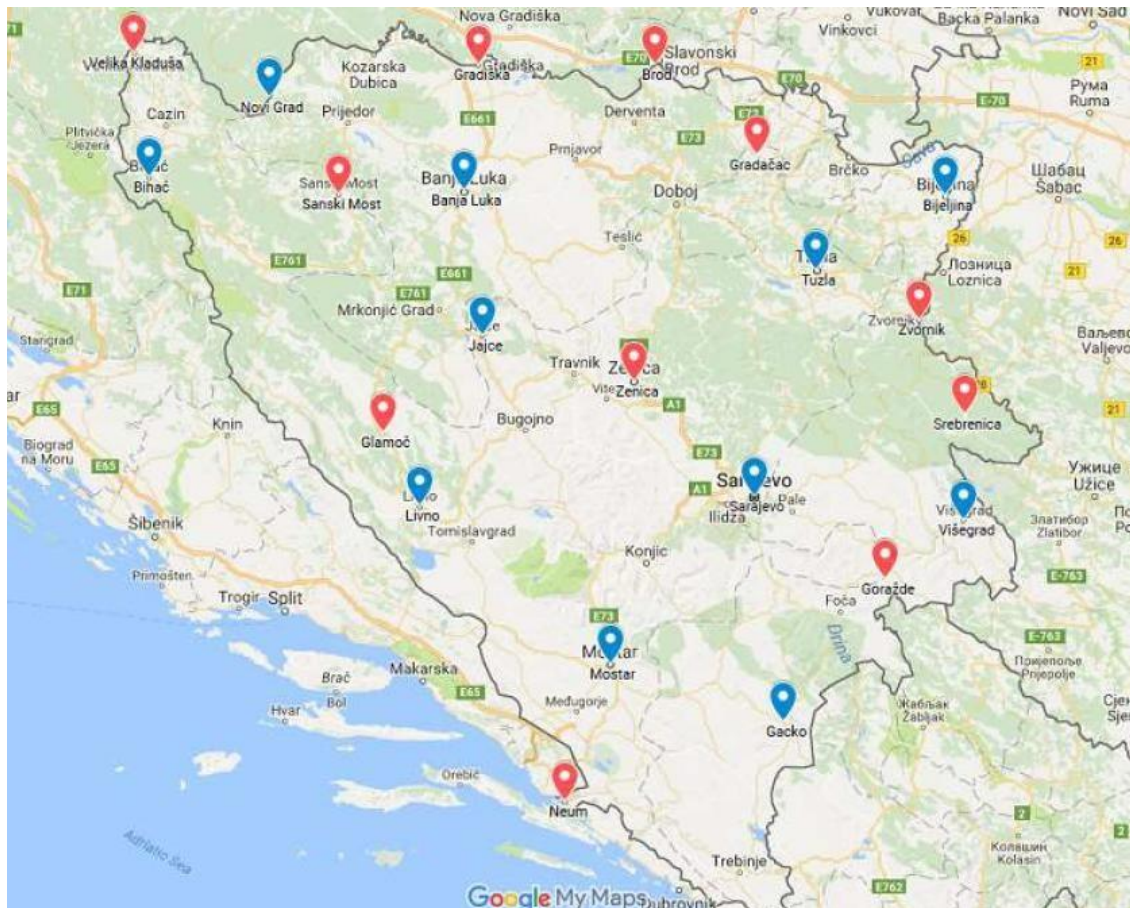


Proposed location for Croatian storage facility close to border of Bosnia and Herzegovina

It is important to emphasize that Bosnia and Herzegovina has an automated on-line system for monitoring environmental radiation and for early warning of a radiation emergency by measuring the ambient dose rate of gamma radiation. The system was donated by the IAEA through a technical cooperation project in 2004. It consists of 11 measuring stations distributed across the country, as well as two interconnected servers for data storage.

In addition to the present station locations, it is recommended by the expert mission that additional stations are installed in major population centres close to the border regions and in selected locations at central regions of BiH. In order to provide an early warning of in case of a serious accident at a nearby nuclear power plant resulting in atmospheric release, it is recommended that new stations are at first placed to border locations in north (3 new stations) and to eastern border (2 station) and after that additional stations are installed to other locations (6 stations). The first priority is, however, to replace the existing 11 monitoring stations with new ones.

The current situation with gamma monitoring stations in Bosnia and Herzegovina is explained in Part B of this Report.



A map showing the present monitoring stations (blue symbol) and proposed new stations (red symbol)

Due to the possible nuclear and radiological threats, the Parliamentary Assembly of BiH adopted the National Emergency Preparedness and Response Plan in 2015. The aim of the plan is establishment of an efficient and successful system of preparedness and response of the institutions in Bosnia and Herzegovina at all levels in case of a nuclear or radiological emergency on the country territory.

The plan consists of four chapters:

- Introduction,
- Response planning,
- Response to a radiation emergency, □ Preparedness for a radiation emergency.

The plan particularly emphasizes an adequate involvement of the institutional capacities and identifies deficiencies in order to work towards their future elimination, which would allow for the establishment of an effective system of public and environmental protection in the event of a radiation emergency.

The plan has defined the powers and responsibilities of institutions in Bosnia and Herzegovina, which will be an opportunity for their active participation in the exercises related to the provision of information, engaging and seeking assistance, regularly organized by the IAEA in cooperation with the Member States.

Radiological and nuclear threats in Bosnia and Herzegovina are classified into five categories under the "Regulation on the categorization of radiation threats" (Official Gazette of BiH No. 102/11), as follows:

- Radiation threat category I are radiation facilities in which the radiation emergency can lead to severe deterministic effects for individuals off the site.
- Radiation threat category II are radiation facilities in which the radiation emergency can result in doses which require taking off-site emergency protective measures.
- Radiation threat category III are radiation facilities in which the radiation emergency can result in doses or contamination that requires on-site emergency protective measures.
- Radiation threat category IV are objects, activities with radiation sources and radiation sources, which can cause a nuclear or radiological emergency and require emergency protective measures in an unforeseeable location.
- Radiation threat category V are the practices that do not involve ionizing radiation, but whose products are likely to become contaminated as a result of a radiation emergency in facilities of the threat category I or II.

According to this categorization, there are no threat categories I and II in Bosnia and Herzegovina, i.e. there are no facilities and no activities that might cause severe deterministic effects to individuals off the site or that might lead to doses that require off-site emergency protective measures. Therefore, the plan is based on threat categories III, IV and V. During the assessment of radiation threats on the territory of Bosnia and Herzegovina, previous experience (including nuclear accidents in Ukraine-Chernobyl and Japan-Fukushima) was taken into consideration. Also, the experience from several cases in the country was considered, e.g. the cases in which radiation sources were found in trucks and train wagons loaded with scrap metal. Under the Plan, the main actors in the communications and information management, and the coordination of public protection measures in the event of mass contamination due to a nuclear accident in another country are SRARS, the Ministry of Security of BiH, the civil protection administrations in the Federation of BiH and the Republic of Srpska, and the Coordination Body of BiH for Protection and Rescue. In case of receiving information about a nuclear accident (from the IAEA or a country where the accident occurred), the communication system and the responses envisaged in the plan is explained below for such accident from threat category V. As the reference point of contact, the Operational and Communication Centre 112 (OCC-112) within the Ministry of Security of Bosnia and Herzegovina receives the notification and forwards it to SRARNS which then verifies the information itself and its content through information exchange with the IAEA. After the warning, the Ministry of Security and SRARNS conduct simultaneous activities in which a SRARNS representative performs the reading and interpretation of the results from the online monitoring system. OCC-112 informs the relevant operational centres of the Federation of BiH, the Republic of Srpska, the Brcko District of BiH, other relevant operational offices of ministries and administrative authorities in Bosnia and Herzegovina, and the mass media to enable the system structures to respond to the resulting emergency situation and to take measures to protect the population. Upon the situation assessment, the Coordination Body for Protection and Rescue may be activated if necessary. After informing the competent entity and district authorities, and the civil protection services, several institutions take adequate response measures to protect the population, livestock, food, and water. These institutions cover health, agriculture, administration, emergency and rescue,

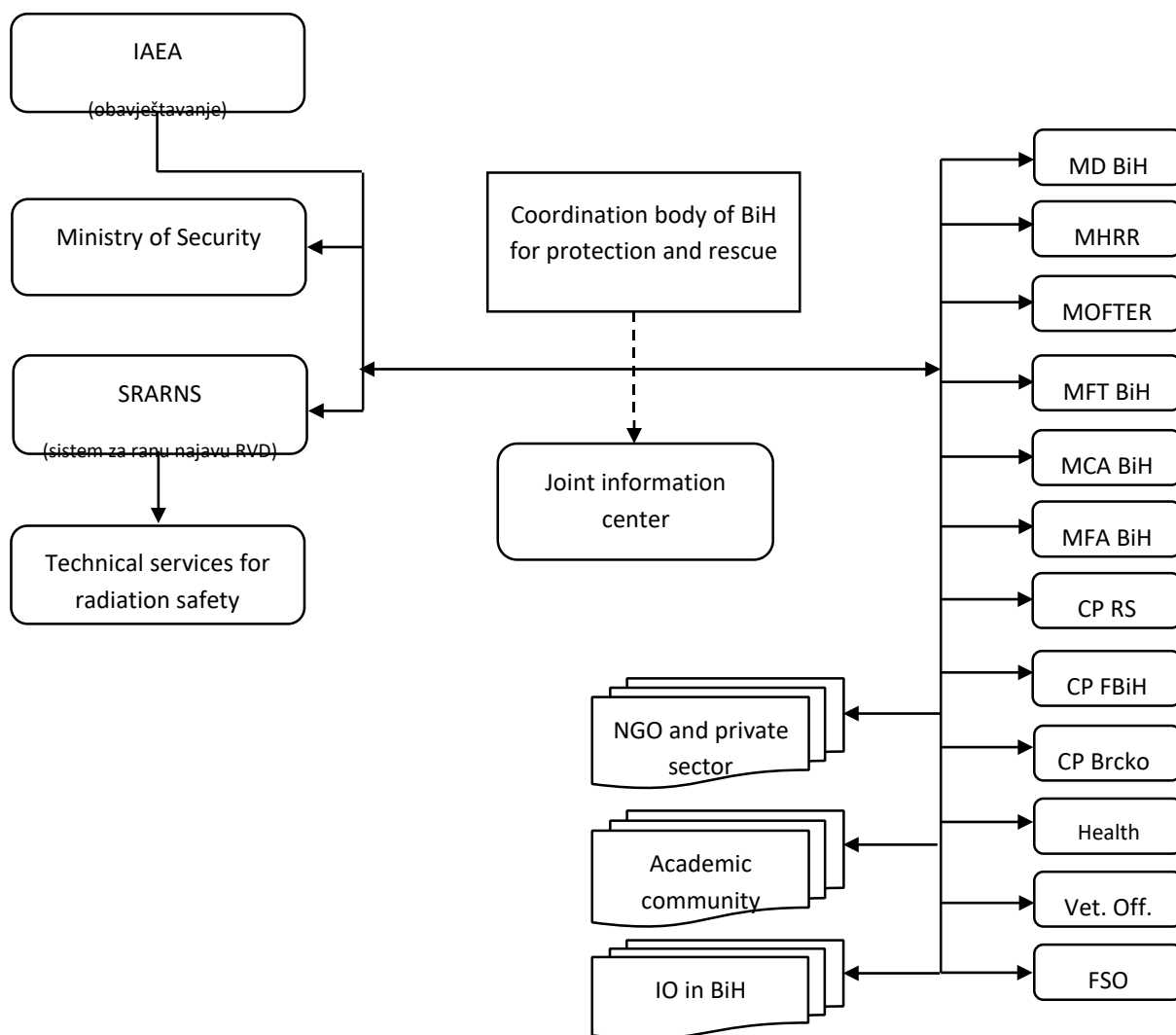
each acting on the relevant entity territory in accordance with the measurements of doses and rate of the radioactive cloud approaching.

The entity and district civil protection authorities discuss the recommended measures and in accordance with their assessments and plans take warning measures and measures to protect the population, material and other goods, livestock, and the environment. They report the taken measures to the OCC-112. SRARNS, the Ministry of Security and other relevant entity and district institutions compile and give information to the media, and give warnings to the public. Regular reports are sent to the IAEA, other countries, and the relevant entity and district institutions.

Regarding radiation emergencies, SRARNS communicates with the IAEA directly or through the Ministry of Foreign Affairs and the Permanent Mission of BiH within the framework of international organizations in Vienna.

In assessing the situation and its potential development, and in providing recommendations for response to such situation, informing and calming the public, representatives of the academic community, as well as non-governmental organizations may be included.

The schematic representation of emergency management and response is shown in the following diagram:



The institutions participating in the preparation and response to a radiation emergency in Bosnia and Herzegovina will provide funds for the training of the persons who perform tasks, duties, or in any way participate in the preparation and response to radiation emergency.

Readiness of the system to respond to a radiation emergency will be tested by performing regular exercises that involve all competent authorities in accordance with the plan.

The time interval for exercises should be at least once a year for the services of the first and initial response, while the exercise that involves the full activation of the system preparedness for response to a radiation emergency takes place at least once every three years.

The organization and conduct of exercises in the field of radiation and nuclear safety and protection is the responsibility of SRARNS.

The implementation of urgent protective measures is a great challenge because in reality it requires evacuation of entire settlements and carrying out measures regarding the food safety, protection of vital material property and health, maintenance of public order and peace including

the measures against crime against property, all of which requires an integrated approach and engagement of all available response forces, the organization of legal persons, and the public cooperation in the implementation of the measures.

In order to further develop and strengthen capacity for emergency preparedness and response (EPR) to a nuclear and radiological emergency in compliance with international standards, Bosnia and Herzegovina is implementing a National IAEA TC Project BOH9007, titled "Enhancing Radiation Emergency Preparedness and Response Capabilities". The project implementation began in 2016, with the plan to last three years.

D – LIST OF ABBREVIATIONS

CNS – Convention on Nuclear Safety

DG DEVCO - Directorate-General for International Cooperation and Development)

ECURIE - European Community Urgent Radiological Information Exchange

EM - expert mission

EPR – Emergency Preparedness and Response

EURDEP - European Radiological Data Exchange Platform

IAEA - International Atomic Energy Agency

Law - Law on Radiation and Nuclear Safety in Bosnia and Herzegovina

SOP - Standard operating procedures

SRARNS – State Regulatory Agency for Radiation and Nuclear Safety

USIE - Unified System for Information Exchange in Incidents and Emergencies