

**Basis for action** Radioactive wastes are generated in the nuclear fuel cycle as well as in nuclear applications (the use of radionuclides in medicine, research and industry). The radiological and safety risk from radioactive wastes varies from very low in short-lived, low-level wastes up to very large for high-level wastes. Annually about 200,000 m<sup>3</sup> of low-level and intermediate-level waste and 10,000 m<sup>3</sup> of high-level waste (as well as spent nuclear fuel destined for final disposal) is generated world wide from nuclear power production. These volumes are increasing as more nuclear power units are taken into operation, nuclear facilities are decommissioned and the use of radionuclides increases. The high-level waste contains about 99 per cent of the radionuclides and thus represents the largest radiological risk. The waste volumes from nuclear applications are generally much smaller, typically some tens of cubic metres or less per year and country. However, the activity concentration, especially in sealed radiation sources, might be high, thus justifying very stringent radiological protection measures. The growth of waste volumes should continue to be kept under close review.

The safe and environmentally sound management of radioactive wastes, including their minimization, transportation and disposal, is important, given their characteristics. In most countries with a substantial nuclear power programme, technical and administrative measures have been taken to implement a waste management system. In many other countries still only in preparation for a national nuclear programme or having only nuclear applications, such systems are still needed.

**Objective** The objective of this programme area is to ensure that radioactive wastes are safely managed, transported, stored and disposed of, with a view to

protecting human health and the environment, within a wider framework of an interactive and integrated approach to radioactive waste management and safety.

**Management-related activities** States, in cooperation with relevant international organizations, where appropriate, should:

- a Promote policies and practical measures to minimize and limit, where appropriate, the generation of radioactive wastes and provide for their safe processing, conditioning, transportation and disposal;
- b Support efforts within IAEA to develop and promulgate radioactive waste safety standards or guidelines and codes of practice as an internationally accepted basis for the safe and environmentally sound management and disposal of radioactive wastes;
- c Promote safe storage, transportation and disposal of radioactive wastes, as well as spent radiation sources and spent fuel from nuclear reactors destined for final disposal, in all countries, in particular in developing countries, by facilitating the transfer of relevant technologies to those countries and/or the return to the supplier of radiation sources after their use, in accordance with relevant international regulations or guidelines;
- d Promote proper planning, including environmental impact assessment where appropriate, of safe and environmentally sound management of radioactive waste, including emergency procedures, storage, transportation and disposal, prior to and after activities that generate such waste.

**Financial and cost evaluation** The costs at the national level of managing and disposing of radioactive wastes are considerable and will vary, depending on the technology used for disposal.

Estimated average total annual cost to international organizations about \$8 million.