

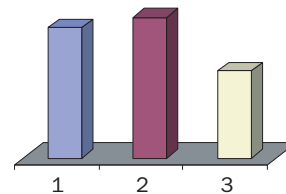
RADIOACTIVE WASTE SAFETY

PROGRAMME OBJECTIVE

To promote the safe management of radioactive waste, including the safety of disposable, dischargeable and residual waste, through the establishment of relevant safety standards, the application of these standards, as well as the support and service, as required, of relevant international agreements

Regular budget expenditure: \$1 823 867

Extrabudgetary programme expenditure
(not included in chart): \$253 480



1. Safety of Disposable Waste: \$662 405

2. Safety of Dischargeable Waste: \$717 114

3. Safety of Residual Waste: \$444 348

OVERVIEW

Key developments during the year included the publication of safety standards on the predisposal management of radioactive waste and on the regulatory control of radioactive discharges. There was also progress on the establishment of new consensus standards on geological disposal. A conference on the safety of radioactive waste management made a significant contribution towards building the necessary consensus. In addition, a new service was launched to provide technical advice to Member States on applying the safety standards. And the Agency continued to provide advice to the London Convention 1972, and in so doing completed another step towards a comprehensive database on radioactive materials in the marine environment as a result of human activities.

SAFETY OF DISPOSABLE WASTE

Safety Requirements on the predisposal management of radioactive waste, including decommissioning, were published in 2000. These establish internationally agreed requirements relating to waste arising from: the operation and decommissioning of nuclear facilities; the use of radionuclides in industry, medicine and research; the processing of raw materials containing naturally occurring radionuclides; and the cleanup of contaminated sites. They include provisions required to bring radioactive waste into a state suitable for storage or disposal in designated facilities and to ensure the safety of the facilities.

An obvious gap in the current programme to update the Agency's safety standards is the absence of standards for the geological disposal of radioactive waste. Efforts to close this gap took a step forward in 2000 when the Waste Safety Standards Committee approved

an outline for a Safety Requirements publication. The Committee also identified specific topics on which consensus still needs to be developed.

As a follow-up to a conference held in Córdoba on the safety of radioactive waste management (see Box 1), the Agency's Scientific Forum during the 2000 General Conference was devoted to the topic of "Radioactive Waste Management: Turning Options into Solutions". Several of the themes from the Córdoba conference were revisited at the Forum. For example, there were discussions on various technical issues, including a number of presentations on national programmes, and some reflection on the prospects for future technological developments. There was also the same recognition that waste management cannot be treated as an exclusively technical matter, and that the technology that exists can only be put to use if the issues of public confidence and acceptance are addressed. And, as at the Córdoba conference, there was

BOX 1. BUILDING PUBLIC TRUST IN THE TECHNOLOGY TO HANDLE RADIOACTIVE WASTES

In March 2000, the Agency organized an international conference on the safety of radioactive waste management, in Córdoba, Spain. The conference, co-sponsored by the European Commission, the OECD/NEA and WHO and hosted by the Government of Spain, covered:

- The siting of radioactive waste management facilities,
- Legislative and general safety aspects,
- The predisposal management of radioactive waste,
- Near surface disposal,
- Geological disposal,
- The management of disused radioactive sources,
- The transboundary movement of radioactive waste.

Although areas were identified in which improvements could be made, there was general consensus that the technology is available to manage radioactive waste safely and reliably, and that these technological solutions should be implemented. However, a recurring theme of the conference was the importance of non-technical issues, such as building public trust in the technology and, just as importantly, in its practitioners. In particular, it was noted that progress in some areas of radioactive waste management, such as the siting of geological repositories, appeared to be best served by carefully structured, inclusive decision making processes in which all interested parties (or "stakeholders") had a recognized role.

In Resolution GC(44)/RES/12, the Agency's General Conference requested the Secretariat to prepare a report assessing the implications of the Córdoba conference's conclusions and recommendations for the Agency's programme of work. The report will be presented to the Board of Governors in 2001. ■

general acknowledgement of a ‘perception gap’ between technical experts and the public on the safety of radioactive waste disposal, and therefore of the pressing need to expand the dialogue on waste management issues to include all stakeholders.

The Agency launched a new safety and technical advisory service on radioactive waste management. The objective of this service is to assist Member States in the application of the Agency’s waste safety standards and ensure that all waste is managed in a manner that is safe and which also protects individuals and the environment. An example was an expert

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mission to Brazil that reviewed arrangements for processing low and intermediate level waste from units 1 and 2 of the Angra nuclear power plant. The review also covered the on-site storage arrangements for the waste.

Two CRPs on methodologies for assessing radioactive waste disposal practices ended in 2000. The first one led to the development and documentation of agreed procedures for the safety assessment of several types of near surface facility, including earth trenches, concrete vaults and boreholes. The second CRP, on biosphere models for assessments (BIOMASS), focused on promoting international harmonization on a range of issues: the use of ‘reference biospheres’ — stylized representations of hypothetical future environments — for long term safety assessments of geological repositories; modelling the impact of environmental remediation at sites affected by residual radioactive material; reconstruction of radiation doses from past releases; the transfer of radionuclides in forest ecosystems and fruit trees; and the environmental behaviour of tritium.

Partly on the basis of work done in the BIOMASS project on reference biospheres, the Agency was invited to peer review the biosphere component of the United States Department of Energy’s performance assessment for the planned high level waste repository at Yucca Mountain, Nevada. The review team observed that satisfying the regulators of the safety of the facility will be necessary, but not sufficient, and that the assessment will also need to be presented to other interested parties. The team therefore divided its recommendations and suggestions into two classes: (a) those aimed at improving the biosphere assessment capability while remaining focused on satisfying regulatory requirements; and (b) those aimed at gaining the confidence of other stakeholders and making the DOE’s biosphere assessment methodology more consistent with international guidance and practice. The Agency is also co-operating with the OECD/NEA in conducting a peer review of the Yucca Mountain performance assessment as a whole.

SAFETY OF DISCHARGEABLE WASTE

A Safety Guide on regulatory control of radioactive discharges to the environment was issued. This provides guidance on controlling the discharge of liquid and gaseous effluents to the environment from normal controlled operation of practices in which radioactive material is used. A complementary safety report on environmental dose assessments provides models and data for conducting assessments in the context of implementing the recommendations in the Safety Guide.

The London Convention 1972 prohibits the disposal at sea of radioactive material. The Agency published definitions and criteria to determine levels of activity below which materials would not be regarded as “radioactive” under the Convention. Following up on this, it developed guidance on radiological assessment procedures to determine whether materials for disposal at sea meet the criteria specified in the earlier document. The Contracting Parties approved this report at their meeting

in September 2000, and it will be published by the Agency in 2001.

The Agency also prepared for the London Convention a report on accidents and losses at sea involving radioactive materials. This was a follow-up to a 1999 report on the disposal of radioactive materials at sea. A database of radioactive discharges from land based sources to the marine environment was established and data collection is under way. These three sets of information constitute a

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comprehensive database of radioactive materials in the marine environment as a result of human activities. This information will be one input into the Agency’s clearinghouse on radioactive substances, which is being developed as part of the United Nations Global Programme of Action (GPA) for the Protection of the Marine Environment. The clearinghouse will also contain information on: levels of natural and artificial activity in the world’s oceans; monitoring techniques; assessments of the impact of radioactive releases to the marine environment; and international and regional conventions and standards.

Radiation protection has historically focused on the protection of people, but an increasing number of Member States have expressed interest in the protection of the environment as well. A meeting of specialists organized by the Agency in August–September 2000 agreed on the overall objectives of environmental protection, the meaning of harm in the context of environmental protection, the basis for approaches for assessment and compliance, and greater co-operation with international organizations such as the International Commission on Radiological Protection and the International Union of Radioecologists,

which also have work programmes in this area.

SAFETY OF RESIDUAL WASTE

The safe decommissioning of nuclear power plants, research reactors and nuclear fuel cycle facilities is an expanding field of work for the Agency. Two projects began in 2000 to assist in planning for the decommissioning of unit 1 of Ignalina in Lithuania and units 1, 2 and 3 of Chernobyl in Ukraine. These are in addition to an ongoing project dealing with the decommissioning of the BN-350 nuclear power plant in Kazakhstan.

In co-operation with the Ministry of the Russian Federation for Atomic Energy, the Agency organized an international conference entitled the ‘Radiation Legacy of the 20th Century: Environmental Restoration’. Held in Moscow in October–November 2000, the conference was to some extent a follow-up to an Agency symposium on the restoration of environments with radioactive residues, held in Arlington, USA, in 1999. However, the focus of the Moscow conference was on the radioactive legacy in the countries of the former Soviet Union, Central and Eastern Europe, and the issues arising from this legacy. A key observation from both meetings was that environmental restoration decisions continue to be made on the basis of radiological criteria for the control of practices, despite international recommendations that intervention criteria are more appropriate for such situations.

Measures were taken in the immediate aftermath of the Chernobyl accident to control the international movement of foodstuffs affected by radioactive fallout. However, these measures were designed for the short term and did not address the long term issue of commodities produced in areas with persistent radioactive contamination. Areas affected by the Chernobyl accident have experienced difficulties in exporting commodities such as wood because there are no internationally accepted criteria by which to judge whether use of the commodities would pose a significant hazard. In response, the Agency’s General Conference

requested the Secretariat to develop, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, radiological criteria for long lived radionuclides in commodities, particularly foodstuffs and wood.

The Agency completed a radiological assessment of sites in Algeria used in the past for nuclear weapon testing. A report on the assessment has been delivered to the Algerian Government.

Agency experts participated in a mission to Kosovo, Yugoslavia, organized by UNEP in November 2000. The mission was part of a UNEP assessment to determine whether the use of ammunition containing depleted

uranium during the 1999 Kosovo conflict has resulted in any current or future health or environmental risks. The team made external dose rate measurements and took samples of soil, water, vegetation and milk at 11 locations where NATO confirmed that such ammunition had been used. The UNEP report concluded that no widespread ground contamination had been found in the investigated areas. Therefore, the corresponding radiological and chemical risks were considered insignificant. Although the mission findings showed no cause for alarm, the report described specific situations where risks could be significant. It was also noted that there were scientific uncertainties related to the longer term behaviour of depleted uranium in the environment.