

Programme L. MANAGEMENT OF RADIOACTIVE WASTE

Rationale: Radioactive waste is an unavoidable remnant from the use of radioactive substances and nuclear technology. It has been produced by beneficial practices such as the generation of nuclear energy and the use of radioactive materials in medicine, research and industry, and from industrial activities using naturally occurring radioactive material, such as the mining and milling of naturally occurring radioactive ores.

As with all radiation sources, radioactive waste is potentially hazardous to health and must therefore be managed in order to protect humans and the environment. A relatively small fraction of radioactive waste is routinely released into the environment in the form of discharges that need to be properly controlled; some amounts may remain in the human habitat as radioactive residues, particularly after the termination of practices and the decommissioning of installations, which may require remediation of the affected environments; finally, the main bulk of radioactive waste must be rendered into a solid form and safely stored or directly disposed of into repositories isolated from the human habitat. Thus radioactive waste management requires safety standards and provisions to be made for their application, and the implementation of appropriate technologies.

As radioactive waste is a source of radiation exposure, the Agency's statutory radiation safety functions — i.e. establishing safety standards for the protection of health and providing for the application of these standards at the request of a State — are applicable. In addition, several international undertakings and agreements place obligations on the Agency related to the safety of radioactive waste management, namely the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention), the Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Materials (the London Convention, 1972), the United Nations Conference on Environment and Development (UNCED or Rio Declaration), and the United Nations Global Plan of Action for Protection of the Marine Environment from Land-based Activities. Other regional international undertakings apply to the control of radioactive wastes in the environment and also involve the Agency, for example the Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention). A number of General Conference resolutions have stressed the importance of the Agency's activities to resolve radioactive waste management issues, namely (GC(37)/RES/614, GC(38)/RES/6, GC(40)/RES/12, GC(44)/RES/12, GC(45)/RES/10 and GC(46)/RES/7).

The suite of safety standards in the radioactive waste management (RADWASS) programme is essentially complete and, although work will continue during this period on the refinement and updating of the standards the emphasis of this part of the programme will shift to providing for the application of the standards in Member States. This will involve greater emphasis on promoting the requirements and recommendations of the standards through education and training programmes, advisory missions and safety appraisals at the request of Member States. Application of the techniques of safety assessment as a means of identifying weaknesses in the protective systems of waste management facilities will also be promoted. This phase of the programme is guided by the outcome of the Córdoba Conference, which led to an action plan on the Safety of Radioactive Waste Management being approved by the General Conference in September 2001. The action plan focuses on important outstanding issues in the area of radioactive waste management which could benefit from international action.

Appropriate technologies to cope with the radioactive waste generated by the use of nuclear energy are also required in order to meet some of the obligations relating to the management of radioactive waste placed on the Agency and Member States by the international undertakings and agreements mentioned above. In addition, appropriate technologies are also required in order to satisfy the various needs of Member States commensurate with the extent of their applications of nuclear technology. Many developing countries lack the technological and organizational infrastructures to properly and safely manage radioactive waste, including disused sealed radiation sources, and they need assistance in building the necessary capacity. Industrialized countries, on the other hand, look for a means for exchanging technical information and national experiences, particularly on matters related to the geological disposal of high level waste. The Agency's Medium Term Strategy reflects the priorities that must be given in the programme to the activities that address these needs. One priority is the promotion of technological solutions by facilitating information exchange among Member States on treatment, storage and disposal of high, intermediate and low level wastes and spent fuel (in Objective B.4 of the Medium Term Strategy). Another priority is the building of international consensus on solutions for the safe, environmentally acceptable and efficient management of radioactive wastes from both nuclear power and non-power sources.

Finally, in the framework of the recommendations of the Rio Conference on Environment and Sustainable Development (Agenda 21), the Agency has been entrusted with the task of developing Indicators for

Radioactive Waste Management in the context of sustainable development.

The beneficiaries of the programme are national bodies charged with radioactive waste management responsibilities. This includes, in particular, competent authorities for regulating and controlling the safety of radioactive waste management, organizations operating radioactive waste management facilities or facilities generating radioactive waste, environmental protection agencies responsible for controlling the discharges of radioactive materials to the environment, and to some extent health authorities, as well as — if applicable — relevant international organizations. Derived beneficiaries are members of the public and society at large.

Objective: To increase global harmonization in the policies, criteria, standards and provisions for their application, as well as in methods and technologies, for achieving safety in radioactive waste management, in order to protect humans and their environment against potential health effects attributable to actual or potential exposure to radioactive waste.

Outcomes
<ul style="list-style-type: none"> — International consensus achieved on Agency radioactive waste safety standards. — Actions taken — by Member States which requested Agency services and received training — on targeted strengthening of their radioactive waste safety infrastructure. — Use by Member States of radioactive waste management technologies and strategies as documented in Agency publications and reports or as a result of taking part in Agency activities. — Under the aegis of the Agency, exchange of information and experience on radioactive waste management, particularly on enhancing information to concerned parties. — Confidence and competence in waste safety methods, techniques and technologies in Member States.
Performance Indicators
<ul style="list-style-type: none"> — Availability to Member States of radioactive waste safety standards. — Percentage of Agency recommendations implemented. — Number of Member States using Agency guidance on technologies for the management of radioactive waste, decommissioning of facilities and restoration of sites.

Performance Indicators (cont'd)
<ul style="list-style-type: none"> — Participation by Member States in information exchange and using information, advice and peer reviews provided under Agency aegis in the area of radioactive waste management, decommissioning and the restoration of sites.

Specific criteria for prioritization:

- First priority is given to establishing standards and servicing conventions.
- Second priority is given to application of standards and transfer of technology for radioactive waste management.
- Third priority is given to strengthening information exchange.

Subprogramme L.1: National and Global Infrastructure Enhancement for Radioactive Waste Safety

Rationale: Establishing standards of waste safety and providing for their application at the request of any State are statutory functions of the Agency. A suite of relevant safety standards for the safety of radioactive waste management has been developed; these standards need to be kept up to date with developments in technical knowledge and approaches to safety and any gaps need to be filled. The Agency has put in place a mechanism for the review and approval of its safety standards consisting of a set of review committees of regulatory experts from Member States. A part of this subprogramme is concerned with the organization and servicing of the committees concerned with the radioactive waste safety standards.

In recent years the international waste safety regime has been strengthened by the coming into force of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management for which the Agency provides the Secretariat. The Joint Convention is the only legally binding instrument dealing specifically with radioactive waste management and the associated review process may be expected to lead to improved international harmonization of waste management policies. The Agency's Secretariat has the responsibility for servicing the Joint Convention. The full and proper implementation of the safety standards requires that the necessary national regulatory infrastructure exists in a State, in particular that a regulatory authority has been established by the government to regulate the introduction and conduct of any practice involving sources of radiation.

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However, many Member States lack the necessary expertise to establish and operate an effective regulatory programme, and require substantial support for the development of their regulatory infrastructure, in particular, during the preparation of their regulations and the development of their systems of control. The importance of the Agency's role in supporting the development of national infrastructures was highlighted in General Conference Resolutions GC(44)/RES/11, GC(44)/RES/17 and GC(45)/RES/10. The accepted means for providing such support is through the provision of appropriate guidance documents, through the application of co-ordinated technical co-operation assistance and advisory missions, and finally, through the periodic review of safety infrastructures by expert teams.

A major emphasis of this subprogramme will be the establishment of sustainable education and training programmes, such programmes being seen as fundamental to safety. This view is supported by Resolutions GC(XXXVI)/RES/584 (1992), GC(43)/RES/10 (1999), GC(44)/RES/13 (2000), GC(45)/RES/10.C (2001), and GC(46)/RES/7, by which the Agency was requested, inter alia, to arrange and intensify postgraduate educational and specialized training courses in appropriate official languages of the Agency and to develop, in a systematic way, syllabuses and training material for specific target groups and specific uses of radiation sources and radioactive materials. In 2001, the Agency prepared a strategic plan for education and training aiming at having by 2010 sustainable education and training programmes in its Member States. This strategic plan was endorsed by the General Conference in Resolution GC(45)/RES/10.C which urged the Agency to implement the plan.

Objective: To strengthen national and global infrastructures for waste safety by establishing international standards and providing for their application in Member States and by supporting and servicing the Joint Convention.

Outcomes
<ul style="list-style-type: none"> — Growing international consensus achieved on Agency waste safety standards. — Improved global harmonization of policies for the safe management of radioactive waste through the functioning of the Joint Convention. — Action taken by Member States which requested Agency services/appraisals and integrated safety evaluations. — Implementation of Agency recommendations developed through peer review missions and use of knowledge gained through training.
Performance Indicators
<ul style="list-style-type: none"> — Effective review and approval of safety standards by the safety standards review committees. — Effective servicing of the Joint Convention.

Performance Indicators (cont'd)
<ul style="list-style-type: none"> — Evidence of improved waste safety from peer review missions. — Provision of modular education and training packages for radioactive waste safety.

Programme changes and trends: This subprogramme is similar to the previous L.1 Radioactive waste safety standards and provisions for their application (2002–2003) but, in line with the general shift within the overall programme towards providing for the application of the standards, it is expanded by giving increased emphasis to strengthening regulatory infrastructures and to education and training.

Resource changes and trends: The proposed resources for Subprogramme L.1 amount to \$904 000 in 2004, reflecting an increase in the budget of \$82 000, or 10%, compared with 2003. The increase results from the inclusion in the regular budget of the position of the Co-ordinator, WASSC, for which the Agency has previously relied on cost free experts.

Financial resources (2003 prices)

L.1	2003	2004	2005
Reg. budg.	822 000	904 000	909 000

Project L.1.01: Reviewing and approving waste safety standards

Main outputs: This project will result in biannual reports of the WASSC and TECDOCs produced by the Subgroup on Principles and Criteria for Radioactive Waste Disposal.

Duration: 2004–2005

Ranking: 1 ex aequo

Recurrent project L.1.02: Strengthening national regulatory infrastructures and promoting integrated safety evaluations

Main outputs: Reports on integrated safety evaluation missions will be issued to Member States, and feedback on implementation of the recommendations resulting from the integrated safety evaluation missions will be made available.

Unfunded activities/means of implementation: Update of Agency documents related to improving regulatory infrastructures related to waste safety.

Ranking: 9 ex aequo

Project L.1.03: Implementing a strategy for sustainable education and training in waste safety

Main outputs: Standardized training material in modular form, lecture notes, presentational aids, and materials for evaluation and practical work will be made available.

Unfunded activities/means of implementation: Collection and distribution of information on Agency education and training activities in the field of waste management; review and analysis of feedback from the use of the reference training material at various courses and workshops.

Duration: 2004–2005

Ranking: 9 ex aequo

Project L.1.04: Servicing the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Main outputs: Summary reports of the Review Meetings and of any other meetings of Contracting Parties will be issued. Summaries and records of information presented at the Review Meetings will be made available.

Duration: 2004–2005

Ranking: 1 ex aequo

Subprogramme L.2: Information and Communication Networks on Radioactive Waste Management

Rationale: Having accurate information is fundamental to obtaining a proper understanding of technical affairs. In order to implement its central role in matters related to the safety of, and technology for, radioactive waste management, the Agency must establish and maintain a comprehensive information system and have the means to facilitate the worldwide dissemination of information. The subprogramme brings together all elements related to information — its acquisition, retention and dissemination. Existing databases will be maintained, co-ordinated and improved, and new emphasis will be given to improving the Agency’s electronic information networks. Special attention will be given to the maintenance of knowledge over times well into the future so as to address the concerns related to the long term persistence of the hazards associated with radioactive waste.

There is a basic and longstanding issue in communicating effectively with the public in matters related to radioactive waste. The subprogramme aims at helping to address the lack of understanding and concern about radioactive waste which is widespread. In addition, the programme will aim at improving the general awareness and comprehension of policy makers, opinion makers and professional bodies.

As part of this subprogramme, the exchange of technical information and know-how will be facilitated, inter alia, through the organization of international conferences and peer reviews, of

advisory missions and the co-ordination of international initiatives.

Objective: To improve awareness and understanding of radioactive waste management issues among the Agency’s constituencies by effectively gathering, disseminating and communicating relevant information.

Outcomes
<ul style="list-style-type: none"> — Established databases of global information on radioactive waste management and means for gaining access to the information. — Improved communication materials on radioactive waste management available for the use of Member States. — Proposals on mechanisms for maintaining and transmitting knowledge about radioactive waste disposal to future generations. — Improved management of radioactive waste through the exchange of technical information and expertise.
Performance Indicators
<ul style="list-style-type: none"> — Evidence that use is being made of Agency information systems. — Existence of new and improved materials for communication on matters related to radioactive waste management. — A report making proposals on possible mechanisms for retention and transmission of knowledge about radioactive waste disposal in the long term.

Programme changes and trends: This subprogramme consolidates elements from the previous Programme L and places increased emphasis on information and its effective dissemination. It also heightens the importance of effectively communicating on waste management issues. Material which is accessible and attractive to the specialists as well as to the non-specialists will be produced. As a new initiative, mechanisms through which countries could transfer information about their waste disposal practices and situation to future generations will be established.

Resource changes and trends: The proposed resources for Subprogramme L.2 amount to \$735 000 in 2004, reflecting an increase in the budget of \$92 000, or 14.3%, compared with 2004. The increased resources, mainly in 2004, reflect efforts to set up effective networking to improve current waste management information systems (essentially in the area of information gathering and dissemination) and new media for communicating waste management issues to the public.

Financial resources (2003 prices)

L.2	2003	2004	2005
Reg. budg.	643 000	735 000	743 000

Recurrent project L.2.01: Managing radioactive waste information systems

Main outputs: A technical document on identification of records that can be compiled up to repository closure will be issued and a draft document on operational waste classification will be prepared. A report on the use of indicators of sustainable development for radioactive waste will be provided to the United Nations programme on sustainable development; Waste Management Research Abstracts Volumes 28 and 29 will be prepared; Radioactive Waste Management Profile Reports 6 and 7, based on data from the Net Enabled Waste Management Database (NEWMDB), will be prepared on CD-ROM, as well as the international radioactive waste management inventory reports number 3 and 5 (Internet based), a report on NEWMDB “lessons learned” workshop, the annual report on status and trends in radioactive waste management (on CD-ROM) and a TECDOC on standard methods and mechanisms for the long term retention of knowledge on radioactive waste disposal.

Unfunded activities/means of implementation: Pamphlet with a position from the international perspective on major issues of concern in the area of radioactive waste management.

Ranking: 21 ex aequo

Recurrent project L.2.02: Facilitating exchange of technical radioactive waste management information and know-how

Main outputs: Reports of advisory missions (1–2 per year), for example under the Waste Management Assessment and Technical Review Programme (WATRP), will be made available. A report of the international Waste Technology Advisory Committee (WATEC) will be provided to senior management. Contributions to major international meetings organized by or in co-operation with the Agency will be produced. Papers on Agency work presented at international conferences and symposia will be published.

Ranking: 21 ex aequo

Recurrent project L.2.03: Communicating waste management issues to the public

Main outputs: This project will result in the development of communications materials, such as, folders, fact sheets, home pages and videos on information and topical issues in radioactive waste management.

Unfunded activities/means of implementation: Safety report on status of stakeholder involvement in decision making processes related to waste management facilities.

Ranking: 21 ex aequo

Subprogramme L.3: Safety Policies and Approaches for Disposable Radioactive Waste Safety

Rationale: The Conference on the Safety of Radioactive Waste Management held in Córdoba in 2000 resulted in a comprehensive action plan being developed which has been used to modify the Agency’s programme in this area. The action plan was set out in GOV/2001/31–GC(45)/14 and approved by the General Conference in September 2001. The topics identified for international action were as follows: the development of a common framework for radioactive waste disposal, the investigation of the safety implications of the extended storage of radioactive waste, the establishment of geological disposal standards, the necessary provisions for the structured application of the standards, the examination of intergenerational information transfer and the exploration of factors influencing decision making in the context of radioactive waste management. The main elements of the action plan are being implemented in this subprogramme.

In addition, throughout the subprogramme, an increased emphasis is given to tasks aimed at assisting Member States to evaluate the safety of radioactive waste facilities and especially of waste repositories. Previous Agency programmes have successfully established methodologies for performing such assessments and their continued and systematic application in Member States can lead to tangible improvements in waste safety.

Objective: To improve the capability of Member States to manage radioactive waste safely.

Outcomes
<ul style="list-style-type: none"> — An agreed international safety policy on the long term disposition of radioactive waste. — Internationally approved safety standards for the geological disposal of radioactive waste. — Agreed criteria and strategies for the release of radioactive materials from regulatory control and for the transboundary movement of commodities.
Performance Indicators
<ul style="list-style-type: none"> — Approval of safety standards, particularly on geological disposal and on the release of materials from regulatory control and for the transboundary movement of commodities. — Number of Member States using the Agency safety assessment methodologies.

Programme changes and trends: The subprogramme developed for the 2002–2003 timeframe (previous L.2 “Safety of disposable radioactive waste: Managing non-reusable radioactive materials and arranging for their disposal”) has been modified to take into account the new elements and emphases indicated by the Action

Plan. With the completion of most of the safety standards on disposable waste safety, the emphasis will shift towards providing for their application though work will continue, as indicated in the Action Plan, on some important remaining safety related issues and aspects. Additional emphasis will be placed on the application of methodologies developed under Agency auspices on the safety assessment of waste facilities.

Resource changes and trends: The proposed resources for this subprogramme represent an increase of \$118 000, or 13.7%, in 2004 over 2003. In recent budget cycles, the regular budget for this subprogramme was reduced in view of the extrabudgetary funding being made available for many of its activities. An attempt is now being made to move away from complete reliance on extrabudgetary resources, and to establish an adequate level of funding in the regular budget for key activities in disposable waste safety. The funds have mainly been allocated to non-staff travel to ensure the appropriate level of support from experts in Member States on specific topics, and to ensure an adequate cross-section of Member States in Agency technical meetings. An increased level of funds has also been allocated to enhance the Agency's co-ordinated research programmes in this area.

Financial resources (2003 prices)

L.3.	2003	2004	2005
Reg. budg.	861 000	979 000	984 000

Project L.3.01: Elaborating an internationally harmonized approach for removing radioactive waste from the regulatory system

Main outputs: A Safety Guide and supporting Safety Report establishing the accepted approach will be developed. Safety Reports will be prepared on monitoring procedures for removing material from regulatory control, record keeping practices and material certification guidance.

Duration: 2002–2006

Ranking: 1 ex aequo

Project L.3.02: Improving the safety of pre-disposal radioactive waste management

Main outputs: Current safety standards for predisposal management of waste will be revised taking into consideration the safety and sustainability issues associated with extended storage of radioactive waste. A Safety Report on an improved and harmonized methodology for the safety assessment of pre-disposal waste management activities will be published.

Unfunded activities/means of implementation: A CRP on safety assessment methodologies for predisposal waste management facilities.

Duration: 2004–2005

Ranking: 9 ex aequo

Project L.3.03: Developing a globally harmonized approach for the safe disposal of radioactive waste from the nuclear fuel cycle

Main outputs: A Safety Requirements document and supporting Safety Guides for radioactive waste disposal facilities and a Safety Guide on operational limitations for disposal facilities will be developed. Reports of the CRPs on safety assessment and safety indicators and reports on experiences of stakeholder involvement in the process for producing Safety Standards will be issued.

Unfunded activities/means of implementation: A CRP on application of safety assessment methodology for near surface waste disposal facilities is partially unfunded.

Duration: 2004–2005

Ranking: 1 ex aequo

Project L.3.04: Establishing a rational basis for the safe management of other types of radioactive waste

Main outputs: A Safety Report setting out the common framework for the safe management of different types of waste and a technical document summarizing discussions with Member States on applying the common framework will be produced. Revision, as appropriate, of elements of existing safety standards to take account of common framework principles will be carried out.

Duration: 2004–2005

Ranking: 9 ex aequo

Subprogramme L.4: Technologies for Disposable Radioactive Waste Management

Rationale: Considerable experience has been gained in the predisposal management of radioactive waste of all types but the nature of some waste types makes them difficult to manage. Low and intermediate level short lived radioactive waste has been disposed of in near surface repositories in many countries. However, experience shows that the methods used in the past can be improved and, in order to accommodate new waste types arising from decommissioning and site remediation, new approaches are needed. Therefore, safe and cost effective technologies for the predisposal management and for the near surface disposal of radioactive waste have to be developed.

The Agency in its statutory role of fostering information exchange is facilitating the dissemination of information on approaches to the management of disposable radioactive waste and is,

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in addition, assisting Member States in waste management. Actual experience of the geological disposal of high level radioactive waste does not exist, so the Agency is contributing towards improving the situation through international projects to demonstrate or verify the technology. The Agency has been encouraged to place emphasis on programmes in this area, and especially in relation to geological disposal, by several programme peer reviews, advisory committees and international conferences.

Objective: To increase the capability of Member States to implement safe and cost effective technologies for the pre-disposal and for the near surface disposal management of radioactive waste and to build confidence in technologies for geological disposal of high level waste.

Outcome
— Improved radioactive waste management capabilities in States as a result of taking part in Agency programmes.
Performance Indicator
— Number of Member States using Agency advice, guidance and recommendations for methods for processing and disposal of radioactive waste.

Programme changes and trends: The emphasis on demonstrating proven processing technologies for managing radioactive waste will continue beyond the 2004–2005 biennium, with a shift towards innovative waste treatment and conditioning technologies, including those for technologically enhanced naturally occurring radioactive materials in waste. To build confidence in geological disposal of radioactive waste, the Agency in 2002 established a Network of Centres of Excellence for Training in and Demonstration of Waste Disposal Technologies in Underground Research Facilities. Because of the above mentioned changes, the projects in this subprogramme will extend through 2007.

Resource changes and trends: Resources essentially remain constant, with a slight decrease of \$25 000, or 1.6%, in 2005 over 2004.

Financial resources (2003 prices)

L.4.	2003	2004	2005
Reg. budg.	1 568 000	1 570 000	1 545 000

Project L.4.01: Transferring technologies for the predisposal management of radioactive waste

Main outputs: The project activities will result mostly in technical documents and guidelines covering key issues in radioactive waste management, selected on the basis of the state-of-the-art and Member State requests. A TECDOC on improvement of radioactive waste management at WWER NPPs and a TECDOC on management of

specific radioactive and chemically toxic waste from decommissioning will be made available.

Duration: 2002–2007

Ranking: 9 ex aequo

Project L.4.02: Building confidence in geological disposal of radioactive waste

Main outputs: One of the main outputs of this project will be the development of the Network of Centres of Excellence through an increase in the number of participants in Network related activities (CRP, TC training and scientific visits). Another important output will be the development of demonstration activities in underground research facilities that will facilitate the public acceptance of geological disposal concepts. The project will also result in TECDOCs on: the use of anthropogenic analogues for high level and long lived radioactive waste disposal; disposal approaches for long lived low and intermediate radioactive wastes; possible scenarios/frameworks of co-operation in implementing multinational repository projects; and technological implications of safeguards requirements for radioactive waste geological disposal.

Duration: 2002–2007

Ranking: 9 ex aequo

Project L.4.03: Transferring technologies for the near surface disposal of radioactive waste based on operating experience

Main outputs: The following technical documents will be produced: experience in upgrading near surface disposal facilities in Central and Eastern European countries and the Newly Independent States (2005); and disposal options for spent sealed sources (2005). A progress report on the CRP on disposal aspects of low and intermediate level decommissioning waste will be made available.

Duration: 2002–2007

Ranking: 9 ex aequo

Subprogramme L.5: Safe Discharge of Radioactive Substances to the Environment

Rationale: Because of the potential for transboundary and transgenerational impacts of discharges of radioactive materials, it is important to have internationally agreed policies and criteria for the control of discharges, including discharge limits, assessment procedures and compliance monitoring methods. In addition, increased information on the sources of discharges and inputs of radioactive materials to the environment is needed to serve various related conventions.

As part of its statutory obligations to establish standards of safety, the Agency has for many years had the leading international role in establishing standards on the control of radioactive discharges for the purpose of the radiation protection of the public. In 1994, in approving BSS, the Board established basic requirements for protection of the public from ionizing radiation. As a follow-up, detailed guidance related to radiation protection of the public was prepared. However, all these activities were based on the assumption that if human beings were adequately protected as individuals, other living things in the environment will be adequately protected as a species. This assumption is being challenged, and there is a growing demand for a new ethic on the radiation protection of the environment as such. The basis for this ethic is given by the Rio Declaration of 1992. As a result of this challenge, existing policies for protection of the environment are being reviewed, and within the timeframe of this programme it is expected that the Agency will be engaged in the development of a new safety standard in this area.

In the context of the London Convention, 1972, the Agency has the role of international competent body with regard to radioactive materials and is regularly requested by the parties to the convention to provide advice on matters concerned with the disposal of radioactive materials at sea. Moreover, within the United Nations Global Plan of Action for the Protection of the Marine Environment from Land-based Activities (GPA), the Agency has been designated as the lead agency for providing guidance and information on radioactive substances and has been tasked with acting as an international clearing house for its dissemination. New regional and international undertakings, such as the OSPAR Convention, the Espoo Convention and the Aarhus Convention, may be expected to involve the Agency in the near future.

Objective:

- To strengthen Member State ability to control discharges of radioactive materials to the environment, and to assess the impact of radionuclides in the environment on the public and biota.
- To strengthen the collaboration with other international specialized organizations and undertakings aimed at improving the state of the global environment.

Outcomes
<ul style="list-style-type: none"> — International consensus achieved on safety standards for discharge control and on protection of the environment. — Improved ability of Member States to monitor radionuclides in the environment and to assess exposure levels of public and biota.

Outcomes (cont'd)
<ul style="list-style-type: none"> — International consensus achieved on safety standards for discharge control and on protection of the environment. — Improved ability of Member States to monitor radionuclides in the environment and to assess exposure levels of public and biota. — Available information on worldwide releases of radioactive material to the environment, their inventory, temporal trends and impact on humans and the environment.
Performance Indicators
<ul style="list-style-type: none"> — Safety standards on discharge control approved and published. — Publication of guidance on the principles and general framework for protection of the environment against ionizing radiation. — Availability of international guidance on methods of environmental monitoring of radionuclides and assessment of associated public doses. — Existence of a web based information system on discharges, sources and levels of radioactive material in the environment. — Availability of relevant documents prepared in response to requests from international undertakings.

Programme changes and trends: Additional guidance is necessary to provide for the application of recently established safety standards on environmental monitoring, specifically on monitoring of sources of radionuclides released to the environment, monitoring of radionuclides in the environment and the assessment of associated doses to members of the public. To facilitate the establishment and application of these standards, information on the sources of discharges of radioactive materials to the environment is needed. The Agency will also continue to carry out its formal obligations with respect to certain international undertakings such as the London Convention, 1972, and the GPA and to the regional OSPAR Convention concerned with radioactive waste and the environment.

Resource changes and trends: Resources essentially remain constant. No major change is foreseen for 2004 or 2005.

Financial resources (2003 prices)

L.5	2003	2004	2005
Reg. budg.	771 000	789 000	791 000

Project L.5.01: Constraining the discharge of radioactive substances to the environment

Main outputs: The following documents will be produced: safety guide on regulatory aspects of setting limits on the discharge of radioactive substances to the environment; technical document on national and international trends in discharge control; safety guide on the principles and general

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framework for protection of the environment against ionizing radiation; and a safety report on assessment methods and data in support of the Safety Guide on protection of the environment against ionizing radiation.

Duration: 2004–2007

Ranking: 1 ex aequo

Recurrent project L.5.02: Monitoring and maintaining an inventory of discharges of radioactive substances to the environment

Main outputs: Safety reports on dose assessment based on environmental monitoring data and for NPPs and research reactors will be produced. The Handbook of Parameter Values for the Prediction of Radionuclide Transfer in Temperate Environments (Technical Reports Series No. 364) will be revised. A technical document on the radiological discharges database and its contents and a report on the worldwide assessment of the radiological impact of radioactive releases to the environment will be produced. An information system on inputs and sources of radioactive material in the environment will be provided.

Unfunded activities/means of implementation: CRP on the capability for assessment of radionuclide transfer in the environment (follow-up of BIOMASS).

Ranking: 21 ex aequo

Recurrent project L.5.03: Supporting international undertakings concerned with releases of radioactive substances to the environment (the London Convention, 1972)

Main outputs: Reports containing radiological guidance, data and assessments will be prepared in response to requests from international legal instruments, such as the London Convention, 1972, and the Oslo and Paris Convention (OSPAR). A clearing house for information on inputs of radioactive material to the marine environment will be maintained in the context of the GPA.

Unfunded activities/means of implementation: Provision of advice to the regional OSPAR Convention on radiological protection matters.

Ranking: 1 ex aequo

Subprogramme L.6: Safe Management of Radioactive Residues: Decommissioning Facilities and Restoring Environments

Rationale: The current generation has inherited many nuclear facilities and sites that will eventually either be released from regulatory control or have institutional controls maintained for long periods.

The process of removing the regulatory controls is known as decommissioning. Many nuclear facilities will require decommissioning within the next 20 years. Decommissioning operations have the potential to expose workers to hazards not encountered during normal operations and may require resources which may not be available unless proper planning is started early in the facility's life. The increasing importance of having internationally agreed procedures for safe decommissioning was recognized at the International Conference on the Safe Decommissioning for Nuclear Activities held in Berlin in October 2002. Particular attention was given to the Agency's safety standards and the need to establish high level safety standards (a Safety Requirement) in this area was emphasized. The Conference also drew attention to the potential difficulties of ensuring funding for decommissioning at the appropriate time. Guidance will therefore be developed on the means by which responsible national bodies can ensure that such funding will be available. Considerable experience now exists of decommissioning nuclear facilities of various types and the value of an international Web-based forum for the exchange of information was recognized at the Conference. Increased emphasis will be placed on the dissemination of the Agency's guidance to the proper authorities within Member States for implementation.

Large areas of land contain radioactive residues as a result of many different activities in the past, including nuclear weapons testing, accidents, past activities that have not been properly controlled and acts of war involving depleted uranium. Each of these areas must be properly assessed to determine the optimum methods of control and, if necessary, remediation. Many have been abandoned in countries with few resources to perform the necessary remediation activities. The Agency has recently completed the development of safety standards that will assist Member States to determine where remediation is needed and appropriate clean up strategies. The next steps will be to prepare guidance on how to implement the standards. Planning for remediation begins with an assessment of the radiological conditions at the affected site. In the past, the Agency has been requested by individual Member States to assist in the assessment of these areas for example, at the nuclear test sites of Mururoa and Fangataufa, Bikini, Semipalatinsk and Algeria. The control of practices using NORMs has become an issue during the past few years. International radiation protection guidance and control of waste generated from industries that are normally under regulatory control, such as the uranium and thorium mining industries, have been developed. Similar guidance has not yet been developed for other industries where NORMs is a by-product, such as the oil and gas, phosphate, rare earth extraction and gypsum industries. The waste material, and even sometimes the main products, can

contain elevated levels of NORMs having the potential to cause significant exposure of the general public. A coherent approach to the regulatory control of practices giving rise to environmental residues must be established in order to provide an appropriate degree of protection, without posing an undue burden on the industries and on the regulatory authorities. This subprogramme is linked with Subprogramme K.4, which addresses the protection of occupationally exposed persons to NORMs.

Objective:

- To strengthen Member State ability to achieve safe and effective termination of practices involving radioactive material, including the safe decommissioning of all types of nuclear facilities.
- To effectively and safely manage radioactive residues that are in the environment due to past activities or from industries that use NORMs.

Outcomes
<ul style="list-style-type: none"> — An increase in Member State capability for planning the safe decommissioning of nuclear facilities. — The environmental remediation of sites affected by radioactive residues from past activities and NORM waste.
Performance Indicators
<ul style="list-style-type: none"> — Evidence of the Agency acting as international co-ordinator for decommissioning and site remediation projects. — Requests from Member States to perform radiological assessments of contaminated sites.

Programme changes and trends: The Agency has developed a set of international safety standards that provide guidance on decommissioning and site remediation, and on the requirements for the removal of regulatory controls and the free trade of commodities. The focus is now shifted to the implementation of these standards through direct assistance, site assessments, education, co-ordination, peer reviews and appraisals. It is expected that increased demands will be made on the Agency for this type of assistance.

Resource changes and trends: The proposed resources for Subprogramme L.6 amount to \$545 000 in 2004, reflecting an increase in the budget of \$31 000, or 6.0%, compared with 2003.

Financial resources (2003 prices)

L.6.	2003	2004	2005
Reg. budg.	514 000	545 000	550 000

Recurrent project L.6.01: Developing guidance and criteria for the safe termination of nuclear practices

Main outputs: In order to reflect the increasing importance of decommissioning safety, a specific Safety Requirements document will be prepared on

decommissioning and existing safety guides will be reviewed to ensure their coherence with the new requirements. A safety report will be issued on the application of the safety analysis process for decommissioning activities. A safety report will be issued providing information on the standard format and content of safety related decommissioning documents. The Agency will continue to provide assistance to Member States, particularly in the form of international co-ordination meetings, education programmes, a Web based forum for information exchange as well as a document providing guidance on strategies for providing funding to assure the decommissioning of facilities at the appropriate time and peer reviews of specific projects. Technical support will be provided to the technical co-operation programme to support requests from Member States on the planning process and safe implementation of decommissioning activities.

Ranking: 1 ex aequo

Project L.6.02: Regulating and remediating environments with residues from naturally occurring radioactive residues (NORMs)

Main outputs: A safety guide on the safe management of NORMs in the environment will be prepared. A safety report will be prepared to provide practical examples of how effective regulation of NORMs waste can be performed including examples from industries with potential NORMs waste issues. A specialist meeting will be organized to discuss safe management practices for NORMs in the environment. A training programme on the safe management of NORMs will be prepared and provided at the request of Member States. Technical support with respect to NORM issues may also be provided at the request of Member States and through the technical co-operation programme.

Unfunded activities/means of implementation: Safety Guide on the safe management of NORM in the environment; TECDOC on effective regulation of NORM; and training module on regulating NORM industries.

Duration: 2002–2007

Ranking: 1 ex aequo

Recurrent project L.6.03: Preparing for the remediation of environments affected by radioactive residues from past activities and events

Main outputs: Safety reports will be prepared on derived cleanup criteria, on selection principles for remediation strategies, on methods for assessing the radiological impact of contaminated areas, and on monitoring for compliance with cleanup criteria. International radiological assessments of areas affected by residues from both practices and interventions will be organized upon the request of Member States. Training, through workshops and

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seminars, will be provided on assessment and modelling techniques, remediation planning, environmental monitoring, and on the surveillance and maintenance of areas once remediated. Support will be provided to the technical co-operation programme for requests from Member States on the planning and safe implementation of the remediation process for contaminated sites.

Unfunded activities/means of implementation: International assessments of areas contaminated with radioactive residues.

Ranking: 9 ex aequo

Subprogramme L.7: Technologies for the Decommissioning of Installations and Restoration of Sites

Rationale: Residual radioactive materials are being accumulated from a range of nuclear activities, including the decommissioning of nuclear sites and installations and from the environmental restoration of sites affected by previous nuclear activities. These areas, facilities and materials must be managed in ways which remove potential sources of risk from the immediate human environment by means of state-of-the-art efficient and cost effective technologies and methods.

This is a comparatively new area and methods and approaches are still being developed. The Agency, in its statutory role of fostering the exchange of scientific and technical information, is disseminating information to Member States on the most efficient, cost effective and environmentally sound strategies and techniques for management of the residues.

Objective: To provide Member States with up-to-date information on methods and technologies for application in the fields of decommissioning, environmental remediation and disposition of resulting residual radioactive materials and to provide advice and assistance where appropriate.

Outcome
— Strengthened capability in Member States to decommission nuclear facilities and to manage the cleanup of radioactively contaminated sites on their territory.
Performance Indicator
— Number of Member States using technologies and methods for decommissioning and cleanup recommended by the Agency.

Programme changes and trends: In response to the growing need by Member States for technical guidance and assistance in efficient management of nuclear liabilities, increased emphasis will be placed on innovative decommissioning technologies and re-use of sites following decommissioning, stewardship

of contaminated sites, partial decommissioning, and planning for environmental remediation, resulting in an extension into the next biennium.

Resource changes and trends: The proposed resources for Subprogramme L.7 amount to \$483 000 in 2004, reflecting a decrease in the budget of \$56 000, or 10.4%, compared with 2003. A decrease in the resources for this biennium reflects an overall decreased effort in the field of promoting technologies for restoration of radioactively contaminated sites.

Financial resources (2003 prices)

L.7.	2003	2004	2005
Reg. budg.	539 000	483 000	480 000

Project L.7.01: Facilitating the transfer of sustainable technologies for decommissioning of facilities

Main outputs: The following documents and reports will be prepared and issued: document on planning, organizational and management aspects for decommissioning of nuclear facilities (2004); report on decommissioning of sites intended for reuse for new purposes (2005); technical report on decommissioning of embedded components; and document on dismantling of contaminated chimneys (2005).

Unfunded activities/means of implementation: Preparation of technical report on decontamination and dismantling of spent fuel ponds and associated systems.

Duration: 2002–2007

Ranking: 9 ex aequo

Project L.7.02: Promoting technologies for restoration of contaminated sites

Main outputs: The planned activities will result in six TECDOCS to be published successively in 2004–2005. In addition, the web site representing the Directory of Radioactively Contaminated Sites (DRCS) will be maintained and the yearly status will be made available on CD-ROM.

Duration: 2002–2007

Ranking: 9 ex aequo

Subprogramme L.8: Management of Disused Sealed Radioactive Sources

Rationale: While sealed radioactive sources have many beneficial applications in medicine, science and industry, when no longer in use they must be safely managed and disposed of. There are shortcomings in the implementation of safe and cost effective technologies for the management and disposal of disused sealed radiation sources. Numerous radiation accidents have been caused by

the inadvertent misuse of such sources and this has led to the establishment of the Action Plan. As one part of the Action Plan, the Agency is advising on and assisting Member States to manage disused sealed radioactive sources safely. The Agency is carrying out these activities in compliance with its statutory roles of providing for the application of its safety standards and fostering the exchange of scientific and technical information.

Objective: To increase the capability of Member States to implement safe and cost effective technologies for the management of disused sealed radiation sources and to assist in the application of the technologies involved.

Outcome
— Improved management of disused sealed radioactive sources.
Performance Indicator
— Number of Member States with disused sealed radioactive sources which have been conditioned.

Programme changes and trends: In keeping with the Agency's classification of radiation sources, increased emphasis is placed on developing guidance and building technological infrastructures to assist Member States in managing disused high activity radioactive sources, which are the sources most likely to cause serious injuries if lost from regulatory control. This new emphasis results in an extension of

the projects in this subprogramme into the next biennium.

Resource changes and trends: Resources essentially remain constant. No major change is foreseen for 2005.

Financial resources (2003 prices)

L.8.	2003	2004	2005
Reg. budg.	342 000	331 000	361 000

Project L.8.01: Conditioning disused sealed radioactive sources

Main outputs: The main output will be the conditioning of sealed sources rendered safe in drums. In order for this to be accomplished, technical procedures and some equipment will be developed for sources other than radium sources.

Duration: 2002–2007

Ranking: 9 ex aequo

Project L.8.02: Building capacity in Member States to manage disused sealed radioactive sources

Main outputs: Technical reports will be produced on the management of sealed radioactive sources. A TECDOC on record updating (from old files) will be produced.

Duration: 2002–2007

Ranking: 9 ex aequo