

Board of Governors
General Conference

GOV/2024/40-GC(68)/11

General Distribution
Original: English

For official use only

NUCLEAR AND RADIATION SAFETY

Report by the Director General

For official use only

Item 13 of the Conference's provisional agenda
(GC(68)/1 and Add.1)

Nuclear and Radiation Safety

Report by the Director General

Summary

Pursuant to resolution GC(67)/RES/7, a report covering the following subjects is submitted to the Board of Governors and the General Conference for their consideration:

- General;
- Conventions, regulatory frameworks and supporting non-legally binding instruments;
- Agency safety standards;
- Self-assessments and the Agency's peer review and advisory services;
- Nuclear installation safety;
- Radiation safety and environmental protection;
- Transport safety;
- The safety of spent fuel and radioactive waste management;
- Safety in decommissioning, uranium mining and processing, and environmental remediation;
- Capacity building;
- Safe management of radioactive sources; and
- Nuclear and radiological incident and emergency preparedness and response.

Recommended Action

It is recommended that the Board of Governors take note of this report.

Nuclear and Radiation Safety

Report by the Director General

A. General



Participants at the 34th Meeting of the Steering Committee of the Asian Nuclear Safety Network in Beijing, April 2024 (Photo: Nuclear and Radiation Safety Centre of the People's Republic of China)

1. This report has been produced for the 68th regular session (2024) of the General Conference in response to resolution GC(67)/RES/7, in which the General Conference requested the Director General to report in detail on the implementation of nuclear and radiation safety activities in response to the resolution and on other relevant developments in the intervening period. This report covers the period from 1 July 2023 to 30 June 2024.
2. The Agency continued its efforts to maintain and strengthen nuclear, radiation, transport and waste safety, and emergency preparedness and response (EPR) capabilities, focusing, inter alia, on the technical areas and geographical regions where the need for such efforts is greatest. The Agency implemented numerous activities and services to assist Member States considering or planning for the introduction of nuclear power or radiation technology; establishing or strengthening their safety infrastructure and regulatory framework; and building competency in several areas related to nuclear and radiation safety.¹
3. The Agency continued to encourage Member States to become Contracting Parties to the Convention on Nuclear Safety (CNS), the Joint Convention on the Safety of Spent Fuel Management

¹ This relates to operative paragraphs 1 and 2 of resolution GC(67)/RES/7.

and on the Safety of Radioactive Waste Management (Joint Convention), the Convention on Early Notification of a Nuclear Accident (Early Notification Convention) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention). Activities related to the Conventions are reported in detail in subsequent sections of this report.²

4. In March 2024, a report by the Director General containing the draft *Nuclear Safety Review 2024* was submitted to the Board of Governors. The final version of the *Nuclear Safety Review 2024*, prepared in the light of discussions at the Board of Governors, is provided as an information document at the 68th regular session of the Agency's General Conference. The *Nuclear Safety Review 2024* includes the global trends and the Agency's activities in 2023. It also presents priorities and related activities for 2024 and beyond, as identified by the Agency, for strengthening nuclear, radiation, transport and waste safety, as well as EPR. These priorities are addressed in the Agency's Programme and Budget, including outcomes, outputs, timelines and performance indicators.³

5. Through the Legislative Assistance Programme the Agency continued to provide assistance to its Member States to support the development of adequate and comprehensive national nuclear legal frameworks and to promote adherence to the relevant international legal instruments in all areas of nuclear law. Specific bilateral legislative assistance was provided to 19 Member States through written comments on draft and enacted national nuclear legislation, and nine dedicated bilateral review meetings to provide specific advice on such legislation and the Agency's comments thereon. In addition, the Agency conducted the following activities:⁴

- A regional workshop on nuclear law for Member States in Europe and Central Asia was conducted in Bar, Montenegro, in September 2023; and
- Twelve other legislative assistance activities were conducted in a number of Member States, comprising seven awareness-raising meetings for decision makers, policymakers and senior officials and five national workshops on international and national nuclear law.

6. The Agency organized the eleventh session of the Nuclear Law Institute (NLI) in Vienna in October 2023, where participants from 54 Member States acquired a solid understanding of all aspects of nuclear law, with a particular focus on legislative drafting.⁵

7. The thirteenth Treaty Event took place during the 67th regular session of the Agency's General Conference. It provided Member States with a further opportunity to deposit their instruments of ratification, acceptance or approval of, or accession to, the treaties deposited with the Director General, including those related to nuclear safety, security and civil liability for nuclear damage. Belarus, Egypt and Zimbabwe all deposited legal instruments to become a party to the various instruments.⁶

8. The Agency held three Regional Training Courses for New Regulators in Radiation Safety and Security of Radioactive Material — in Buenos Aires in October–November 2023, in Rabat in May–June 2024, and in Accra in May–July 2024. These courses provided participants with comprehensive training in core regulatory functions and processes, including notification and authorization procedures, review and assessment techniques, inspection protocols, enforcement practices and comprehension of

² This relates to operative paragraph 21 of resolution GC(67)/RES/7.

³ This relates to operative paragraphs 6 and 148 of resolution GC(67)/RES/7.

⁴ This relates to operative paragraphs 21 and 116 of resolution GC(67)/RES/7.

⁵ This relates to operative paragraphs 21 and 116 of resolution GC(67)/RES/7.

⁶ This relates to operative paragraph 21 of resolution GC(67)/RES/7.

regulations and guides, as well as in effective communication and consultation with relevant stakeholders.⁷

9. The Agency held two Regional Training Courses on the Authorization and Inspection of Radiation Safety and Nuclear Security for Industrial Practices — in Rabat in September 2023, and in Addis Ababa in April 2024. Additionally, a National Training Course on Regulatory Control of Radiotherapy Practices was held virtually in Nairobi in January 2024 to train regulators in review, assessment, authorization, inspection and enforcement practices in relation to various radiotherapy technologies.⁸

10. The Agency held a meeting of the Steering Committee of the Regulatory Cooperation Forum (RCF) in Vienna in July 2023, and an RCF Support Meeting in Vienna in June 2024, to review the status of regulatory infrastructure development in countries receiving support from the RCF and to foster the exchange of experience.⁹

11. As part of RCF activities, the Agency held a Technical Meeting on Strengthening National Regulatory Infrastructure in Tokyo in February 2024, to facilitate the sharing of information and experience, including with regard to the Japanese Nuclear Regulation Authority's update of the national regulatory framework on the basis of lessons learned from the Fukushima Daiichi accident, and to assist nuclear safety regulatory organizations in the area of regulatory infrastructure development.¹⁰

12. The Agency held a Regional School on Drafting Regulations for Radiation Safety and Security of Radioactive Material in Vienna in July 2023 to train teams of regulators from the Caribbean region in drafting regulations for radiation safety and security of radioactive material.¹¹

13. An Interregional Training Course — School on Drafting Regulations for Countries Embarking on a Nuclear Power Programme was held in Beijing in November–December 2023 to provide guidance to regulators in embarking countries on the preparation of regulations related to the safety of nuclear power plants (NPPs), and to improve the knowledge and skills of participants in developing and drafting national nuclear safety regulations.¹²

14. The Agency held a Training Workshop on the Assessment of the National Nuclear Infrastructure to Support a New Research Reactor Project in Vienna in October 2023, through which it provided guidance to Member States embarking on new research reactor projects on assessing and developing related national infrastructure.¹³

15. The Agency held a Regional Workshop on Strengthening Radiation Safety Culture in Medicine in Rabat in November 2023 to train participants to understand and implement values and behaviours that promote safety culture in relation to the uses of medical radiation, in order to strengthen radiation safety culture in Member States.¹⁴

⁷ This relates to operative paragraphs 2, 28 and 116 of resolution GC(67)/RES/7.

⁸ This relates to operative paragraphs 2, 28 and 116 of resolution GC(67)/RES/7.

⁹ This relates to operative paragraphs 2 and 28 of resolution GC(67)/RES/7.

¹⁰ This relates to operative paragraphs 2 and 28 of resolution GC(67)/RES/7.

¹¹ This relates to operative paragraphs 2, 28 and 116 of resolution GC(67)/RES/7.

¹² This relates to operative paragraphs 2 and 116 of resolution GC(67)/RES/7.

¹³ This relates to operative paragraph 5 of resolution GC(67)/RES/7.

¹⁴ This relates to operative paragraph 7 of resolution GC(67)/RES/7.

16. The Agency held a Regional Workshop on Safety and Nuclear Security Culture Values and Approaches in Castries, Saint Lucia, in November 2023 to raise awareness of the importance of a nuclear safety and security culture among Member States of the Caribbean region.¹⁵

17. The Agency held two National Workshops on Safety Culture Self-Assessment for the Regulatory Body in Nairobi in July 2023 and in Mexico City in November 2023 to guide participants from the regulatory bodies in establishing a strategic approach to assessing and enhancing safety culture.¹⁶

18. In December 2023, the Agency held a National Training Activity on the Promotion and Assessment of Nuclear Safety Culture and Leadership for Nuclear Safety and Organizational Resilience in Cernavodă, Romania, to increase awareness and understanding of safety culture assessment and development, leadership for safety, regulatory requirements and international standards, and to identify opportunities for improvement in future training activities.¹⁷

19. The Agency held a Technical Meeting on the Consideration of Human Factors in the Safety of Nuclear Fuel Cycle Facilities in Vienna in November 2023. The meeting facilitated the exchange of experience in developing and sustaining programmes for leadership and management for safety, including a strong safety culture, and provided practical information on managing the interaction of human, technical and organizational factors in the design and operation of nuclear fuel cycle facilities (NFCFs).¹⁸

20. During the reporting period, the Agency continued developing two Technical Reports Series publications on safety and security interfaces, provisionally entitled *Use of Safety Analysis Approaches to Support Nuclear Security at Nuclear Installations* and *Design Safety and Security Considerations for Transportable Nuclear Power Plants*.¹⁹

21. The Agency coordinated programmatic activities on the safety of research reactors with nuclear energy activities and nuclear applications in technical areas of a cross-cutting nature. A Technical Meeting on Integrated Management Systems for Research Reactors was held in Daejeon, Republic of Korea, in September 2023, which provided practical information on the establishment, implementation and continuous development of management systems for research reactors on the basis of the Agency's safety standards. Additionally, a Training Workshop on the Assessment of National Nuclear Infrastructure to Support a New Research Reactor Project was held in Vienna in October–November 2023 to provide information on the assessment of nuclear infrastructure for such projects based on the publication entitled *Specific Considerations and Milestones for a Research Reactor Project* (IAEA Nuclear Energy Series No. NP-T-5.1).²⁰

22. As part of its coordinated programmatic activities, the Agency continued its support for the Director General's Rays of Hope initiative. As safety is a key element in the initiative, technical support for radiation safety was provided to regulators and users, for example to finalize new regulations and ensure that all equipment and procedures used are in accordance with the Agency's safety standards.²¹

¹⁵ This relates to operative paragraphs 7 and 8 of resolution GC(67)/RES/7.

¹⁶ This relates to operative paragraphs 7 and 14 of resolution GC(67)/RES/7.

¹⁷ This relates to operative paragraph 7 of resolution GC(67)/RES/7.

¹⁸ This relates to operative paragraphs 7 and 114 of resolution GC(67)/RES/7.

¹⁹ This relates to operative paragraph 8 of resolution GC(67)/RES/7.

²⁰ This relates to operative paragraphs 9 and 59 of resolution GC(67)/RES/7.

²¹ This relates to operative paragraphs 2 and 9 of resolution GC(67)/RES/7.

23. In a collaboration between the Department of Nuclear Safety and Security and the Department of Nuclear Energy, the Agency started collating information about the safe decommissioning of small and medium sized modular reactors and the management of the ensuing radioactive waste, with a particular focus on the challenges these could present to the application of relevant international safety standards. This has included engaging the designers of such reactors.²²
24. The Agency held a Workshop on Safety Considerations in the Use of Advanced Technologies at Nuclear Fuel Cycle Facilities in Warrington, United Kingdom, in October 2023. The workshop provided a forum for the exchange of information and experience in design and operational safety and regulatory oversight in the use of advanced technology, including digital control systems, robotics and artificial intelligence (AI) at NFCFs.²³
25. During the reporting period, two IAEA Technical Documents were finalized on safety and performance aspects in the development and qualification of high burnup nuclear fuels for water cooled reactors, and on analysis and modelling of severe accidents for liquid metal cooled fast reactors. Work was undertaken to develop a technical document to capture the outcomes of the completed coordinated research project (CRP) entitled “Design and Performance Assessment of Passive Engineered Safety Features in Advanced Small Modular Reactors”.²⁴
26. The Agency held the 20th and 21st Meetings of the Steering Committee of the Global Nuclear Safety and Security Network (GNSSN) in a virtual format in December 2023 and in person in Vienna in June 2024, respectively, to review the GNSSN action plan and share information among members of the Steering Committee.²⁵
27. The Agency held the 33rd and 34th Meetings of the Steering Committee of the Asian Nuclear Safety Network (ANSN) in Vienna in August 2023 and in Beijing in April 2024, to discuss ways to improve the efficiency and effectiveness of ANSN activities and to review the work plan for 2024–2026.²⁶
28. The Agency held the 15th Annual Meeting of the Arab Network of Nuclear Regulators in Vienna in February 2024, to discuss concrete action items to enhance nuclear and radioactive material safety and security in the Arab region for 2024-2025.²⁷
29. The Agency held the 21st Meeting of the Steering Committee of the Forum of Nuclear Regulatory Bodies in Africa in Egypt in June 2024 to review the Forum’s achievements and approve the work plan for 2024.²⁸
30. The Agency held the 12th Meeting of the Steering Committee of the European and Central Asian Safety Network in Vienna in June 2024 to review and update the work of the Network in 2024 and discuss the work plan for 2025.²⁹

²² This relates to operative paragraphs 9 and 102 of resolution GC(67)/RES/7.

²³ This relates to operative paragraphs 9 and 71 of resolution GC(67)/RES/7.

²⁴ This relates to operative paragraph 9 of resolution GC(67)/RES/7.

²⁵ This relates to operative paragraphs 10 and 118 of resolution GC(67)/RES/7.

²⁶ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

²⁷ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

²⁸ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

²⁹ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

31. The Agency held the Seventh Global Nuclear Safety and Security Communication Network Steering Committee Meeting in Vienna in November 2023, with the possibility of remote connection, to review the outcomes of the Network's activities in 2023 and to review and approve the work plan for 2024.³⁰

32. The Agency completed a project to refurbish and modernize the Global Safety Assessment Network (GSAN) website — hosted on the NUCLEUS portal — to improve the accessibility of information. Work was initiated to develop a repository of knowledge on the GSAN website to cover design safety and safety assessment for current, evolutionary and innovative reactors, including small modular reactors (SMRs), advanced non-water cooled reactors, floating nuclear power plants (FNPPs) and fusion facilities. As a collaborative platform, GSAN enables the Agency to share information on its activities related to the safety of innovative reactors with the international community of nuclear safety experts, and those aiming to increase their knowledge on the safety of those technologies.³¹

33. The Practical Arrangements between the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO) and the Agency on cooperation in the areas of nuclear and radiation safety, EPR and nuclear security were extended in July 2023. The Agency organized two Steering Committee meetings in Lisbon in November 2023, and in Asunción in June–July 2024. Three additional meetings were held under the FORO extrabudgetary programme. FORO launched its new web collaboration portal, known as 'RED', in September 2023, which provides relevant information about the work of FORO to the general public and optimizes interaction among its users.³²

34. The Agency participated in the European Nuclear Safety Regulators Group (ENSREG) meetings in Brussels in October 2023 and March 2024 to exchange information in the area of nuclear safety, in particular on the conduct of Integrated Regulatory Review Service (IRRS) missions.³³

35. The Agency held a Workshop on the Safe Transport of Fissile Material in Ankara in January 2024 to highlight the administrative and design requirements for packages containing fissile material, as outlined in the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)).³⁴

³⁰ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

³¹ This relates to operative paragraph 10 of resolution GC(67)/RES/7.

³² This relates to operative paragraph 11 of resolution GC(67)/RES/7.

³³ This relates to operative paragraph 11 of resolution GC(67)/RES/7.

³⁴ This relates to operative paragraph 14 of resolution GC(67)/RES/7.

B. Conventions, Regulatory Frameworks and Supporting Non-Legally Binding Instruments



*Fifth Extraordinary Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in Vienna, March 2024
(Photo: IAEA)*

36. The Agency continued to encourage Member States, especially those planning, constructing, commissioning or operating NPPs or considering a nuclear power programme, to become Contracting Parties to the Convention on Nuclear Safety (CNS). This was done through discussions with Member States' representatives during Agency conferences, meetings, peer review missions and visits of the Director General to Member States, as well as through technical cooperation projects including on legislative assistance. During the reporting period, four Member States (Egypt, El Salvador, Iraq and Zimbabwe) became new Contracting Parties to the CNS, bringing the total number of Contracting Parties to 95.³⁵

37. The Agency held a Workshop for Contracting Parties to the Convention on Nuclear Safety in Vienna in October 2023 to provide Permanent Mission representatives with assistance and information on the CNS peer review process and obligations.³⁶

38. Two Working Group Meetings of the Contracting Parties to the Convention on Nuclear Safety were held in November 2023 and March 2024 to consider potential changes to the CNS processes with a view to enhancing their effectiveness and efficiency.³⁷

39. The Agency held a consultancy meeting in Vienna in October 2023 to discuss the results of a survey of user experiences of both the public and secure versions of the CNS website. Improvements were identified and will be implemented in time for the Tenth Review Meeting of the Contracting Parties to the CNS.³⁸

40. The Agency held a Workshop to Promote the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and the Convention on Nuclear

³⁵ This relates to operative paragraphs 19 and 21 of resolution GC(67)/RES/7.

³⁶ This relates to operative paragraphs 19 and 21 of resolution GC(67)/RES/7.

³⁷ This relates to operative paragraphs 19 and 21 of resolution GC(67)/RES/7.

³⁸ This relates to operative paragraphs 19 and 21 of resolution GC(67)/RES/7.

Safety in Vienna in October 2023 to promote the benefits of, and explain the process for adherence to, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) and the CNS.³⁹

41. The Agency held the Fifth Extraordinary Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in Vienna in March 2024 to discuss possible changes to the guidelines of the Joint Convention to achieve the uniform identification of good practices.⁴⁰

42. The Agency held an Organizational Meeting for the Eighth Review Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management in Vienna in March 2024 to review and discuss provisional arrangements and topical sessions for the forthcoming Review Meeting.⁴¹

43. The Agency continued to encourage Member States to become Contracting Parties to the Joint Convention and to participate actively in the peer review process and contribute to the effectiveness of that process. During the reporting period, one Member State, Iraq, became a new Contracting Party to the Joint Convention, bringing the total number of Contracting Parties to 90.⁴²

44. The Agency continued to promote the benefits of, and adherence to, the Joint Convention through the following activities:⁴³

- Two regional workshops in Pretoria in December 2023, and in Rio de Janeiro, Brazil, in May 2024; and
- Two national workshops in Ankara in May 2024 and in Baghdad in June 2024 to provide new Contracting Parties, Türkiye and Iraq, with support in developing their first national report under the Joint Convention.

45. As of 30 June 2024, 151 States had made a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources, of which 138 also notified the Director General of their intention to act in a harmonized manner in accordance with the Code's supplementary Guidance on the Import and Export of Radioactive Sources. A total of 153 States nominated points of contact to facilitate the export and import of radioactive sources. In addition, a total of 70 States have now notified the Director General of their intention to act in a harmonized manner and in accordance with the Code's supplementary Guidance on the Management of Disused Radioactive Sources.⁴⁴

46. The Agency held two Regional Meetings to Share Experiences and Lessons Learned in Implementing the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance in Jakarta in November 2023 and in Mexico City in February 2024. The meetings provided a platform for exchanging experience, lessons learned, successes and challenges in the implementation of the Code of Conduct and its Supplementary Guidance.⁴⁵

³⁹ This relates to operative paragraphs 19 and 21 of resolution GC(67)/RES/7.

⁴⁰ This relates to operative paragraph 19 of resolution GC(67)/RES/7.

⁴¹ This relates to operative paragraph 19 of resolution GC(67)/RES/7.

⁴² This relates to operative paragraph 21 of resolution GC(67)/RES/7.

⁴³ This relates to operative paragraph 21 of resolution GC(67)/RES/7.

⁴⁴ This relates to operative paragraphs 22 and 126 of resolution GC(67)/RES/7.

⁴⁵ This relates to operative paragraphs 22 and 126 of resolution GC(67)/RES/7.

47. The Agency continued to encourage Member States' adherence to the Early Notification Convention and the Assistance Convention. In the reporting period, one Member State, Turkmenistan, adhered to the Early Notification Convention and the Assistance Convention, bringing the total number of States Parties to 133 and 128, respectively.⁴⁶

48. The Agency held a Workshop on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies in Vienna in October–November 2023 to discuss matters related to adherence to the Early Notification Convention and the Assistance Convention.⁴⁷

49. During the reporting period, the Agency continued to support and address the recommendations from the International Meeting of the Points of Contact for the Purpose of Facilitating the Import and Export of Radioactive Sources in Accordance with the Guidance on the Import and Export of Radioactive Sources held in Vienna in January 2023.⁴⁸

50. During the reporting period, the Agency completed the revision and publication of 11 Specific Safety Guides applicable to research reactors. Other publications were issued that provide guidance for the effective application of the provisions of the Code of Conduct on the Safety of Research Reactors.⁴⁹

51. The Agency held a Regional Meeting on the Application of the Code of Conduct on the Safety of Research Reactors in Vienna in July 2023, where participants exchanged information and experience in the areas of the development of safety documents for research reactors as well as leadership and management for the safety of research reactors. Participants discussed ways to further improve regional cooperation on research reactor safety on the basis of the Code of Conduct.⁵⁰

52. The Agency held a Workshop on the Safety of Experiments for Research Reactors in Aix-en-Provence, France, in October 2023 to provide practical information on the Agency's safety standards related to the design, fabrication, installation, operation and decommissioning of experiments for research reactors, and on the application of the provisions of the Code of Conduct on the Safety of Research Reactors.⁵¹

53. The Agency supported the activities of the working group established to follow up on the Call for Action derived from the International Conference on Effective Nuclear and Radiation Regulatory Systems: Preparing for the Future in a Rapidly Changing Environment held in Abu Dhabi in February 2023. Two meetings of the working group were held — in February and March 2024 — to identify and collect from Member States initiatives aimed at improving regulatory effectiveness. The Agency published the conference proceedings in April 2024.⁵²

54. The Agency held a consultancy meeting in Vienna in April 2024 to initiate the development of a draft Safety Guide provisionally entitled *Development and Implementation of an Effective and Efficient Regulatory Experience Feedback Programme for Safety of Nuclear Installations* (DS547).⁵³

⁴⁶ This relates to operative paragraph 21 of resolution GC(67)/RES/7.

⁴⁷ This relates to operative paragraphs 21 and 140 of resolution GC(67)/RES/7.

⁴⁸ This relates to operative paragraph 24 of resolution GC(67)/RES/7.

⁴⁹ This relates to operative paragraphs 25 and 49 of resolution GC(67)/RES/7.

⁵⁰ This relates to operative paragraphs 14 and 25 of resolution GC(67)/RES/7.

⁵¹ This relates to operative paragraph 25 of resolution GC(67)/RES/7.

⁵² This relates to operative paragraph 28 of resolution GC(67)/RES/7.

⁵³ This relates to operative paragraph 29 of resolution GC(67)/RES/7.

55. The Agency held an Explanatory Meeting on the Methodology for Technical and Scientific Support Organizations Self Capability Assessment in Vienna in February 2024 to provide a forum for technical and scientific support organizations to discuss the Technical and Scientific Support Organizations Self Capability Assessment (TOSCA) process, tools and supporting mechanism.⁵⁴

56. The Agency held the 19th meeting of the Steering Committee of the Technical and Scientific Support Organization Forum (TSO) in Vienna in April 2024. This meeting served as a platform to provide feedback on the recent achievements of the Forum and discuss the outcomes of the Explanatory Meeting held in February 2024, including the TOSCA methodology for self-assessment.⁵⁵

57. The Agency held a Regional Workshop on Technical and Scientific Support Organizations Providing Support to Regulatory Bodies: Challenges with their Establishment and Operation in Dushanbe in July 2023 to exchange experience related to the establishment and operation of technical and scientific support organizations (TSOs) supporting the functions of regulatory bodies and to discuss the nature and scope of such support activities, the roles and responsibilities of TSOs, human resources and infrastructure.⁵⁶

58. The Agency held two meetings of the International Nuclear Safety Advisory Group (INSAG) in Vienna in October 2023 and in April 2024 at which high-level experts discussed current and emerging nuclear and radiation safety issues of interest to the nuclear community and the public. In addition, INSAG prepared a draft addendum to its publication entitled *Defence in Depth in Nuclear Safety* (IAEA publication INSAG-10) on the applicability of the principle of defence in depth to SMRs.⁵⁷



Participants at the 23rd INLEX Meeting. (Photo: IAEA)

59. The International Expert Group on Nuclear Liability (INLEX) held its 23rd and 24th regular meetings in Vienna in July 2023 and May 2024. The Group discussed the most recent developments in the field of nuclear liability, including national aspects and the implementation of the international legal

⁵⁴ This relates to operative paragraph 31 of resolution GC(67)/RES/7.

⁵⁵ This relates to operative paragraph 31 of resolution GC(67)/RES/7.

⁵⁶ This relates to operative paragraph 31 of resolution GC(67)/RES/7.

⁵⁷ This relates to operative paragraph 33 of resolution GC(67)/RES/7.

instruments, and the geographical scope of the 2004 Paris Convention on Third Party Liability in the Field of Nuclear Energy, the 1997 Vienna Convention on Civil Liability for Nuclear Damage and the Convention on Supplementary Compensation for Nuclear Damage (CSC). The Group also discussed the issue of exclusion of small quantities of nuclear material from the scope of the 1963 and 1997 Vienna Conventions and the CSC, the operator's right of recourse and liability issues during the transport of nuclear material and those related to outer space activities, SMRs and nuclear fusion. The 2023 and 2024 meetings were followed by a Workshop for Diplomats on Civil Liability for Nuclear Damage. Further, on the margins of the 67th General Conference, a side event was held to commemorate the 20th anniversary of the establishment of INLEX, and in May 2024 a new IAEA publication providing a collective view of some INLEX members on the Group's work over the past two decades was published.⁵⁸

60. A regional workshop on Civil Liability for Nuclear Damage for Latin America was held as an IAEA/INLEX outreach activity in Rio de Janeiro, Brazil, in October 2023 to promote adherence to the nuclear liability instruments, in particular the CSC. In addition, several dedicated CSC bilateral outreach activities were undertaken at the request of Member States and nuclear liability was covered in the context of other activities of the Legislative Assistance Programme. The Agency also served as the Secretariat to the Fourth Meeting of the Parties and Signatories to the CSC held in June 2024 at IAEA Headquarters.⁵⁹

C. Agency Safety Standards



International Training Course on the IAEA Safety Standards, in Vienna, May 2024 (Photo: IAEA)

⁵⁸ This relates to operative paragraph 36 of resolution GC(67)/RES/7.

⁵⁹ This relates to operative paragraphs 21, 36 and 116 of resolution GC(67)/RES/7.

61. In 2024, the Agency established a new term for the Commission on Safety Standards (CSS) and for the Safety Standards Committees, with new nominated expert members from Member States. The CSS met in Vienna in November 2023 and May 2024. The Waste Safety Standards Committee (WASSC), the Transport Safety Standards Committee (TRANSSC), the Nuclear Safety Standards Committee (NUSSC) and the Radiation Safety Standards Committee (RASSC) held their meetings in Vienna in November 2023 and June 2024, while the Emergency Preparedness and Response Standards Committee (EPreSC) and the Nuclear Security Guidance Committee (NSGC) held their meetings in Vienna in December 2023 and June 2024. Additionally, EPreSC and WASSC held a joint virtual meeting in September 2023 to discuss projects of joint interest, including Agency safety standards and information publications recently issued and/or in preparation. The NSGC, RASSC and TRANSSC also held a joint meeting in June 2024 to discuss topics of joint interest.⁶⁰

62. The Interface Group, which brings together the Chairs of the Safety Standards Committees and the NSGC, reviewed two publication proposals for possible safety–security interfaces following a recommendation from the Secretariat’s Coordination Committee on Safety Standards and Nuclear Security Series Publications.⁶¹

63. The Secretariat continued the implementation of an action plan to clear the backlog of safety standards awaiting publication and find a sustainable solution. All safety standards approved up to the 54th CSS meeting in November 2023 have now been issued or are at the last stage of editing before publication. A total of 12 Safety Guides were published during the reporting period.⁶²

64. The Agency undertook further efforts to translate safety standards into Chinese, French, Russian and Spanish. 25 Safety Guides were translated into Chinese, 4 into French, 18 into Russian and 4 into Spanish.⁶³

65. During the reporting period, the Agency enabled virtual participation of Member States’ representatives in the meetings of the CSS and Safety Standards Committees in addition to in-person participation.⁶⁴

66. The CSS endorsed the following draft Safety Guides for submission for publication:⁶⁵

- *Radiation Protection Aspects of Design for Nuclear Power Plants* (DS524);
- *Protection of Workers against Exposure Due to Radon* (DS519); and
- *Chemistry Programme for Water Cooled Nuclear Power Plants* (DS525).

67. The Agency continued preparing a technical document that will analyse the issues and challenges faced at nuclear facilities in terms of the practical application of Agency safety standards and nuclear security guidance during an armed conflict, using the knowledge and experience collected in Ukraine since February 2022, and how these issues and challenges might be addressed, if possible, by all interested parties, including the Agency.⁶⁶

⁶⁰ This relates to operative paragraphs 41 and 43 of resolution GC(67)/RES/7.

⁶¹ This relates to operative paragraphs 8 and 41 of resolution GC(67)/RES/7.

⁶² This relates to operative paragraph 42 of resolution GC(67)/RES/7.

⁶³ This relates to operative paragraph 42 of resolution GC(67)/RES/7.

⁶⁴ This relates to operative paragraph 43 of resolution GC(67)/RES/7.

⁶⁵ This relates to operative paragraph 44 of resolution GC(67)/RES/7.

⁶⁶ This relates to operative paragraphs 4 and 45 of resolution GC(67)/RES/7.

68. The Agency published two General Safety Guides and ten Specific Safety Guides, as follows:⁶⁷

- *Application of the Concept of Exemption* (IAEA Safety Standards Series No. GSG-17);
- *Application of the Concept of Clearance* (IAEA Safety Standards Series No. GSG-18);
- *Radiation Protection and Radioactive Waste Management in the Design and Operation of Research Reactors* (IAEA Safety Standards Series No. SSG-85);
- *Instrumentation and Control Systems and Software Important to Safety for Research Reactors* (IAEA Safety Standards Series No. SSG-37 (Rev. 1));
- *Ageing Management for Research Reactors* (IAEA Safety Standards Series No. SSG-10 (Rev. 1));
- *Radiation Protection Programmes for the Transport of Radioactive Material* (IAEA Safety Standards Series No. SSG-86);
- *Radiation Safety in the Use of Radiation Sources in Research and Education* (IAEA Safety Standards Series No. SSG-87);
- *Design Extension Conditions and the Concept of Practical Elimination in the Design of Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-88);
- *Evaluation of Seismic Safety for Nuclear Installations* (IAEA Safety Standards Series No. SSG-89);
- *Radiation Protection Aspects of Design for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-90);
- *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-3 (Rev. 1)); and
- *Borehole Disposal Facilities for Disused Sealed Radioactive Sources* (IAEA Safety Standards Series No. SSG-1 (Rev. 1)).

69. The Agency included all of the new safety standards and nuclear security guidance publications in the Nuclear Safety and Security Online User Interface platform.⁶⁸

70. Within the reporting period, the Agency launched e-learning courses on *Safety Assessment for Facilities and Activities* (IAEA Safety Standards Series No. GSR Part 4 (Rev. 1)); *Predisposal Management of Radioactive Waste* (IAEA Safety Standards Series No. GSR Part 5); *Decommissioning of Facilities* (IAEA Safety Standards Series No. GSR Part 6); *Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. SSR-1); and *Safety of Research Reactors* (IAEA Safety Standards Series No. SSR-3).⁶⁹

71. An International Training Course on the IAEA Safety Standards was held in Vienna in May 2024 to facilitate better understanding and awareness of Agency safety standards, as well as to enhance access to and use of the safety standards in Member States.⁷⁰

⁶⁷ This relates to operative paragraph 46 of resolution GC(67)/RES/7.

⁶⁸ This relates to operative paragraphs 43 and 44 of resolution GC(67)/RES/7.

⁶⁹ This relates to operative paragraph 47 of resolution GC(67)/RES/7.

⁷⁰ This relates to operative paragraph 47 of resolution GC(67)/RES/7.

72. The Agency organized a Workshop on the Application of the IAEA Safety Standards on the Design of Nuclear Power Plants, including Water Cooled Small Modular Reactors in Vienna in July 2023.⁷¹

73. The Agency continued to attend meetings of committees of the International Commission on Radiological Protection (ICRP) and participated in several ICRP task groups on specific topics, including the ICRP International Symposium held in Tokyo in November 2023. The Agency continued its cooperation with the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), focusing in particular on the UNSCEAR project on assessing radiation exposure of the public, and continued to attend its regular annual sessions.⁷²

74. The Secretariat, together with Member States, is preparing a new long term structure and plan for the Agency's safety standards, taking into consideration new technologies, including SMRs. In addition, the Chairs of the CSS, the Safety Standards Committees and the NSGC attended a presentation on the work undertaken within the scope of the Nuclear Harmonization and Standardization Initiative (NHSI) and how that work might affect the revision of related safety standards.⁷³

75. During the reporting period, the Agency continued the revision of the *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GS-G-2.1) and initiated a thorough review of *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards No. GSR Part 7). This work includes important considerations on SMRs.⁷⁴

⁷¹ This relates to operative paragraphs 47 and 76 of resolution GC(67)/RES/7.

⁷² This relates to operative paragraph 48 of resolution GC(67)/RES/7.

⁷³ This relates to operative paragraph 49 of resolution GC(67)/RES/7.

⁷⁴ This relates to operative paragraph 49 of resolution GC(67)/RES/7.

D. Self-Assessments and the Agency's Peer Review and Advisory Services



Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation Mission in Czech Republic, October 2023 (Photo: Radioactive Waste Repository Authority of the Czech Republic)

76. The Agency conducted four IRRS missions — in Poland in September 2023, in Saudi Arabia in October 2023, in Romania in October–November 2023 and in Morocco in November–December 2023. Four IRRS follow-up missions were conducted — in Germany and Australia in October 2023, in the United Kingdom in January 2024 and in Canada in June 2024.⁷⁵

77. Six Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) missions were conducted by the Agency — in Lithuania in July 2023, which reviewed for the first time siting plans for deep geological disposal of radioactive waste; in Greece in September 2023, in Italy and Czechia in October 2023, in the Kingdom of the Netherlands in November 2023 and in Belgium in December 2023.⁷⁶

78. The Agency conducted three Advisory Missions on Regulatory Infrastructure for Radiation Safety and Nuclear Security (RISS) — in El Salvador in August 2023, in Antigua and Barbuda in October 2023 and in Eswatini in May 2024.⁷⁷

79. The Agency conducted two Occupational Radiation Protection Appraisal Service (ORPAS) missions — in Botswana in October 2023 and in Thailand in March 2024.⁷⁸

⁷⁵ This relates to operative paragraphs 14, 51 and 54 of resolution GC(67)/RES/7.

⁷⁶ This relates to operative paragraphs 51 and 54 of resolution GC(67)/RES/7.

⁷⁷ This relates to operative paragraphs 50, 51 and 120 of resolution GC(67)/RES/7.

⁷⁸ This relates to operative paragraphs 50 and 51 of resolution GC(67)/RES/7.

80. The Agency conducted an Education and Training Appraisal (EduTA) mission in Greece in June 2024.⁷⁹

81. The Agency conducted three Site and External Events Design (SEED) missions — in Kazakhstan in October 2023, in Kenya in January 2024, and in Sri Lanka in May–June 2024. Two SEED follow-up missions were conducted — in Uganda in November 2023 and in a virtual format in Romania in April 2024.⁸⁰

82. The Agency conducted a Technical Safety Review (TSR) design safety mission for Rolls-Royce Small Modular Reactors Limited in the United Kingdom in June 2024 and a TSR follow-up mission on Level 1 probabilistic safety assessment (PSA) for Units 5 and 6 of Kozloduy NPP in Bulgaria in May 2024. Additionally, preparatory meetings for a TSR design safety mission were convened for the SALUS-100 reactor conceptual design in the Republic of Korea in February 2024, and for NuScale US460 in the United States of America (USA) in May 2024.⁸¹

83. The Agency held two training courses for reviewers in IRRS missions in Washington DC in October 2023 and in April 2024. The Agency also held two international workshops for IRRS missions in Vienna in October 2023 to exchange information, experience and lessons learned from previous missions and to discuss recent developments and further improvements in the planning and implementation of missions.⁸²

84. The Agency held a Regional Workshop on Lessons Learned from Integrated Regulatory Review Service Missions Conducted in European Union Member States in Vienna in October 2023 to exchange information and experience, and to discuss specific issues related to the IRRS missions conducted in the European Union, including to facilitate compliance with Council Directive 2014/87/Euratom obligations. The workshop also provided an opportunity to discuss the use of the back-to-back approach for conducting IRRS and ARTEMIS missions.⁸³

85. During the reporting period, the Agency updated the IRRS Good Practices Database, which is publicly accessible on the Agency's website. The database contains all commendable practices identified from 2016 to 2023, offering a comprehensive repository for stakeholders.⁸⁴

86. A National Workshop on SEED Capacity Building for Site Safety Evaluation and Review for New Nuclear Installation Programmes was held in Warsaw in November 2023.⁸⁵

87. The Agency held two meetings of the Peer Review and Advisory Services Committee in Vienna in November 2023 and May 2024 to review the status of peer review missions, make recommendations for improvement and monitor the effectiveness and efficiency of advisory services.⁸⁶

88. The Agency conducted four Safety Aspects of Long Term Operation (SALTO) missions — in Sweden in November 2023, in Argentina in February 2024, in Japan in April 2024 and in Brazil in June

⁷⁹ This relates to operative paragraphs 14, 50 and 51 of resolution GC(67)/RES/7.

⁸⁰ This relates to operative paragraphs 50 and 51 of resolution GC(67)/RES/7.

⁸¹ This relates to operative paragraphs 50 and 51 of resolution GC(67)/RES/7.

⁸² This relates to operative paragraphs 51, 52 and 54 of resolution GC(67)/RES/7.

⁸³ This relates to operative paragraphs 51 and 54 of resolution GC(67)/RES/7.

⁸⁴ This relates to operative paragraphs 51 and 54 of resolution GC(67)/RES/7.

⁸⁵ This relates to operative paragraphs 14 and 52 of resolution GC(67)/RES/7.

⁸⁶ This relates to operative paragraph 53 of resolution GC(67)/RES/7.

2024. One pre-SALTO mission was conducted in Romania in February 2024 and a follow-up mission was conducted in Spain in September 2023.⁸⁷

89. The Agency conducted five Operational Safety Review Team (OSART) missions — in France in September 2023, in the United Kingdom in October 2023, in Slovakia in November 2023, in the Russian Federation in November 2023 and in France in May 2024. Three OSART follow-up missions were conducted — in China in August 2023, in France in December 2023, and in the Republic of Korea in June 2024.⁸⁸

90. In August 2023, the Agency celebrated 40 years of OSART peer review missions. In total, 222 OSART missions and 162 follow-up OSART missions have been carried out since the safety peer review service was launched.⁸⁹

91. The Agency conducted a preparatory Safety Evaluation of Fuel Cycle Facilities during Operation (SEDO) mission to the Pitesti Nuclear Fuel Plant in Romania in March 2024.⁹⁰

92. In February 2024, the Agency published the *Guidelines for the Peer Review of Operational Safety of Nuclear Fuel Cycle Facilities* (IAEA Services Series No. 50) which provides guidance on how to conduct SEDO missions.⁹¹

93. The Agency held three Integrated Safety Assessment of Research Reactors (INSARR) missions — two in the Islamic Republic of Iran in September 2023 and one in the Philippines in November 2023. One follow-up INSARR mission was held in the Kingdom of the Netherlands in April 2024.⁹²

94. The Agency held a Training Workshop for Reviewers in Future Integrated Safety Assessment of Research Reactors Missions in Vienna in May 2024 to provide information and guidance for participants who may participate as team members in future INSARR missions, and who are not yet fully familiar with INSARR methodology and the conduct of such missions.⁹³

95. The Agency published *Analysis of Results from Integrated Safety Assessment of Research Reactors (INSARR) Missions* (IAEA-TECDOC-2048) and the revised *Guidelines for the Review of Research Reactor Safety* (IAEA-SVS-25), the reference document for INSARR, in April 2024.⁹⁴

96. The Agency conducted an Integrated Nuclear Infrastructure Review (INIR) Phase 1 mission in Estonia in October 2023 to review the country's infrastructure development for a nuclear power programme. Additionally, an INIR Phase 3 mission was conducted in Poland in April 2024.⁹⁵

97. The Agency continued to cooperate with the World Health Organization (WHO) within the framework of the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) in areas of joint interest, in line with the *Joint Radiation Emergency Management Plan of the International Organizations* (EPR-JPLAN (2017)), and in the area of developing and implementing safety standards in EPR. This includes collaboration between Emergency Preparedness Review (EPREV) and

⁸⁷ This relates to operative paragraphs 14, 51 and 55 of resolution GC(67)/RES/7.

⁸⁸ This relates to operative paragraphs 51 and 55 of resolution GC(67)/RES/7.

⁸⁹ This relates to operative paragraphs 51 and 55 of resolution GC(67)/RES/7.

⁹⁰ This relates to operative paragraphs 51 and 55 of resolution GC(67)/RES/7.

⁹¹ This relates to operative paragraph 55 of resolution GC(67)/RES/7.

⁹² This relates to operative paragraphs 51 and 55 of resolution GC(67)/RES/7.

⁹³ This relates to operative paragraphs 52 and 55 of resolution GC(67)/RES/7.

⁹⁴ This relates to operative paragraph 55 of resolution GC(67)/RES/7.

⁹⁵ This relates to operative paragraphs 9, 50 and 51 of resolution GC(67)/RES/7.

stakeholders of the WHO Joint External Evaluation service to ensure the coordinated assessment of national arrangements against relevant standards co-sponsored by the Agency and the WHO.⁹⁶

E. Nuclear Installation Safety



Plenary session of the SMR RF meeting, in Vienna, December 2023 (Photo: IAEA)

98. The Agency held a Technical Meeting of the Technical Working Group on Research Reactors (TWG-RR) in Vienna in May 2024 to provide advice and guidance on the implementation of programmatic activities in the following areas related to research reactors, including the associated safety considerations: new projects and designs; operation; utilization; nuclear fuel cycle; maintenance; refurbishment modernization; quality assurance; and decommissioning.⁹⁷

99. The Agency held the Annual Meeting of the Regional Advisory Safety Committee for Research Reactors in Asia and the Pacific in Bangkok in November 2023 to provide a forum for the safety committees of research reactor operating organizations in the Asia and the Pacific region to share knowledge and experiences related to research reactor safety.⁹⁸

100. The Agency held a Technical Meeting on the Safety of Research Reactors Under Project and Supply Agreements and Review of their Safety Performance Indicators in Vienna in October 2023. At the meeting, participants exchanged information on the safety status of research reactors under project and supply agreements and reviewed their 2021 and 2022 safety performance indicators following the

⁹⁶ This relates to operative paragraph 57 of resolution GC(67)/RES/7.

⁹⁷ This relates to operative paragraph 59 of resolution GC(67)/RES/7.

⁹⁸ This relates to operative paragraphs 10 and 59 of resolution GC(67)/RES/7.

guidance for the safety of research reactors set out in the Code of Conduct on the Safety of Research Reactors.⁹⁹

101. During the reporting period, the Agency finalized a draft technical document on experiences in the design safety and safety assessment of fusion facilities to present Member States' current practices and experiences regarding the safety of experimental fusion facilities, with a focus on the aspects most relevant to future fusion power plants. The Agency also finalized a draft technical document on international experience in the regulation of fusion facilities to present Member States' current fusion regulation practices — including discussions of current regulatory frameworks and technical capabilities — and future regulatory plans. In addition, two Technical Meetings on Fusion Design Safety and Regulation were held in Vienna in October 2023 and February 2024.¹⁰⁰

102. The Agency held the following International Generic Ageing Lessons Learned Phase 7 meetings: meetings of Working Group 1 on Mechanical Components in Vienna in May 2024; meetings of Working Group 2 on Electrical and Instrumentation and Control Components in Vienna in May 2024; meetings of Working Group 3 on Civil Structures in Vienna in June 2024; and meetings of Working Group 4 on Regulatory Experience in Vienna in June 2024. In addition, the Second International Generic Ageing Lessons Learned Phase 6 Steering Committee Meeting was held in Vienna in December 2023.¹⁰¹

103. In December 2023, the Agency approved a CRP entitled “Development of Time Limited Ageing Analyses to Support Continued Safe Operation of Research Reactors” aimed at improving the design, operation, utilization and safety of research reactors, as well as increasing the knowledge and expertise of Member States in the area of ageing management.¹⁰²

104. The Agency held a Workshop on Ageing Management for Nuclear Fuel Cycle Facilities in Vienna in April 2024 to provide guidance on the application of the Agency safety standards and a forum for sharing information and experience in the development and implementation of systematic ageing management programmes for NCFs.¹⁰³

105. The Agency held a Technical Meeting on the CANDU Probabilistic Safety Assessment Working Group in Ottawa in October 2023 to facilitate cooperation and information exchange among the members of the Working Group.¹⁰⁴

106. During the reporting period, the Agency continue to work on the development of the Safety Guide *Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants* (to be published as Safety Standards Series No. SSG-4 (Rev. 1)). In addition, *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-3 (Rev. 1) was published.¹⁰⁵

107. The Agency held a Regional Workshop on Applications of Level 2 and Level 3 of Probabilistic Safety Assessments in Yerevan in August 2023 to discuss and share experience, best practices and recent

⁹⁹ This relates to operative paragraphs 25 and 59 of resolution GC(67)/RES/7.

¹⁰⁰ This relates to operative paragraphs 9 and 63 of resolution GC(67)/RES/7.

¹⁰¹ This relates to operative paragraph 64 of resolution GC(67)/RES/7.

¹⁰² This relates to operative paragraph 64 of resolution GC(67)/RES/7.

¹⁰³ This relates to operative paragraph 64 of resolution GC(67)/RES/7.

¹⁰⁴ This relates to operative paragraph 65 of resolution GC(67)/RES/7.

¹⁰⁵ This relates to operative paragraph 65 of resolution GC(67)/RES/7.

approaches to the development and application of Level 2 and Level 3 PSA, with special emphasis on the application of the results and outcomes of Level 2 and Level 3 PSA for NPPs.¹⁰⁶

108. The Agency held a Regional Training Course on Modelling Severe Accidents in Probabilistic Safety Assessment in Dubrovnik, Croatia in October 2023 to train participants in approaches to the modelling of severe accidents for safety analysis purposes, with a specific focus on PSA.¹⁰⁷

109. The Agency held a Technical Meeting on Probabilistic Safety Assessment of Nuclear Installations in Relation to External Events and their Combinations in Vienna in November 2023, to present recent work on safety standards and technical documents related to PSA for nuclear installations, with special emphasis on the modelling of severe external event scenarios other than seismic events.¹⁰⁸

110. The Agency held a Technical Meeting on the Protection of Nuclear Installations Against External Hazards in Vienna in September 2023 to review the progress of the External Events Safety Section's extrabudgetary programme activities in relation to the siting, design and safety assessment of nuclear installations in with respect to external events, thereby supporting the development and implementation of the relevant Agency publications.¹⁰⁹

111. The Agency held the First Research Coordination Meeting on the CRP on Climate Change Challenges to the Safety of Nuclear Installations in Vienna in June 2024 to plan the numerical simulation of hydrological hazard in selected case studies, including the effects of climate change, in a benchmark environment.¹¹⁰

112. On the margins of the 28th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change held in Dubai, United Arab Emirates in December 2023, the Agency organized an expert panel on climate change challenges to the safety of nuclear installations to disseminate information on the External Events Notification System and the CRP entitled "Climate Change Challenges to the Safety of Nuclear Installations".¹¹¹

113. The Agency published *Evaluation of Design Robustness of Nuclear Installations Against External Hazards* (IAEA-TECDOC-2043) in February 2024, and *Optimization of Safety Measures for Protection of Nuclear Installations Against External Hazards* (IAEA-TECDOC-2042) in March 2024. In addition, the Agency published *Multi-unit Probabilistic Safety Assessment* (Safety Reports Series No. 110) in September 2023.¹¹²

114. The Agency held an International Symposium on the Deployment of Floating Nuclear Power Plants — Benefits and Challenges in Vienna November 2023. Further to the findings of the Symposium, the Agency continues to consult with experts from Member States and international organizations to consider the possible roles of the Agency and other organizations in the development and ownership of future safety requirements for FNPPs.¹¹³

115. The Agency organized the International Conference on Enhancing the Operational Safety of Nuclear Power Plants in Beijing in April 2024. The conference aimed to foster the exchange of

¹⁰⁶ This relates to operative paragraphs 14 and 65 of resolution GC(67)/RES/7.

¹⁰⁷ This relates to operative paragraph 65 of resolution GC(67)/RES/7.

¹⁰⁸ This relates to operative paragraphs 65 and 66 of resolution GC(67)/RES/7.

¹⁰⁹ This relates to operative paragraph 66 of resolution GC(67)/RES/7.

¹¹⁰ This relates to operative paragraph 66 of resolution GC(67)/RES/7.

¹¹¹ This relates to operative paragraph 66 of resolution GC(67)/RES/7.

¹¹² This relates to operative paragraph 68 of resolution GC(67)/RES/7.

¹¹³ This relates to operative paragraphs 70 and 76 of resolution GC(67)/RES/7.

information and experiences related to enhancing NPP operational safety during commissioning, start-up, ongoing and long-term operation among representatives of new and existing nuclear operators, regulators, technical support organizations, construction companies and other like-minded organizations. The conference reaffirmed the importance of ensuring the safe and reliable operation of the existing nuclear power plants as a priority, first to protect people and the environment. But it is also the foundation for the long-term safe development of the nuclear power industry and of new designs such as small modular reactors, that will contribute to realize the goal of tripling nuclear power by 2050 and NetZero. The conference was attended by over 600 delegates with representation from 40 Member States.¹¹⁴

116. The Agency held two consultancy meetings — in Vienna in October–November 2023 and in February 2024 — to develop a technical document on design safety and security considerations for FNPPs. At the meetings, a number of Agency safety standards were reviewed for their applicability to FNPP facilities, and potential pathways for the development of future safety requirements for FNPPs were discussed.¹¹⁵

117. The Agency, together with the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA), held a Technical Meeting for National Coordinators of the International Reporting System for Operating Experience on Recent Events in Nuclear Power Plants in Paris in October 2023 to share lessons learned from operating experience at NPPs and to exchange information on recent safety significant events at NPPs.¹¹⁶

118. The Agency held a Workshop on the Safety of Fuel Manufacturing for Advanced Reactors in Vienna in June 2024 to provide a platform to discuss and exchange information on, and experience in, the safety of manufacturing new fuels for advanced reactors.¹¹⁷

119. The Agency held a Technical Meeting on Digital Instrumentation and Control Systems for Research Reactors in Vienna in July 2023, where participants exchanged information and experience related to the safety, technical and managerial aspects of research reactor projects (both modernization projects and projects for the design and construction of new facilities) involving digital instrumentation and control (I&C) systems.¹¹⁸

120. In The Agency held a Technical Meeting on the Safety Implications of the Use of Artificial Intelligence in Nuclear Power Plants in Vienna in October 2023, where participants exchanged knowledge and experience of the development and application of AI for NPPs, with a specific focus on safety considerations, including opportunities for safety improvements, as well as safety challenges, including those related to licensing.¹¹⁹

121. The Agency held a Workshop on Assessment and Reduction of Vulnerabilities to Common Cause Failures in Instrumentation and Control Systems in Nuclear Power Plants in Vienna in September 2023 to provide a forum for international, cross-cutting discussions on experience in the assessment and implementation of defensive measures to mitigate common cause failures in I&C systems and increase safety at NPPs.¹²⁰

122. The Agency held a Training Workshop on the Development of Severe Accident Management Guidelines Using the IAEA's Severe Accident Management Guideline Development Toolkit in Vienna

¹¹⁴ This relates to operative paragraph 70 of resolution GC(67)/RES/7.

¹¹⁵ This relates to operative paragraph 70 of resolution GC(67)/RES/7.

¹¹⁶ This relates to operative paragraph 70 of resolution GC(67)/RES/7.

¹¹⁷ This relates to operative paragraph 70 of resolution GC(67)/RES/7

¹¹⁸ This relates to operative paragraph 71 of resolution GC(67)/RES/7

¹¹⁹ This relates to operative paragraph 71 of resolution GC(67)/RES/7

¹²⁰ This relates to operative paragraph 71 of resolution GC(67)/RES/7

in November 2023 to exchange information on, and enhance understanding of, the development of severe accident management guidelines and to share best practices for establishing such guidelines in Member States.¹²¹

123. During the reporting period, the Agency continued to operate the International Reporting System for Operating Experience (IRS), the Incident Reporting System for Research Reactors (IRSRR) and the Fuel Incident Notification and Analysis System (FINAS) and completed the modernization and upgrade of the host information technology platform to improve the effectiveness of these systems by enhancing their functionality and the user interface.¹²²

124. In January 2024, the Agency published *Operating Experience from Events Reported to the IAEA Incident Reporting System for Research Reactors* (IAEA-TECDOC-1762/Rev.1), which incorporates the experience and feedback from events reported to the IRSRR during the period 2015–2023.¹²³

125. The Agency held a Regional Workshop on Operating Experience Feedback for Research Reactors in Vienna in September 2023 to provide practical information on Agency safety standards related to operating and regulatory experience feedback for research reactors, incident reporting systems for nuclear installations, lessons learned and improving the safety culture at research reactors.¹²⁴

126. During the reporting period, the Agency held the following meetings under the NHSI Regulatory Track¹²⁵:

- Two virtual meetings in September 2023 and January 2024 and two in-person meetings of Working Group 1 in November 2023 and April 2024 on building a framework for regulators to share information, including discussion of the obstacles to sharing information and potential solutions;
- Two virtual meetings in September 2023 and February 2024 and two in-person meetings of Working Group 2 in November 2023 and May 2024 on developing a process for multinational pre-licensing; and
- Two virtual meetings in September 2023 and February 2024 and two in-person meetings, with the possibility of remote connection, of Working Group 3 in December 2023 and April 2024 on processes for leveraging other regulatory reviews and for regulators to work together during ongoing reviews.

127. The Agency organized two meetings of the Small Modular Reactor Regulators' Forum in December 2023 and April 2024. During the first meeting, the new topics for Phase 4 (2024–2026) and the reports from Phase 3 (2021–2023) addressing some of the key regulatory challenges related to SMRs were approved. The Phase 3 reports, including the summary report, were published on the Forum's website in February 2024.¹²⁶

128. Two Regional Educational Workshops on Regulatory Challenges in Small Modular Reactors were held in Rabat in October 2023 and in Prague in December 2023. The workshops were targeted at

¹²¹ This relates to operative paragraphs 72 and 74 of resolution GC(67)/RES/7

¹²² This relates to operative paragraph 75 of resolution GC(67)/RES/7

¹²³ This relates to operative paragraph 75 of resolution GC(67)/RES/7

¹²⁴ This relates to operative paragraphs 5 and 75 of resolution GC(67)/RES/7

¹²⁵ This relates to operative paragraph 76 of resolution GC(67)/RES/7

¹²⁶ This relates to operative paragraph 76 of resolution GC(67)/RES/7

regulatory bodies and served to disseminate the work of the Small Modular Reactor Regulators' Forum and enhance regulatory capacity.¹²⁷

129. The Agency held a Technical Meeting on the Site and External Events Design (SEED) Review Service and Capacity Building Activity Output Assessment in Vienna in October 2023 to discuss and assess the progress and outputs of SEED missions and the capacity building programme on site, and design safety reviews for nuclear installations. The development of a SEED service for the siting of SMRs was also discussed.¹²⁸

F. Radiation Safety and Environmental Protection



Regional Training Course on Prevention and Mitigation Methods for Protection against Radon Exposure in Buildings in Coimbra, Portugal, January 2024 (Photo: IAEA)

130. The Agency held the Third Technical Meeting on Methods for Radiological and Environmental Impact Assessment (MEREIA) in Vienna in September 2023 to present and discuss work carried out under the programme, with a focus on enhancing the skills of entry-level professionals in the field of modelling and environmental radiological impact assessment. In addition, the Agency held a virtual Training Workshop in May 2024 under the MEREIA programme, providing an opportunity for entry-

¹²⁷ This relates to operative paragraphs 76 and 116 of resolution GC(67)/RES/7

¹²⁸ This relates to operative paragraphs 51, 66 and 76 of resolution GC(67)/RES/7

level professionals to carry out a dose assessment for human and non-human biota for a planned discharge scenario in an interactive setting.¹²⁹

131. In March 2024, the Agency upgraded the software of the Information System on Occupational Exposure in Medicine, Industry and Research — Industrial Radiography (ISEMIR-IR) to a multilingual format, making it available in the six official languages of the Agency. The ISEMIR-IR tool was promoted at the 20th World Conference on Non-Destructive Testing held in Incheon, Republic of Korea, in May 2024, and at the 56th National Conference on Radiation Control held in Jacksonville, USA, in May 2024.¹³⁰

132. In November 2023, the Agency published a ‘call for action’ document as an outcome of the International Conference on Occupational Radiation Protection: Strengthening Radiation Protection of Workers — Twenty Years of Progress and the Way Forward, held in Geneva, Switzerland, in September 2022.¹³¹

133. The Agency held the Annual Meeting of the Regulatory Forum for Safety of Uranium Production and Naturally Occurring Radioactive Materials (REGSUN) in Vienna in July 2023, and a Technical Meeting of REGSUN in Vienna in June 2024. The participants reviewed progress in supporting inspection of uranium tailings facilities and training the trainers for the application of Agency safety standards related to naturally occurring radioactive material (NORM), shared experiences in establishing regulations for NORM management applying graded approach, and exchanged information in topical areas of common concern associated with the safety of uranium production and the management of NORM residues.¹³²

134. During the reporting period, the Agency continued to revise a draft Safety Report on radiation protection related to NORM in the oil and gas industries, and to develop a draft Safety Report on radiation protection related to NORM in the water treatment and utilization industries.¹³³

135. The Agency held a Technical Meeting on Advisory Services for Radiation Protection and Safety for Medical Exposures in Vienna in September 2023 to exchange experience and provide advice on the development of, and approach to the implementation of, such advisory services.¹³⁴

136. The Agency held a Technical Meeting on the Radiation Protection of Patients in the New Era of Medical Imaging in Vienna in March 2024 to exchange information and identify any need for the development of guidance and tools for ensuring the radiation protection of patients when applying new imaging technologies and trends in medical practice.¹³⁵

137. The Agency led the development of an information paper prepared by the Inter-Agency Committee on Radiation Safety (IACRS) to summarize the IACRS’s common understanding of approaches for the management of exposure from non-medical human imaging to support the implementation of safety requirements. The document is available on the IACRS website.¹³⁶

¹²⁹ This relates to operative paragraph 77 of resolution GC(67)/RES/7

¹³⁰ This relates to operative paragraphs 78 and 79 of resolution GC(67)/RES/7

¹³¹ This relates to operative paragraph 80 of resolution GC(67)/RES/7

¹³² This relates to operative paragraphs 81, 111, 112 and 113 of resolution GC(67)/RES/7

¹³³ This relates to operative paragraph 81 of resolution GC(67)/RES/7

¹³⁴ This relates to operative paragraph 83 of resolution GC(67)/RES/7

¹³⁵ This relates to operative paragraphs 83 and 85 of resolution GC(67)/RES/7

¹³⁶ This relates to operative paragraph 85 of resolution GC(67)/RES/7

138. The Agency published *Patient Radiation Exposure Monitoring in Medical Imaging* (Safety Reports Series No. 112) in July 2023. This publication was developed in cooperation with the WHO and UNSCEAR.¹³⁷

139. A peer-reviewed study entitled *Safety in Radiation Oncology (SAFRON): Learning About Incident Causes and Safety Barriers in External Beam Radiotherapy* was published in a scientific journal. The study examined the causes of incidents and the safety barriers in place for external beam radiotherapy by analysing voluntary incident reports provided by Member States in the Safety in Radiation Oncology (SAFRON) incident learning system. Further, the Agency held a Regional Workshop on Strengthening Radiation Safety Culture in Medicine in Rabat in November 2023.¹³⁸

140. The Agency held a Regional Training Course on Prevention and Mitigation Methods for Protection against Radon Exposure in Buildings in Coimbra, Portugal, in January 2024 to train participants in methods of radon prevention and mitigation in buildings, and in indoor radon monitoring and risk communication, in the framework of the Agency safety standards related to protection against radon exposure.¹³⁹

141. During the reporting period, the Agency continued developing a new draft Safety Guide provisionally entitled *Protection of Workers against Exposure Due to Radon* (to be published as Safety Standards Series No. SSG-91).¹⁴⁰

142. In August 2023, the Agency published *Exposure due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency, Part 1: Technical Material* (Safety Reports Series No. 114), co-sponsored by the Food and Agriculture Organization of the United Nations (FAO) and the WHO.¹⁴¹

143. The Agency continued working on the development of a new draft Safety Guide provisionally entitled *Radiation Protection and Safety in Existing Exposure Situations* (DS544) that will cover, inter alia, the management of consumer goods.¹⁴²

144. The Agency held a Technical Meeting on Radiation Safety in International Trade of Commodities in Vienna in August 2023 to discuss and share national experience in managing radiation safety in the international trade of non-food commodities and to provide technical inputs to a draft Safety Report on this topic.¹⁴³

145. The Agency collaborated with relevant international and regional organizations such as the World Customs Organization, the World Trade Organization, UNSCEAR, the United Nations Conference on Trade and Development, the OECD, the European Commission, the Heads of European Radiological Protection Competent Authorities, and the Conference of Radiation Control Program Directors on the drafting of a Safety Report on the international trade of consumer goods containing radionuclides.¹⁴⁴

146. The Agency held a National Workshop on Practical Application of Clearance in Cernavodă, Romania, in January 2024, where several Romanian organizations involved in decommissioning and

¹³⁷ This relates to operative paragraph 83 of resolution GC(67)/RES/7

¹³⁸ This relates to operative paragraph 84 of resolution GC(67)/RES/7

¹³⁹ This relates to operative paragraph 86 of resolution GC(67)/RES/7

¹⁴⁰ This relates to operative paragraph 86 of resolution GC(67)/RES/7

¹⁴¹ This relates to operative paragraph 87 of resolution GC(67)/RES/7

¹⁴² This relates to operative paragraph 88 of resolution GC(67)/RES/7

¹⁴³ This relates to operative paragraphs 14 and 89 of resolution GC(67)/RES/7

¹⁴⁴ This relates to operative paragraph 89 of resolution GC(67)/RES/7

waste management activities discussed the process of clearance and, in particular, the option of specific clearance for metals from decommissioning. Participants obtained practical experience in applying the methodology for selecting scenarios for material reuse, modelling exposure pathways and calculating specific clearance levels.¹⁴⁵

147. During the reporting period, the Agency continued to develop a new Safety Report on the derivation of specific clearance levels for the reuse and recycling of materials and for the disposal of waste in conventional landfill, which will support the application of the guidance provided in the Safety Guide entitled *Application of the Concept of Clearance* (IAEA Safety Standards Series No. GSG-18).¹⁴⁶

148. The publication *Inventory of Radioactive Material Resulting from Historical Dumping, Accidents and Losses at Sea — For the Purposes of the London Convention 1972 and London Protocol 1996* (IAEA-TECDOC-1776) was most recently updated in 2015. The Agency communicates with the secretariat of the related Convention at the International Maritime Organization and updates the inventory when requested to do so.¹⁴⁷

G. Transport Safety



Participants on the Workshop on the Safe Transport of Radioactive Material, training course series No 1 (draft edition), in Vienna, February 2024 (Photo: IAEA)

149. The Agency held the Second and Third Meetings of the Denial of Shipment Working Group in Vienna in July 2023 and April 2024, respectively. Discussions focused on the progress achieved and future plans of the Working Group and its three sub-working groups. The Secretariat conducted preparations for an open-ended meeting of legal and technical experts, to be held in July 2024, to discuss the draft code of conduct on the facilitation of the safe and secure transport of radioactive material proposed by the Working Group. Moreover, in September 2023, the Agency launched a survey among

¹⁴⁵ This relates to operative paragraph 90 of resolution GC(67)/RES/7

¹⁴⁶ This relates to operative paragraph 90 of resolution GC(67)/RES/7

¹⁴⁷ This relates to operative paragraph 91 of resolution GC(67)/RES/7

the industry and Member States to collect feedback on matters related to denials of and delays in shipments of radioactive material.¹⁴⁸

150. The Agency held two Schools for Drafting Regulations on Transport Safety in Vienna — in November 2023 (in French) and in December 2023 (in English) — to help Member States identify gaps in their national transport safety regulations against the provisions of the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)) and draft and revise their national regulations accordingly. In addition, the Agency launched e-learning modules 1–4 on the safe transport of radioactive material in French in March 2024.¹⁴⁹

151. The Agency held a Follow-up Workshop on the Transport Safety Regulatory Programme for Uranium and Other Naturally Occurring Radioactive Material Produced by Mining and Milling in Pretoria in February 2024, which focused on compliance with the requirements of the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)) relating to low specific activity material.¹⁵⁰

152. The Agency held a Workshop on the Design Safety Assessment of Transport Packages Containing Radioactive Material in Vienna in March 2024 to provide Member States with guidance on the design safety assessment of transport packages containing radioactive material.¹⁵¹

153. The Agency held a Workshop on Safe Transport of Radioactive Material, Training Course Series No. 1 (draft Fifth Edition) in Vienna in February 2024 to raise awareness among Member States of the use of *Safe Transport of Radioactive Material* (IAEA Training Course Series No. 1, currently under revision) and ensure compliance with the requirements of the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)).¹⁵²

¹⁴⁸ This relates to operative paragraph 95 of resolution GC(67)/RES/7

¹⁴⁹ This relates to operative paragraph 96 of resolution GC(67)/RES/7

¹⁵⁰ This relates to operative paragraphs 96 and 116 of resolution GC(67)/RES/7

¹⁵¹ This relates to operative paragraphs 96 and 116 of resolution GC(67)/RES/7

¹⁵² This relates to operative paragraphs 96 and 116 of resolution GC(67)/RES/7

H. Safety of Spent Fuel and Radioactive Waste Management



International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability in Vienna, November 2023 (Photo: IAEA)

154. The Agency published *Experiences of the Development, Review and Communication of Safety Cases and Safety Assessments for Near Surface Disposal of Radioactive Waste* (IAEA-TECDOC-2041) in January 2024.¹⁵³

155. The Agency completed the International Harmonization and Safety Demonstration Project for Predisposal Radioactive Waste Management (ECLiPSE) and projects on radioactive waste disposal (the Forum on the Safety of Near Surface Disposal and the International Project on Demonstrating the Safety of Geological Disposal).¹⁵⁴

156. During the reporting period, the Agency continued to work on the development of a draft Safety Report on the derivation of specific clearance levels for materials suitable for recycling, reuse or disposal in landfills, along with the software supporting the associated calculations.¹⁵⁵

157. The Agency continued providing technical support to Member States, upon request, for the management of disused sealed radioactive sources in borehole facilities.¹⁵⁶

158. During the reporting period, the Agency continued to work on the development of a technical document on the management of radioactive waste and spent fuel from small modular and non-water cooled reactors.¹⁵⁷

¹⁵³ This relates to operative paragraph 101 of resolution GC(67)/RES/7

¹⁵⁴ This relates to operative paragraph 101 of resolution GC(67)/RES/7

¹⁵⁵ This relates to operative paragraph 101 of resolution GC(67)/RES/7

¹⁵⁶ This relates to operative paragraph 101 of resolution GC(67)/RES/7

¹⁵⁷ This relates to operative paragraph 102 of resolution GC(67)/RES/7

159. The Agency organized the International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability in Vienna in November 2023 to provide a forum for exchanging information, experiences, and anticipated future developments for maintaining the highest standards of safety and managing the interrelationships between safety and sustainability. There was a strong consensus among participants that safety is a key component of sustainability (for the use of nuclear science and technology to be sustainable, its use must be safe throughout its lifetime, up to and including the management of radioactive waste), and that safety on its own is not sufficient to ensure sustainability (radiation protection and safety should be optimized, taking account of economic, societal and environmental factors).¹⁵⁸

I. Safety in Decommissioning, Uranium Mining and Processing, and Environmental Remediation



Joint Technical Meeting of the Uranium Mining and Remediation Exchange Group and the International Working Forum on Regulatory Supervision of Legacy Sites in San Rafael, Argentina, October 2023 (Photo: IAEA)

160. The Agency held the Seventh and Eight Meetings on the International Project on Decommissioning of Small Medical, Industrial and Research Facilities in Copenhagen in October 2023 and in Vienna in May 2024, to advance discussions, exchange experiences and good practices, finalize case studies for selected types of small facilities, as well as to show practical examples of decommissioning during site visits.¹⁵⁹

161. The Agency organized the Biennial Forum of the International Decommissioning Network in Vienna in November 2023. The Forum included a review of the progress of implementation of decommissioning programmes in Member States and focused on capacity building for

¹⁵⁸ This relates to operative paragraphs 103 and 109 of resolution GC(67)/RES/7

¹⁵⁹ This relates to operative paragraph 109 of resolution GC(67)/RES/7

decommissioning, addressing the development of human resources, education and training, and knowledge management.¹⁶⁰

162. The Agency held a Technical Meeting on Considerations for Decommissioning of Fusion Facilities in Vienna in February 2024 to discuss a draft technical report concerning the decommissioning of fusion facilities and related waste management issues, as well as to provide an opportunity for detailed review of the technical report by Member States, taking into consideration different national frameworks and dismantling scenarios.¹⁶¹

163. During the reporting period, the Agency continued working on the refinement of future back-end characterization for SMRs and the associated waste management. These efforts included improving decommissioning and waste management data collection from SMRs to obtain a thorough grasp of their requirements and provide proficient guidance that leverages IAEA safety requirements and guides.¹⁶²

164. In the reporting period, the Agency continued to work on the development of a new Safety Guide, provisionally entitled *Decommissioning of Uranium Production Facilities* (DS551).¹⁶³

165. The Agency held the Annual Meeting of the Coordination Group for Uranium Legacy Sites in Dushanbe and Istiklol, Tajikistan, in August 2023 to exchange information on the status of current and proposed remediation activities in Central Asia, including changes to regulatory frameworks to assess and authorize remediation activities in the region.¹⁶⁴

166. In September 2023, the Agency provided training to Member States participating in the Coordination Group for Uranium Legacy Sites (CGULS) to improve water sampling and analysis methodology and capabilities. In March 2024 an expert mission was conducted to Kyrgyzstan, Tajikistan and Uzbekistan to advise laboratory staff on the improvement of analytical procedures and quality.¹⁶⁵

167. In March 2024, the Agency held a Technical Meeting on Initiating the Coordination Group for Uranium Legacy Sites for African Regions in Lusaka to discuss the role of CGULS in addressing challenges and opportunities associated with uranium legacy sites in Africa, as well as to agree on the scope, objectives and terms of reference of CGULS.¹⁶⁶

168. The Agency held a Joint Technical Meeting of the Uranium Mining and Remediation Exchange Group and the International Working Forum on Regulatory Supervision of Legacy Sites in San Rafael, Argentina, in October 2023 to provide a forum for experts from Member States to present, discuss and disseminate practical and new knowledge related to the operational, environmental, regulatory and societal aspects of uranium mining and remediation projects.¹⁶⁷

¹⁶⁰ This relates to operative paragraph 109 of resolution GC(67)/RES/7

¹⁶¹ This relates to operative paragraphs 9 and 110 of resolution GC(67)/RES/7

¹⁶² This relates to operative paragraphs 9 and 110 of resolution GC(67)/RES/7

¹⁶³ This relates to operative paragraphs 81 and 111 of resolution GC(67)/RES/7

¹⁶⁴ This relates to operative paragraph 112 of resolution GC(67)/RES/7

¹⁶⁵ This relates to operative paragraph 112 of resolution GC(67)/RES/7

¹⁶⁶ This relates to operative paragraph 112 of resolution GC(67)/RES/7

¹⁶⁷ This relates to operative paragraphs 81 and 112 of resolution GC(67)/RES/7

J. Capacity Building



Participants at an interactive session conducted during the IAEA School on Nuclear and Radiological Leadership for Safety hosted in Hiratsuka, Japan, in February–March 2024 (Photo: IAEA)

169. The Agency held two Educational Workshops on Regulatory Challenges in Small Modular Reactors in Rabat in October 2023 and in Prague in December 2023 to enhance the knowledge of Member States' regulatory bodies regarding challenges identified by the Small Modular Reactor Regulators' Forum and to provide information on any necessary changes to national regulatory requirements and practices.¹⁶⁸

170. The Agency held the annual Meeting of the Steering Committee on Regulatory Capacity Building in Vienna in December 2023 to seek advice from Member States on the implementation of a strategic approach to capacity building activities in nuclear safety, and to exchange information on the status of the establishment of national strategies in this area.¹⁶⁹

171. The Agency held the Annual Meeting of the Steering Committee on Education and Training in Radiation, Transport and Waste Safety in Vienna in December 2023, where representatives of the participating Member States shared their experience and progress in establishing a national strategy on education and training in this area, and identified areas where further assistance from the Agency is required.¹⁷⁰

172. Seven Postgraduate Educational Courses in Radiation Protection and the Safety of Radiation Sources were conducted in a number of languages — two in Argentina (in Spanish), and one in each of the following countries: Indonesia (in English), Jordan (in Arabic), Algeria (in French), Kenya (in English) and Malaysia (in English). In addition, the Agency held a Meeting of Directors of the

¹⁶⁸ This relates to operative paragraph 114 of resolution GC(67)/RES/7

¹⁶⁹ This relates to operative paragraphs 76 and 114 of resolution GC(67)/RES/7.

¹⁷⁰ This relates to operative paragraphs 2, 114 and 116 of resolution GC(67)/RES/7.

Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources in Vienna in August 2023 to share experience and good practices in the conduct of the course.¹⁷¹

173. The Agency held a Workshop on Methods for Radiological and Environmental Impact Assessment (MEREIA) in Vienna, with the possibility of remote connection, in September 2023 to present and exchange experiences on the progress of the activities being carried out under the programme and to plan the activities for the following year.¹⁷²

174. The Agency held a Regional Workshop on the Review and Assessment of Nuclear Power Plant Licence Applications by Regulatory Bodies in Manila in November 2023 for ANSN members, to provide embarking countries with information and guidance on appropriate organization and management as well as on the effective conduct of regulatory review and assessment.¹⁷³

175. The Agency held an IAEA–KINS Workshop in Support of Developing and Enhancing the Safety Infrastructure for a Nuclear Power Programme in Daejeon, Republic of Korea in July 2023 to provide guidance to Member States embarking on nuclear power programmes on establishing the necessary safety infrastructure, with a focus on the development, implementation and strengthening of the regulatory framework in line with the guidance provided in the Safety Guide entitled *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16).¹⁷⁴

176. A Technical Meeting on Experience in the Development of Leadership and Safety Culture Programmes in Member States was conducted in Vienna in August 2023 to assist Member States to further develop and enhance their capacity in leadership and management for safety.¹⁷⁵

177. The Agency held two International Schools on Nuclear and Radiological Leadership for Safety in Vienna in August 2023 (in French) and in Hiratsuka, Japan, in February–March 2024 (in English). Additionally, four National Schools were held — in Buenos Aires in July 2023, in Abu Dhabi in November 2023, in Beijing in December 2023, and in Islamabad in June 2024. A Train the Trainers Course was held in Vienna in April 2024 to share lessons learned and train new trainers in the school methodology.¹⁷⁶

178. The Agency conducted 4 interregional training courses covering safety aspects of SMRs with over 130 participants from embarking countries or countries expanding their nuclear power programmes, as follows:¹⁷⁷

- Interregional Workshop on Technology Development and Applications of Small Modular Reactors in Chengdu, China, in September 2023;
- Interregional Training Course on Safety of Small Modular Reactors in Saint Petersburg, Russian Federation, in October 2023;
- Interregional Workshop on Applicability of the IAEA Safety Standards to Small Modular Reactors in Boston, USA, in October 2023; and

¹⁷¹ This relates to operative paragraphs 14 and 116 of resolution GC(67)/RES/7.

¹⁷² This relates to operative paragraphs 77 and 116 of resolution GC(67)/RES/7.

¹⁷³ This relates to operative paragraphs 5, 10, 116 and 117 of resolution GC(67)/RES/7.

¹⁷⁴ This relates to operative paragraphs 5 and 116 of resolution GC(67)/RES/7.

¹⁷⁵ This relates to operative paragraphs 7 and 116 of resolution GC(67)/RES/7.

¹⁷⁶ This relates to operative paragraphs 14 and 116 of resolution GC(67)/RES/7.

¹⁷⁷ This relates to operative paragraphs 14, 76 and 116 of resolution GC(67)/RES/7.

- Interregional Training Course on Safety Aspects of Small Modular Reactors in Vienna in February 2024.

179. The Agency held a Regional Workshop on Site Evaluation for Small Modular Reactors for ANSN members in Haikou, China, in November 2023 to enhance the understanding and competence of regulatory bodies and future operators with regard to site evaluation for SMRs on the basis of Agency safety standards and Member State practices.¹⁷⁸

180. The Agency held a National Workshop on the Management of the Regulatory Review and Assessment for an NPP Project in Accra in December 2023 to provide guidance on appropriate organization and management, and on the effective conduct of regulatory review and assessment for the licensing of an NPP¹⁷⁹.

181. In implementation of the University Partnership Programme on Nuclear Law and to build the teaching capacity of the partner universities to deliver the planned postgraduate courses on nuclear law, training opportunities were provided to professors from the six partner universities (University of Buenos Aires, Argentina; Institute of Nuclear Engineering, Brazil; Alexandria University, Egypt; University of the West Indies, Jamaica; University of the Witwatersrand, South Africa; and Khalifa University, United Arab Emirates) at the NLI in October 2023, the OECD/NEA International School of Nuclear Law in August–September 2023, and at a dedicated training course in November 2023. A total of 22 professors were trained through these opportunities. Further, a short course on nuclear law basics was conducted at two universities during the reporting period (Alexandria University, Egypt and the University of the Witwatersrand, South Africa).¹⁸⁰ In addition, the Agency finalised and delivered to all six academic institutions, the curriculum and teaching materials for their planned postgraduate courses. In May 2024, the University of Buenos Aires launched its postgraduate course on nuclear law.

182. The Agency held a Regional Workshop on the Development and Implementation of Effective Integrated Management Systems for Nuclear Facilities and Activities in Jakarta in August 2023 to provide practical knowledge on the development and implementation of effective integrated management systems for nuclear facilities and activities.¹⁸¹

183. The Agency held two expert missions to review the management system of the regulatory authorities — in Egypt in September 2023 and in Jordan in November 2023 — to review the degree of compliance of State management systems with the Safety Requirements publication *Leadership and Management for Safety* (IAEA Safety Standards Series No. GSR Part 2) and other related Agency publications in order to improve the management system of regulatory authorities.¹⁸²

184. The Agency held the Annual Meeting of the Regional Advisory Safety Committee for Research Reactors in Asia and the Pacific in Bangkok in November 2023 to provide a forum for the safety committees of research reactor operating organizations in the Asia and the Pacific region to share knowledge and experiences related to research reactor safety.¹⁸³

185. The Agency held a meeting for the Regional Advisory Safety Committee for Research Reactors in Africa in Accra in July 2023, where participants exchanged information on safety issues of common

¹⁷⁸ This relates to operative paragraphs 14, 76 and 116 of resolution GC(67)/RES/7

¹⁷⁹ This relates to operative paragraphs 14 and 116 of resolution GC(67)/RES/7.

¹⁸⁰ This relates to operative paragraph 116 of resolution GC(67)/RES/7.

¹⁸¹ This relates to operative paragraph 117 of resolution GC(67)/RES/7.

¹⁸² This relates to operative paragraph 117 of resolution GC(67)/RES/7.

¹⁸³ This relates to operative paragraphs 5 and 117 of resolution GC(67)/RES/7.

interest within the region including maintenance, periodic testing, and preparation for the decommissioning of research reactors based on the Agency safety standards.¹⁸⁴

186. The Agency held a Regional Workshop on the Development and Implementation of Effective Integrated Management Systems for Nuclear Facilities and Activities in Jakarta in July–August 2023 to provide practical knowledge on the development and implementation of effective integrated management systems for nuclear facilities and activities.¹⁸⁵

187. The Agency held a Regional Workshop on the Management of Training Systems for Nuclear and Radiation Safety in Manila in November 2023 for ANSN members, to deliver advanced information on specific aspects of the systematic approach to training, identify achievements, gaps and good practices in implementing this approach, and develop country-specific action plans to improve regulatory training systems.¹⁸⁶

188. The Agency held a Regional Workshop on Requirements for the Safe Transport of Radioactive Material in Hanoi in October 2023 for ANSN members, to deliver advanced information on specific aspects of a compliance assurance programme for the safe transport of radioactive material. The workshop helped to develop country-specific plans, which then improved compliance with the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev.1)) across the region.¹⁸⁷

189. During the reporting period, the Agency established an internal capacity building oversight committee to enhance the effective and efficient implementation of all safety and security capacity building initiatives, and to facilitate the strategic implementation of capacity building in nuclear safety and security from 2022 to 2030.¹⁸⁸

¹⁸⁴ This relates to operative paragraphs 5, 14 and 117 of resolution GC(67)/RES/7.

¹⁸⁵ This relates to operative paragraph 117 of resolution GC(67)/RES/7.

¹⁸⁶ This relates to operative paragraph 117 of resolution GC(67)/RES/7.

¹⁸⁷ This relates to operative paragraph 118 of resolution GC(67)/RES/7.

¹⁸⁸ This relates to operative paragraphs 116 and 120 of resolution GC(67)/RES/7.

K. Safe Management of Radioactive Sources



Behind the Scenes of Scrap Yards. (Photo: IAEA)

190. The Agency held an Interregional Workshop on the Development of National Policies and Strategies for the Management of Disused Sealed Radioactive Sources in Abuja in December 2023.¹⁸⁹

191. The Agency held a consultancy meeting in Vienna in December 2023 to review a draft technical document on establishing financial provisions for the management of disused radioactive sources.¹⁹⁰

192. The Agency continued promoting the Scrap Metal Tool Kit, a web-based collaboration platform for the exchange of information on the control of radioactive material inadvertently incorporated into scrap metal and semi-finished products of the metal recycling industries. The Agency continued promoting its e-learning course on the topic. During the reporting period, 1500 participants registered for the e-learning course.¹⁹¹

193. The Agency published *Applicability of IAEA Safety Standards to Non-Water Cooled Reactors and Small Modular Reactors* (Safety Reports Series No. 123) in November 2023. This publication offers a reviews the applicability of Agency safety standards to evolutionary and innovative design reactors, in particular SMRs, to consider whether the current requirements and recommendations are applicable to these technologies and to identify any gaps, such as new safety issues, that may be partially or wholly unaddressed by the safety standards.¹⁹²

¹⁸⁹ This relates to operative paragraph 123 of resolution GC(67)/RES/7.

¹⁹⁰ This relates to operative paragraph 125 of resolution GC(67)/RES/7.

¹⁹¹ This relates to operative paragraph 127 of resolution GC(67)/RES/7.

¹⁹² This relates to operative paragraph 128 of resolution GC(67)/RES/7.

L. Nuclear and Radiological Incident and Emergency Preparedness and Response



On 13 March 2024, during a full response exercise at the IAEA's Incident and Emergency Centre, members of the Incident and Emergency System respond to a simulated nuclear emergency in a Member State (Photo: IAEA)

194. The Agency participated in the regional large scale exercise “Valahia 2023”, which was organized by Romania with the support of Norway and the Agency in October 2023 under the Enhancement of Nuclear Safety, Security and Emergency Preparedness in Romania project. The Agency’s field response team was deployed together with other assistance teams from Member States and integrated into national response capabilities.¹⁹³

195. In 2023, the Agency conducted two Level 1 Convention Exercises (ConvEx-1) and four Level 2 Convention Exercises (ConvEx-2), with the participation of over 124 Member States.¹⁹⁴

196. During the reporting period, the Agency continued to develop a new Safety Guide provisionally entitled *Protection Strategy for a Nuclear or Radiological Emergency* (DS534) and to revise *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSG-2).¹⁹⁵

197. The Agency conducted quarterly internal full response exercises — in October and December 2023 and in March and June 2024 — to demonstrate the ability of the Agency’s Incident and Emergency System (IES) to respond to a simulated nuclear or radiological emergency and provide training for IES

¹⁹³ This relates to operative paragraphs 130 and 134 of resolution GC(67)/RES/7.

¹⁹⁴ This relates to operative paragraph 131 of resolution GC(67)/RES/7.

¹⁹⁵ This relates to operative paragraph 132 of resolution GC(67)/RES/7.

staff. Each exercise lasted 8 hours with the participation of 35–40 Agency staff members. The exercise in October 2023 was conducted in conjunction with the regional large scale exercise in Romania and was used as a ConvEx-2c exercise to test the operational arrangements for implementing the Agency's response roles. In addition, the Agency conducted a Business Continuity full response exercise in May 2024 to demonstrate the ability of the IES to respond using the Agency's backup Incident and Emergency Centre operations area, which is located at an alternate site on the IAEA Seibersdorf labs premises.¹⁹⁶

198. The Agency held the first Interregional Workshop on Emergency Preparedness and Response for Small Modular Reactors in Daejeon, Republic of Korea in October 2023 to provide participants with information on the latest Agency developments in the area of EPR for such reactors.¹⁹⁷

199. The Agency held an International Workshop on Nuclear Security Measures and Emergency Response Arrangements for Ports in Las Vegas, USA, in November 2023 to facilitate the exchange of information among Member States developing or revising their nuclear security measures or emergency response arrangements at ports.¹⁹⁸

200. The Agency held the Pilot Workshop on Considerations for Preparedness and Response to Nuclear and Radiological Emergencies, Triggered by Nuclear Security Events in Wiener Neustadt, Austria, in October–November 2023 to raise awareness of considerations for preparedness and response to nuclear or radiological emergencies triggered by nuclear security events, to discuss challenges in coordinating the response to such emergencies and to highlight aspects related to nuclear security within the context of *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7) and relevant Nuclear Security Series publications.¹⁹⁹

201. During the reporting period, the Agency continued to offer training material on *Arrangements for the Termination of a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSG-11) at the request of Member States.²⁰⁰

202. The Agency's Unified System for Information Exchange in Incidents and Emergencies (USIE) web portal was used by the contact points of States Parties to the Early Notification Convention and the Assistance Convention and by Member States in all workshops on arrangements for notification, reporting and assistance, as well as in all ConvEx exercises. Member States shared information on events of interest via the USIE platform. USIE users received information on 17 events communicated by Member States. More than 90 posts were made on the situation in Ukraine on the USIE platform. The USIE Exercise website was used by the Secretariat and Member States for over 50 exercises in the reporting period. In addition, 9 International Nuclear and Radiological Event Scale event ratings were submitted through USIE and shared on IAEA News (<https://www-news.iaea.org/>).²⁰¹

203. New or updated registrations of national assistance capabilities in the Agency's Response and Assistance Network (RANET) were received during the reporting period from Belarus, Canada, Denmark, Finland, Italy, Slovenia, Thailand and Switzerland.²⁰²

¹⁹⁶ This relates to operative paragraph 134 of resolution GC(67)/RES/7.

¹⁹⁷ This relates to operative paragraph 135 of resolution GC(67)/RES/7.

¹⁹⁸ This relates to operative paragraph 135 of resolution GC(67)/RES/7.

¹⁹⁹ This relates to operative paragraph 135 of resolution GC(67)/RES/7.

²⁰⁰ This relates to operative paragraph 136 of resolution GC(67)/RES/7.

²⁰¹ This relates to operative paragraph 138 of resolution GC(67)/RES/7.

²⁰² This relates to operative paragraph 139 of resolution GC(67)/RES/7.

204. A RANET consultancy meeting was held in February 2024 on the update of *IAEA Response and Assistance Network* (EPR-RANET 2018) to incorporate lessons identified from recent requests for assistance, including the provision of equipment.²⁰³

205. The Agency held a National Workshop on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies in Abidjan, Côte d'Ivoire, in August 2023 to increase participants' knowledge of and ability to use the Agency's arrangements and resources for international notification, reporting and requesting assistance during an emergency.²⁰⁴

206. During the reporting period, the Agency issued 67 updates — statements by the Director General — and 4 reports to the Board of Governors and one report to the General Conference on the situation in Ukraine, which are available and accessible to the public on the Agency website.²⁰⁵

207. Two consultancy meetings were conducted with researchers from the private sector, governmental and academic AI laboratories to draft an introductory publication on the scope and means of mitigating risks associated with AI-produced disruptive messaging that could hamper public acceptance of protective actions in an emergency.²⁰⁶

208. The Agency held a Workshop on the Implementation of the International Radiation Monitoring Information System (IRMIS) in Vienna in December 2023 to improve participants' awareness and understanding of IRMIS, including training on emergency response roles, features and arrangements for sharing monitoring data.²⁰⁷

209. During the reporting period, eight IRMIS radiation monitoring stations were provided on loan by the Agency and were deployed in the Republic of Moldova.²⁰⁸

210. During the reporting period, 5 States started sharing environmental radiation monitoring data through IRMIS, namely Albania, Georgia, Iraq, Morocco and Türkiye, bringing the total number of States sharing radiation monitoring data on IRMIS to 51.²⁰⁹

211. As of June 2024, 142 Member States had appointed national Emergency Preparedness and Response Information Management System (EPRIMS) coordinators, with 11 Member States appointing coordinators in the reporting period. EPRIMS has a total of 536 users. The number of published modules increased to 2119 in 2024, up from 2039 in 2023.²¹⁰

212. A review and potential revision of the *Joint Radiation Emergency Management Plan of the International Organizations* (EPR-JPLAN 2017) was initiated in September 2023. All participating organizations and corresponding organizations of the IACRNE were requested to revise their existing content or provide new content for inclusion in a revision of the publication.²¹¹

²⁰³ This relates to operative paragraph 139 of resolution GC(67)/RES/7.

²⁰⁴ This relates to operative paragraphs 116 and 140 of resolution GC(67)/RES/7.

²⁰⁵ This relates to operative paragraph 141 of resolution GC(67)/RES/7.

²⁰⁶ This relates to operative paragraph 141 of resolution GC(67)/RES/7.

²⁰⁷ This relates to operative paragraph 142 of resolution GC(67)/RES/7.

²⁰⁸ This relates to operative paragraph 142 of resolution GC(67)/RES/7.

²⁰⁹ This relates to operative paragraph 142 of resolution GC(67)/RES/7.

²¹⁰ This relates to operative paragraph 143 of resolution GC(67)/RES/7.

²¹¹ This relates to operative paragraph 144 of resolution GC(67)/RES/7.

213. The Agency held a multi-day virtual training exercise in September 2023 with public information officers of the IACRNE member organizations.²¹²

214. In December 2023, three working groups composed of members of EPreSC presented their findings and proposals following their review of *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7), in order to inform the scope and nature of a potential revision of the publication. In January 2024, the Agency held a consultancy meeting to finalize the work of the three working groups and presented the main outputs at the first EPreSC meeting of the new term (2024–2026), held in June 2024.²¹³

215. In January 2024, the Agency held a consultancy meeting to continue the review of GSR Part 7 and collect feedback, observations and suggestions from non-EPreSC members.²¹⁴

²¹² This relates to operative paragraph 145 of resolution GC(67)/RES/7.

²¹³ This relates to operative paragraph 146 of resolution GC(67)/RES/7.

²¹⁴ This relates to operative paragraph 146 of resolution GC(67)/RES/7.

Annex Table of Concordance

Table of Concordance Between Resolution GC(67)/RES/7 Operative Paragraphs (OPs) Associated with Agency Action and Paragraphs of this Report

OP	Report Paragraph	OP	Report Paragraph	OP	Report Paragraph
1	2	49	50, 74,75	96	149,150,151,152
2	2,8,9,10,11,12,13,22,170	50	78,79,80,81,82,96	101	153,154,155,156
3	21	51	76,77,78,79,80,81,82,83,84,85	102	23,157
4	67	52	83,86,94	103	158
5	14,124,173,174,183,184	53	87	109	158,159,160
6	4	54	76,77,83,84,85	110	161,162
7	15,16,17,18,19,175	55	88,89,90,91,92,93,94,95	111	132,163
8	16,20,62	57	97	112	132, 164,165,166,167
9	21,22,23,24,25,96,101,161,162	59	21, 98,99,100	113	132
10	26,27,28,29,30,31,32,99,173	63	101	114	19, 168,169,170
11	33,34	64	102,103,104	116	5,6,8,9,12,13,60,127,150,151,152, 170,171,172,173,174,175,176,177,178,179,180,188,204
14	17,35,51,76,80,86,88,107,143,171,176, ,177,178, 179, 184	65	105,106,107,108,109	117	173, 181,182,183,184,185,186
15	7	66	109,110,111,112,128	118	26,187
16	7,8	68	113	120	78,188
17	7,14	70	114,115,116,117	123	189
18	7	71	24, 118,119,120	125	190
19	,36,37,38,39,40,41,42	72	121	126	45,46
20	8	74	121	127	191
21	3,5,6,7, 36,37,38,39,40, 43,44, ,47,48, 60	75	122,123,124	128	192
22	45,46	76	72,114, 125,126,127,128,169, 177,178	130	193
24	49	77	129,172	131	194
25	50,51,52,100	78	130	132	195
28	8,9,10,11,12,53	79	130	134	193,196
29	54	80	131	135	197,198,199
31	55,56,57	81	132,133,163,167	136	200
33	58	83	134,135,137	138	201
36	59,60	84	138	139	202,203
41	61,62	85	135,136	140	48,204
42	63,64	86	139,140	141	205,206

43	61,65,69	87	141	142	207,208,209
44	66,69	88	142	143	210
45	67	89	143,144	144	211
46	68	90	145,146	145	212
47	70,71,72	91	147	146	213,214
48	73	95	148	148	4



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

www.iaea.org

International Atomic Energy Agency
PO Box 100, Vienna International Centre
1400 Vienna, Austria
Tel.: (+43-1) 2600-0
Fax: (+43-1) 2600-7
Email: Official.Mail@iaea.org