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MEASURES TO RESOLVE INTERNATIONAL RADIOACTIVE WASTE MANAGEMENT ISSUES

1. The safe management and disposal of radioactive waste is receiving particular attention in all countries engaged in nuclear energy production. It is also of concern in countries making use of radioactive materials for only medical, industrial or research purposes. International co-operation and assistance is playing an increasingly important role in this field, as Member States develop strategies and implement programmes to ensure that populations and the environment in the near term and the distant future are protected from the hazards associated with radioactive waste.

2. The following attachments to this paper describe current important activities within the Agency's radioactive waste management programme, managed by the Division of Nuclear Fuel Cycle and Waste Management:

(i) Progress and status of the Radioactive Waste Safety Standards (RADWASS) Programme;

(ii) Dumping of radioactive waste in the Arctic seas - International Arctic Seas Assessment Project (IASAP);

(iii) Assistance to developing Member States;

(iv) Assistance in waste management and environmental clean-up for Eastern Europe and countries of the former USSR;

(v) Status of the Waste Management Assessment and Technical Review Programme (WATRP) - an international peer review service.

3. The Secretariat will continue to keep the Board of Governors and the General Conference informed about important radioactive waste management activities and issues.

PROGRESS AND STATUS OF THE RADIOACTIVE WASTE SAFETY STANDARDS (RADWASS) PROGRAMME

Introduction

1. The Agency's Radioactive Waste Safety Standards (RADWASS) Programme was established in 1991 in response to requests by Member States to demonstrate that a harmonized approach to the safe management of radioactive waste exists at the international level (see document GOV/INF/586). The RADWASS Programme was formulated in concert with the International Radioactive Waste Management Advisory Committee (INWAC), which advises the Director General on all aspects of radioactive waste management.

Aims of the programme

2. The aims of the RADWASS Programme are to:

- document the international consensus regarding the approaches and methodologies for radioactive waste management where it exists,
- create a mechanism for achieving a consensus where it does not yet exist, and
- provide Member States with a comprehensive series of internationally agreed documents as a basis for - or to complement - national standards and criteria.

Programme overview

3. The RADWASS Programme was developed by the Secretariat in consultation with a large number of outside experts. The programme plan includes the preparation and promulgation of 55 documents in the following six subject areas:

- Planning
- Pre-disposal
- Near-surface disposal
- Geological disposal
- Uranium/thorium mining and milling waste
- Decommissioning.

4. RADWASS documents are to be published within the hierarchical structure of the Agency's Safety Series, i.e.

- Safety Fundamentals
- Safety Standards
- Safety Guides
- Safety Practices.

There is to be a Safety Fundamentals document ("The Principles of Radioactive Waste Management") covering all aspects of radioactive waste management and a Safety Standards document for each of the six subject areas. The rest of the above-mentioned 55 documents will be Safety Guides and Safety Practices.

5. The Safety Fundamentals and Safety Standards documents will be submitted in draft form for review by Member States and for approval by the Board of Governors after a thorough preparation and review process which typically includes two consultants' meetings, two Technical Committee meetings and consideration by INWAC and the Agency's internal Safety Standards Review Committee.

Programme status

6. The first phase of the RADWASS Programme is scheduled to be completed by the end of 1994. The second phase, the plans for which were approved by INWAC in March 1993, is to be carried out during the period 1995-98. A third phase will be necessary in order to achieve all the programme aims.

7. The Secretariat hopes to complete work on 12 high-priority documents during the first phase: the Safety Fundamentals document "The Principles of Radioactive Waste Management"; the Safety Standards documents for the subject areas "Planning", "Pre-disposal", "Near-surface disposal" and "Decommissioning"; five Safety Guides; and two Safety Practices documents.*

8. The draft Safety Fundamentals document was submitted for review to Member States in July, and the Secretariat hopes to submit it to the Board of Governors for approval in 1994, with a view to publication before the end of 1994.

9. Work on the four Safety Standards documents has reached an advanced stage, and it may be possible to submit them to Member States for review this year.

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* The Safety Practices document "Application of Exemption Principles to the Recycle and Reuse of Materials from Nuclear Facilities" has already been issued (in December 1992).

Future activities

10. There are plans to hold an Agency meeting on the "Requirements for the Safe Management of Radioactive Waste" during the third quarter of 1995. INWAC would be involved in the preparations for the symposium.

11. If the RADWASS Safety Fundamentals and Safety Standards documents are approved according to the present schedule, the symposium would provide an excellent opportunity to discuss the safety aspects of radioactive waste management on a broad basis and might trigger the start of work on a convention on radioactive waste management.

DUMPING OF RADIOACTIVE WASTE IN THE ARCTIC SEAS - INTERNATIONAL ARCTIC SEAS ASSESSMENT PROJECT (IASAP)

Introduction

1. The International Arctic Seas Assessment Project (IASAP) was initiated in 1993 in order to address the widespread concern over the possible health and environmental impacts of radioactive waste dumped in the shallow waters of the Arctic seas. The project is being executed as a part of the Agency's responsibilities under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention 1972).

2. When the first reports of radioactive waste dumping in the Kara and Barents Seas were presented at the 14th Consultative Meeting of Contracting Parties to the London Convention, in 1991, great concern was expressed over the possible threat to the marine environment and also because it was felt that the alleged dumping could seriously affect the credibility of the Convention as an instrument for protecting the marine environment.

3. During 1992 the Agency's Secretariat took various steps to verify the claims that radioactive waste dumping had taken place. The actions taken were reported at the 15th Consultative Meeting, in November 1992, and the Contracting Parties agreed to make a number of formal requests - addressed mainly to the Russian Federation, Norway and the Agency - with a view to further verifying the dumping, establishing the levels of radioactivity in the local environment, assessing the potential impact of any such dumping and evaluating possible remedial measures.

4. In May 1993 the Russian Federation provided information to the Agency about the high- and low-level radioactive waste dumped in the Arctic seas during the years 1959-92. The total amount of radioactivity dumped was more than 90 PBq. The items dumped included seven nuclear submarine or icebreaker reactors with fuel containing a total of 85 PBq; ten reactors (without fuel) containing 3.7 PBq; liquid low-level waste containing 0.9 PBq; and solid intermediate- and low-level waste containing 0.6 PBq. The solid waste (packaged) and the nuclear reactors were dumped in the Kara Sea, in the shallow bays of Novaya Zemlya, where the depths of the dumping sites range from 12 to 135 m, and in the trough of Novaya Zemlya, at a depth of 380 m. Most of the liquid low-level waste was discharged in the open Barents Sea.

Aims of the project

5. The International Arctic Seas Assessment Project was launched at a meeting held in Oslo in February 1993. The aims are to:

- assess the risks to human health and the environment associated with the radioactive waste dumped in the Kara and Barents Seas, and
- examine possible remedial measures and advise on whether they are necessary and justified.

Project overview

6. At the Oslo meeting, working groups were established to deal with the following subjects: (a) Source Terms, (b) Existing Environmental Concentrations, (c) Transfer Mechanisms and Models, and (d) Impact Assessment and Remedial Measures. A Co-ordinated Research Programme (CRP) has been established in support of the project, and the first CRP planning meeting was held in June. A work plan for the next twelve months has been developed.

7. It is envisaged that the project will last four years and be executed by the Agency in co-operation with the Governments of Norway and the Russian Federation and with the involvement, through the Agency, of experts from Member States.

8. The need for the Agency to become involved in the Arctic seas dumping issue was not foreseen at the time when the Regular Budgets for 1993 and 1994 were being prepared. Member States have therefore been requested to provide extrabudgetary support for the project, and such support has been provided for the first year by the United States of America.

Other activities

9. Agency specialists took part in exploratory cruises to the Arctic seas organized by the Governments of Norway and the Russian Federation in 1992 and 1993, and the Agency's Monaco Laboratory has carried out independent analyses of environmental samples obtained during the cruises. The measurements taken to date indicate that existing levels of radioactivity in the Kara and Barents Seas are very low and present no apparent risk to health.

10. Information has been provided to the Agency about the dumping of radioactive waste in the North West Pacific, mainly in the Japan Sea. The reported amounts are much smaller than in the case of the Arctic seas, but are nevertheless giving rise to local concern. The Agency's Secretariat is exploring ways in which it could be of assistance to the countries in the region.

ASSISTANCE TO DEVELOPING MEMBER STATES

Introduction

1. Helping developing countries to establish national radioactive waste management programmes is an important promotional activity of the Secretariat, which is very conscious of the fact that its efforts in the fields of nuclear power and nuclear applications must be backed by efforts in the area of radioactive waste management.

2. Assistance is being provided on a national, regional and interregional basis to Member States wishing to establish the infrastructures needed for the safe management of radioactive waste, including spent radiation sources, or to strengthen their existing infrastructures.

Overview

3. With the guidance of the International Radioactive Waste Management Advisory Committee (INWAC), the Secretariat is employing mechanisms traditionally used by it in providing assistance to Member States.

4. As part of the Agency's Waste Management Advisory Programme (WAMAP), missions of various types (advisory, fact-finding, assistance, etc., depending on Member States' needs) are being offered.

5. A project entitled "Support for the Safe Management of Spent Radiation Sources in Developing Member States" has been established (see in this connection document GOV/INF/595).

6. Work on preparing a series of technical manuals designed to meet the need of Member States for straightforward and low-cost solutions to waste management problems has been initiated. Particular attention is being paid to the management of low- and intermediate-level waste generated at small nuclear research centres and by radioisotope users in medicine, research and industry.

7. Design packages for standardized central facilities for the processing and storage of radioactive waste and the conditioning and storage of spent radiation sources are being developed to meet the needs of Member States with modest nuclear applications programmes.

8. Urgent training needs have been identified in the following areas: spent radiation source management, integrated waste management systems, infrastructure requirements, management of waste from nuclear applications, and quality assurance requirements for waste management. Training in these areas is being arranged on a regional and an interregional basis.

Recent activities

9. During 1992-93 advisory missions were undertaken to Sri Lanka, Viet Nam, Morocco and the Syrian Arab Republic and fact-finding missions to Ukraine and Namibia. Also, assistance was provided to Thailand, Malaysia and Ukraine with the drafting of national regulations for the management of radioactive waste.

10. Efforts relating to spent radiation sources have focussed on the development and testing of a database package for the registration and monitoring of sources and on the preparation of a technical document on locating and identifying sealed sources. These products are directed at helping Member States to significantly reduce the number of spent radiation sources that become unaccounted for.

11. Significant progress has been made in the preparation of a series of documents entitled "Technical Manuals for the Management of Low and Intermediate Level Wastes Generated at Small Nuclear Research Centres and by Radioisotope Users in Medicine, Research and Industry". During 1992-93, six documents were published and work started on the remaining three documents in this series. In 1993, work started on the preparation of technical manuals on the siting and design of near-surface facilities for the disposal of low-level waste.

12. During 1992-93 one interregional and three regional training courses were held (a fourth regional course is to be held in Greece in November) on various aspects of radioactive waste management. They were attended by 86 participants from 42 Member States.

Future activities

13. It is expected that the design packages for standardized central facilities for the processing and storage of radioactive waste and the conditioning and storage of spent radiation sources (see para. 7 above) will be presented at an AFRA Workshop on the Storage and Disposal of Spent Radiation Sources and Solid Waste to be held in Nairobi in November.

14. Under WAMAP, resources will be allocated not only to missions but also to follow-up actions. As Member States establish the basic infrastructures required for radioactive waste management, greater emphasis will be placed on providing assistance on specific waste management steps (i.e. waste handling, processing, storage and disposal) and on the safety requirements associated with each of these steps.

ASSISTANCE IN WASTE MANAGEMENT AND ENVIRONMENTAL CLEAN-UP FOR EASTERN EUROPE AND COUNTRIES OF THE FORMER USSR

Introduction

1. The political changes in Eastern Europe and the former USSR have revealed the existence of many environmental problems, some connected with earlier waste management practices and insufficient controls on radionuclide releases to the environment.

2. The Agency has instituted a number of programmes aimed at providing advice on and assistance with various aspects of these problems.

3. During the present preliminary phase, the emphasis is on facilitating the collection and exchange of information, including assessment of technology available for radioactive waste management and environmental clean-up. Also, the Agency is sponsoring regional workshops at which experts from Eastern Europe, countries of the former USSR and western countries can share experience and establish contacts with one another.

Overview

4. The Agency's programmes cover - inter alia - the broad spectrum of waste types generated within the nuclear fuel cycle and through the use of radionuclides in medicine, research and industry and the environmental contamination which has resulted from mining and milling activities, military activities and the industrial use of radionuclides.

5. Regional co-operation was initiated in 1991 with a view to identifying the common problems of countries of Eastern Europe and the former USSR in the management of radioactive waste from nuclear power plants of the WWER type and recommending ways to deal with those problems. Several of the countries in question have encountered radioactive waste management problems due to shortcomings in national regulations, equipment design, technology and/or waste management practices, as they lack a national system covering all aspects of radioactive waste management.

6. Planning for a regional technical co-operation project on environmental restoration in Eastern Europe began in 1992. The project, the aim of which is to provide advice on and assistance with the clean-up of radioactively contaminated sites, will proceed in three phases:

(i) Site identification and characterization - obtaining an overview of the environmental state of each country;

(ii) Preparation for restoration - setting restoration objectives, assessing radiological impacts, reviewing remediation options and taking decisions on future actions;

(iii) Technology for clean-up - reviewing the available technology and worldwide experience of restoration.

7. As part of the IAEA/UNDP programme for strengthening radiation and nuclear safety infrastructures in countries of the former USSR (see document GC(XXXVII)/INF/318), assistance will be provided in the area of radioactive waste management, including assistance in the areas of stabilization of waste tailings from uranium mining and milling, safety of shallow land burial sites for radioactive waste, spent fuel and spent radiation source management.

Progress

8. The present situation as regards WWER waste handling, treatment and conditioning has been reviewed, and recommendations for improving waste management practices in the participating countries have been made. During the period 1993-94 the focus is on: (a) infrastructures for managing the radioactive waste from WWERs and (b) the analysis of selected WWER waste management systems. Workshops are to be held in Finland, France, Hungary and Ukraine.

9. The first of the environmental restoration workshops is to be held in Hungary in October. Participants from twelve countries will present information on the environmental situation in their countries. It is expected that the workshop will be attended by environmental restoration experts from seven western countries.

10. During the first phase of the above-mentioned IAEA/UNDP programme, the focus is on fact-finding missions. Later, the assistance needs of the individual countries will be determined on the basis - inter alia - of relative radiological hazards.

International co-operation

11. Formal links have been established with CASSIOPEE (a consortium of six national waste management agencies operating within the EEC) in order to co-ordinate efforts so that there is minimum duplication between the Agency and CASSIOPEE in providing assistance to Eastern Europe and countries of the former USSR in the area of radioactive waste management.

STATUS OF THE WASTE MANAGEMENT ASSESSMENT AND TECHNICAL REVIEW PROGRAMME (WATRP) - AN INTERNATIONAL PEER REVIEW SERVICE

Introduction

1. Within the framework of its Waste Management Assessment and Technical Review Programme (WATRP), the Agency offers a peer review service to Member States with established radioactive waste management programmes.

Purpose

2. WATRP was developed to provide a mechanism through which the Agency could offer technical assessments and independent peer reviews of the waste management policies, concepts, programme activities and systems of Member States by international panels of experts. Member States can request such reviews on the technical, operational, safety and performance features of radioactive waste management systems - planned or in operation.

Recent activities

3. This year the Finnish Ministry of Trade and Industry requested a review of Finland's radioactive waste management programmes (which are financed both from public funds and by industry) and advice on future radioactive waste management activities. A WATRP team is visiting Finland towards the end of August.

4. The Czech State Office for Nuclear Safety recently requested a review of the Czech research and development programme for a deep geological repository. A WATRP team is preparing for a review meeting to be held in November.

5. WATRP peer reviews have been previously conducted in the United Kingdom and the Republic of Korea.