

Board of Governors General Conference

GOV/2006/40-GC(50)/3

Date: 1 August 2006

General Distribution

Original: English

For official use only

Item 14 of the provisional agenda
(GC(50)/1)

Measures to strengthen international cooperation in nuclear, radiation and transport safety and waste management

Report by the Director General

Summary

Pursuant to resolutions GC(48)/RES/10 and GC(49)/RES/9, a report including the following subjects is submitted to the Board of Governors and the General Conference for their consideration:

- Regulatory reviews, effective regulatory systems and safety networks;
- The Agency's safety standards programme;
- Nuclear installation safety;
- Radiation safety;
- The safety of radioactive waste management;
- The safe decommissioning of nuclear facilities and other facilities using radioactive material;
- Education and training in nuclear, radiation, transport and waste safety;
- Safety and security of radioactive sources;
- Transport safety;
- International nuclear and radiological emergency preparedness and response;

Recommended Action

- It is recommended that the Board of Governors and General Conference:
 - Consider and take note of this report; and
 - Endorse the actions proposed in Annex 2 to the report regarding the Code of Conduct on the Safety and Security of Radioactive Sources.

Measures to strengthen international cooperation in nuclear, radiation and transport safety and waste management

A. Regulatory reviews, effective regulatory systems and safety networks

A.1. Integrated Regulatory Review Service (IRRS)

1. The original legal and governmental infrastructure (LGI) related peer review services offered by the Agency were aimed at providing, on request, advice and assistance to Member States in strengthening and enhancing the effectiveness of their regulatory infrastructure and nuclear regulatory bodies. These LGI peer review services included: International Regulatory Review Team (IRRT); Radiation Safety and Security of Radioactive Sources Infrastructure Appraisal (RaSSIA); Transport Safety Appraisal Service (TransSAS); International Nuclear Security Advisory Service (INSServ); Emergency Preparedness Review (EPREV) and the regulatory aspects of Integrated Safety Assessment of Research Reactors (INSARR).

2. Given that these services had many areas in common, particularly concerning the requirements for the legislative framework and the regulatory body activities, the Secretariat decided to integrate them into a new Agency safety service to improve their efficiency and consistency and to allow a greater flexibility in defining the scope of an LGI review. The new Agency safety service is called the Integrated Regulatory Review Service (IRRS).

3. The IRRS is applicable to nuclear, radiation, waste and transport safety and is based on the IAEA Safety Standards. The Secretariat has developed guidelines and associated questionnaires to support the application of the IRRS process.

4. The questionnaires are constructed in a modular form to cover each of the following LGI review areas:

- Legislative and governmental responsibilities;
- Responsibilities and functions of the regulatory body;
- Organization of the regulatory body;
- Authorization;
- Regulations and guides;
- Review and assessment;
- Inspection and enforcement;
- Management systems for regulatory bodies.

Additionally, the service considers thematic areas with dedicated questionnaires.

5. The IRRS approach is based on a self-assessment methodology which is designed to support the continuous improvement concept in Member States. Initially the Member State would conduct a self-assessment against the IAEA Safety Standards using the IRRS guidelines and its associated questionnaires to identify strengths and weaknesses in the regulatory framework and regulatory practices and to formulate a plan of activities to address the identified weaknesses. At the request of the Member State, the Agency would then conduct an independent peer review mission to review the results of the self-assessment and the plan of activities.

6. In a follow-up phase, a further self-assessment would be carried out after 18 to 24 months to review the implementation of the plan of activities. This further assessment could be carried out by the Member State or through another Agency peer review.

7. The IRRS concept was discussed at the 3rd Review Meeting of the Contracting Parties of the Convention of Nuclear Safety in 2005. The meeting acknowledged the importance of performing a self-assessment prior to conducting the peer review mission, as this improved the Member State's understanding of its regulatory practices and of the requirements specified in the IAEA Safety Standards. This was further discussed at the International Conference on Effective Nuclear Regulatory Systems held in Moscow from 27 February to 3 March 2006, where it was considered that the IRRS would support the development of the global nuclear safety regime through the sharing of good regulatory practices, the development and harmonization of regulatory safety standards, and support for the application of the continuous improvement process.

8. The development of the IRRS started after the joint peer review mission (IRRT and RaSSIA) to Romania in January 2006. A reduced scope IRRS was conducted to the UK Nuclear Installations Inspectorate in March 2006. A full scope IRRS — covering all nuclear facilities, activities and practices — will be conducted in France in November 2006. The Agency has also received requests for IRRS missions from Australia, Canada and Spain.

A.2. Outcomes of the International Conference on Effective Nuclear Regulatory Systems

9. The conference was hosted by the Russian Federation in Moscow from 27 February to 3 March 2006, with 216 participants from 57 countries, 6 organizations and 7 observers in attendance. The conference was the first to bring together senior nuclear safety, radiation safety and nuclear security regulators from around the world to discuss how to improve regulatory effectiveness.

10. The conference made many recommendations for governments, regulatory bodies and international organizations¹, including, inter alia, that the Agency:

- strengthen the IAEA Safety Standards in relation to leadership in regulatory bodies, regulatory management systems, resource evaluation and stakeholder engagement;
- improve, in collaboration with the OECD/NEA, the system for fostering international cooperation in regulatory effectiveness and the sharing of good nuclear safety and security regulatory practices;
- further develop the Integrated Regulatory Review Service (IRRS) process;
- the IAEA should develop its programmes to assist Member States in human resource development by organizing training courses in radiation protection, waste safety, nuclear safety and security training courses at international, regional, sub-regional and national level;
- consider how its activities and those of other international organizations can be coordinated to enable the most effective participation by regulators.

11. Conference participants also drew the following conclusions:

- Effective nuclear safety and security regulation is vital for the safe and secure use of nuclear energy and associated technologies and is an essential prerequisite for the achievement of global energy security and global sustainable development;

¹ <http://www-pub.iaea.org/MTCD/Meetings/PDFplus/cn150/PresidentReport.doc>

- Regulators work for the benefit of society and therefore play a vital role. To be effective they must be independent and able to make regulatory decisions without pressure from those who are responsible for the promotion of the use of nuclear energy and associated technologies or those who are opposed to its use;
- Regulators must be competent and have adequate resources to deliver their mission. The safety and security of nuclear facilities and nuclear and radioactive materials requires effective coordination of safety and security regulation;
- Continued and improved international cooperation is important to develop comprehensive international standards for safety and guidance for security. The importance of wider participation and fuller implementation of the international instruments such as conventions and codes of conduct was stressed;
- Head regulators should meet again within three years to review progress and identify new emerging regulatory challenges.

A.3. Safety networks

A.3.1. Asian Nuclear Safety Network (ANSN)

12. Notable progress has been made in the development of the ANSN hubs in China, Japan and the Republic of Korea and national centres in Indonesia, Malaysia, Philippines, Thailand and Vietnam. The network is being used both for sharing safety knowledge and experience and as a platform for implementation of Agency assistance and mutual learning.

13. Bangladesh and Pakistan have joined ANSN activities related to nuclear power plant (NPP) safety and the strengthening of regulatory frameworks.

14. Topical groups are currently active in the areas of safety analysis of research reactors, operational safety of nuclear installations and education and training. In December 2005, two new topical groups were established to deal with the areas of emergency preparedness and response and radioactive waste management. The kick-off meeting of the emergency preparedness and response topical group was held in China in June 2006 and the first meeting of the radioactive waste management topical group is planned for September 2006.

15. The ANSN is hosting a pilot project on decommissioning of research reactors using the Philippine Research Reactor. This project is also financed under the Agency's technical cooperation programme.

16. Technical cooperation project RAS/9/028, Development of an Asian Nuclear Safety Network, was completed in 2005. Assistance provided through this project has been of utmost importance for the establishment of ANSN national centres and to initiate the utilization of knowledge management techniques in capturing, classifying and sharing safety knowledge at both national and international levels.

17. An ANSN Newsletter has been published bi-weekly since March 2005 and is distributed to approximately 650 readers in countries participating in the programme. Promotional meetings were organized in China, France and Indonesia to introduce ANSN to a larger audience and decision makers. Meetings are also planned for the Philippines and Thailand. The ANSN will also be promoted during the 15th Pacific Basin Nuclear Conference in October 2006 in Sydney.

18. The 4th ANSN Steering Committee meeting was held in Tokyo in June 2006 to review progress and to update the work plan. It was agreed that a systematic indexation of the documents posted on the

ANSN website would be conducted to enhance the search process. The indexation will be expanded to accommodate the new technical areas of the network. Additional efforts will be devoted to increasing the number of users and institutional commitments. The use of ANSN for sharing safety knowledge at the national level was strongly supported and bilingual websites need to be further developed.

A.3.2. The Ibero-American Radiation Safety Network

19. The extrabudgetary programme on nuclear and radiation safety in the Ibero-American region established in 2003 is being implemented under the auspices of the Ibero-American Forum of Nuclear Regulators. A steering committee composed of representatives of the five supporting countries² and the Agency oversees the implementation of the programme and its consistency with the Agency's nuclear safety programmatic structure and activities.

20. The priority is to share regulatory experience for mutual learning in the areas of safety regulation, import and export of radioactive sources, protection of patients, safety of nuclear installations and education and training. A central element of the programme is the establishment of a nuclear and radiation safety network to capture and analyse existing and new safety knowledge and experience and to disseminate it among Ibero-American countries. In 2005, the network prototype was successfully completed. Work is underway to develop version 1.0 of the network. The network is taking advantage of the experience with the development and operation of the ANSN. At their plenary sessions held in January and June 2006, the Ibero-American Forum of Nuclear Regulators reviewed the network results and oriented future work.

B. The Agency's safety standards programme

21. In March 2004, the Board of Governors approved the Action Plan for the Development and Application of IAEA Safety Standards³. The Action Plan is based on a vision and strategy prepared by the Secretariat in consultation with the safety standards committees⁴ and the Commission on Safety Standards (CSS). The core elements of the strategy are the establishment of a structure based on thematic and facility-specific safety standards, their application and feedback for continuous improvement.

22. All ten actions established by the Action Plan have been addressed and implementation reports have been reviewed by the committees and the CSS.

23. A uniform process for the development of safety standards introduced in 1996 is now well established. This involves the development of a document preparation profile (DPP) defining the scope, interfaces with other publications and the contents of the safety standard to be developed. After approval of the DPP by the relevant committee(s) and CSS a draft is prepared. When approved by the committee(s) the draft is submitted to the Member States, who have 120 days to provide comments. A revised draft is then prepared on the basis of comments from the Member States and submitted for review by the committee(s) and the CSS. Safety Fundamentals and Safety Requirements are submitted

² Spain as well as Argentina, Brazil, Cuba and Mexico.

³ The background for the action plan is available in document GOV/2004/6.

⁴ Nuclear Safety Standards Committee (NUSSC), Radiation Safety Standards Committee (RASSC), Transport Safety Standards Committee (TRANSSC), and Waste Safety Standards Committee (WASSC).

to the Board of Governors for approval for publication. The Safety Guides are published under approval of the Director General.

24. The transition to the new structure has made good progress in all areas. The identified gaps in the coverage of safety standards are being eliminated by new standards for fuel cycle facilities, disposal of radioactive waste, research reactors and medical and industrial applications of radiation sources. The work under way in the current structure of the safety standards will result in 1 unified Safety Fundamentals publication, 15 Safety Requirements and 114 Safety Guides.

25. As indicated in the action plan and in response to paragraph 9 of General Conference resolution GC(49)/RES/9A, Safety Fundamentals have been developed which provide the basis for the IAEA Safety Standards and the related programme. The Safety Fundamentals are being submitted to the Board of Governors for approval (GOV/2006/42).

26. Furthermore, in response to paragraph 10 of General Conference resolution GC(49)/RES/9, a review of the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS) has been conducted. The review has concluded that, while there was no major issue requiring urgent revision, there was a case to be made for the revision of the BSS in order to take account of the many improvements that have been suggested. In the 4th quarter of 2006, a draft DPP will be reviewed by the committee(s) and submitted to the CSS for approval. The revision will be carried out by a secretariat established by the Agency with the participation of the co-sponsors.

27. To strengthen internal coordination, a steering committee composed of senior Secretariat staff was established to review safety and security related publications. The steering committee reviews all safety standards prior to their submission to the committees and the CSS.

28. The Secretariat, in consultation with representatives of other intergovernmental organizations that provide advice on health and safety, has developed a process for formalizing the co-sponsorship of IAEA Safety Standards.

29. The Secretariat has also established a policy regarding the development of Safety Reports and TECDOCs that reaffirms the highest priority to be given to the safety standards. The priority given to safety standards has been reflected in the Agency's Programme and Budget for 2006–2007.

30. The revision of safety standards involves a review of feedback collected from the users and preparation of a report by the Secretariat. The report is presented to the relevant committee(s). If it is determined that a revision is not necessary, the committee(s) will establish a date for a subsequent review (in two to five years time). If it is determined that a revision is necessary, the Secretariat will prepare a DPP that clearly defines the areas to be revised and what, if any, impact the revision will have on the structure of the standards in the particular area. Upon approval of the DPP by the CSS, the established procedure for the development of safety standards will be followed. Typically, safety standards will be reviewed every five to six years to determine whether and when they would need to be revised.

31. To further enhance the involvement of the users in the preparation and review of safety standards, representatives from all Member States are invited to nominate experts as members of the committees or as corresponding members to receive all the reports presented at the committee meetings and to have the opportunity to review and comment on these reports. Furthermore, there is an increased involvement of the facility operators in the drafting of the safety standards.

32. A questionnaire on IAEA Safety Standards has been posted on the Agency website⁵ with responses automatically stored in a database. All published standards now include a request to the users for feedback. The Agency's safety review services and training courses are based on the IAEA Safety Standards and the Secretariat has established a systematic method to collect feedback on the standards from these activities. The use of standards in Member States is now an agenda item for the meetings of the CSS and the committees. Feedback of experience from international organizations will be sought both by writing to the co-sponsoring organizations and from their representatives on the committees.

33. The sharing of experience is now done routinely in the meetings of the CSS and the committees. In addition, specific sessions in international conferences, symposia and seminars are devoted to the application of relevant safety standards. A full catalogue of IAEA Safety Standards was sent out to 9000 recipients in 2004 and is used at conferences. This catalogue includes comprehensive entries for the standards with descriptions, availability of versions in other languages and, in some cases, tables of contents. International journals receive copies of new safety standards on publication and are solicited for reviews.

34. To promote the use of the IAEA Safety Standards, the Secretariat has developed multimedia presentations to explain the content of about 20 safety standards in the areas of legal and governmental infrastructure, site evaluation, nuclear power plant design and operation, and research reactors. These are available free of charge to Member States. Training materials based on the content of safety standards have been prepared for a number of areas dealing with nuclear installations. The IAEA Safety Glossary has been revised and posted on the Agency website⁶. Translation into other languages is in progress.

35. To promote awareness of the standards and their status, the Secretariat has developed a booklet outlining the structure of the standards and the status of each standard. The booklet is updated annually in time for distribution during the General Conference and the Senior Regulators' Meeting.

36. Newly published safety standards are distributed to over 600 users worldwide (regulatory bodies, ministries of health, transport and environment, nuclear power plants, research reactor and fuel cycle facilities). Recipients are encouraged to use the safety standards and provide feedback.

37. The Secretariat has devoted additional resources to the translation of the safety standards. A number of Member States have also contributed generous efforts to support the translation of the standards. The Safety Fundamentals and Safety Requirements are published in the official languages of the Agency while Safety Guides, depending on the topic, are published in selected official languages. All drafts and published standards and their translations are posted on the Agency website⁷.

38. The Agency copyright statement has been revised and brought into line with that of other UN agencies. In addition, unlike other organizations, it is explicitly stated that the Agency welcomes non-commercial reproduction and translations of its publications. Full and clear contact addresses are given. The statement relating to the copyright is included in all new safety standards and is posted on the website.

39. The commercial book distributors have also worked to promote the IAEA Safety Standards. The standards are included in listings sent to librarians and in online bookshops. One distributor produced

⁵ <http://www-ns.iaea.org/standards/feedback.htm>

⁶ <http://www-ns.iaea.org/standards/safety-glossary.htm>

⁷ <http://www-ns.iaea.org/standards/>

a special feature on the IAEA Safety Standards, while another has initiated a campaign to advertise the new edition of the Agency's Transport Regulations.

40. The implementation of the Action Plan has improved notably the quality of the standards and their utilization by the Member States. Recent reports by many countries and organizations such as the Western European Nuclear Regulators' Association (WENRA) confirm the wider use of IAEA Safety Standards both as a benchmark for harmonization and as a basis for the review of national regulations or their incorporation in the body of national regulations.

41. The CSS at its meeting in June 2006 issued a statement (included as Annex 1 to this report) acknowledging that the implementation of the action plan had resulted in significant improvement in the quality of the safety standards and their utilization by Member States. The CSS also discussed a number of challenges including the need for maintaining a continuous improvement process and providing appropriate response to the needs of Member States with a comprehensive set of standards while further rationalizing the safety standards programme by maintaining a reasonable and manageable number of standards. The CSS has requested the Secretariat to consider these challenges and prepare a report for consideration by the committees at their next meetings and the CSS in November 2006.

C. Nuclear installation safety

C.1. Outcomes of the International Conference on Operational Safety Performance in Nuclear Installations

42. From 30 November to 2 December 2005, the Agency hosted the International Conference on Operational Safety Performance in Nuclear Installations to share, in a global sense, the operating and regulatory experiences for improving operational safety performance in nuclear installations. The general theme of the conference was how best to reflect lessons learned from the entire entity of operating experiences into present and future reactors.

43. Participants noted that both operators and regulators must avoid isolation and must freely share operating experience, not just on events, but also on corrective actions and good practices, that management commitment was essential and that managers must show leadership in nuclear safety. It was noted that there was a need for rapid international dissemination of best practices and operating experience and that effective knowledge management was essential. Succession planning was also important so that the lessons learned were passed on to future generations of regulators and operators. Participants also noted that an integrated approach was needed where safety, environment, waste management, proliferation resistance, infrastructure, and economic considerations were taken into account.

44. Participants recommended that guidelines be developed to analyse all information and data available from operation in a systematic manner and address identified issues, trends and patterns for a proactive, rather than reactive, response. Participants discussed the exchange of experts or even cross-inspections between countries as a tool for harmonizing regulatory approaches.

C.2. Safety of research reactors

45. The General Conference resolution GC(45)/RES/10.A, inter alia, requested the development and implementation of an international research reactor safety enhancement plan. The Board of Governors

subsequently adopted the Code of Conduct on the Safety of Research Reactors in March 2004 and the General Conference endorsed the Code of Conduct in September 2004.

46. In response to the request of the Contracting Parties to the Convention on Nuclear Safety (CNS) at their 3rd Review Meeting held from 11 to 22 April 2005, the Agency convened an open-ended meeting on the effective application of the Code of Conduct on the Safety of Research Reactors in Vienna from 14 to 16 December 2005. Fifty-one representatives of 31 Member States attended. Meeting participants recommended that the Agency organize triennial meetings to exchange experience and lessons learned, identify good practices and discuss plans, difficulties and assistance needed in applying the Code of Conduct. To avoid duplication of effort, the triennial meetings will be scheduled such that material prepared for the CNS review meetings will still be timely. To prepare for the triennial meetings, the Secretariat will organize one or more regional meetings. The first meeting is planned to be held in Morocco in November 2006 for Member States from Africa to provide a forum for participants to present and share their experience on the management of research reactor safety and the application of the Code of Conduct.

47. Important components of the Agency's programme will include developing safety standards for research reactors, promoting global and regional cooperation on safety matters, improving the exchange of information on experience and lessons learned through the Incident Reporting System for Research Reactors (IRSRR), the organizing of international conferences and meetings and training activities. An International Conference on Research Reactors: Safe and Effective Utilization is planned for Australia in November 2007.

48. Conducting safety review missions and assisting in the improvement of the safety of research reactors will continue to be an important part of the Agency's activities. Particular attention will be given to monitoring the safety of research reactors subject to project and supply agreements⁸. Recognizing the benefits of the Code of Conduct towards enhancing research reactor safety worldwide, participants at the open-ended meeting recommended that the Code of Conduct be widely applied and used as a basis for the Agency's activities.

49. The open-ended meeting also recommended that the Secretariat consider updating the project and supply agreements to reflect the provisions of the Code of Conduct. The project and supply agreements generally require that a Member State receiving Agency assistance apply the Agency's health and safety standards and measures as specified in the agreement. Most of the agreements that apply to research reactors were written many years ago and the safety standards that are invoked in these agreements are outdated and do not represent the current internationally accepted norms. In addition, some agreements are still in place that relate to reactors that no longer operate or have been decommissioned; these agreements should be appropriately modified or terminated. The Code of Conduct, the safety requirements for research reactors⁹, and the supporting safety guides that will be published in the next two years define today's international research reactor safety regime. It is timely to begin the process of updating and revising the project and supply agreements.

50. An integrated approach including the synergies between safety and the Agency's other activities related to research reactors — such as security and utilization — is essential for the effective implementation of the safety enhancement plan.

⁸ As of 24 April 2006, there were 33 agreements covering 36 reactors in 28 Member States.

⁹ *Safety of Research Reactors*, IAEA Safety Standards Series NS-R-4, 2005.

D. Radiation safety

D.1. Implementation of the International Action Plan for the Radiological Protection of Patients

51. This section describes the activities that have taken place on the action plan since July 2005. The background for the action plan is available in Annex 6 of document GOV/INF/2004/10-GC(48)/INF/7.

52. The steering panel for the action plan held its second meeting in Madrid, Spain, in February 2006 and noted that the momentum on radiological protection of patients was picking up in Member States and the impact of the Agency's work was being felt. The number of Member States involved in projects for the radiological protection of patients has increased three-fold in the past three years.

53. The Agency has developed a website¹⁰ on the radiological protection of patients. The steering panel placed considerable priority on the development of this website and believes that the website will meet the needs of health professionals, Member States and patients. The steering panel noted the need to translate the website into other languages.

54. Training activities, initially oriented to radiologists, radiation oncologists, nuclear medicine physicians and hospital physicists, and then extended to cardiologists, have shown good results. Plans are underway to extend the training to cover other doctors who use fluoroscopic procedures — such as urologists, orthopaedic surgeons and gastroenterologists — with the first training event scheduled for September 2006. In some Member States, national cardiological societies are now taking the lead in organizing training events on radiation protection.

55. In view of the contemporary interest and fast increase in the use of multi-detector computed tomography applications in the heart and colon, the Agency — in collaboration with the WHO and the International Commission on Radiological Protection (ICRP) — is preparing guidance on radiation protection aspects in computed tomography colonography (virtual colonoscopy) and cardiac computed tomography.

56. At present, there is considerable variation in release criteria in Member States of patients that have had radionuclides administered for the treatment of thyroid cancer. The Agency is preparing guidelines, based on recent ICRP advice, on the topic.

57. The Agency is also considering the development of a voluntary reporting system for incidents during interventional radiological procedures so that lessons can be drawn to prevent recurrence.

58. The steering panel also recommended that the Agency organize, for 2009, an international conference on the radiological protection of patients, similar to the one held in 2001.

D.2. Implementation of the Action Plan for Occupational Radiation Protection

59. This section describes the activities that have taken place on the action plan since July 2005. The background for the action plan is available in Annex 7 of document GOV/INF/2004/10-GC(48)/INF/7.

60. The ILO discharges its responsibility for occupational safety and health in the radiation protection area through the promotion of the Convention concerning the Protection of Workers against Ionising Radiations (ILO Convention 115), which has so far been ratified by 47 countries, with

¹⁰ <http://rpop.iaea.org>

2 others indicating their intention to ratify. The ILO uses the requirements for occupational radiation protection embodied in the Agency's BSS as the basis for assessing compliance with ILO Convention 115. Agency coordination meetings of countries participating in the Agency's projects on upgrading regulatory infrastructures included a presentation on ILO Convention 115.

61. During the reporting period, the Agency published Safety Guide NS-G-1.13, *Radiation Protection Aspects of Design for Nuclear Power Plants*. Several new documents dealing with occupational radiation protection are under development. These include a draft safety report on radiation protection of itinerant workers and two draft safety reports on operational radiation protection in the workplace, dealing with dose rate and surface contamination measurement and with airborne contamination measurement, respectively. In addition, draft safety reports on dosimetry services for individual monitoring and a draft safety report on neutron monitoring for radiation protection are being developed. Finally a draft Safety Guide on installing quality management systems into organizations providing services in radiation safety has also been developed.

62. Drafting of a safety report on *Assessing the Need for Radiation Protection Measures in Work involving Minerals and Raw Materials* has been completed. This safety report provides information that can assist Member States in the identification of industrial activities that may need regulatory attention and, for such activities, in the determination of the most appropriate regulatory approach. The proceedings of an international conference on naturally occurring radioactive material (NORM IV), held in Poland in 2004 with active Agency involvement, were published in 2005 as TECDOC-1472. The drafting of sector-specific safety reports on radiation protection in the phosphate, zircon, and titanium dioxide industries continued during 2005 with the acquisition of a large body of additional technical data, and is now nearing completion.

63. The Agency continues to conduct intercomparisons of monitoring methods for assessing occupational exposure, to assist its Member States in complying with dose limitation requirements and to harmonize the use of internationally agreed quantities and assessment methods. Many different intercomparison exercises are at various stages of implementation. Recently, the Agency cooperated in a research project, which involved a worldwide intercomparison exercise involving suppliers of active personal dosimeters.

64. In late 2005, a consultant reviewed information assembled by the Secretariat on the formulation and application of standards for protection of pregnant workers and their embryos and fetuses and made clear recommendations for developing additional guidance for the application of the requirements for protection of pregnant workers and their embryos and fetuses. The work of the expert group is expected to continue.

65. A draft report on attributing radiation-linked diseases to occupational exposure — prepared by a group of consultants in 2003 — formed the working material for a meeting held in May 2006 by WHO, which is coordinating the implementation of this action. A broad spectrum of international experts discussed the draft report and suggested changes so it can be published as a WHO-ILO-IAEA jointly sponsored document.

66. The Agency has implemented a quality management system in its radiation protection monitoring service. This service is due to become accredited (international standard ISO17025) as a testing laboratory in 2006. The knowledge gained through this process has been condensed into a training course suitable for operators of similar monitoring services in Member States. The training material has been validated by the steering committee and the course has already been given once to Member States from the Asia and the Pacific region.

D.3. Promoting effective and sustainable national regulatory infrastructures for the control of radiation sources

67. As recommended by the Board of Governors (document GOV/2004/52-GC(48)/15) and reiterated by the General Conference (resolution GC(49)/RES/9.A, paragraphs 26 and 27), a wide range of actions have been undertaken to implement the policy for promoting effective and sustainable national regulatory infrastructures for the control of radiation sources.

68. The Radiation Safety and Security of Radioactive Sources Infrastructure Appraisal (RaSSIA), Regulatory Authority Information System (RAIS), Radiation Safety Regulators Network (RaSaReN), and regulatory body staff training programmes have been updated to incorporate the additional regulatory requirements and guidance of the *Code of Conduct on the Safety and Security of Radioactive Sources*, the *Guidance on the Import and Export of Radioactive Sources* and the *Categorization of Radioactive Sources*. These updates address in particular, the following points:

- establishing a national registry/inventory of radiation sources;
- cradle-to-grave oversight of sources;
- national strategies for locating, identifying and regaining regulatory control over orphan sources;
- strengthening control over the import and export of radioactive sources.

69. Assistance in the current cycle, in particular through RaSSIA, RAIS, RaSaReN and training events, has resulted in all Member States that receive Agency assistance having a better understanding of their current status with respect to the new and existing international standards and guidance, and hence a clear understanding of what remains to be done. The RaSSIA action plan in particular, provides a means by which Member States can work with the Agency to implement a continuous improvement programme for establishing and sustaining effective regulatory infrastructures for radiation safety and the security of radioactive sources.

70. As a result of the ongoing Agency programme, in particular through RaSSIA, Member States are establishing and/or operating effective and sustainable national regulatory infrastructures for the control of radiation sources through strengthened and focused Agency assistance projects being implemented in accordance with the latest international standards and guidance. As of April 2006, 44 countries had received a RaSSIA mission. These countries have an improved understanding of the *Code of Conduct on the Safety and Security of Radioactive Sources*, the *Guidance on the Import and Export of Radioactive Sources* and the *Categorization of Radioactive Sources* and are therefore better equipped to take effective measures under their own control, in order to achieve compliance with the latest international standards and guidance. Most of these countries also have a regulatory framework in place and have national programmes to achieve effective regulatory infrastructures.

71. The RaSSIA protocol and the working material on notification and authorization have been extended to include further questions and examples that address information management, information exchange and coordination on national, regional and international levels. Member States are using these in the establishment and operation of their national regulatory infrastructures. In due course, the scope of RaSSIA will be included in the Integrated Regulatory Review Service (IRRS) discussed in section A.1 of this report.

72. The Agency has developed and released an upgraded version of RAIS (RAIS 3.0), the information management tool for the day-to-day activities of regulatory bodies. RAIS 3.0 has been made available in a format which allows each Member State to further develop the system to its own particular requirements. Ninety-four countries are now either using RAIS in their daily activities or are in the process of assessing RAIS with a view to managing their existing national register of sources or to creating one. In addition, some Member States have revised their existing systems using RAIS as

the reference. Overall, the majority of Member States will soon have a national register of radiation sources and an information management system harmonized and compatible with current international requirements and guidance.

73. RaSaReN has been established to facilitate worldwide exchange of knowledge and experience essential to establishing and maintaining an effective and sustainable regulatory infrastructure for radiation safety and security of radioactive sources. Currently the RaSaReN website may be accessed by registered staff of regulatory bodies in Member States. To date, 47 regulatory bodies, through 131 representatives, have joined the network.

74. During 2005, a standardized package covering control of radiation sources in medical and industrial practices was delivered to train regulators from all regions. The training packages are currently being revised to take into account the guidance of the *Code of Conduct on the Safety and Security of Radioactive Sources*, the *Guidance on the Import and Export of Radioactive Sources* and the *Categorization of Radioactive Sources*, together with any other relevant new documentation and international standards and guidance. A similar package has been developed on control of radiation sources in cyclotron facilities. In addition, a course on radiation safety for custom officers has been developed with the World Customs Organization. A radiation safety course for lawyers is in development. As a consequence of these training courses, regulatory bodies have increased the number of competent national regulatory staff.

D.4. Implementation of the Plan of Activities on the Radiation Protection of the Environment

75. The background for the Plan of Activities is available in document GOV/2005/49. The main aim of the Plan of Activities is on the one hand to promote collaborative work by relevant international organizations that enhances current approaches in radiation protection by taking explicit account of non-human species in developing an approach for the assessment and management of radionuclides entering or present in the environment. Secondly, another aim is to provide assistance to Member States in their efforts to protect the environment by developing a framework and methodologies to assess radiation impacts on biota, and reviewing the corpus of radiation safety standards related to the assessment and management of radionuclides entering or present in the environment and revising them, as appropriate.

76. In January 2006, the Agency convened a meeting attended by eighteen participants from seven international and regional organizations (IAEA, ICRP, the International Union of Radioecology (IUR), the United Nations Scientific Commission on the Effects of Atomic Radiation (UNSCEAR), the World Nuclear Association (WNA), the European Commission (EC) and OECD/NEA) and six Member States (Canada, France, Germany, Sweden, UK and USA). Meeting participants agreed that their respective international and regional organizations and Member States become members of the Coordination Group on Radiation Protection of the Environment. Involvement in the Coordination Group from other regions is desirable.

77. The Coordination Group will serve as a mechanism in order to facilitate the coordination of activities among international and regional organizations by reviewing their ongoing work related to the protection of non-human species and advise the Agency on the implementation of the Plan of Activities. The Coordination Group should meet on an annual basis, or more often if deemed necessary. Meetings of the Coordination Group will be organized by the Secretariat. A coordinated international work plan, including activities of international and regional organizations and Member States instrumental in the field of environmental radiation protection, will be developed by the Agency.

78. A glossary of the most important terms relevant to radiation protection of non-human species will be compiled in 2007 and made available on the website in order to avoid terminology problems.

79. The Secretariat is planning a major conference on environmental radioactivity in 2007. The OECD/NEA, in cooperation with the Agency, is also planning a workshop on the subject for 2008. The next major Agency meeting on environmental radiation protection is tentatively scheduled for 2009 or 2010.

80. There is consensus among the Coordination Group on the need for establishing an iterative review process to determine the need for, and if necessary the form and content of, additional or revised standards. In this process, account must be taken that:

- radiation is only one of many environmental stressors, probably relatively minor if compared to others;
- there is a need to understand implications of any proposed improvement on the current system of regulation and to test the practical adequacy;
- the process of reviewing safety standards does not necessarily mean major standard revisions;
- the work of ICRP Committee 5 (Protection of the Environment) is ongoing.

81. A generic statement on the necessity of radiation protection of the environment is included in the new draft Safety Fundamentals. The Coordination Group noted that there are no explicit requirements on environmental radiation protection in the BSS and recommended that such a basic requirement be considered during the review process that was recently initiated.

82. Further development of the environmental radiation protection matters within the system of the IAEA Safety Standards should, to the extent possible, follow development of ICRP recommendations in this subject area. As the ICRP environmental protection system is currently under development, it is premature to include detailed guidance in the IAEA Safety Guides.

83. The development of international standards and guidance on the application of the environmental radiation protection framework will be undertaken through existing Agency mechanisms with full involvement of the Member States. For the preparatory stage, the Coordination Group recommended the following activities:

- Based on the experience of countries where legislation on environmental radiation protection is already in place, e.g. Canada, Sweden, UK, to assess the possible implications of the application of this regulation on the discharge control procedures and practices;
- To review IAEA Safety Guide WS-G-2.3, *Regulatory Control of Radioactive Discharges to the Environment*, published in 2000, with regard to a possible future revision accounting for radiation protection of both humans and non-human species.

E. The safety of radioactive waste management

E.1. Implementation of the International Action Plan on the Safety of Radioactive Waste Management

84. This section describes the activities that have taken place on the action plan since July 2005. The background for the action plan is available in Annex 9 of document GOV/INF/2004/10-GC(48)/INF/7. In completing the action plan, the Secretariat has progressively integrated the actions into the

Agency's ongoing radioactive waste management programme (Programme L). This integration process is now finished and the action plan has been completed.

85. A number of conclusions were drawn from recent international activities¹¹ upon which it was deemed appropriate to act within the radioactive waste management programme:

- Further guidance is needed on demonstration of the safety of disposal facilities for long time frames in the future;
- There is a need for clarity in concepts and terminology for management of radioactive waste containing low levels of radioactivity;
- It is necessary to review and update international standards on classification of radioactive waste;
- A need exists for guidance on use of the clearance concept – in particular for organizations dealing with limited amounts of radioactive waste and with limited expertise available;
- Guidance is needed on conditional release of low level waste material as practised in many countries;
- Further work is needed for providing a basis for demonstrating the safety of borehole disposal of disused sealed sources;
- International consensus is needed on the management of waste containing naturally occurring radionuclides;
- Efforts are needed to promote a global radioactive waste safety regime and in particular to expand membership of the Joint Convention;
- Archiving of information important to the safety of radioactive waste disposal is in need of further consideration including the possibility of an international repository of information;
- Systematic and reliable approaches to evaluating the adequacy of national infrastructure providing for the safety of radioactive waste management need to be developed (this will be addressed in the frame of the Integrated Regulatory Review Service discussed in Section A.1 of this report);
- The adequacy of concepts for longer term storage of radioactive material, particularly in facilities considered as possible options for disposal need consideration.

86. A document has been developed setting out proposals for the establishment of a common framework linking waste types to management and disposal options. The concepts contained in the document were presented and debated in a number of international forums including the Tokyo Conference. One of the main issues to arise from the work is the need to revise the existing IAEA Safety Standard 111-G-1.1, *Classification of Radioactive Waste* (1994). A revised draft was approved by WASSC in April 2006 for review by Member States. Both the revision of the safety standards on radioactive waste management and the common framework are being pursued within the waste management programme and should be completed within the present cycle.

87. A Safety Guide on storage of radioactive waste has been approved by the CSS. An international project on safety assessment of waste management prior to disposal commenced in 2004 and one component of the project is dealing with assessing the safety of long term storage. In addition, work commenced on a further document on long term storage in 2005 to clarify and elaborate on the concepts and issues related to safety. These will be subjected to further international debate with a

¹¹ International Symposium on Disposal of Low Activity Radioactive Waste, Córdoba, Spain, December 2004 and International Conference on the Safety of Radioactive Waste Disposal, Tokyo, Japan, October 2005 (the Tokyo Conference)

view to developing consensus on the safety and sustainability of longer term waste management options currently under consideration.

88. The Board of Governors approved safety requirements WS-R-4, *Geological Disposal of Radioactive Waste*, in September 2005. A safety guide is under development to provide guidance on meeting the requirements. The guidance will take account of experience gathered in the past decade with development of geological disposal facilities — an area where significant developments are taking place in a number of countries. One of the difficult aspects in demonstrating the safety of geological disposal is the long time frames involved and dealing with the associated uncertainties. A number of countries are currently dealing with this matter and arrangements are underway to initiate an international project to allow exchange and dialogue with a view to developing harmonized methodology and approaches.

89. Further guidance is under development on the practical use of the concepts identified in safety guide RS-G-1.7, *Application of the Concepts of Exclusion, Exemption and Clearance* (2004), in particular on monitoring related to the removal of sites and buildings from regulatory control. Strategies for the management of the large amounts of waste that are generated in decommissioning activities are also being documented.

90. A considerable amount of training material has been developed based on the IAEA Safety Standards for use in workshops and training events delivered through the technical cooperation programme and for use by Member States. A methodology has been developed for use in the appraisal of national infrastructure for radioactive waste safety and a systematic programme of using the mechanism commenced in 2006. Related material has also been developed for use in connection with the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Such material can be used to assist in the compilation of national reports.

91. A safety report addressing the identification and preservation of information important to the safety of radioactive waste disposal facilities has been approved for publication. The approaches discussed in the report have also been tested on information available from an existing facility. The current Agency databases on radioactive waste management are being evaluated with a view to determining their potential utility as international archives.

92. The broader aspects of knowledge management in respect of radioactive waste management are being addressed through the International Network of Centres of Excellence for Demonstration and Training in Geological Disposal and through the World Nuclear University. Several training events on diverse aspects of radioactive waste disposal are being proposed every year by the Agency to the Network members. These mechanisms are able to contribute on an ongoing basis to the broader maintenance and dissemination of knowledge on the safe management of radioactive waste.

93. Ongoing pre-disposal activities and technical publications in progress focus on strategies and methodologies for waste minimization, characterization, treatment, conditioning and storage. Guidance will also be provided through a report ready for publication to Member States on retrieval and reconditioning of historic wastes which were improperly stored or disposed.

94. Assisting Member States in building confidence in geological disposal of high level radioactive waste remains one of the main objectives of the Agency's current radioactive waste management programme. In that respect, a TECDOC on the impact of retrievability on geological disposal of radioactive waste is being prepared.

95. Low level waste disposal remains another major activity area. One of the main ongoing activities consists of gathering and disseminating information to Member States on economic aspects and funding mechanisms for low level waste repositories. Another current project deals with lessons

learned by waste management organizations worldwide in operating near-surface disposal facilities. The material collected will be accessible to all interested parties via a web-based information system.

96. Initiatives related to stakeholders in the sphere of radioactive waste management have been focused on engaging a broader base of interested parties in the safety standards development programme and in the overall waste management programme of the Agency. Extensive information is now made available through the Agency website and every opportunity is taken to promote awareness and understanding of the international waste safety standards at international meetings. In addition, the issue of stakeholder involvement features on all international meeting programmes organized by the Agency concerned with radioactive waste management. The programme of work has avoided direct dialogue with the broader range of stakeholders generally associated with radioactive waste management activities since the OECD/NEA maintains an active and successful programme in this area through the Forum on Stakeholder Confidence. Ongoing liaison is maintained with the OECD/NEA in this project.

97. The corpus of international standards for controlling radioactive discharges to protect the public was completed with the publication of Safety Guide RS-G-1.8, *Environmental and Source Monitoring for Purposes of Radiation Protection*. To support the existing safety guides, technical documents were prepared on the practical aspects of setting discharge limits, and on design and operation of source and environmental radiation monitoring programmes.

98. The Agency's Plan of Activities on the Radiation Protection of the Environment will focus on the possible form of future regulatory criteria, the application of biota effect data, and their relationship to discharge regulation.

99. Safety standards are being developed for borehole disposal facilities. These are focused on narrow diameter boreholes down to depths of tens of metres which are under development with a view to disposing limited inventories of disused sealed sources. Closely related to this work is the development of approaches to assessing the safety of such facilities making use of generic assessment methodology customized to particular site conditions and proposed inventories. Progress has been made in this work, but extensive efforts are still required before such an approach could be used with confidence. Work is also still needed to establish approaches to licensing such facilities making use of the safety standards and safety assessment work under development.

E.2. Outcomes of the International Conference on the Safety of Radioactive Waste Disposal

100. This conference — hosted by Japan from 3 to 7 October 2005 — was the latest in the series, and the first held in Asia, on the safety of radioactive waste disposal. The conference focused on the need to demonstrate the long-term safety of radioactive waste disposal facility development and operation.

101. Participants at the conference discussed the benefits to be obtained from being part of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) and ways in which more countries could be encouraged to join. A number of developments were seen as evidence of movement towards a global approach to safety, for example, the regional initiatives to establish collaborative networks in Asia and Latin America and the increasing use of the peer review services of the international organizations. In this regard, the proposal of Japan to expand the ANSN to include radioactive waste management was welcomed by the Conference.

102. Conference participants discussed the plans for updating the Agency's 1994 safety standard *Classification of Radioactive Waste*. Many countries have comparatively small volumes of intermediate and high level radioactive waste and studies have been initiated at a regional level, with

some support from the European Union, to examine the feasibility of a regional disposal facility in which the waste from several countries could be placed. The Agency recently published IAEA-TECDOC-1413, *Developing multinational radioactive waste repositories: Infrastructural framework and scenarios of cooperation*, to serve as a reference document for Member States potentially interested in sharing disposal facilities for radioactive waste and/or spent fuel.

103. Use of a safety case concept for demonstrating the safety of waste management and disposal facilities is becoming more common throughout the world, although consensus is still developing on their structure, content and use. There is agreement that all the arguments and evidence demonstrating safety need to be included and that they should cover the adequacy of the engineering and design logic, a quantitative safety assessment and the adequacy of the management systems for all safety related aspects of a waste disposal facility project.

104. Considerable attention continues to be focused on the geological disposal of high level waste. The progress of recent years towards achieving operational geological disposal facilities is continuing in a number of countries and reports from three of them were made at the conference. The technical discussions at the conference focused on some of the remaining difficulties. Due to the long timescales involved, it is not possible to demonstrate safety by direct measurement and recourse must be made to less direct evidence. The approaches being used to make the safety case for these facilities and to improve confidence in their safety were discussed at some length. Providing for protection of the public at long timescales, far beyond the lifetimes of current generations, requires the use of predictive models and stylized scenarios to show compliance with radiological criteria.

105. More than 100 near surface type disposal facilities are in existence in the world and account for the main part, by mass and volume, of the disposed radioactive waste. The existing facilities vary in quality and some that were developed several decades ago, which are not compatible with modern standards, are being upgraded or considered for possible upgrading.

106. The approach for designing near surface repository systems to achieve safety is now well established. For such systems, compliance with the international radiological protection criteria can be achieved by a combination of engineered barriers, natural site features and institutional controls to prevent inadvertent intrusion into the waste. This contrasts with the situation at the sites at which large volumes of waste from the mining and milling of radioactive ores or from other industries producing waste containing natural radionuclides have been deposited on the earth's surface. At these sites, the radiation exposure of local populations can be in excess of radiation protection criteria for members of the public. Because of the large volumes, the practical protection measures which can be taken are limited. The international guidance on their safe management is not yet adequate and it was recommended that it should be improved based, in the first instance, on the experience described at the conference.

107. Work on some types of disposal at intermediate depths (typically 50 to 100 metres) was presented. It was emphasized that the safety principles and methods for assessing safety are no different from those used for other types of disposal.

108. Ongoing international projects to help remove the global problem of disused sealed radiation sources by the technique of borehole disposal were described. Although the approach promises to provide a cost effective option where alternatives, such as near surface and geological disposal are not appropriate or available, it was stressed that safety would not be compromised and that international standards would be respected.

109. Regulatory review of safety cases and supporting safety assessments and decision-making on licensing was discussed in respect of both new and existing facilities. International guidance in the

areas of both formalized regulatory review and decision-aiding techniques would be of considerable benefit.

110. Several experiences of how communications with interested parties have been managed in national projects were described. The discussions at the conference showed the need for clarity in the language used for the communications between experts in this field but also of a need for a simpler, but accurate, language for communicating with all interested parties.

111. Demonstrating the long-term safety of radioactive waste disposal facilities remains a challenge but the experience gained in safety studies over the past years in many countries has generated an ever-increasing confidence that the current designs of disposal facilities can adequately contain and isolate radioactive waste for the times necessary to provide a high level of safety.

E.3. Second Review Meeting of the Contracting Parties to the Joint Convention

112. The Second Review Meeting of the Contracting Parties to the Joint Convention was held at the Agency's Headquarters from 15 to 24 May 2006. The President of the Review Meeting was Mr André-Claude Lacoste, France. All 41 Contracting Parties, including 8 new Contracting Parties, with nearly 500 delegates, were in attendance and participated actively in the peer review. In addition, the Contracting Parties agreed to allow China to fully participate in the Review Meeting. China had not yet deposited its instrument of accession, but had requested to be invited as a full participant. OECD/NEA was present as an observer.

113. Areas, for which the need for further work was identified at the First Review Meeting, were addressed by the Contracting Parties and reflected in their National Reports and oral presentations during the Second Review Meeting.

114. During the Second Review Meeting, Contracting Parties demonstrated their commitment to improving policies and practices particularly in the areas of:

- National strategies for spent fuel and radioactive waste management;
- Engagement with stakeholders and the public;
- The control of disused sealed sources.

Challenges continue in a number of areas including the implementation of national policies for the long-term management of spent fuel, disposal of high level wastes, management of historic wastes, recovery of orphan sources, knowledge management and human resources. The need to ensure that Contracting Parties' financial commitments are consistent with the extent of liabilities was also recognized.

115. Many Contracting Parties see the benefit of enhancing international cooperation through the exchange of information, experiences and technology. In particular, needs for sharing knowledge and assistance were emphasized by Contracting Parties with limited radioactive waste management and research programmes.

116. Three topics were discussed by the open-ended working group established at the opening plenary session:

- Ways to increase membership;
- Improvements in the review process;
- Roles of safety standards in the review process.

Concerning the role of the IAEA Safety Standards, the Contracting Parties shared the view that they constituted a useful source of guidance, among others, to which a Contracting Party could refer, on a voluntary basis, in preparing its National Report.

117. The Third Review Meeting will be held from 11 to 22 May 2009.

E.4. Findings of the International Conference on Management of Spent Fuel from Nuclear Power Reactors

118. The International Conference on the Management of Spent Fuel from Nuclear Power Reactors was held in Vienna on 19-22 June 2006. The conference was jointly organised by the Nuclear Safety Department and the Nuclear Energy. Compared to previous international conferences on spent fuel management, the scope of this conference was broader and included policy, safety and security aspects. Spent fuel is still differently regarded by Member States — as a resource by some and as a waste by others — and the strategies for its management vary, ranging from reprocessing to direct disposal. In all cases, a final disposition solution is needed and it is generally agreed that disposal deep in geological formations is the most appropriate solution.

119. In all countries, spent fuel or high level waste from reprocessing is currently being stored, usually above ground, awaiting the development of geological repositories. While these arrangements have proved satisfactory, it is generally agreed that they are interim and do not represent a final solution.

120. Recent fuel cycle initiatives by USA and Russia have similar overall goals of improving control over the increasing amounts of spent fuel, reducing proliferation and security risks, and assisting new countries to develop nuclear power. They rely on reprocessing and recycling, but with advanced technologies to reduce proliferation risks and minimize radioactive waste generation. The multilateral approaches also promise better assurances of security and proliferation resistance. It was proposed that the international agencies should continue to be involved and to evaluate these approaches further and it was also suggested that IAEA could be a monitoring agency to oversee the safety and other aspects of any multilateral initiatives that may be implemented.

121. The Joint Convention and the IAEA Safety Standards provide a framework for the international safety regime for spent fuel management. The transport of radioactive material, including spent fuel, provides a well-established example of this international safety regime through the near-universal application of the IAEA Transport Regulations. It was noted that other IAEA safety standards in the area of spent fuel management are in the process of being updated and elaborated. Conference participants made a number of proposals on topics that warrant the development of new safety standards.

122. Many technical aspects of spent fuel storage were also reviewed during the Conference:

- Presentations indicated that substantial benefits can be obtained from burn-up credit¹². However, much of the assessment and development work is for PWR and BWR fuels and there is a need to extend this work to VVER and RBMK fuels.
- Although most spent fuel storage systems were designed for short term application pending reprocessing or disposal, the unavailability of disposal facilities has resulted in extended operating periods for these storage systems in most countries. An important issue is how to establish the safety of these facilities for a longer term.
- There is a trend towards dry storage. While specialists expressed confidence in the technical development of storage facilities and containers, it was agreed that more research and development on fuel behaviour in dry storage is needed.

123. Looking to the future, the presentations at the Conference show some clear tendencies which can provide a basis for more international cooperation:

¹² Burn-up credit makes use of the change in the isotopic composition of fuel, and hence its reactivity, due to irradiation to allow denser storage of spent fuel.

- The need for geological repositories for radioactive waste;
- The development of advanced processing of spent fuel;
- The burning of actinides in fast reactors;
- The necessity to increase the duration of spent fuel storage;
- The unavoidable increase of transport of both spent fuel and radioactive waste.

F. The safe decommissioning of nuclear facilities and other facilities using radioactive material

124. This section describes the activities that have taken place on the International Action Plan on Decommissioning of Nuclear Facilities since July 2005. The background for the action plan is available in Annex 10 of document GOV/INF/2004/10-GC(48)/INF/7.

125. A database, incorporating detailed information from research reactor decommissioning projects, is attached to Technical Reports Series No. 446, *Decommissioning of Research Reactors: Evolution, State of the Art, Open Issues*. The Power Reactor Information System (PRIS) was extended to include NPPs that have been shutdown and Member States started to submit data beginning in early 2006.

126. A safety standard on safety requirements for the decommissioning of facilities using radioactive material has been endorsed by the CSS and the Board of Governors will consider this standard at its September 2006 meeting. The updating of the existing Safety Guides WS-G-2.1, *Decommissioning of Nuclear Power Plants and Research Reactors*, WS-G-2.2, *Decommissioning of Medical, Industrial and Research Facilities* and WS-G-2.4, *Decommissioning of Nuclear Fuel Cycle Facilities* has started.

127. A safety report has been drafted that provides information to assist Member States in selecting a suitable decommissioning strategy based on a number of key factors that must be considered during the selection process. This document is in the final approval process. IAEA-TECDOC-1478, *Selection of decommissioning strategies: Issues and factors*, highlighting specific issues on this subject has been drafted by the Technical Group on Decommissioning (TEGDE). Technical Reports Series No. 446, *Decommissioning of Research Reactors: Evolution, State of the Art, Open Issues*, has been approved for publication. A technical report on the decommissioning of research reactors and other small nuclear facilities by making optimal use of limited resources is being prepared.

128. The Research Reactor Decommissioning Demonstration Project began this past June with a workshop at the Philippine Research Reactor (PRR-1). The Government of the Philippines has agreed to host this project. Partial funding is being provided by a TC regional project and the Extrabudgetary Programme on the Safety of Nuclear Installations in South East Asia, Pacific and Far East Countries.

129. Technical Reports Series No. 441, *Management of Problematic Waste and Material Generated During the Decommissioning of Nuclear Facilities*, on the characteristics and management of specific decommissioning waste has been published. Another technical report on strategies and methodologies for dispositioning of large amounts of decommissioning materials at lower activity levels is being prepared. It provides information on industrial options for the disposition of decommissioning material with radionuclide levels close to clearance values.

130. The Government of Greece has agreed to host the International Conference on Lessons Learned from Decommissioning of Nuclear Facilities and the Safe Termination of Nuclear Activities, which will be held in Athens in December 2006. The programme has been finalized and over 80 contributed papers have been received.

131. IAEA-TECDOC-1476, *Financial Aspects of Decommissioning*, has been published, and Technical Reports Series No. 444, *Redevelopment of Nuclear Facilities after Decommissioning*, has been approved for publication.

132. Work is under way on documents addressing the societal aspects of decommissioning, specifically national experiences worldwide of stakeholders' involvement in decision-making in relation to decommissioning, and experiences of social issues related to the shutdown and decommissioning of nuclear facilities.

G. Education and training in nuclear, radiation, transport and waste safety

G.1. Education and training in nuclear safety

133. In continuing to implement the Strategy for Education and Training in Nuclear Safety, the Secretariat has drawn up a long-term plan for ensuring that there are sustainable programmes for education and training in nuclear safety in all relevant Member States by the end of the decade. The expected outcomes are national and regional centres providing training in line with the Agency's nuclear safety standards and standardized training materials for use by lecturers and trainees (in English and other languages). This section describes activities carried out since July 2005.

134. In 2005, a series of activities to assist Member States in the assessment of training needs and development of a comprehensive education and training programme were initiated. Detailed self-assessment guidelines were prepared based on the required competencies to perform the job duties in regulatory bodies and research reactor operating organizations. Workshops, oriented to senior staff members with responsibilities on training in the field of nuclear safety, were conducted in Indonesia, Malaysia, Pakistan, Romania and Thailand.

135. A two-week course on training assessment methodologies and the use of training materials developed by the Secretariat was successfully conducted in November 2005 in Saclay, France, in November 2005. The course was oriented to professionals from Europe and East Asia engaged in human resources development. Perceived needs expressed by Member States include tailoring of courses and materials according to regional requirements which will provide the basis for increasing programme relevance and training sustainability in 2006.

136. A two-week version of the Basic Professional Training Course on Nuclear Safety was conducted in Vietnam in November 2005. Local experts, using training materials prepared by the Secretariat and translated into the local language, gave most of the lectures. This course, as well as one conducted previously, is a step towards the establishment of a sustainable training programme. A third course will be conducted in Hanoi in September 2006 to strengthen fundamental knowledge and enhance technical competencies of national regulatory staff and managers.

137. In China, a workshop and review mission will take place in the second half of 2006 to develop sustainable training methods and practices in response to the need to train junior and senior regulatory staff for the rapidly developing nuclear power programme. Agency support will include assistance in planning the training of local nuclear safety trainers in keeping with the Agency's strong train-the-trainer approach, and translation of nuclear safety training materials for wide-scale use.

138. The creation of distance learning tools for self-study in two formats, hypertext modules, and multimedia materials for synchronized videos and PowerPoint presentations, continued. Synchronized videos and PowerPoint presentations of five safety guides were completed and are now available to Member States covering NPP design topics (protection against internal fires and explosions, emergency power systems, reactor containment systems, flood hazards in coastal and river sites), site evaluations, and documentation for use in regulating NPPs. A project is being launched in 2006 to facilitate improved access and provide an increased array of downloadable materials directly online via the Agency's web pages. This project will enable Member States to rapidly acquire newly issued multimedia materials and hypertext modules for national nuclear safety training purposes.

139. Work continued on the establishment of a network of training centres in the Asian region through which experience and training materials can be shared. The network is operating with a database into which training materials developed by the Secretariat and other participating organizations are systematically entered. Most of the training materials prepared by the Secretariat, except the multimedia materials, are accessible through the network to those Member States.

140. In addition to activities carried out pursuant to the long-term plan, the Agency conducted 45 training courses and workshops — mostly designed to inculcate the principles of safety at nuclear installations.

G.2. Education and training in radiation, transport and waste safety

141. The General Conference, in resolution GC(49)/RES/9.A, underlined the fundamental importance of sustainable programmes for education and training in nuclear, radiation, transport safety and waste management, and stated further that such education and training is a key component of any adequate safety infrastructure. A wide range of actions has been undertaken to promote and implement sustainable education and training programmes, as identified in the Strategic Plan endorsed by General Conference in resolution GC(45)/RES/10.C in 2001. A steering committee oversees the implementation of the Strategic Plan. This section describes activities that have been undertaken during the reporting period.

142. Pilot Education and Training Appraisal missions took place in two Member States. Each appraisal was aimed at identifying the Member State's training needs, assessing the national education and training strategy and preparing an action plan for an effective training system.

143. An inter-centre network between the Agency and the steering committee members (representing regional, collaborating and many national training centres) has been established and is now operational. Currently, all standardized training material is loaded onto the network, with packages and documents placed in relation to specific tasks of the steering committee. A discussion forum has been created. These features facilitate the efficient exchange, sharing and dissemination of information.

144. Eight train-the-trainer workshops (four on radiation protection in medicine, two on radiation protection in industry and two on radiological emergency preparedness and response) were held during the reporting period.

145. Specific training modules continue to be developed. Modules on radiation protection in cardiology, prevention of accidental exposures in radiotherapy, radiation protection and the management of radioactive waste in the oil and gas industry, quality management systems for technical services in radiation safety, authorization and inspection of cyclotron facilities for regulators and a training course for customs were completed and submitted to steering committee members for review.

146. More than 30 training packages on a wide range of radiation safety topics are now complete and have been validated by the steering committee. A large number of training packages were also disseminated to Member States on request.

147. To assist Member States in implementing their education and training programmes, a syllabus on the requirements for the training of radiation protection officers was prepared and submitted to the steering committee which recommended its publication in the final form. The document *Procedure for Planning, Implementing and Conducting Training in Radiation and Waste Safety* was submitted to the Steering Committee which recommended its implementation to ensure an effective quality management policy for education and training.

148. The Agency organized 28 regional training events relating to radiation, transport and waste safety within the framework of regional projects, national projects and regional cooperation agreements during the reporting period.

149. The annual postgraduate educational courses in radiation protection and the safety of radiation sources were held at the regional centres in Argentina, Belarus, Greece, Malaysia, Morocco and the Syrian Arab Republic. The courses were attended by over 120 participants and are based on the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources: Standard Syllabus (Training Course Series No. 18), which is now published in five languages (English, French, Spanish, Russian and Arabic).

H. Safety and security of radioactive sources

150. The project implementing the Tripartite¹³ Initiative on Securing and Managing Radioactive Sources in countries of the former Soviet Union has been successfully completed. As a result, a large number of vulnerable, high activity radioactive sources have been rendered safe and secure in six countries of the former Soviet Union. Similar projects for the recovery of vulnerable and orphan radioactive sources in other regions such as South Eastern Europe, countries in the Middle East and North Africa are being implemented or planned. Ongoing and future activities are receiving substantial financial and in-kind contributions from major donor States and the European Union.

151. A new radiation warning sign, to supplement the existing trefoil symbol, has been developed. Human factors experts, United Nations member states, and members of the international community of radiation protection professionals were consulted for input on the design of a new radiation warning sign that would clearly convey the message of “Danger — Run Away — Stay Away” when in close proximity to a dangerous source of radiation. Cultural differences of perception on various warning symbols were taken into consideration and arrays of possible signs were developed. The signs were tested internationally in 11 countries by a professional survey company to determine the best sign for this purpose. One sign clearly tested the best internationally in conveying the intended message. The new radiation warning sign is currently draft ISO standard 21482 under committee review. Country comments are in the process of being reconciled and the final vote is scheduled for the summer of 2006.

152. As requested in paragraph 59 of resolution GC(49)/RES/9, the Secretariat organized from 31 May to 2 June 2006 an open-ended meeting of technical and legal experts for consultation with

¹³ Agency, Russian Federation and USA.

Member States with a view to establishing a formalized process for a periodic exchange of information and lessons learned and for the evaluation of progress made by States towards implementing the provisions of the Code of Conduct on the Safety and Security of Radioactive Sources. The meeting was attended by experts from 66 Member States, 5 non-Member States and an observer from the European Commission. The group of experts reached consensus on a formal mechanism for a voluntary, periodic exchange of information for all States to share experiences and lessons learned in implementing the Code of Conduct and its supplementary Guidance on import and export. As suggested by the group of experts, the Chair report and its attachment are included as Annex 2 to this report. The recommended mechanism is consistent with the non-binding nature of the Code, and is primarily based on a single international meeting open to all States, held every three years. Regional meetings that include Code of Conduct related issues and relevant international conferences would provide an input to the international meeting. All meetings would be subject to the availability of funding.

153. As a result of the agreement reached at a technical meeting on The Code of Conduct on the Safety and Security of Radioactive Sources – sharing experiences in implementing the supplementary Guidance on the Import and Export of Radioactive Sources, held in Vienna in December 2005, forms for “Request for Consent” and “Notification of Shipment” have been prepared, translated to the official UN languages and placed on the internet in order to assist States in importing and exporting Category 1 and 2 sources. The import and export of radioactive sources subject to the Guidance will require the exchange of information between importing and exporting States. In order to facilitate this bilateral exchange of information, the Secretariat is collecting and publishing details of the relevant national contact points through the Internet. More than 70 States have nominated their national contact points.

154. Significant efforts continue to be provided to Member States to help them recover and safely and securely store their disused sealed radioactive sources. Recently, several old Co-60 teletherapy and Cs-137 brachytherapy sources, as well as two Category 1 irradiators loaded with Cs-137 sources, were recovered in the United Republic of Tanzania and transferred to a centralized storage facility. The conditioned sources will eventually be either returned to the country of manufacture or stored in a long-term safe and secure facility prepared for that purpose. The programme of return of sources to suppliers or manufacturers has contributed to reducing the sealed source inventory in developing countries. In 2005, disused sealed radioactive sources representing a total activity of 9000 curies have been repatriated from several countries in Africa and Latin America.

155. The International Catalogue of Sealed Radioactive Sources and Devices has been available for use by Member States since October 2005. The catalogue currently contains information on over 9900 source models, 10 200 device models and 1290 manufacturers and distributors. In connection to the catalogue, a booklet is in preparation to assist in the initial identification of radioactive devices, sources and packages by non-specialist individuals and organizations that may come in contact with them either by accident or in the course of their normal work. The booklet will be a publicly available document containing illustrative pictures of different types of devices and sources. Potential users include border control workers, scrap metal dealers and officials in government agencies.

I. Transport safety

I.1. Report on the planning and work of the International Expert Group on Nuclear Liability (INLEX)

156. The work of the International Expert Group on Nuclear Liability (INLEX) continued during 2006. In particular, the explanatory texts on the nuclear liability instruments adopted under Agency auspices were published under the new International Law Series, a new publication series which replaces the IAEA Legal Series. At the Group's sixth meeting held in May 2006, the Group, inter alia, discussed further ways to address previously identified gaps and ambiguities in the scope and coverage of the existing international nuclear liability instruments adopted under the auspices of the IAEA. In recognising that work in this area should continue, the Group concluded that the general promotion of the global nuclear liability regime was an integral part of its role, and that the Group's future work should highlight the positive aspects of the global nuclear liability regime while also facilitating discussion of any difficulties.

157. Arrangements for the second Regional Workshop on Liability for Nuclear Damage, scheduled to be held in Lima, Peru, in December 2006 are underway and Member States of the Latin America region will be invited to attend this workshop. The Group's work is ongoing and it is expected that it will continue to be a forum of expertise for discussions between shipping and coastal States and to provide authoritative advice on the nuclear liability instruments adopted under Agency auspices.

158. A more detailed Report on INLEX's past and future activities has been made available, at the request of Member States, as Annex 3 to the Nuclear Safety Review for the Year 2005 (document GC(50)/INF/2).

I.2. Implementation of the Action Plan for the Safety of Transport of Radioactive Material

159. This section describes the activities that have taken place on the action plan since July 2005. The background for the action plan is available in Annex 4 of document GOV/INF/2004/10-GC(48)/INF/7.

160. All actions, with one exception, identified in the action plan are either complete or on schedule for completion. The exception is the action for the Secretariat to initiate a coordinated research project on severe transport accidents. To date, Member State response has been insufficient.

161. A seminar on communication of the complex technical issues related to the safety of transport was held from 11 to 12 January 2006 in Vienna. The various presenters discussed all aspects of transport of radioactive material with special emphasis on complex technical issues. The participants had an open and constructive dialogue and gained a shared understanding of key transportation technical issues. Seminar participants concluded that both the Secretariat and the Member States had done an outstanding job in the development of the international transportation standard, the Transport Regulations. The international adoption and implementation of this standard has resulted in an extremely effective and safe programme for the transport of radioactive material worldwide. Participants agreed that the objectives of the seminar, as set in the Action Plan, were met.

162. The Agency conducted a TransSAS mission to Japan in December 2005. The mission report is due to be published in 2006.

163. The Agency held a technical meeting in January 2006 to discuss a draft guide on security of transport of radioactive material. Subsequently, the draft was provided to Member States for comments.

164. In accordance with the policy for reviewing and revising the Agency's Transport Regulations, the review of the 2005 edition of the Transport Regulations was completed and TRANSSEC determined that there was no need for an immediate revision of the Regulations. The CSS confirmed this assessment at its June 2006 meeting.

165. As recommended by the General Conference in paragraph 12 of resolution GC(49)/RES/9.B, the Agency held a technical meeting of experts from 8 to 12 May 2006 to discuss further the progress on the issue of denials of shipments of radioactive material. The experts recommended the establishment by the Director General of a steering committee on denials of shipments of radioactive material. The mandate and role of the steering committee would be to identify, evaluate and implement actions to alleviate denials of shipment on the basis of an action plan. In doing so, the steering committee would review existing activities, improve understanding for the reasons of denials of shipment and act as the focal point for receiving notifications. The Agency also continues to coordinate with the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) and meet with port and regulatory authorities as necessary.

J. International nuclear and radiological emergency preparedness and response

166. The Agency's Incident and Emergency Centre (IEC) was established in February 2005 to serve as the global focal point of an international preparedness, communication and response system for nuclear or radiological safety or security related incidents or emergencies, threats or events of media interest, and to facilitate the enhancement of Member States' capabilities for responding to nuclear or radiological incidents and emergencies, independently of the cause, by offering timely and efficient services and by promoting international cooperation. The IEC reports directly to the Deputy Director General, Head of the Department of Nuclear Safety and Security, and is now located on floor B08 of the Vienna International Centre in a wider space environment with enhanced functional arrangements and technological capabilities.

167. General Conference resolution GC(48)/RES/10 requested the Secretariat to review its current mechanisms for reporting and sharing information about incidents and emergencies. This review is complete and the process of creating a single web-based portal for incidents and emergencies was initiated. The portal will bring together the exchange of information mechanisms of the Early Notification and Assistance Conventions and the Nuclear Events Web-based System (NEWS), and later streamline and enhance these information channels by making use of the illicit trafficking database mechanisms.

168. The enhanced application of the INES methodology has been pursued by the trial use of additional guidance for the rating of events involving the transport of radioactive material. This guidance — in use since June 2004 — was endorsed by the INES national officers in May 2006. A revised INES manual is planned to be issued in 2007 incorporating the trial guidance and other clarifications.

169. NEWS¹⁴ provides general information on the occurrence of nuclear events rated using the INES scale. More than 1600 registered users, as well as the media and public have access the website.

170. A Safety Guide on arrangements for preparedness for a nuclear or radiological emergency has been approved by the CSS and a safety guide on generic reference levels — based on IAEA-TECDOC-1432, *Development of an extended framework for emergency response criteria* (published in 2005) — is under development. The Secretariat also continued to develop and maintain practical documents that could be easily implemented by Member States such as a manual for first responders to a radiological emergency, which was tested during a national exercise in Jakarta, Indonesia, in September 2005.

171. The International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies (see resolutions GC(46)/RES/9.D and GC(47)/RES/7.A) has been implemented by the Secretariat, in close collaboration with the National Competent Authorities' Coordinating Group (NCACG). To date, draft documents describing the concept and strategy for achieving an internationally harmonized communications system and for enhancing international assistance for nuclear and radiological incidents and emergencies were prepared. A protected website is available to facilitate the exchange of information and documents among all relevant stakeholders.

172. The Secretariat, as part of the Agency's strategy for supporting the practical implementation of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, has developed the concept of a Response Assistance Network (RANET). RANET consists of national capabilities to respond (on request) rapidly and, in principle, on a regional basis, to nuclear or radiological incidents and emergencies irrespective of the cause. A document explaining RANET was published in April 2006. Competent authorities under the framework of the Assistance Convention are strongly encouraged to join the network.

173. The third meeting of the representatives of competent authorities identified under the Convention on Early Notification of a Nuclear Accident and the Assistance Convention was held in Vienna from 12 to 15 July 2005. The delegates supported the development of a code of conduct for the international emergency management system. The Agency received an official request to develop a code in April 2006.

174. Major lessons learned from the international nuclear emergency exercise (ConvEx-3 (2005)) held in May 2005 are the need to improve responders' training and the effectiveness of the release of information to the public. Corrective measures have been taken by the Secretariat and by Member States to overcome these shortcomings. The next ConvEx-3 exercise is scheduled for 2008.

¹⁴ <http://www-news.iaea.org/news/default.asp>

Annex 1

Beyond the Action Plan on the Development and Application of Safety Standards

Statement by the Commission on Safety Standards (CSS)

“The CSS recognizes that the quality of the safety standards in the new IAEA Safety Standards Series has been significantly enhanced, considering in particular that their content increasingly reflects good international practices and some of the best international practices.

With the aim of maintaining a continuous improvement, the CSS welcomes the report prepared by the Secretariat, which describes the achievements under the Action Plan, identifies new challenges and presents ways to respond to these in the future.

The CSS agrees that there are challenges giving rise to a need for further rationalization of the safety standards programme, including:

- the approval for publication of the unified Safety Fundamentals publication as the primary standard for the Safety Standards Series, which calls for a review of the relationship between the Safety Fundamentals and the various Safety Requirements;
- the increasing use of the IAEA safety standards by the Member States, which calls for greater stability;
- the strategic interest of achieving better international recognition and use of the safety standards as a reference and in particular of seeking joint sponsorship of the standards with other international organizations.

The CSS therefore supports the proposals from the IAEA Secretariat and requests it to elaborate on them further and to propose at its next meeting in November 2006 a policy paper together with a revised overall structure for the safety standards, which should:

- propose a vision on what the entire series would comprise in the future (the concept of a ‘closed set’ of safety standards);
- establish a logical relationship between the unified Safety Fundamentals and the various Safety Requirements, as well as logical relationships between the Safety Requirements and the subsequent Safety Guides;
- maintain a manageable number of publications and take into account the need for efficiency and timeliness for the future development of the Series.

For the transition period, an analysis of the differences between the proposed future set and the current set should be presented, together with a proposal for prioritization of the work to be done.

Moreover, the CSS requests the Secretariat to analyse the potential need for more detailed publications to assist the Member States in implementing the recommendations of the Safety Standards. The CSS, in view of the link with the safety standards publications and the actual use of these technical documents by a number of Member States, is of the opinion that it may be useful to consider identifying a dedicated category for these publications as well as a dedicated, clear and flexible process for their review.

The CSS considers that continuous improvement relies on a strong commitment by, and shared responsibilities between, the CSS, the safety standards committees and the IAEA Secretariat, and is looking forward to considering the proposal from the Department of Nuclear Safety and Security management team after discussion at the Committees.”

Annex 2

Report of the Chairman

Meeting of technical and legal experts for Consultations with States with a view to establishing a formalized process for a periodic exchange of information and lessons learned and for the evaluation of progress made by States towards implementing the Code of Conduct on the Safety and Security of Radioactive Sources

Vienna, 31 May to 2 June 2006

1. Pursuant to a request from the 2005 General Conference of the IAEA, a meeting of technical and legal experts for ‘consultations with States with a view to establishing a formalized process for a periodic exchange of information and lessons learned and for the evaluation of progress made by States towards implementing the Code of Conduct on the Safety and Security of Radioactive Sources’, was held from 31 May to 2 June 2006 at the IAEA Headquarters in Vienna under the chairmanship of Mr S. McIntosh (Australia). The meeting was attended by experts from 66 Member States (Albania, Algeria, Argentina, Armenia, Australia, Azerbaijan, Belgium, Benin, Brazil, Cameroon, Canada, China, Croatia, Cuba, Czech Republic, Ecuador, Ethiopia, Finland, France, Georgia, Germany, Ghana, Greece, Hungary, India, Indonesia, Iraq, Italy, Japan, Jordan, Kazakhstan, Korea Republic of, Kuwait, Kyrgyzstan, Liberia, Libyan Arab Jamahiriya, Lithuania, Malaysia, Maldives, Mali, Mexico, Moldova, Morocco, Niger, Nigeria, Pakistan, Panama, Philippines, Portugal, Romania, Russian Federation, Senegal, Serbia and Montenegro, Seychelles, the Slovak Republic, Sweden, Tajikistan, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, United States of America, Uruguay, Vietnam, Yemen and Zambia), 5 non-Member States (Brunei Darussalam, Burundi, Mozambique, Palau and St. Vincent and the Grenadines), and the European Commission. The Scientific Secretaries for the meeting were Mr J. Wheatley (NSRW) and Mr W. Tonhauser (OLA). The meeting was opened by Ms E. Amaral, Director NSRW.

2. The Secretariat provided background information on the current level of international support for the Code, the various means by which IAEA can, and is, assisting States to implement the Code, and an overview of the new nuclear security series. Participants were also informed about the information exchange mechanism for the Code of Conduct on Research Reactors which had recently been developed.

3. At the outset of the meeting, there was some discussion as to how knowledge concerning the capability of other States to manage Category 1 and 2 sources in a manner consistent with the provisions of the Code might be more effectively disseminated, in order to facilitate the application of the import and export provisions of the Code and of the Guidance. Some States that are already implementing the Guidance strongly urged that selected information such as progress under the Model Project, or pertinent parts of the reports of the Agency’s RaSSIA missions to particular Member States, be made available, as this is important for full consideration of export licence applications. Other experts noted that the RaSSIA missions were conducted on the basis of confidentiality (particularly given that they cover security as well as safety), and that their results were in any event only a snapshot in time. It was also noted that the reports of the RaSSIA equivalent in the transport field – TranSAS missions – were generally public documents. It was recognized that any reports of a RaSSIA mission, or parts thereof, could be provided to other States only with the consent of the State

concerned. Experts felt that this issue needed further consideration, both by States and by the Secretariat.

4. Prior to the meeting, the Chairman had circulated a discussion paper on options for an information exchange mechanism to participants. Based on that paper, a wide discussion on the possible shape of such a mechanism took place. That discussion resulted in consensus support for a mechanism for a voluntary, periodic exchange of information among States on their implementation of the Code and Guidance, as outlined in the Attachment to this Report. Experts noted that information sharing on issues relating to the security of radioactive sources would have to be at a somewhat general rather than a detailed level, given the need not to diminish the effectiveness of States' security systems.

5. The Chairman's discussion paper had raised the possibility of holding the information exchange in conjunction with a major international conference such as the International Conference on the Safety and Security of Radioactive Sources held from 27 June to 1 July 2005 at Bordeaux, France. Experts felt that, whilst the information exchange which had taken place at that Conference had been valuable, the fact that it had been restricted to less than one day — as necessitated by the overall programme of such a Conference — meant that the issues relating to implementation of the Code and Guidance had not been discussed at great depth and that not all participants had had a full opportunity to contribute to the discussion. It was also noted that such conferences are typically open to the media, and as such States may not feel comfortable in openly sharing experiences in such a forum. The meeting therefore preferred to institute a dedicated mechanism for the information exchange, whilst noting that it might be appropriate for the reports of the meetings held under that mechanism to be reported to future relevant International Conferences, and that the findings of such Conferences may provide an input to the meetings under the mechanism.

6. The recommended mechanism includes regional meetings. It was noted that such meetings could be held in conjunction with IAEA-organized meetings in the different technical co-operation areas or with meetings of other organisations such as regional meetings of the International Radiation Protection Association.

7. The recommended mechanism also includes international meetings which would, inter alia, produce a report summarising the discussions. It was noted that this report would, consistent with the flexible nature of the process, be a report of the Chairman which would be discussed, but not formally adopted, by the participating States.

8. It was noted that the Regular Budget of the Agency currently did not contain the funds necessary for the process outlined in the Attachment to this report, and that it would need to be largely supported by extra-budgetary funding. Some experts considered that the meetings should be funded from the Regular Budget, whilst recognising that that was ultimately a decision to be taken by the Agency's governing bodies. It was further noted that any proposals for interpretation during the meetings or holding the meetings outside IAEA Headquarters would add to the cost of such meetings. Given the value of such a mechanism for the enhancement of the safety and security of radioactive sources around the world, Member States were encouraged to positively consider providing such funding on a voluntary basis. If the first meeting were to be held in 2007 as suggested, some experts considered that it should be held in English only and at IAEA Headquarters.

9. Experts suggested that the Director-General submit this report and its Attachment to the Agency's policy-making organs for their information and endorsement of the actions proposed therein.

Steven McIntosh

Chairman

2 June 2006

Attachment to Chair report

A Process for the Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance on the Import and Export of Radioactive Sources

1. The objective of the process is to promote a wide exchange of information on national implementation of the Code of Conduct on the Safety and Security of Radioactive Sources (the 'Code') and the associated Guidance on the Import and Export of Radioactive Sources (the 'Guidance'). The information exchange would not replace the possible review of the Guidance foreshadowed in paragraph 20, or the informal information exchange and consultation processes recommended in paragraph 21, of that document. Noting the non-binding nature of the Code and the Guidance, such an exchange of information would:
 - a) Assist States in their national implementation of the Code and Guidance, by enabling them to learn from the experiences of others and to evaluate their own progress on implementation of the Code and Guidance;
 - b) Increase the knowledge of States concerning the capability of other States to manage Category 1 and 2 sources in a manner consistent with the provisions of the Code in order to facilitate the application of the import and export provisions of the Code and of the Guidance;
 - c) Increase the awareness of the Secretariat about the implementation of the Code and Guidance to assist them in the planning of their regular and technical co-operation programs; and
 - d) Invite and encourage more States to implement (and politically commit to) the Code and the Guidance.
2. The information exchange process should be voluntary in nature. It should encourage the broadest possible participation by all member and non-member States, whether or not they have made a political commitment to the Code and/or the Guidance. Intergovernmental organizations may also be invited to attend as observers.
3. There should be two elements to such an information exchange:
 - a) A dedicated international meeting, to be organised by the IAEA Secretariat and held every three years (ideally, in the year not currently used for the review processes under the CNS and the Joint Convention). The first such meeting could therefore be held in 2007. Such a meeting would provide a forum for a wide exchange of information on national implementation of the Code and Guidance. Each meeting should have a duration of five days. States participating in the meeting should be urged to submit national papers and presentations, but such submission should not be mandatory.
 - b) Regional meetings to share information on experiences on implementing the Code and the Guidance should be held as appropriate. Such meetings would be held on an as-needed basis and preferably prior to the international meeting, and reports from such meetings would be presented to the opening plenary of that international meeting. In order to reduce costs, regional meetings may be held in conjunction with other relevant regional meetings. Their organisation would be left to the participants in each meeting. The IAEA Secretariat may wish to attend these regional meetings, if invited. The Chairs of these regional meetings may also wish to provide meeting summaries to the Secretariat for transmission to other States prior to the international meeting.

4. States wishing to submit voluntary national papers in English sharing experience on implementation of the Code and the Guidance are encouraged to provide these to the IAEA Secretariat four weeks in advance of the meeting to facilitate timely transmission to other States participating in the Meeting. The Secretariat would then make the papers available to other participants in advance of the meeting via a password-protected web site. Countries may choose to discuss any relevant issues in their papers. The papers might cover, but are not limited to:

- a) The infrastructure for regulatory control.
- b) The facilities and services available to the persons authorized to manage radioactive sources (paragraph 9 CoC).
- c) Training of staff in the regulatory body, law enforcement agencies and emergency service organizations (paragraph 10 CoC).
- d) Experience in establishing a national register of radioactive sources (paragraph 11 CoC).
- e) National strategies for gaining or regaining control over orphan sources, including arrangements for reporting loss of control and to encourage awareness of, and monitoring to detect, orphan sources (paragraphs 8(b), 12 and 13 CoC).
- f) Approaches to managing sources at the end of their life cycles (paragraphs 14 and 15 CoC).
- g) Experience with arrangements for implementing the import and export provisions of the Code (paragraphs 23 to 29) and the Guidance on the Import and Export of Radioactive Sources.
- h) Any other issues relevant to the implementation of the Code and the Guidance.

5. The papers may briefly describe the current circumstances in the country with regard to the aforementioned topics. They may also comment on achievements and success stories, on difficulties encountered and lessons learned and/or on areas where improvements were still needed, and set out the future strategies for addressing these matters. Papers should be brief – they do not need to be more than ten pages in length. They should contain a one-page executive summary.

6. The international meeting should commence with an opening plenary to discuss organisational issues, hear and discuss reports from the preceding regional meetings (see paragraph 3(b) above) and discuss any issues relevant to the implementation of the Code and/or the Guidance of particular importance that a State may wish to raise. That plenary should not last for more than one day. The opening plenary should decide upon the allocation of time between the Country Groups and the closing plenary, drawing upon the suggestions in the following paragraphs as appropriate.

7. The opening plenary would be followed by meetings of Country Groups. Allocation of States to Country Groups would be done initially alphabetically, with discretion for the Secretariat to adjust that allocation to ensure that there is an approximately even spread of experience across the Groups. At the first meeting, there should be a total of three groups. Each meeting should decide upon how many Country Groups there should be at the next meeting. States choosing to make a presentation would do so in their allocated Country Group, but all participants are otherwise free to attend and take part in the discussions in other Country Groups. The chairman of the meeting and members of the Secretariat should be free to take part in any Country Group discussions. National presentations may be made by oral presentation and/or by poster presentations.

8. The Country Groups would each have their own chair, to be appointed by the opening plenary. In those Country Groups, States could make a voluntary national presentation, of up to approximately 15 minutes in duration, on their national experiences. There would be no obligation on States to make an oral or poster presentation, even if they have submitted a national paper. After the conclusion of those presentations (which in total should take no more than 50% of the time allocated to the Country Group sessions), there should be open discussions on a range of topics, such as those identified in paragraph 4. The Country Group discussions should conclude by the fourth day of the meeting.

9. After the conclusion of the Country Group sessions, all participating States would again meet together in plenary. That plenary would hear reports from the Chairs of the Country Groups on the discussions within those Groups, and may further discuss particular topics of interest identified by those reports. Any other issues relevant to the implementation of the Code and/or the Guidance of particular importance that a State may wish to raise may also be discussed in that plenary meeting. The plenary may also make recommendations as to actions which might be taken by the IAEA Secretariat to assist States in their implementation of the Code and/or Guidance, and should discuss the content of the Chairman's report (see paragraph 10 below).

10. The Chairman should prepare a report of the meeting, of approximately 5-6 pages. That report would not identify any participating State by name, but would be grouped under broad themes. The report might also identify areas where the process might be improved for future meetings. In that way, the broad outcomes of the discussions at the meeting would be reported to the governing bodies of the IAEA and to the public. After each international meeting, each State should indicate whether its national paper should be made publicly available by the Secretariat. Diagram 1 gives a pictorial overview of the process.

Diagram 1. Pictorial overview of process

