

Pursuant to Article 16(1) of the Law on Radiation and Nuclear Safety in Bosnia and Herzegovina (Official Gazette of BiH 88/07) and Article 61(2) of the Law on Administration (Official Gazette of BiH 32/02 and 102/09), the director of the State Regulatory Agency for Radiation and Nuclear Safety issues the

R E G U L A T I O N

ON THE TRAINING IN IONIZING RADIATION PROTECTION

PART ONE – GENERAL PROVISIONS

Article 1 **(Subject)**

This regulation prescribes the requirements for establishing and maintaining the system of training in ionizing radiation protection (hereinafter: radiation protection) in Bosnia and Herzegovina.

Article 2 **(Objective of the regulation)**

The objective of the regulation is to ensure a standardized way and content of training, testing, and improving knowledge about radiation protection through a single curriculum of theoretical and practical training in radiation protection.

Article 3 **(Application)**

This regulation applies to the persons whose duties require specific competences in radiation protection.

Article 4 **(Definitions)**

The terms used in the regulation mean:

- a) "Authorized technical service for the training in ionizing radiation protection" (hereinafter: service): A legal person conducting training in radiation protection based on a registration issued by the State Regulatory Agency for Radiation and Nuclear Safety (hereinafter: Agency).
- b) "Demonstration": Involves the use of radiation sources and/or equipment to illustrate a concept or procedure. Demonstrations are performed by a trainer. Demonstrations involve correct and safe operation of equipment, handling of sources or the use of software before a laboratory exercise.

- c) "Laboratory exercise": An exercise in laboratory environment during which radiation sources and/or measuring and protective equipment are used by the participants themselves under the supervision of a trainer.
- d) "Training": An educational process by which individuals become trained and professionally qualified with the aim of mastering the work with radiation sources, safety of their use, and implementing radiation protection measures with the aim of increasing knowledge, skills or conduct through the adoption and refreshment of knowledge about achievements and new technologies.
- e) "Program": The main unit of training classification defined by the content and a number of activities with the aim of fulfilling specific planned tasks.
- f) "Scenario": An exercise conducted in the classroom, during which the participants are given a specific task to analyze a situation and draw conclusions. A scenario is presented to the participants before the exercise, and during the exercise trainers ask appropriate questions, and the knowledge gained through the course is applied. At the end of the exercise there is a discussion during which group or individual conclusions are presented and assessed.

Article 5 (Certificates)

- (1) All certificates on the completed or attended courses are issued by the Agency.
- (2) The Agency sends the certificates referred to in paragraph (1) to the course participants.
- (3) The service must submit the original test results record referred to in Article 13(2)g to the Agency within three days after the training completion for the purpose of issuing the certificates.
- (4) The list of participants who may receive the certificate must be signed by the director of the course organizer-service and the course leader, and verified by the stamp of the course organizer-service.
- (5) The Agency sends the copies of issued certificates to the service within three days after their issuance.
- (6) The Agency must keep copies of the issued certificates for the period specified in accordance with the applicable law.

PART TWO: TRAINING IMPLEMENTATION AND TRAINING PROGRAMS

Article 6 (Persons required to be trained)

- (1) The persons required to be trained in radiation protection:
 - a) Medical/non-medical practices:
 - 1) radiation protection officers;
 - 2) exposed workers who handle high-activity sealed sources;
 - 3) personnel of the technical services for ionizing radiation protection;
 - 4) the personnel involved in the transport of radioactive material;
 - 5) the personnel involved in the import, export, acquisition, and distribution of radiation sources;
 - 6) the manager of the holder of authorization for practices involving radiation sources;
 - 7) exposed workers in higher education and scientific research work;
 - 8) outside workers, including apprentices and students, who perform tasks in supervised and controlled areas as defined in applicable regulations.
 - b) Medical practices:
 - 1) Exposed workers in human medicine;
 - 2) The medical doctors who refer to radiological examinations, and employees in human medicine and exposed to ionizing radiation but not categorized as exposed workers;
 - 3) Exposed workers in veterinarian medicine.
 - c) Non-medical practices:
 - 1) Exposed workers in non-medical practices with radiation sources.
 - d) Other practices:
 - 1) The workers who may be exposed to orphan sources;
 - 2) Emergency response (remediation) personnel;
 - 3) Persons working with radiation sources but not categorized as exposed workers.
- (2) The individuals with completed course for radiation protection officer need not attend a course within their practice.
- (3) The training content for outside workers, including apprentices and students, is determined in accordance with the type of current or intended practice.

Article 7
(Training for other persons)

The persons not specified in Article 6 must attend radiation protection courses if it is required under the laws and regulations governing their main occupation.

Article 8
(Natural persons)

The natural persons may attend training in other practices, defined for individuals, if they wish to do so.

Article 9
(Framework theoretical and practical content of the training curriculum)

- (1) The service organizes and conducts courses in accordance with the theoretical and practical training curriculum shown in Annex 4.
- (2) The training consists of a theoretical and a practical part and is conducted in accordance with the planned curriculum for a given practice involving radiation sources.
- (3) The theoretical and practical training parts must consist of 60–70% and 30–40% of the total number of training hours respectively.
- (4) The total number of training hours contains general topics, specific topics, and exercises.

Article 10
(Application for course approval)

- (1) The service must receive an approval from the Agency for each individual course in radiation protection.
- (2) The service must file an application for course approval with the Agency.
- (3) The application must be completed in accordance with the training particulars for course approval referred to in Article 21, which is a documented proof of the availability of qualified personnel and technical equipment.
- (4) The service must appoint a course leader who is obligated to conduct at least 10% of the course.

Article 11
(Course leader)

- (1) The course leader must be a qualified expert in radiation protection in the relevant training field, as follows:

- a) Radiation protection expert in medical practices – for medical practices;
 - b) Radiation protection expert in non-medical practices – for non-medical practices;
 - c) Radiation protection expert in higher education and scientific research work – for the practice of higher education and scientific research work.
- (2) The course leader for other practices and natural persons may be a radiation protection expert in any field referred to in paragraph (1).

Article 12
(Course approval)

- (1) The Agency issues a procedural decision approving the course within 15 days from the date of submitting the completed application.
- (2) The procedural decision approving the course is issued separately for each individual course.

Article 13
(Course implementation)

- (1) The service must organize a course at least once in six months and, as necessary, more often.
- (2) The course implementation consists of the following activities:
- a) Provision of information:
 - 1) The Agency must be notified of the start date of every course and any foreseen changes, taking into account the information included in the approved course. The service must send the course curriculum at least 45 days in advance along with attached documents serving as a proof that the criteria from this regulation have been met.
 - 2) The approved course must be announced on the official Agency web page at least 30 days before the course start date.
 - 3) When the course implementation is announced, possible developments before or after the course that could lead to the change of information contained in the training particulars or curriculum must be considered. The Agency must be notified immediately for the purpose of justifying the reasons for change.
 - 4) If a course is cancelled, the Agency must be notified at least five days before the scheduled start date of the course, including a detailed explanation of the reasons for cancelling.
 - b) Content:
 - 1) The content of the course curriculum must be always updated in accordance with applicable legislation and developed in accordance with the curriculum shown in annexes to this regulation.

c) Planning:

- 1) A minimum number of training hours must be defined, taking into account the number of training hours envisaged in the theoretical and practical training curriculum sections.
- 2) The curriculum must allow for maximum six hours of theoretical training. The total daily training may last maximum eight hours, including practical part, seminars, and symposiums.
- 3) The theoretical part must be scheduled in the training curriculum and complemented with practical exercises from the training fields under the trainer's supervision.
- 4) The number of course participants must be adapted to the conditions of the classroom in which the course will be held. The number of participants per group for practical exercises may not exceed 15 and must be adapted to the content and type of practical exercises, with mandatory consideration of the possibility for the participants to handle the equipment and instruments.
- 5) The course leader must always keep the documents proving that the training curriculum is followed. The trainer and the course participants must sign the form shown in Annex 3 to confirm the presence and the covered fields/topics.

d) Availability of facilities and equipment:

- 1) Premises and classrooms must be suitable for conducting lectures and practical exercises.
- 2) Before the course begins, documents with lectures and a short concept of exercises that correspond to the approved curriculum must be available to the participants in electronic and/or written form.
- 3) The premises for practical exercises must be equipped so as to always justify the compliance with applicable radiation safety regulations. If the premises are not owned by the service-course organizer, there must be an agreement, as a documented proof, between the service and the owner of the premises for practical exercises.
- 4) There must be a sufficient amount of radiation detection equipment, all other necessary devices and instruments in order to achieve the exercise objectives.

e) Verifying the presence:

- 1) The course leader must verify the participants' presence at the theoretical and practical classes and have a documented proof of their presence at minimum 90% of the classes.
- 2) If the requirement referred to in indent 1) has not been met, the participant may not take the final test or receive a certificate on attended course.

f) System for assessing gained knowledge:

- 1) The participants' theoretical and practical knowledge is assessed on the basis of a written test grade. The written test consists of 30 questions, with one hour

given to participants for answers. The questions and the offered answers must correspond to the course type and module, with four multiple-choice answers for each question and only one correct answer.

- 2) In order to pass the test, the participant must answer correctly to at least 70% questions.
 - 3) The participants who failed the first test may take a retest within 30 days from the first test date.
 - 4) The participant who fails the retest will be sent to attend the course again.
- g) The test results record, signed by the course leader, must contain the following information:
- 1) Course information:
 - Course type;
 - Module;
 - Course dates;
 - Test dates;
 - Names of the institutions at which theoretical and practical classes were held.
 - 2) Information about the participants:
 - A list of the participants who attended the course and those from previous courses who take the test. The information about the previous participants must include their course dates.
 - The list must contain participants' full name, a parent's name, and the personal ID number.
 - From the course beginning the course leader must keep certified copies of participants' university diplomas and a file for each participant with their personal information, address, attended course type and module, and course dates.
 - 3) Test information:
 - Test;
 - Results of each participant (the percentage of correct answers);
 - Test date and grades must be noted in the participant's file.

Article 14 (Data retention)

- (1) The service must maintain a database on tests and keep the documentation referred to in Article 13 at least five years.
- (2) The copies of certificates on completed course must be kept 30 years, and if the service has closed the business, they must be transferred to the Agency.

- (3) The Agency establishes and maintains a database on courses and issued certificates.

Article 15
(Course implementation)

- (1) The course that lasts eight hours must have at least two trainers, one of whom must be the course leader.
- (2) The course that lasts longer than eight hours must have at least three trainers, one of whom must be the course leader.

Article 16
(Test administration)

- (1) The service organizes a test only for the course that lasts longer than eight hours.
- (2) The service issues a procedural decision establishing a test grading committee consisting of three members. The committee chairperson must be the course leader, while the other two members are course trainers.
- (3) The service issues a procedural decision approving the participant to take the test.
- (4) The service appoints a technical secretary to make a test results record.
- (5) The layout and content of the test results record is shown in Annex 2.
- (6) An authorized Agency representative who may not participate in test grading must be present during the committee's work.

Article 17
(Certificate types and layout)

- (1) The Agency issues a certificate on completed course for a course that lasts longer than eight hours.
- (2) The Agency issues a certificate on attended course for a course that lasts eight hours.
- (3) The certificate must contain the Agency stamp, the signature of the Agency director, the course leader's name, the participant's full name and a parent's name, the participant's personal ID number, the date of birth, the full course title and course module, the course start and end dates, the date and number of the procedural decision approving the course, and the date and number of the issued certificate.
- (4) The certificate must indicate that it is issued only for the purpose of radiation protection.
- (5) The certificate layout is shown in Annex 2.

Article 18
(Regulatory control)

- (1) During the course the Agency must conduct checks as it considers necessary in order to verify compliance of the course implementation with the issued procedural decision on the course approval.
- (2) The Agency issues a procedural decision on the course suspension or invalidation if it is established that the course has not been implemented in accordance with the procedural decision on the course approval.

Article 19
(Course types and modules)

This regulations lays down the following types and modules of the course in radiation protection:

I. Radiation protection in medical/non-medical practices

Type:

1. Radiation protection in medical/non-medical practices

Modules:

- a) Radiation protection for radiation protection officers;
- b) Radiation protection for exposed workers working with high-activity sealed sources;
- c) Radiation protection for the personnel of technical services for ionizing radiation protection;
- d) Radiation protection for the personnel in the transport of radioactive material;
- e) Radiation protection for the personnel involved in the import, export, acquisition, and distribution of ionizing radiation sources;
- f) Radiation protection for the managers of holders of authorization for practices involving radiation sources;
- g) Radiation protection for persons in higher education and scientific research work.

II. Radiation protection in medical practices

Type:

2. Radiation protection in medical practices

Modules:

- a) Radiation protection for exposed workers in human medicine;

- b) Medical doctors referring to radiological examinations, and employees in human medicine exposed to ionizing radiation but not categorized as exposed workers;
- c) Radiation protection for exposed workers in veterinarian medicine.

III. Radiation protection in non-medical practices

Type:

3. Radiation protection in non-medical practices

Modules:

- a) Radiation protection for radiography specialists working with portable sealed sources in industrial radiography;
- b) Radiation protection for persons working with portable nuclear gauges;
- c) Radiation protection for support personnel in industry;
- d) Radiation protection for persons working with fixed nuclear gauges and roentgen devices in industrial radiography;
- e) Radiation protection for persons working with sealed radiation sources and roentgen devices in industry and other practices.

IV. Radiation protection in other practices

Type:

4. Radiation protection in other practices

Modules:

- a) Radiation protection for the persons who may be exposed to orphan sources;
- b) Radiation protection for the personnel involved in the response and remediation of emergency consequences;
- c) Radiation protection for persons working with ionizing radiation sources but not categorized as exposed workers;
- d) Radiation protection for natural persons.

Article 20 (Course syllabus)

The syllabus of the courses referred to in Article 19 is shown in annexes 4 to 8 and tables 1 to 6 in annexes to this regulation.

Article 21
(Document with training particulars for course approval)

- (1) The service must file an application with training particulars for course approval with the Agency.
- (2) The training particulars for course approval consist of the following:
 - a) Organization:
 - 1) The name of the legal person, parent organization of the service. The tax identification number.
 - 2) Address, phone and fax numbers.
 - b) Information about the course leader:
 - 1) Name and ID number of the radiation protection expert-course leader;
 - 2) A certified copy of the certificate on recognition of the radiation protection expert status;
 - 3) Resume;
 - 4) Postal address;
 - 5) Phone and fax numbers, e-mail.
 - c) Course type and modules
 - d) Expected number of course participants and identification of groups for practical training
 - e) Trainers:
 - 1) Trainer's full name, personal ID number, and the university diploma number;
 - 2) The documents proving professional experience in the field of lecturing.
 - f) A detailed curriculum containing a description of every theoretical and practical class hour and the trainer's name
 - g) Characteristics of the classrooms for theoretical training (capacity, location, audiovisual equipment, etc.)
 - h) The institution in which practical training will be held:
 - 1) The name of the institution;
 - 2) Address;
 - 3) The building owner;
 - 4) The number of the authorization for practices involving radiation sources;

- 5) The documents relating to the agreement between the legal person which is parent organization of the service and the institution for practical training if the service doesn't have premises for conducting practical exercises.
- i) Necessary equipment and accessories for practical exercises in order to develop appropriate curriculums for various methods of work:
- 1) Equipment for radiation detection and measurement;
 - 2) Available accessory equipment and other accessories for radiation protection (lead aprons and gloves, protective materials, dosimeters, etc.).
- j) Written or digital training materials for participants (a complete copy of theoretical lessons and exercise concepts)
- k) The composition of the test grading committee.

Article 22
(Refresher training)

- (1) Refreshment of knowledge must be conducted periodically for all practices, every five years after obtaining the certificate on the completed training.
- (2) The refresher courses referred to in paragraph (1) must last minimum 50% of the first course duration from the given field.

Article 23
(Application for training)

The legal person files an application to the service for training of its candidates in the form shown in Annex 1 with the service.

Article 24
(Training costs)

- (1) The legal person that applies for the training of its candidates bears the training costs.
- (2) An individual not employed with the legal person-applicant and wanting to attend a course bears the training costs.
- (3) The participant who has failed the retest and has to attend the course again bears the training costs.

Article 25
(Complaint and appeal)

- (1) The participant who claims unfair treatment during the testing may file a complaint within seven days, which will be decided by the service as the first instance body within 15 days.
- (2) The participant who is not satisfied with the first instance decision on the complaint has the right to file a second instance appeal to the Agency within seven days after receiving the decision.

Article 26
(Radiation protection expert and radiation protection service)

- (1) A radiation protection expert must conduct radiation protection training for the personnel of the holder of authorization for practices involving radiation sources who require training as provided for in this regulation.
- (2) A radiation protection service must conduct radiation protection training for the personnel of the holder of authorization for practices involving radiation sources who require training as provided for in this regulation.
- (3) The radiation protection expert and the radiation protection service must conduct the training referred to paragraph (1) in accordance with the provisions of this regulation.

Article 27
(Agency personnel)

- (1) Agency personnel must permanently attend courses in ionizing radiation protection.
- (2) The Agency adopts an annual training plan for its personnel by 30 September of the current year for the following year.
- (3) The training of the personnel referred to in paragraph (1) is conducted in accordance with the Agency training plan based on recommendations by the International Atomic Energy Agency (IAEA).

Article 28
(Guide)

The Agency publishes a guide with the content of training in ionizing radiation protection for radiation protection officers, which is mandatory for implementation by the services.

PART THREE – TRANSITIONAL AND FINAL PROVISIONS

Article 29 (Deadlines for obtaining the certificates)

- (1) The holder of the authorization for practices involving ionizing radiation sources or the holder of authorization for technical services for ionizing radiation protection whose personnel is required to attend the training must obtain the certificates on completed training in radiation protection shown in Annex 2.
- (2) The certificates referred to in paragraph (1) must be obtained within one year from the day of entering into force of this regulation for:
 - a) the persons who begin to work with radiation sources or in technical services;
 - b) radiation protection officers;
 - c) personnel of technical services for radiation protection.
- (3) The certificates referred to in paragraph (1) must be obtained within one year after the expiry of the first year from the effective date of this regulation:
 - a) for the exposed workers who have already been performing duties involving radiations sources;
 - b) for the managers of legal persons-holders of authorization for practices involving radiation sources and the managers of legal persons-technical services for radiation protection.
- (4) The certificates referred to in paragraph (1) for other individuals must be obtained within two years after the expiry of the first year from the effective date of this regulation.
- (5) If the persons referred to in paragraphs (2) and (3)a) do not obtain the certificates in the prescribed deadlines, they may not continue to work within the practice involving radiation sources or the practice of technical services after the deadlines have expired.

Article 30 (Entering into force)

This regulation enters into force on the eighth day following the date of its publication in the Official Gazette of BiH.

No. _____/15
Sarajevo _____ 2015

DIRECTOR
Emir Dizdarević