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

National Report for Uruguay

Introduction

There are no nuclear power stations and no nuclear fuel cycle activities in Uruguay. There are only disused radioactive sources from medical and industrial practices and there is a disused conditioned neutron Pu-239 source with 185 TBq, waiting for its reshipment to the United States. This material is stored in the building in which it was an old research reactor. The application of the Convention is limited to radioactive waste arising from the medical, industrial and research applications of radioisotopes.

Radioactive waste categorisation

In the absence of nuclear power or nuclear fuel cycle facilities, no high level radioactive waste is produced in Uruguay. Furthermore although no formal system of categorisation has been undertaken, radioactive waste in the form of disused sealed and unsealed radioactive material arising from medical, industrial and research/educational applications would all be categorised as either intermediate or low-level, depending on the activity and activity concentration of the material in question.

Regulatory infrastructure

Under Uruguayan legislation all activities involving radioactive sources, save those which meet the criteria for exemption specified in the legislation, require a operation licence from the National Radioprotection Authority, that belongs to de central government, through the Industry, Energy and Mines Ministry. The Authority is empowered to attach conditions to these licences including conditions relating to the management of radioactive waste. Inspectors from the Authority carry out inspections to assess compliance with the conditions. The Authority maintains a database of all licensees, which includes an up-to-date national inventory of all radioactive material in storage in the country.

Management of disused sealed radioactive sources

Since the licensing system was introduced in 2002, activities involving sealed radioactive sources are permitted only if the licence applicant can satisfy the Authority. From 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 licence and are subject to inspections by the Authority. It is a condition of licence that the legal owner of the source nominates a named individual to take responsibility for its safety. The appendix provides an updated list all the significant disused sources in storage . (see below)

Radioactive waste storage facility

While all the sources referred to above are held in secure locations, it would be clearly preferable to have them all placed in a dedicated storage facility. This would help ensure longer term security and remove the ever present risk that a source will be inadvertently disposed of with other scrap material, particularly if the legal owner is placed in receivership or if the premises, where it is held, is sold. The Authority has an agreement with the State National University and the waste storage is in a building located in the Faculty of Sciences. At the present time the security of the building with financial resources of the Industry, Energy and Mines Ministry is been improved according the IAEA recommendations.

The radioactive waste in Uruguay is managed by the Nuclear Research Center of the Faculty of Sciences and its operation is subject to regulatory control by the National Radioprotection Authority.

Surveillance of disused sealed sources

In addition to inspections by the Institute, it is a condition of the licence 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, were previously used in radiotherapy services of Hospitals for the treatment of cancer. However, in common with the practice in other countries, these sources have been replaced by less hazardous radionuclides, including, in particular caesium137 and iridium192. During 1996, the medical radium sources have been removed to Uruguay based supplier of the caesium sources. All of them are conditioned in the waste storage.

In addition to the radium sources referred to in the appendix there are lightening preventors incorporating radium sources. Still there are lightening preventors 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.

12 Cobalt sources and 1 Caesium old sources from teletherapy services are in the waste storage. 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.

Management of unsealed radioactive material

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

The licences 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. This places an upper limit on the quantities of radioactive waste that may be produced. Technetium generator cores are returned to the supplier.

Short half life radioisotopes used in nuclear medicine keep them in each medical institution in a exclusive restricted area waiting at least 10 half life time and after are discharged to the sewage system.

Radioactive waste in the form of excreta from patients

The licence conditions are currently being revised to include the disposal of radioactive waste in the form of excreta from patients. Furthermore the radiation safety procedures, which as a condition of licence, hospitals are obliged to draw up, must include requirements to ensure that precautions are taken to prevent the spread of contamination, including contamination in the form of excreta from patients. These include a requirement that patients who are being treated with high levels of radioiodine for thyroid ablation, or with other high activity radionuclides, are held in a specially designed unit until the level of radioactivity in both their bodies and in their excreta has decayed to levels at which they may be discharged.

Instructions are also given to patients on how to prevent the spread of contamination and to limit doses to other persons with whom they may have contact.

The revised licence condition places an obligation on hospitals and clinics to keep records of radionuclide administrations to patients which will enable estimates of the quantities excreted to the sewers to be made, using established excretion factors.

Conclusion

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 teletherapy services and industrial applications. The priority is to minimise the production of radioactive waste, and keep a low level radiological risk. In Uruguay, the National Authority through the fulfil of the regulatory framework wants ensure the security of the central radioactive waste storage facility. We are upgrading and updating the present waste infrastructure looking for a final waste disposal facility.

References

1.- Radiological Protection Act, 2002 – Norm UY 100 - Uruguay
2.- Norm UY 106 - Management of radioactive waste, 2002
3.- National radioactive inventory

Appendix
Inventory of disused radioactive sources in Uruguay
Sealed Sources
Radionuclide Total activity

Kind of waste	Radionuclide	Activity	From
Start-up neutron source	239-Pu-Be	185 GBq	FormerReactor
Nuclear Gauges	241-Am-Be	1.1 GBq	Industrial
Nuclear Gauges	137-Cs	0.74 GBq	Industrial
Nuclear Gauges	226-Ra-Be	3.7 GBq	Industrial
Nuclear Gauges	226-Ra-Be	74 MBq	Industrial
Brachytherapy	Sr-90	S/d	Medical
Brachytherapy	226-Ra	519.63 mg	Medical
Brachytherapy	226-Ra	43.8 mg	Medical
Nuclear Gauges	204-Tl	63,9 MBq	Industrial
Sealed blisters	85-Kr	18.5 GBq	Research
Radon Generator	226-Ra	74 GBq	Medical
Lightning rod	226-Ra	850 MBq	Industrial
Lightning rod	241-Am	850 MBq	Industrial
Reference source	60-Co	S/d	Research
Reference source	226-Ra	359.7 KBq	Teaching
Nuclear Gauges	137-Cs	23.5 GBq	Industrial
Reference source	60-Co/137-Cs	S/d	Nuclear Medicine
Radiotherapy	60-Co	7,4 TBq	Medical
Radiotherapy	60-Co	7,4 TBq	Medical
Radiotherapy	60-Co	8,4 TBq	Medical
Radiotherapy	60-Co	14 TBq	Medical
Radiotherapy	60-Co	11,3 TBq	Medical
Radiotherapy	60-Co	5,6 TBq	Medical
Radiotherapy	137-Cs	30 TBq	Medical
Radiotherapy	60-Co	3 TBq	Medical
Radiotherapy	60-Co	22,9 TBq	Medical
Radiotherapy	60-Co	25,5 TBq	Medical
Radiotherapy	60-Co	3,56 TBq	Medical
Radiotherapy	60-Co	11,32 TBq	Medical