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### Physical Security Measures for Radioactive Materials in Albania

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#### ABSTRACT

The primary responsibility for ensuring security and radiation protection is to the physical/legal person which operates with ionizing radiation sources. The Radiation Protection Commission has over all role for security in Albania based on the radiation protection law "On Protection from Ionizing Radiation". The Regulation on Physical Protection of Radioactive Material in Albania has the objective(s) to establish the basic requirements for physical protection of radioactive sources, and apply to all activities relating to the possession, use, storage and transportation of radioactive sources. Physical protection of radioactive sources aims to protect persons, property, society, and the environment from malicious acts, such as theft or unauthorized removal and sabotage involving radioactive sources. In this paper, as a practical example, whole physical protection system of radioactive materials implemented in Albania is explained on the basis of the established legal.

**Keywords:** Physical protection, Radioactive sources, Radiation protection, Regulatory control, Orphan source

#### 1. Introduction

The main purpose is to assess the present situation on security of radioactive sources in Albania, in respect to the current management practices and regulatory control for the security of sealed radioactive sources. The assessment is focused on the safety and security of high-activity sealed sources and orphan sources, as defined by IAEA categorization of Sources. The basic law for radiation protection in the Republic of Albania is the law "On Protection from Ionizing Radiation", No. 8025, date 09.11.1995, and also, Law. 9973, date 28.07.2008 "On some amendments and additions to Law no. 8025, dated 09.11.1995" "On Protection from Ionizing Radiation", [1] that approximates the IAEA safety fundamental and series as well as the Council Directive 96/29/EURATOM of 13.05.1996, which establishes basic safety standards to protect health of workers and the general public environment against the dangers arising from the ionizing radiation. Decision No 877, date 30.10.2015 of Council of Minister for the approval of the

new regulation "On the physical security of radioactive sources in the Republic of Albania" [2] covers main aspects related to security. The object of this regulation is the determination of measures on the physical protection of radioactive materials, transportation, and the requirements to keep the radioactive sources in secure places and their use only by the physical/legal persons licensed for import-export and relevant activities according to the legal acts and regulations [5], [7], [9]. Referring to the categorization of radioactive sources, [4] the groups of physical protection of radioactive sources are created in order to come up with an appropriate system of physical protection as below:

- a) Group of physical protection A, where the sources of category 1 are included;
- b) Group of physical protection B, where the sources of category 2 are included;

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c) Group of physical protection C, where the sources of category 3 are included;

RPC is designated as the focal point with International Atomic Energy Agency for the issues of security of radioactive materials and illicit trafficking. Regarding the Safety and Security Measures the security systems are installed through support by the US Department of Energy.

Concerning the RSWF's security system, an upgrade by US DOE was done in 2005 to inhibit unauthorized access and to provide response to intrusion or alarms.

## 2. Physical Security of Radioactive Sources in Albania

Radiation Protection Commission, in the licensing process, evaluates application regarding physical security for each possession, use, storage and transportation of radioactive sources. Legal and physical persons, who apply for license for possession, use, storage and transportation of radioactive sources of categories I, II and III, must have a security plan of radioactive sources [6].

### 2.1 General principles

- A license is required to be issued by the Radiation Protection Commission (RPC)
- Licenses shall have a Security Plan
- Full responsibility for the implementation of physical protection measures rests with the licensee.
- Contingency plans shall be in place

### 2.2 Physical protection requirements for different categories of radioactive sources

- The licensee shall evaluate the category of the radioactive source or aggregation
- The categories of radioactive sources shall be updated periodically
- According to the categories of radioactive sources, three groups of physical protection requirements are established, as follows:
  - a) Group A, for radioactive sources of category 1;
  - b) Group B, for radioactive sources of category 2;
  - c) Group C, for radioactive sources of category 3;

## 3. Transport of Radioactive Sources in Albania

The transport of radioactive materials in the Republic of Albania is based on the Decision No. 488, date. 23.06.2010 of Council of Ministers for the approval of the regulation "On safe transport of radioactive materials" [8]. The transport of radioactive materials is carried out only with special tools by physical or legal persons, who have a license for this type of transport, issued by the Radiation Protection Commission. This

does not exclude physical and legal persons from other legal obligations for the transport of dangerous goods.

Licenses for activities that produce radioactive waste provide transportation waste radioactive on land routes (public roads, rail lines), air or sea route in accordance with the regulations in force for the transport of safe of radioactive materials.

## 4. Responsibilities of Radiation Protection Commission

The RPC sets national policies for radioactive waste management, in cooperation with other competent authorities in Albania. RPC creates a national program for the implementation of radioactive waste management policies.

RPC shall take the appropriate measures to ensure that all radioactive sources in the Republic of Albania of categories 1, 2 and 3 are registered, controlled and securely protected during and at the end of their useful lives [6]. RPC shall establish and implement a security inspection program. The frequency of the inspections shall be established taking into account level for physical protection.

RPC by law no. 8025, dated 11.01.1995 "On protection against ionizing radiation" approves regulations on:

- a) Licensing procedures for the activities with ionizing radiation sources provided in Article 3 of this law.
- b) Protection of the population and the environment from ionizing radiation.
- c) Protection of persons professionally exposed to radiation.
- d) Standards and practical acts of activities with radiation sources.
- e) Security measures for radioactive substances, equipment and installations.
- f) Activities of the radiation protection office.

## 5. Responsibilities of the Licensees

Licenses for activities that generate radioactive waste, create and implement operational programs to manage safe of radioactive waste [3], in accordance with National Waste Management Program Radioactive.

Operational management programs radioactive waste includes:

- a) All types of radioactive waste that are produced by their activities;
- b) All steps of radioactive waste management from production to placement in disposal facility, taking into account interdependencies between them and the impact of provided for placement in the disposal facility.

Licenses for activities that produce radioactive waste, as well as the licensee for the radioactive waste storage

facility must take all measures to guarantee the security of all radioactive waste they possess or their control, in order to guarantee:

- a) Prevention of any unauthorized action in the radioactive waste storage area;
- b) Preventing the unauthorized entry in the radioactive waste storage facility;
- c) Protection of radioactive waste from theft, loss or sabotage acts.

Safety and security measures should be implemented in an integrated manner. The level of security should be proportional to the level of radiological hazards and the nature of radioactive waste.

Licensees for activities with radioactive materials are also responsible for:

- Categorization and regular re-categorization of radioactive sources;
- Development of a security plan, in accordance with Annex 2;
- Formal assignment and training of the users of radioactive sources;
- Implementation of all necessary physical protection measures for radioactive sources in use, storage and transport, according to their categories;
- Management of the radioactive sources in order to ensure the implementation of the RPC physical protection requirements for the complete life cycle of the radioactive sources;
- Performance of regular inventory of all radioactive sources that are in his responsibilities, report to RPC and assist the RPC during inspections;
- Maintenance of up-to-date documentation of the use, storage and transfer of the radioactive sources;
- Compliance with any other RPC dispositions related to security of radioactive sources.

## 6. Reporting

License holders, who temporarily or in the long term keep, have stock or deposit radioactive waste or discharging radioactive waste, will retain radioactive waste data, including related information with the following aspects, as appropriate:

- a) Duration;
- b) Conditioning process;
- c) Storage;
- d) Discharge;
- e) Transfer;

For each package or item in the storage facility, the licensee must contain the data specified above and will include information on management history, relevant information for admission to the warehouse or for further management steps.

The licensee shall report to RPC in any of the following situations:

- Loss of radioactive sources;
- Attempts of malicious acts (theft or unauthorized removal of radioactive sources, sabotage);

- Incidents related to misuse of radioactive sources including their unauthorized use;
- Results of physical inventory of radioactive sources;
- Essential changes in the radioactive source security arrangements;
- Discovery of any unregistered radioactive sources.

## 7. Orphan Sources

Radiation Protection Commission has the support of Institute of Applied Nuclear Physics (IANP) to take under control of all orphan sources. IANP performs processing of orphan sources in the country [12].

Radiation detection portals that are installed at customs points are monitored by competent authorities in custom points or where they are installed. As for portals installed at private companies (e.g. scrap companies) these companies are responsible for monitoring. The competent authorities shall maintain and, where necessary improve existing detection system at customs regarding the safety of the public and employees. Portals installed at private companies will be operated by the owners of the companies. All portal monitors to be adjusted to their activity by the RPC. As a first responder in case of detection of an event, IANP will be responsible for managing of sources further findings which will be transported to the radioactive waste storage facility for processing in accordance with the emergency plan.

IANP performs all procedures for the safety and security of the sources with orphan status to the storage of this Institute. The expenses in case that the owner of the sources is not identified are covered by State. The RPC has established and implemented written procedures that address the actions to be taken in respect of sources that have been found or lost from authorized control. Also these are treated as a part of emergency procedures [13].

## 8. Cooperation with Law Enforcement Agencies

Radiation Protection Commission has the support of Institute of Applied Nuclear Physics (IANP) to take under control of all orphan sources [12]. IANP performs all procedures for the safety and security of the sources with orphan status to the storage of this Institute. The expenses in case that the owner of the sources is not identified are covered by State. The RPC has established and implemented written procedures that address the actions to be taken in respect of sources that have been found or lost from authorized control. Also these are treated as a part of emergency procedures.

## 9. Cooperation with Custom Authorities

In order to secure the border to prevent the unauthorized entrance - exit and transit of the radioactive sources in

the Republic of Albania [9], the Albanian Customs Service should take all the due measures to place the necessary devices for automatic and/or manual detection of the radioisotopes in border crossing points [10]. The allocation of such devices should make possible to detect and/or identify strength/nature of source and should be realized in line with the establishment of functional response plans/ procedures prepared by the Customs Service, [11] in cooperation with RPC and IANP. A Memorandum of Understanding no.419 dated 14.01.2009 is signed between General Custom Directorate and IANP with the aim “For detecting and combating of illicit trafficking on radioactive materials” [4] where the following ways of collaboration are reflected:

- Cooperation when radioactive materials beyond prescribed NORMs are determined;
- Technical assistance for operation of radiation detection equipment and interdictions (such as RIDs identify Special Nuclear Material, neutron radiation is detected, suspicious alarms, unusual high levels of radiation).
- The continuous training of Front Line Officers to improve the effectiveness and efficiency of alarm assessments and actions taken.

## 10. Conclusions

Albania has been working closely with IAEA in the field of security of radioactive sources. Together we have been preparing and approved the INSSP (Integrated Nuclear Security Support Plan) and at the moment the plan is under review. In this framework Albania has reviewed the existing laws and have in process the regulations to determine where provisions specifically related to nuclear security issues (physical protection, illicit trafficking, import-export, border control, waste management, penalties), taking into account international legal instruments, recommendations and IAEA guidelines (gap analysis).

Role of Radiation Protection Commission is very important in implementing the requirements for the security of radioactive materials in Albania.

## Conflict of Interest

The authors have no conflict of interest.

## References

[1] Law no. 8025, dated 11.01.1995 “On protection against ionizing radiation” amended No. 9973, July 28-th 2008.

[2] Decision No 877, date 30.10.2015 of Council of Minister for the approval of the regulation “On physical

protection of radioactive materials in the Republic of Albania”

[3] Decision no. 638, date 07.09.2016, of the Council of Ministers “On the approval of the regulation on the safe handling of radioactive waste in the Republic of Albania”

[4] Cooperation Agreement between Institute of Applied Nuclear Physics and the Directorate General of Customs 419 dated 14.01.2009 “On discovering and combating the illicit trafficking of radioactive materials”

[5] Law no. 102/2014, “The Customs Code of the Republic of Albania”, 22.08.2014.

[6] Regulation No. 9, date 07.01.2010 “On the categorization of radioactive sources in the Republic of Albania”, in function of the radiation protection, safety and security of ionizing radiation sources.

[7] Guideline nr. 1526/2, dated 13.04.2012 “Over the procedures of physical movement for radioactive materials, goods and reaction in case of incident with radioactive sources in CPs”.

[8] Decision No.815, dated 16.11.2016 on the adoption of the regulation “On the safe transport of radioactive materials”.

[9] Decision No 158, date 13.02.2008 of Council of Minister over “Import-Export of Ionizing Radiation Sources.”

[10] Regulation nr.4873 / dated 17.06.2008 “On cooperation between the Customs Service and the State Police”

[11] Regulation about Standard Operation Procedures for Recovery of Radioactive Materials date 10.05.2016.

[12] Order No.435 dated 14.10.2015 “On approval of the document for strategic steps for safe management of radioactive waste in the republic of Albania”.

[13] Decision No. 700, dated 21.11.2018 of Council of Ministers for the approval of the Regulation “On preparation and response in cases of radiological emergency, for the protection of workers and public”