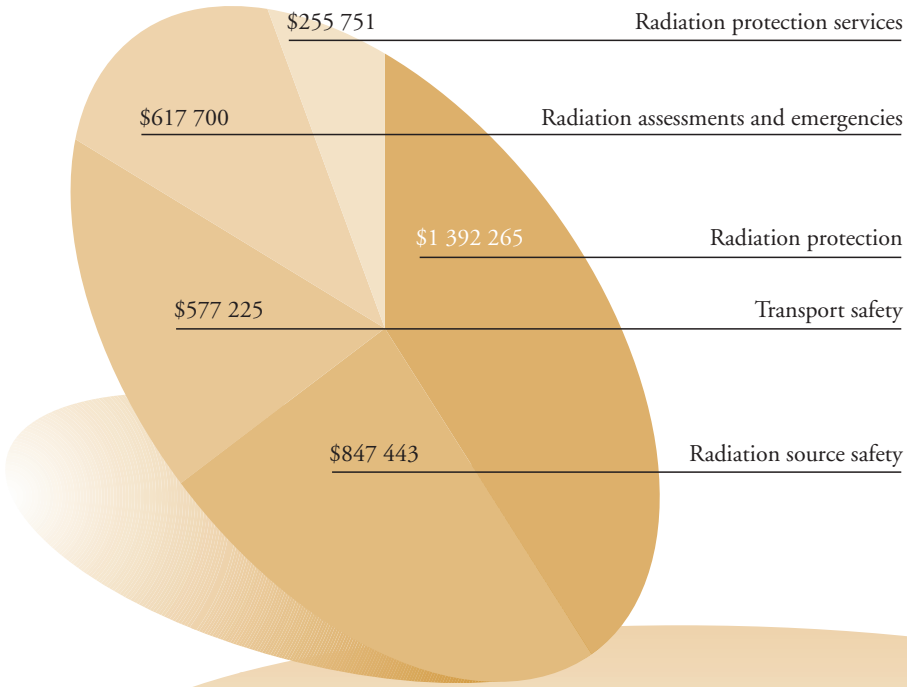
RADIATION SAFETY



Regular budget expenditure:
$3 690 384

Extrabudgetary programme expenditure
(not included in chart):
$746 426

Programme objective

To promote adequate levels of protection against ionizing radiation and for the safety of radiation sources.

The radiation safety programme has two complementary objectives: development of a unified set of safety standards based on consensus; and provision for the application of these standards in Member States and through other international organizations. In order to achieve these objectives, the programme emphasized a number of areas of work covering the relevant research, the development of requirements level consensus documents and supporting guides, and the preparation of practical manuals and other documents to assist in standards implementation by regulatory authorities. Many of these documents provide the technical underpinning for technical co-operation projects, including the Model Project on strengthening radiation and waste safety infrastructures in over 50 Member States. In addition, considerable effort was devoted to emergency response activities, including servicing the Conventions of Early Notification of a Nuclear Accident and Assistance in the Case of a Nuclear Accident or Radiological Emergency. To support these activities a considerable number of research programmes, training courses, conferences and other information exchange meetings were organized under the technical co-operation programme.

Radiation protection

Three Safety Guides on occupational radiation protection, co-sponsored with ILO, were completed. One provides general guidance on the application of the requirements of the International Basic Safety

Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS), while the other two provide detailed guidance on assessing occupational exposure due to external and internal sources.

The Agency became a joint member of the Secretariat, together with the OECD/NEA, for the Information System on Occupational Exposure (ISOE). This will strengthen its influence and responsibility in the ISOE. The Agency also acts as the technical centre which co-ordinates data gathering for utilities and regulatory authorities in non-OECD/NEA Member States with nuclear power plants.

Within the framework of the technical co-operation Model Project on upgrading radiation protection infrastructures, a regional seminar on approaches and practices in strengthening radiation protection and waste management infrastructures in countries of Eastern Europe and the former Soviet Union was held in Bratislava, Slovakia. The seminar confirmed that the Agency's Model Project has played an important role in establishing and strengthening national infrastructures for radiation and waste safety. The setting up of peer reviews was recommended to assess the effectiveness of infrastructures in the participating countries.

The Regulatory Authority Information System (RAIS), a personal computer based application for the management of the data needed by a regulatory authority, such as record systems for radiation sources and doses, was completed and made available to Member States involved in the Model Project.

In a European regional technical co-operation project on improving occupational radiation protection at nuclear power plants, three meetings for health physicists were held at which data and experiences were exchanged. Decreases in collective dose at nuclear power plants were reported, and improvements were noted in the implementation of the principle of optimization of protection.

Radiation source safety

An international conference entitled 'The Safety of Radiation Sources and Security of Radioactive Materials' was held in Dijon, France. An important recommendation from the meeting was that radiation sources should not be allowed to drop out of the regulatory control system. This means that the regulatory authority must keep up-to-date records of those responsible for each source, monitor transfers of the sources and track their fate at the end of their useful life. Efforts should also be made to find radiation sources that are not in the regulatory authority's inventory ('orphan sources') because they were in the country before the inventory was established, were never specifically licensed, or were lost, abandoned or stolen. Another conclusion was that because there are many orphan sources throughout the world, efforts to improve the detection of radioactive materials crossing national borders and moving within countries should be intensified by carrying out radiation measurements and through intelligence gathering. Optimum detection techniques need to be developed, and confusion could be avoided if an international agreement was achieved on quantitative levels that would trigger investigations, for example, at border crossings. The conclusions of the conference led to Resolution GC(42)/RES/12 of the Agency's General Conference that encouraged all governments "to take steps to ensure the existence within their territories of effective national systems of control for ensuring the safety of radiation sources and the security of radioactive materials."

Work continued on the elaboration of guidance relating to the safety of radiation sources and sources of potential exposure, and the prevention, detection and response to illicit trafficking in radioactive materials. In addition, several reports were published on accidents in: San José, Costa Rica; Tammiku, Estonia; and Tomsk, the Russian Federation. These reports identify a number of lessons that may help Member States in preventing similar events. For example, in the report of the accidental overexposure of radiotherapy patients in San José, the main causes were insufficent education and training and lack of a quality assurance programme. According to the report on the radiological accident in Tammiku, the existence of orphan sources, together with insufficient security of a waste repository, were the most important factors contributing to the accident.

Transport safety

Progress was made in assisting international organizations in their adoption of transportation safety requirements for radioactive material as set forth by the

Agency. The transportation safety regulations of the International Civil Aviation Organization, International Maritime Organization and the United Nations Economic and Social Council Committee of Experts on the Transport of Dangerous Goods are being revised to implement requirements for radioactive material based on the 1996 edition of the *Regulations for the Safe Transport of Radioactive Material* (the Transport Regulations), with a planned uniform date for entry into force of 1 January 2001.

On the basis of recommendations from the Transport Safety Standards Advisory Committee (TRANSSAC), a modified process for revising the Transport Regulations was instituted. This process will support a more frequent publication cycle designed to ease adoption by international organizations and Member States.

As requested by the General Conference, a report was prepared on legally binding and non-binding instruments and regulations for radioactive material transport safety and the interactions between them. It was submitted to the Board of Governors in June and made available to the General Conference in September.

As part of an interregional technical co-operation project, a simplified version of the Agency's Transport Regulations was prepared to facilitate implementation in Member States and for use in training activities. At a course on transport safety, organized for competent authorities in Eastern Europe in Braunschweig, Germany, the syllabus, modules and training manual for transport safety training courses to support Member States with and without nuclear power programmes were developed.

Radiation assessments and emergencies

The development of one consolidated document of general safety requirements on emergency preparedness and response, and transport was initiated and is being co-sponsored by the Agency, FAO, OECD/NEA and WHO. A safety report on planning the medical response to radiological accidents, co-sponsored by the Agency and WHO, was published. A document on response procedures for radiological emergencies and another on monitoring procedures for nuclear and radiological emergencies were prepared. These reports feature step-by-step procedures which can be used immediately and can also be easily adapted to suit the needs of a specific country.

The Agency began an audit of its own emergency response system for fulfilling its obligations under the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The Agency participated in the OECD/NEA INEX-2 international emergency exercise, which was held in Paks, Hungary. European Commission forms for notification of an accident have been harmonized with the Agency's forms.

A key outcome of a European regional technical co-operation project on harmonization of emergency preparedness was the signing of a Memorandum of Understanding between 22 States and 7 observer States to co-ordinate their emergency response procedures. In particular, the project addresses the classification of emergencies, integrated planning concepts, notification procedures, protective action recommendations and monitoring and public information procedures. In addition, a Russian language version of *InterRAS* (a computer code for assessing the implications of nuclear accidents) was developed, audits of emergency preparedness in the project countries were completed, and an accident classification scheme for RBMK reactors was developed. The preliminary results of the audit show a wide range of capabilities and preparedness.

Major training exercises were carried out in Europe on medical preparedness, in East Asia on radiological emergency response teams and in Africa on emergency preparedness and response. For example, a technical co-operation workshop was held in China to exercise the capabilities of six emergency response teams from the East Asia region to respond to a range of radiological accidents.

Radiation protection services

Radiation safety services were provided to the staff of the Agency's Laboratories at Seibersdorf, near Vienna, and at IAEA–MEL. Up to 400 Agency staff and 200 field experts were monitored for radiation exposure.

In order to promote the proper use of operational quantities, the Agency organized three dosimetry intercomparison exercises: a regional intercomparison of

personal dosimetry and two intercalibration exercises for the individual monitoring of external and internal exposure. The results of the exercises were incorporated into two documents completed at the end of the year, one on intercomparisons for the individual monitoring of external exposure from photon radiation and the other on intercomparison of biokinetic model validation of radionuclide intake assessment.

Technical support using resources from the Technical Co-operation Fund was provided to safety missions in response to requests for emergency assistance in Georgia, where radioactive sources were discovered at a training centre. The assistance given to the Government of Georgia took the form of expertise and equipment for the radiological investigation of the territory.

Arrangements are now in place with specialized laboratories in Cuba, France and the United Kingdom for the medical treatment of overexposed persons. These arrangements are required because of the difficulties encountered in finding an appropriate laboratory capable of carrying out chromosomal aberration counting at short notice.