

The report was prepared by the National Regulatory Authority in Radiation Protection.

**“Joint Convention on the Safety of Spent Fuel Management
and on the Safety of Radioactive Waste Management”**

National Report-Uruguay

Sixth Review Meeting, October 2017

Introduction

The application of the Joint Convention is limited to radioactive waste arising from the medical, industrial and research applications of radioisotopes.

The total amount of radioactive waste in Uruguay is very low, due to the small amount of generation of waste and the regulatory requirements to have disused sealed sources sent back to the foreign supplier.

We will also repatriate seven (7) cobalt 60 heads, an operation to be carried out at the beginning of November this year to the end the 2017.

We have the following agreement: Contract No.201707547, between IAEA and International Isotopes Inc. (Idaho fall, Idaho 83401) and National Regulatory Authority in Safety (ARNR) from Uruguay, concerning the removal of disused sealed radioactive source from Uruguay for final management in USA.

With this repatriation of cobalt therapy heads, in the country only one team with cobalt 60 is left for use in secondary calibration laboratory.

Despite the repatriation there is a disused conditioned neutron Pu-239/Be source, with 185 GBq (5 Ci), still waiting for its reshipment to the United States. It was the start up neutron source that

belonged to a totally decommissioned research reactor. The fuel of reactor was already reshipped in 1997.

Uruguay still has only one National Waste Storage centralized located in the University of the Republic.

The National Strategy for the Management of Radioactive Waste which was approved by National Decree Nr.389 (17 October 2007). Regarding the waste management the National Strategy defines the responsibilities of the Regulator – National Regulatory Authority of the Ministry of Industry, Energy and Mines and the Operator – Waste National Storage in the Nuclear Research Center (C.I.N), which belongs to the University of the Republic (Sciences Faculty).

In spite of this, the government is analyzing the possibility of transferring the sources to a new site, bigger and with more physical security.

Radioactive waste management policy

Radioactive waste is regulated within the framework of the Basic Standards on Radiation Protection and the specific regulation on waste radiation protection based on the Basic Standard like the Norm UY 100 and UY 106. The standards have been revised and updated recently according to GSR IAEA Part 3.

Radioactive waste management strategy in Uruguay is based on National Strategy approved in 2007. Therefore the requirement is that disused sealed sources be returned to the country of origin or, disposed of in the National Waste Storage if that condition would be impossible to apply. For the waste release from Nuclear Medicine, is applied the criterion of “ten half-lives decay and release” by the user.

Scope of Application

The report does not apply to the safety of spent fuel management since Uruguay has no nuclear facilities and has not declared waste that contains only naturally occurring radioactive material as radioactive waste for the purpose of this Convention. Uruguay has no military or defense programs that produce radioactive waste.

Inventories and Lists

Uruguay as a non – nuclear country and has therefore no spent fuel facilities subject to the Convention. Disused sources are stored, under the control of the Regulatory Body, on the users' premises until decayed. The National Regulatory Authority takes care of disused sealed sources for which safe management may not be guaranteed. This consists mainly of radioactive smoke detectors, lightning rods, as well as other sources of low activity and volume.

With the “Alternative Technology Pilot Project” with Sandia Laboratories, it is planned to replace two cesium 137 blood irradiators with x-ray equipment. One of them will be replaced at the beginning of 2018.

Both blood radiators with cesium 137 will be stored in the centralized warehouse located at the University of the Republic.

The regulatory body and the waste management operator have a database of all radioactive sources in Uruguay. This includes active and disused radioactive sources.

Regulatory System

Under Uruguayan legislation, all activities involving radioactive sources, save those, which meet the criteria for exemption specified in the legislation, require an operation license from the National Regulatory Authority. The Authority is empowered to attach conditions to these licenses including conditions relating to the management of radioactive waste.

Inspectors from the Authority carry out inspections to assess compliance with the requirements. The Authority maintains a database of all licensees, which includes an up-date national inventory of all radioactive material in storage in the country.

Management of disused sealed radioactive sources:

Since 2002 the Authority do not accept a new sealed source unless the supplier or manufacturer of the source take it back to the manufacturer country when no longer required. The National Inventory of disused sources shows that Uruguay has them under regulatory control.

Disused sources must be held under license and are subject to inspections by the Authority. It is a condition of license that the legal owner of the source nominates a named individual to take responsibility for its safety.

In addition to inspections by the Institute, it is a condition of the license that all sealed Sources, whether in use or not, must be leak tested every two years or more frequently if recommended by the manufacturer. A visual check of disused sources must be carried out and recorded at quarterly intervals by the person responsible for their safety.

Radium sources, in the form of tubes, have been replaced by caesium137 and iridium192. During 1996, the medical radium sources have been removed to Uruguay based supplier of the cesium sources. All of them are conditioned in the waste storage.

In addition to the radium sources referred to in the appendix there are lightening rods incorporating radium sources. Still there are lightening rods installed in some public and private institutions but the intention is to manage them and deposit in the waste storage.

Nowadays the Authority no longer permits their importation.

At the present the Authority do not accept more the import of a new Cobalt source unless the old one returns to the supplier country.

Radioactive waste in unsealed form arises from the use of radionuclides in nuclear medicine and in educational and research establishments.

The licenses which the Authority issues in respect of unsealed radioactive material include annual limits on the quantity of each radionuclide which the licensee intends to use. Ten half-lives decay time are accepted. Technetium generator is returned to the supplier.

As it was expressed above, short half life radioisotopes used in nuclear medicine keep them in each medical institution in an exclusive restricted area waiting at least 10 half life times and after are discharged to the sewage system.

At present there are no more operating equipment of cobalt therapy in Uruguay.

Responsibilities of the license holder:

The prime responsibility for the safe management of radioactive sources including radioactive waste management rests with the owner of the installation (the license holder) according to the Basic Act on Radiation Protection. This includes the responsibility to ensure that disused sealed sources are handled in a safe manner and returned to the manufacturer/supplier or disposed of in another legal way accepted by the regulatory authority. If the license holder is in financial difficulties or out of business then the authority may take responsibility for safe disposal of the source in the National Waste Storage.

Human and financial resources:

The Uruguayan Radiation Protection Institute has a total staff of currently 23 persons. The income of the Institute is made up of a grant from the Uruguayan Government and from license and other fees paid by users of its services. Most of the technical staff members of the Institute hold higher university degrees.

Quality Assurance.

The Regulatory Authority has no accreditation according to ISO Standards for its activities yet. However, through an IAEA regional project RLA/9/064 about regulatory infrastructure we are going to started working on the establishment of a Quality Management System for regulatory activities based on: GS-R-1, Safety Requirements, Legal and governmental infrastructure of nuclear and radiological facilities, radioactive waste and transport , IAEA; 2000 and Safety Requirements, Facilities Management System and activities, GS-R-3 IAEA, 2006.

Operational Radiation Protection

All who have radioactive sources in interim storage hold a license to own and use such sources and are subject to the term of the Basic Act on Radiation Protection, specific regulations and regular inspections. This includes keeping the sources in a safe and secure storage, assuring that the doses to workers and the public are below the limits given in the regulation which is consistent with the recommendations of the ICRP and GSR Part 3. Furthermore the principle of ALARA must be applied.

Releases from laboratories must be as low as reasonably achievable and within the limits set in GSR Part 3 and Safety Guides on radiation protection in the use of open sources.

Emergency preparedness.

All who possess a license to own and use radioactive substances in Uruguay are required by the Basic Standard on radiation protection to have an appropriate emergency preparedness system. Those who have radioactive sources in interim storage are all licensees and this requirement thus also applies to them.

Our two neighbors countries Argentina and Brazil have nuclear power plants and management of spent fuel. We have an excellent regulatory relationship with Nuclear Regulatory Authority of Argentina which NPPs Atucha I, II and III, is near of Uruguayan border (80 kms.). In the frame of the technical cooperation with the IAEA an expertise has been requested for this years, for the design of a respond plan against a nuclear emergency.

With regard to Argentina, a technical cooperation agreement has been sent to the sign through the Ministry of Foreign Affairs.

The emergency preparedness is thus based on two main factors: a) detection of any significant increase in radiation dose rate and concentration of radionuclides through two environmental monitors established near both borders and b) the action of our specialized Emergency Group if it is necessary. The Group works according the coordination of the National System of Emergency.

The regulatory body received in real time the information coming from a network of a gamma monitoring stations in cooperation with the Monitoring Laboratory belong to our Ministry.

The purchase and installation of three monitoring stations is already approved by the IAEA, which will arrive in 2018.

In addition, in the framework of technical cooperation with DOE-Sandia-USNRC, a workshop was held on about “Power Plant Events and Accidents Emergency Preparedness and Response (EP/ER) for Nuclear Power Plant Events and Accidents”. Two experts from USNRC gave the workshop that will serve to prepare a document attached to the Emergency Plan of the country.

Decommissioning

This subject does not apply to Uruguay.

Safety of Spent fuel Management

This section does not apply to Uruguay.

Safety of Radioactive Waste Management

All those who have a license from the regulatory body to own and use radioactive substances are required to justify their use and thus keep their stock to the minimum necessary. The licensed user is responsible for that all those who handle waste must do it according to accepted procedures, which have to be based on accepted practices within radiation protection and in accordance with the Basic Regulatory Act and the requirements on radiation protection.

At present Uruguay has a centralized National Waste Storage which is licensed by the Regulatory Body. They belong to the University and carry out all about the waste management and the storage.

Transboundary Movement

Uruguay does not import any radioactive waste and the National Strategy for the Management of Radioactive Waste prohibits specifically this situation.

Disused Sealed Sources

All facilities where high energy sealed sources are used or stored are inspected by the regulatory authority every year in order to ensure that the use and storage of these sources is in accordance with the legislative framework and requirements in license.

No manufacturing or remanufacturing of sealed sources takes place in Uruguay.

In case of orphan sources, the procedure is for the regulatory body to take control of source, to ensure its safe storage and find the owner if possible. Orphan sources are very rarely identified in Uruguay.

Conclusion

There is a general goal of the national regulatory authority to continuously improve safety and enhance radiation protection in all activities involving ionizing radiation.

This report provides a summary of radioactive waste management practice in Uruguay. It will be noted that given the absence of nuclear power and nuclear fuel cycle facilities the quantities of waste to be managed are relatively small and mainly sealed sources from therapy services and industrial applications. The priority is to minimize the production of radioactive waste, and keep a low level radiological risk.

References

1. - Basic Standard Radiological Protection, Standard UY 100 Rev.IV, 2017, Uruguay
2. - Standard UY 106 - Management of radioactive waste - 2014
3. - National Waste Radioactive Inventory

4. - National Report for the 2nd Review Meeting – May 2006

5. - National Report for the 3rd Review Meeting – May 2009

6.- National Report for the 4th Review Meeting- May 2012

7.- National Report for the 5th Review Meeting- October 2014

Appendix

Inventory of removal of disused sealed radioactive sources in Uruguay

Stored in the National Waste Storage (C.I.N.)

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No.	Isotope	Make and Model	Activity TBq(Ci)	Date of Activity	Special Form	DSRS origin	Source type/Source number
1	Co-60	Aleyon II (Device serial number 908P) 127 kg DU in Head 25 kg DU in Collimator	138 (3737)	20 January 1998	Not sure	France	COT15/1629
2	Co-60	AECL Theratron 80 41 kg DU in Head 12 to 29 kg DU in drawer	218 (5882)	23 July 1997	Not sure	Argentina	FSM-60-03/066
3	Co-60	AECL EI Dorado 76 137 kg DU in Head 12.24 kg DU in drawer 16 kg DU in Collimator 5.4 -7.3 kg DU in Trimmer bars	201 (5446)	18 September 1995	Yes	Argentina	FSM -60-03/045
4	Co-60	AECL Theratron 780 99 kg DU in Head 12.3 kg DU in drawer 16 kg DU in Collimators	306.5 (8286)	7 December 2001	Yes	Canada	C146/S-5331

		5-7 kg DU in Trimmer bars					
5	Co-60	AECL EI Dorado 78 (Device serial number 25) 137 kg DU in head	108 (2914)	30 August 2007	Not sure	Argentina	FSM-60-03/123
6	Co-60	AECL Theratron 80 (Device serial number 212) 41 kg DU in Head 12 to 29 kg DU in Drawer	195 (5256)	17 July 2003	Yes	Canada	C146/S-5447
7	Co-60	AECL Theratron 80 (Device serial number 294) 41 kg DU in Head 12 to 29 kg DU in Drawer	291(7861)	7 March 2002	Not sure	Argentina	FSM-60-03/096



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