IAEA Technical Cooperation Programme

Developing radioactive waste management infrastructure in Asia and the Pacific

The challenge

Nuclear technology is used in many IAEA Member States in the Asia and the Pacific region, in fields that include health, agriculture, industry, research and the sustainable use of natural resources. However, radioactive sources and radioactive waste must be carefully managed in order to protect people and the environment from potential hazards, and to ensure safety now and in the future.

Member States need to have a sound national infrastructure in place to treat, condition, manage and store radioactive waste in line with internationally recognized standards. Such an infrastructure consists of appropriate policies and comprehensive national laws and regulations, enforced by a regulatory authority with the legal authority to authorize and inspect regulated activities, including management of radioactive waste.

An important number of nuclear facilities, including research reactors, industrial irradiators and laboratories, are in operation in the Asia and the Pacific region. All these facilities handle radioactive sources. As they come to the end of their operational lifetime, proper decommissioning and environmental remediation are critical to prevent radiation exposure to people and the environment, and to enable the use of such sites for other purposes.

Disused sealed radioactive sources conditioning operation in Quezon City, Philippines.

The project

A four year IAEA technical cooperation regional project was initiated in 2012 to help participating Member States in the region to establish or upgrade their radioactive waste management infrastructure in accordance with IAEA safety standards. Assistance was provided in response to common regional needs, addressing the specific capacity building needs of each individual country.

Through training courses, workshops and expert missions, the IAEA provided support for the formulation of appropriate policies, laws and strategies, with the aim of providing the legal framework for strengthened regulatory oversight and implementation to ensure safety. The project promoted mutual cooperation among the countries of the region, with countries more advanced in radioactive waste management assisting and sharing expertise with less advanced countries.

A number of countries (Bangladesh, Fiji, Malaysia, Philippines, Sri Lanka and Thailand) were also trained in collecting, characterizing, dismantling and conditioning Category 3-5 disused sealed radioactive sources (DSRS). The appropriate infrastructure for the conditioning of DSRS was also developed. The staff of the operator organizations received hands-on-training to ensure the sustainability of the DSRS management activities in these Member States.

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The impact

As a result of the project, participating Member States have acquired the necessary capacities to treat, manage, store, transport and dispose of nuclear and radioactive waste in a safe, effective and secure manner, according to IAEA safety standards. The project has made significant contributions towards the establishment of an institutional framework in the participating Member States.

Additionally, around 700 disused sealed radioactive sources were identified and recovered in the region. Upon recovery, the sealed radioactive sources were characterized and safely conditioned into capsules. Member States now have the necessary know how and competence in this field, together with the appropriate infrastructure, to address this long standing problem and ensure the sustainability of DSRS management activities.

A strategic action plan to strengthen national radioactive waste management infrastructures for regional implementation was prepared and is currently being implemented at the national level. A number of countries, such as Bangladesh, Malaysia, Jordan and the Philippines, have already developed appropriate strategies and related policies for the implementation of the strategic action plan while some countries, such as Mongolia, Oman, Pakistan, Sri Lanka, Thailand and Viet Nam, are in the process of developing their strategies and policies.

Disused sealed radioactive sources field operations in Indonesia.

PROJECT INFORMATION

Project No: RAS9071

Project title: Establishing a Radioactive Waste Management Infrastructure

Duration: 2012–2015 (4 years)

Budget: €706 570

Facts and figures

In Bangladesh, 89 DSRS were recovered from different devices, characterized and safely conditioned into 4 capsules. In the Philippines, more than 100 DSRS were recovered from different devices, characterized and safely conditioned into 4 capsules. In Sri Lanka, 236 DSRS were recovered and characterized and safely conditioned into 5 capsules. In Indonesia 262 DSRS recovered, characterized and safely conditioned into 7 capsules.

The science

A sealed radioactive source is radioactive material that is permanently sealed in a capsule or bonded and in a solid form, designed to prevent the radioactive material from escaping or being released from encapsulation under normal usage and probable accident conditions. Sealed radioactive sources that have reached the end of their useful life – known as disused sealed radioactive sources or DSRS – must be managed effectively to ensure the safety of people and the environment. This includes conditioning the source, checking the status of the source regularly, providing proper security measures, and keeping records of all transactions by the waste operator.