

Management of Radioactive Waste

Objective

To achieve global harmonization in policies, criteria and standards governing waste safety and public and environmental protection, together with provisions for their application, including state-of-the-art technologies and methods for demonstrating their adequacy.

Waste and Environmental Safety

Radioactive waste and spent fuel management

The Agency assists Member States in planning strategies and conducting research activities for the safe management of spent fuel. In particular, the Agency facilitates the sharing of experience and good practices among Member States.

In 2013, the Agency began development of new projects on the management of intermediate level waste and the management of large amounts of waste. The aim is to create a forum for Member States to exchange experience and to assist and provide guidance on the application of the Agency's safety standards. The Agency also published a Safety Guide entitled *The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste* (IAEA Safety Standards Series No. GSG-3) and provided assistance to Member States through technical cooperation projects, peer reviews and Technical Meetings.

During the year, the Agency published a number of reports on designing and managing the construction or operation of disposal facilities, including *Options for Management of Spent Fuel and Radioactive Waste for Countries Developing New Nuclear Power Programmes* (IAEA Nuclear Energy Series No. NW-T-1.24). In addition, the Internet based platform CONNECT (Connecting the Network of Networks for Enhanced Communication and Training) was developed further.

Assessment and management of environmental releases

As part of the Agency's programme on Modelling and Data for Radiological Impact Assessments (MODARIA), the Agency organized a second Technical Meeting in Vienna in November to continue the work on assessment methodologies and their application for remediation of contaminated areas, modelling of radiation exposures and effects on biota, and the dispersion of radionuclides in the marine environment. The meeting was attended by 153 participants from 43 Member States, including regulators and operators as well as environmental modellers and radiation protection experts. In addition, nine MODARIA working groups held meetings, hosted by various Member States, focusing on data compilation and model validation. Among the key results of MODARIA

are improved parameter values and environmental models for use in the Agency's safety guidance and safety reports. The associated knowledge transfer between Member States is also important and is contributing to capacity building for radiological impact assessment.

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Decommissioning and remediation safety

During the year, the Agency continued to provide guidance on implementing optimal measures for remediating contaminated land. In a project carried out in the framework of the IAEA Action Plan on Nuclear Safety, situation specific remediation strategies are to be developed for contaminated urban and rural areas for a wide range of environmental conditions. The strategies integrate the experience gained after accidents such as those at the Chernobyl and Fukushima Daiichi nuclear power plants, and focus both on the radiological aspects and on the impact of technological, economic and societal factors on decisions concerning remediation.

The Agency's Coordination Group for Uranium Legacy Sites (CGULS) provides technical coordination and support to address issues related to uranium legacy sites in affected Member States. In 2013, a strategic plan was developed to guide future CGULS activities. A number of missions were also carried out, including one to assess capabilities for chemical and radiochemical analysis in the Central Asia region. Three missions were carried out to Kyrgyzstan: to develop a national monitoring strategy and programme for uranium legacy sites in the country (Fig. 1);



FIG. 1. Environmental sampling at a remediation site in Kyrgyzstan.

to develop recommendations for a remedial action strategy for the Mailuu-Suu site; and to characterize the Min-Kush site. In addition, the CGULS technical exchange forum was held in Vienna in June, and a meeting was held in Moscow in November to optimize the group's activities.

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Good Practices and Technologies for Radioactive Waste Management, Decommissioning and Environmental Monitoring

Management of radioactive waste and spent fuel

Remediation and decontamination activities in affected areas after a nuclear or radiological emergency may, in a short period of time, produce large amounts of waste having relatively low levels of activity concentration, as was the case after the accident at the Fukushima Daiichi nuclear power plant. For these activities to be conducted smoothly, it is necessary to set up situation specific waste management strategies for the actual waste streams, taking into consideration the long term safety of the managed waste.

In 2013, the Agency set up working groups to analyse and prepare guidance on the important aspects of managing large amounts of waste following emergency situations to address important issues such as establishing an appropriate framework to address the technology aspects of waste management, demonstrating safety, and facilitating the licensing process for waste treatment and storage facilities.

Decommissioning of nuclear facilities and environmental remediation of sites

The Agency's Data Analysis and Collection for Costing of Research Reactor Decommissioning (DACCORD) project is part of a wider effort to provide tools, guidance and assistance for preparing preliminary cost estimates to those Member States with small nuclear facilities. The second annual meeting of DACCORD was held in December, with participants from more than 20 Member States. The participants analysed the collected cost relevant data for different generic types of research reactor, using detailed source information provided by participants relating to their own reactors.

The International Project on Decommissioning Risk Management (DRiMa) examines the factors that influence the risks of decommissioning projects. DRiMa provides recommendations on risk management for the decommissioning of facilities using radioactive material, as well as practical examples of the practices and procedures used for risk management in the planning and execution of decommissioning. A meeting of the DRiMa working groups was held in Cologne, Germany, in May, with 19 participants from 12 countries. Additional examples of decommissioning risk management were added to the draft report for the project, and plans for future activities were elaborated. The second annual meeting of the DRiMa project was held in Vienna in October, with 32 participants from 23 countries. The meeting focused on the collection and analysis of risk management related approaches and experience in decommissioning, addressing aspects of strategic and operational risk management.

In 2013, the Agency, through its Network on Environmental Management and Remediation (ENVIRONET), organized a training event, in cooperation with Argonne National Laboratory in the USA, on the planning and management of environmental remediation works. The event demonstrated that a successful remediation project can only be achieved through proper elaboration and implementation of a well developed plan supported by good managerial practices. The training was of particular relevance, as several Member States have an urgent need for adequate support in planning and managing technically sound and cost effective environmental remediation projects.

The CIDER project — concerned with addressing constraints to implementing decommissioning and environmental remediation programmes — was launched in 2013 as a joint activity of the International Decommissioning Network (IDN) and ENVIRONET with the goal of improving current levels of performance. The first phase of the project, taking place from 2013 through to 2015, is aimed at raising awareness of the importance of this issue and promoting greater cooperation among Member States and international organizations concerned with the implementation of decommissioning and environmental remediation programmes.

Joint Convention Inter-sessional Meeting

As agreed during the 4th Review Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention), the Contracting Parties held an Inter-sessional Meeting in April. The purpose was to facilitate further consideration of proposals to improve the implementation of the Joint Convention and its review mechanisms. Further to this meeting, one Contracting Party requested the Secretariat to hold an extraordinary meeting, in conjunction with the next Joint Convention Organizational Meeting in

May 2014, to consider revisions to the Rules of Procedure and Financial Rules and to the guidance documents¹.

¹ See INFCIRCs 602/603/604, available at: <http://iaea.org/Publications/Documents/Infcircs/index.html>.

In October, a Topical Meeting on Comprehensive Approaches to the Back End of the Nuclear Fuel Cycle was organized at Headquarters in Vienna. The objective of the meeting was to provide a forum for the exchange of information on approaches to managing the back end of the nuclear fuel cycle in a comprehensive manner.