IAEA
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Atoms for Peace and Development

Board of Governors
General Conference

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NUCLEAR AND RADIATION SAFETY

Report by the Director General

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(GC(67)/1 and Add.1)

Nuclear and Radiation Safety

Report by the Director General

Summary

Pursuant to resolution GC(66)/RES/6, 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

Celebration of the 25th anniversary of the Ibero-American Forum of Radiation and Nuclear Safety Regulatory Agencies in Madrid in July 2022.

1. This report has been produced for the 67th regular session (2023) of the General Conference in response to resolution GC(66)/RES/6, in which the General Conference requested the Director General to report in detail on 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 2022 to 30 June 2023.

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]

[1] This relates to operative paragraphs 1 and 2 of resolution GC(66)/RES/6.

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 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 2023, a report by the Director General containing the draft *Nuclear Safety Review 2023* was submitted to the Board of Governors. The final version of the *Nuclear Safety Review 2023*, prepared in the light of discussions at the Board of Governors, is provided as an information document at the 67th regular session of the Agency's General Conference. The *Nuclear Safety Review 2023* includes the global trends and the Agency's activities in 2022. It also presents priorities and related activities for 2023 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. The twelfth Treaty Event took place during the 66th 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. Further, in the margins of the 66th General Conference, a side event was held to commemorate the 25th anniversary of the adoption of the Convention on Supplementary Compensation for Nuclear Damage and the 1997 Vienna Convention on Civil Liability for Nuclear Damage.[4]

6. Through the Legislative Assistance Programme, the Agency continued to provide legislative assistance to its Member States to support the development of adequate national nuclear legal frameworks and to promote adherence to the relevant international legal instruments. Specific bilateral legislative assistance was provided to 20 Member States through written comments on draft and enacted national nuclear legislation, and thirteen 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:[5]

- Three regional workshops were held for Member States — in the Asia and the Pacific region in Hanoi in August 2022, for Member States in the Middle East in Abu Dhabi in December 2022 and for Spanish-speaking Member States in Latin America in Buenos Aires in September 2022;
- A regional workshop on nuclear law was conducted in the Russian language in Dushanbe in March 2023;
- An interregional training course on nuclear law and legislative assistance for experts was held in Vienna in April 2023; and
- 35 other legislative assistance activities were conducted in Vienna and in a number of Member States, comprising 20 awareness-raising meetings for decision makers, policy makers and senior officials, and 15 national workshops on international and national nuclear law.

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[2] This relates to operative paragraph 19 of resolution GC(66)/RES/6.

[3] This relates to operative paragraphs 4 and 136 of resolution GC(66)/RES/6.

[4] This relates to operative paragraph 19 of resolution GC(66)/RES/6.

[5] This relates to operative paragraphs 19 and 106 of resolution GC(66)/RES/6.

7. The Agency organized the tenth session of the Nuclear Law Institute in Vienna in October 2022, where participants acquired a solid understanding of all aspects of nuclear law, with a particular focus on drafting legislation. In addition, as part of the interactive webinar series on topical issues in nuclear law, one webinar was held in August 2022.[6]

8. The Agency held a meeting of the Plenary of the Regulatory Cooperation Forum (RCF) in Vienna in September 2022 to provide updates on the provider members' assistance programmes for developing regulatory infrastructure, as well as on the regulatory infrastructure in several advanced embarking countries. The Plenary also promoted awareness of RCF activities for non-RCF members. In addition, the Agency initiated work on the evaluation report for the RCF programme in Vienna in November 2022 to analyse the results of a survey on the effectiveness of the RCF programme and the implementation of the RCF operational plan, as well as to draft an evaluation report concerning RCF activities for the improvement of the RCF programme.[7]

9. In August 2022, the Agency held an Interregional Workshop on Capacity Building on Site Safety Evaluation and Review for Countries Embarking on a New Nuclear Programme in Vienna to train participants on cross-cutting technical issues related to site safety review and assessment for new nuclear programmes, including flooding, rare extreme natural external events and human induced external events.[8]

10. The Agency held a Workshop on Safety Culture Self-Assessment for Regulatory Bodies — in Fukui, Japan, in February–March 2023 to enhance regulatory bodies' understanding of the elements involved in systematically working with safety culture, and of the key success factors in implementing a safety culture improvement programme.[9]

11. The Agency held two Training Workshops for Safety Culture Continuous Improvement in Vienna in July 2022 and June 2023 to provide personnel working in nuclear facilities and related activities with insights and methods for continuously improving safety culture.[10]

12. A Workshop on Managing the Interface Between Nuclear Safety and Security for Nuclear Fuel Cycle Facilities was held by the Agency in Vienna in October 2022 to provide participating Member States with a forum for sharing knowledge, experience and practical information related to the management of the interface between safety and security for nuclear fuel cycle facilities.[11]

13. 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. These activities included a virtual Training Workshop on the Preparation of a Feasibility Study for a New Research Reactor Project: Experiences and Challenges, in November–December 2022, at which safety as well as technical areas of a cross-cutting nature were addressed in a coordinated manner. The Agency also held a Technical Meeting on the Life Management and Modernization of Fuel Fabrication and Fuel Reprocessing Facilities in Vienna in August 2022, and a Technical Meeting on the Safety of Fuel

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[6] This relates to operative paragraphs 19 and 106 of resolution GC(66)/RES/6.

[7] This relates to operative paragraphs 2 and 25 of resolution GC(66)/RES/6.

[8] This relates to operative paragraphs 3 and 106 of resolution GC(66)/RES/6.

[9] This relates to operative paragraphs 2, 5 and 110 of resolution GC(66)/RES/6.

[10] This relates to operative paragraph 5 of resolution GC(66)/RES/6.

[11] This relates to operative paragraph 6 of resolution GC(66)/RES/6.

Manufacturing for Advanced Reactors in Vienna in November 2022, at which safety and technical areas were addressed in a coordinated manner.[12]

14. In September 2022, the Agency held the Tenth Annual Meeting of the Regional Advisory Safety Committee for Research Reactors in Asia and the Pacific in Sydney, Australia, to provide a forum for the safety committees of research reactor operating organizations in the Asia and the Pacific region to share knowledge and experience related to research reactor safety.[13]

15. The Agency continues to assist Member States in establishing or enhancing their regulatory infrastructure for radiation safety and for the security of radioactive material through dedicated Regulatory Infrastructure Development Projects. The activities included:[14]

- Two Regional Workshops on the Strategic Directions to Establish the Integrated Management System for Regulating Radiation Safety and Security of Radioactive Material, held in Rabat in October–November 2022 for the Africa region (in French) and in Vienna in January–February 2023 for the Caribbean region (in English);
- Two Regional School on Leadership in Radiation Safety and Security of Radioactive Material, held in Vienna in August 2022 for the Latin America region (in Spanish) and in May 2023 for the Africa region (in English); and
- One Regional Training Courses on the Authorization and Inspection of Radiation Safety and Nuclear Security for Medical Practices held in Rabat in September 2022 for the Africa region (in French).

16. The Agency held the 18th and 19th Global Nuclear Safety and Security Network (GNSSN) Steering Committee Meetings in Vienna (with the possibility of remote connection) in July 2022 and in February 2023 to foster further cooperation in joint projects and activities and to develop the GNSSN work plan for 2023.[15]

17. In November 2022, the Agency held the Sixth Global Nuclear Safety and Security Communication Network Steering Committee Meeting in Vienna (with the possibility of remote connection) to review the outcomes and activities of the Network and to review and to approve its 2023 work plan.[16]

18. In November 2022, the Agency held a Regional Workshop on Developing Communication Plans for the Asia and the Pacific region virtually to improve communication effectiveness, consultation and overall interaction with interested parties, and to build public trust in nuclear and radiation safety and security.[17]

19. The Agency held the Ninth and Tenth Meetings of the Steering Committee of the European and Central Asian Safety Network in Vienna in August 2022 and in February 2023 to review and to discuss its 2022–2023 work plan and its achievements in 2022.[18]

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[12] This relates to operative paragraphs 3, 7 and 63 of resolution GC(66)/RES/6.

[13] This relates to operative paragraphs 3 and 8 of resolution GC(66)/RES/6.

[14] This relates to operative paragraph 6 of resolution GC(66)/RES/6.

[15] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[16] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[17] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[18] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

20. The Agency held the 32nd Meeting of the Steering Committee of the Asian Nuclear Safety Network (ANSN) in October 2022 in Vienna to review the progress of the Network's activities.[19]

21. The Agency held the 14th Annual Meeting of the Arab Network of Nuclear Regulators in Tunis in February 2023 to evaluate the activities of the Arab Network of Nuclear Regulators and to discuss ways to develop its working mechanisms and cooperation with the relevant international and regional organizations.[20]

22. In November 2022, the Agency held the 19th Meeting of the Steering Committee of the Forum of Nuclear Regulatory Bodies in Africa virtually to review the 2023 work proposals from each thematic working group, and to discuss and prioritize activities according to Member States' needs.[21]

23. In October 2022, the Agency held a Regional Workshop on Public Information and Communication: Standards, Mechanisms and Challenges for Regulatory Bodies for Nuclear Safety and Security in Belgrade to share experiences in effective communication with the public and other stakeholders, as well as within regulatory bodies for nuclear safety and security, and to provide participants with information on related Agency safety standards.[22]

24. A Regional Workshop on Capacity Building and Competence Assessment for Regulatory Bodies was held by the Agency in Vienna in September 2022 to exchange experience related to the methodology for the (with the possibility of remote connection) Systematic Assessment of Regulatory Competence Needs.[23]

25. The Agency continued its cooperation with the Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO). On the 25th anniversary of FORO, which was celebrated in Madrid in July 2022, the Portuguese Environment Agency joined FORO, becoming FORO's 11th member. The Agency organized three Steering Committee meetings — in Madrid in July 2022, in Montevideo in December 2022 and in Mexico City in June 2023. Seven additional meetings were held under the FORO extrabudgetary programme. The topics covered included regulatory practices in the licensing of nuclear reactor operators, security during the transport of radioactive material, and licensing criteria and inspection requirements for centralized radiopharmacies. Furthermore, a joint IAEA–FORO publication on the creation and development of the competences of regulators of medical and industrial applications (IAEA-TECDOC-2005) was issued in Spanish in September 2022.[24]

26. The Agency participated in two meetings of the European Nuclear Safety Regulators Group Working Group 1 in Brussels in October 2022 and in March 2023. The purpose of these meetings was to exchange information in the area of nuclear safety and, specifically, on the conduct of Integrated Regulatory Review Service (IRRS) missions.[25]

27. In July 2022, the Agency held the 33rd African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) Technical Working Group Meeting in Kigali for African countries that have not yet established a legal and/or regulatory framework for radiation safety. At the meeting, national coordinators for technical cooperation

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[19] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[20] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[21] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[22] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[23] This relates to operative paragraphs 8 and 108 of resolution GC(66)/RES/6.

[24] This relates to operative paragraphs 9 and 106 of resolution GC(66)/RES/6.

[25] This relates to operative paragraphs 9 and 47 of resolution GC(66)/RES/6.

programmes discussed the performance of the AFRA programme and made recommendations to improve its delivery and effectiveness.[26]

28. The Agency held a Meeting on the 10th African Conference on Research Reactor Safety, Operation and Utilization and the Workshop on the Safety of Experiments and Utilization Programme were held by the Agency in Cairo in November–December 2022. Regulators, operators, managers, users and other stakeholders discussed and shared experience and good practices regarding common challenges, options and strategies related to the safe management and effective operation and utilization of research reactors.[27]

29. Four National Workshops on SEED Capacity Building for Site Safety Evaluation and Review for New Nuclear Installation Programmes were held — in Nairobi in August–September 2022, in Rabat in September 2022, in Abuja in December 2022 and in Astana in May–June 2023.[28]

30. The Agency held four Regional Schools on Drafting Regulations for Radiation Safety and Security of Radioactive Material in Vienna for Latin America in August 2022, for the Africa region in October 2022 (in English) and in November 2022 (in French), for the Caribbean in June 2023 and two Regional Schools on Drafting Regulations for Radiation Safety, for the Europe and Central Asia region in January 2023, and for the Asia and the Pacific region in February 2023, to assist participants with the drafting and revision of their countries' national regulations on the radiation safety and security of radioactive material. Participants learned how to ensure the compatibility of their national regulations with the relevant Agency safety standards and nuclear security guidance.[29]

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[26] This relates to operative paragraphs 2 and 12 of resolution GC(66)/RES/6.

[27] This relates to operative paragraphs 3 and 12 of resolution GC(66)/RES/6.

[28] This relates to operative paragraphs 12, 61 and 63 of resolution GC(66)/RES/6.

[29] This relates to operative paragraphs 12 and 106 of resolution GC(66)/RES/6.

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

International Conference on Effective Nuclear and Radiation Regulatory Systems: Preparing for the Future in a Rapidly Changing Environment in Abu Dhabi in February 2023.

31. The Agency continued to encourage Member States, especially those planning, constructing, commissioning or operating nuclear power plants (NPPs), or considering a nuclear power programme, to become Contracting Parties to the 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, by sending outreach letters to the Members States that are not yet Party to the CNS, as well as through technical cooperation projects. During the reporting period, there were no new Contracting Parties to the CNS.[30]

32. The Joint Eighth and Ninth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety was held in March 2023 in Vienna, with 934 participants, the highest level of participation by Contracting Parties to date, with 81 of the 91 Contracting Parties in attendance. In the first week, national reports were reviewed in country group sessions, and Open-Ended Working Group (OEWG) sessions were held to discuss proposals to improve the peer review process. During the second week, at the final plenary sessions, Contracting Parties learned about the results of discussions on each national report, delivered by the rapporteurs, and discussed the recommendations of the OEWG. The proposed amendments to the guidance documents were agreed by consensus. The Contracting Parties identified a number of major common issues, including: managing extraordinary circumstances impacting the safe operation of nuclear installations; strengthening national regulatory capabilities

[30] This relates to operative paragraphs 17 and 19 of resolution GC(66)/RES/6.

taking into account new and innovative technologies; fostering international peer review missions and timely addressing of findings; addressing the possible impact of climate change on nuclear installations; securing reliable supply chains; and exchanging experience on the implementation of their aging management strategies and effectiveness of ageing management practices.[31]

33. In October 2022, the Agency held a Workshop for Permanent Mission Representatives on the Convention on Nuclear Safety in Vienna to provide Permanent Mission representatives with information on the CNS review process and obligations, as well as on the process for adherence to the CNS.[32]

34. In December 2022, the Agency held an Educational Workshop on the CNS in Vienna to provide Permanent Mission representatives assistance with, and educational information on, meeting the obligations under the CNS.[33]

35. The Agency continued to encourage its 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, 1 Member State became a new Contracting Party to the Joint Convention, bringing the total number of Contracting Parties to 89.[34]

36. The Agency held two Regional Workshops to Promote the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management — in Phuket, Thailand, in December 2022 for Member States in the Asia and the Pacific region, and in Mexico City in April 2023 for Member States in the Latin America and the Caribbean region, to encourage adherence to the Joint Convention.[35]

37. In March 2023, the Agency conducted a virtual meeting with Turkmenistan in relation to the prospect of adherence to the Early Notification Convention and the Assistance Convention. In the reporting period, 2 Member States acceded to the Assistance Convention, bringing the total number of Contracting Parties to 127. The number of Contracting Parties to the Early Notification Convention remains at 132.[36]

38. As of 30 June 2023, 147 States had made a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources, of which 131 also notified the Director General of their intention to act in a harmonized manner in accordance with the Code of Conduct's supplementary Guidance on the Import and Export of Radioactive Sources. A total of 151 States nominated points of contact to facilitate the export and import of radioactive sources. In addition, 58 States 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.[37]

39. The Agency continues efforts in raising awareness of the Member States for the need and benefits of expressing political commitment to the Code of Conduct and its supplementary guidance. A Technical

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[31] This relates to operative paragraphs 17 and 19 of resolution GC(66)/RES/6.

[32] This relates to operative paragraphs 17 and 19 of resolution GC(66)/RES/6.

[33] This relates to operative paragraphs 17, 19 and 106 of resolution GC(66)/RES/6.

[34] This relates to operative paragraph 19 of resolution GC(66)/RES/6.

[35] This relates to operative paragraph 19 of resolution GC(66)/RES/6.

[36] This relates to operative paragraph 19 of resolution GC(66)/RES/6.

[37] This relates to operative paragraphs 20 and 117 of resolution GC(66)/RES/6.

Meeting to create awareness of the need for political commitment to the Code and its supplementary guidance was held in Vienna in August–September 2022.[38]

40. The Agency held the 6th Open-ended Meeting of Technical and Legal Experts for Sharing Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources in Vienna in May–June 2023 to share information on the implementation of the Code of Conduct and supplementary guidance and to commemorate the 20th anniversary of the approval of the Code of Conduct.[39]

41. An 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 was held by the Agency in Vienna in January 2023.[40]

42. The Agency held the International Conference on Effective Nuclear and Radiation Regulatory Systems: Preparing for the Future in a Rapidly Changing Environment in Abu Dhabi in February 2023. The conference focused on emerging challenges, such as the safety and security of advanced reactors and new technologies, the challenges related to the application of nuclear and non-nuclear technologies throughout their full life cycle, ensuring regulatory agility and resilience and being prepared for the unexpected, information sharing and transparency, and international cooperation in the event of nuclear or radiological emergencies and for capacity building. A 'call for action' document was issued as an outcome of the conference.[41]

43. The Agency held three Regional Workshops to Launch the Regulatory Authority Information System (RAIS+) to Member States — in Yaoundé in July 2022, in Kingston in August 2022 and in Manila in October 2022, to help regulatory bodies with the installation of and user training on RAIS+ software, and to provide feedback to the Agency on its use.[42]

44. The Agency held the 17th Meeting of the Steering Committee of the Technical and Scientific Support Organization Forum (TSO Forum) in Vienna (with the possibility of remote connection) in January 2023 to discuss the recent achievements of the TSO Forum, as well as the Forum's self-assessment methodology.[43]

45. In December 2022, the Agency held the 15th Consultancy Meeting of the TSO Forum in Vienna to finalize the draft guidance on the establishment and implementation of a strategy to facilitate the development of national technical and scientific capabilities supporting regulatory functions, with a focus on the TSO Self Capability Assessment (TOSCA) methodology and the web-based TOSCA tool. The Agency provided support on the methodology for TSO self capability assessment using the TOSCA tool to Norway in February, April and June 2023. In addition, the Agency co-organized a Workshop on Setting Up National Technical Support Organizations for Nuclear Safety and Security with the Norwegian Radiation and Nuclear Safety Authority in Oslo in June 2023 to share experiences in the practical aspects of setting up a national technical support organization.[44]

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[38] This relates to operative paragraphs 20 and 117 of resolution GC(66)/RES/6.

[39] This relates to operative paragraphs 20 and 117 of resolution GC(66)/RES/6.

[40] This relates to operative paragraphs 20 and 117 of resolution GC(66)/RES/6.

[41] This relates to operative paragraph 25 of resolution GC(66)/RES/6.

[42] This relates to operative paragraph 26 of resolution GC(66)/RES/6.

[43] This relates to operative paragraph 28 of resolution GC(66)/RES/6.

[44] This relates to operative paragraph 28 of resolution GC(66)/RES/6.

46. The Agency held two meetings of the International Nuclear Safety Advisory Group (INSAG) in Vienna in October 2022 and in April 2023, where high-level experts discussed current and emerging nuclear safety issues of interest to the nuclear community and the public. A publication entitled *A Systems View of Nuclear Security and Nuclear Safety: Identifying Interfaces and Building Synergies*, developed jointly by INSAG and the Advisory Group on Nuclear Security, was issued in April 2023.[45]

47. The Secretariat continued to assist Member States, upon request, in their efforts to adhere to the relevant nuclear liability instruments.[46]

48. The International Expert Group on Nuclear Liability (INLEX) held its 22nd regular meeting in September 2022. The Group discussed, inter alia, liability issues concerning insurance of radioactive sources, right of recourse of nuclear fusion facilities operators, small modular reactors, nuclear powered ships, and supplementary compensation obligations for parties to both the Brussels Supplementary Convention and the Convention on Supplementary Compensation for Nuclear Damage. The Group also adopted a statement on the "Benefits of Joining the Global Nuclear Liability Regime". The meeting was followed by a half-day Workshop for Diplomats on Civil Liability for Nuclear Damage.[47]

C. Agency Safety Standards

Participants at the Training Course on the IAEA Safety Standards in Vienna in September 2022.

[45] This relates to operative paragraph 30 of resolution GC(66)/RES/6.

[46] This relates to operative paragraph 32 of resolution GC(66)/RES/6.

[47] This relates to operative paragraph 33 of resolution GC(66)/RES/6.

49. The Commission on Safety Standards (CSS) met in Vienna in October 2022 and May 2023. The following Committee meetings were held:[48]

- The Waste Safety Standards Committee met in Vienna in November 2022 and June 2023;
- The Transport Safety Standards Committee met in Vienna in November–December 2022 and June 2023;
- The Nuclear Safety Standards Committee met in Vienna in November 2022 and in June 2023, and virtually in February 2023;
- The Radiation Safety Standards Committee (RASSC) met in Vienna in November 2022 and June 2023;
- The Emergency Preparedness and Response Standards Committee (EPReSC) met in Vienna in November 2022 and June 2023; and
- The Nuclear Security Guidance Committee met in Vienna in November–December 2022 and June 2023.

50. The Interface Group, which brings together chairs of the Safety Standards Committees and the Nuclear Security Guidance Committee, reviewed 14 publication proposals for possible safety–security interfaces following a recommendation from the Secretariat's Coordination Committee on Safety Standards and Nuclear Security Series Publications.[49]

51. 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 52nd CSS meeting in November 2022 have now been issued or are at the last stage of editing before publication. A total of 21 Safety Guides were published during the reporting period, which is a record number for the past 20 years.[50]

52. The Agency undertook further efforts to translate safety standards into Chinese, French, Russian and Spanish. 23 Safety Guides were translated into Chinese, 6 into French, 14 into Russian and 3 into Spanish.[51]

53. During the reporting period, the Agency enabled remote (virtual) participation of Member States' representatives in the meetings of the CSS and the Safety Standards Committees.[52]

54. The CSS endorsed the following draft Safety Guides for submission for publication:[53]

- *Safety Guide on Radiation Safety of Radiation Sources Used in Research and Education* (DS470);
- *Safety Guide on Application of the Concept of Exemption* (DS499);
- *Safety Guide on Application of the Concept of Clearance* (DS500);

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[48] This relates to operative paragraphs 37 and 39 of resolution GC(66)/RES/6.

[49] This relates to operative paragraphs 6 and 37 of resolution GC(66)/RES/6.

[50] This relates to operative paragraph 38 of resolution GC(66)/RES/6.

[51] This relates to operative paragraph 38 of resolution GC(66)/RES/6.

[52] This relates to operative paragraph 39 of resolution GC(66)/RES/6.

[53] This relates to operative paragraph 40 of resolution GC(66)/RES/6.

- *Safety Guide on Radiation Protection Programmes for the Transport of Radioactive Material* (DS521);
- *Safety Guide on Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants* (DS523);
- *Assessment of the Safety Approach for Design Extension Conditions and Application of the Concept of Practical Elimination in the Design of Nuclear Power Plants* (DS508);
- *Borehole Disposal Facilities for Disused Sealed Radioactive Sources* (DS512); and
- *Evaluation of Seismic Safety for Nuclear Installations* (DS522).

55. In February 2023, the Agency launched e-learning courses on Governmental, Legal and Regulatory Framework for Safety (IAEA Safety Standards Series No. GSR Part 1 (Rev. 1)); Leadership and Management for Safety (IAEA Safety Standards Series No. GSR Part 2); and Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Safety Standards Series No. GSR Part 7).[54]

56. Two international Training Courses on the IAEA Safety Standards 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, were held in Vienna in September 2022 and May 2023. In addition, one national training course was held in Sofia in June 2023.[55]

57. The Agency published the following Safety Guides:[56]

- *Operational Limits and Conditions and Operating Procedures for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-70);
- *Modifications to Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-71);
- *The Operating Organization for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-72);
- *Core Management and Fuel Handling for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-73);
- *Maintenance, Testing, Surveillance and Inspection in Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-74);
- *Recruitment, Qualification and Training of Personnel for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-75);
- *Conduct of Operations at Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-76);
- *Criticality Safety in the Handling of Fissile Material* (IAEA Safety Standards Series No. SSG-27 (Rev. 1));
- *Safety in the Utilization and Modification of Research Reactors* (IAEA Safety Standards Series No. SSG-24 (Rev. 1));

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[54] This relates to operative paragraph 40 of resolution GC(66)/RES/6.

[55] This relates to operative paragraphs 40 and 105 of resolution GC(66)/RES/6.

[56] This relates to operative paragraph 41 of resolution GC(66)/RES/6.

- S*afety Assessment for Research Reactors and Preparation of the Safety Analysis Report* (IAEA Safety Standards Series No. SSG-20 (Rev. 1));
- *Use of a Graded Approach in the Application of the Safety Requirements for Research Reactors* (IAEA Safety Standards Series No. SSG-22 (Rev. 1));
- *Hazards Associated with Human Induced External Events in Site Evaluation for Nuclear Installations* (IAEA Safety Standards Series No. SSG-79);
- S*afety of Conversion Facilities and Uranium Enrichment Facilities* (IAEA Safety Standards Series No. SSG-5 (Rev. 1));
- *Safety of Uranium Fuel Fabrication Facilities* (IAEA Safety Standards Series No. SSG-6 (Rev. 1));
- *Safety of Uranium and Plutonium Mixed Oxide Fuel Fabrication Facilities* (IAEA Safety Standards Series No. SSG-7 (Rev. 1));
- *Commissioning of Research Reactors* (IAEA Safety Standards Series No. SSG-80);
- *Maintenance, Periodic Testing and Inspection of Research Reactors* (IAEA Safety Standards Series No. SSG-81);
- *Core Management and Fuel Handling for Research Reactors* (IAEA Safety Standards Series No. SSG-82);
- *Operational Limits and Conditions and Operating Procedures for Research Reactors* (IAEA Safety Standards Series No. SSG-83);
- *The Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors* (IAEA Safety Standards Series No. SSG-84); and
- *Compliance Assurance for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSG-78).

58. The Agency included all of the new safety standards and nuclear security guidance publications in the Nuclear Safety and Security Online User Interface platform.[57]

59. 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. 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 provided support for the preparation of Scientific Annex D to the UNSCEAR 2020/2021 Report, Volume IV, entitled *Evaluation of Occupational Exposure to Ionizing Radiation*, published in September 2022.[58]

60. The Agency finalized the draft Safety Report provisionally entitled *Attribution of Radiation Health Effects and Inference of Radiation Risks: Consideration for Application of the IAEA Safety Standards*, which explains how the attribution of radiation health effects and the inference of radiation risks, as set out in the UNSCEAR 2012 report, can be taken into account in the application of the safety standards.

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[57] This relates to operative paragraphs 39 and 40 of resolution GC(66)/RES/6.

[58] This relates to operative paragraph 42 of resolution GC(66)/RES/6.

UNSCEAR continued to participate as an observer in the Agency's Safety Standards Committees, including RASSC and EPReSC, and in the CSS.[59]

61. During the reporting period, the Agency finalized the draft Safety Report provisionally entitled *Applicability of Safety Standards to Non-Water-Cooled Reactors and Small Modular Reactors* covering all the stages in the lifetime of these reactors. The completeness and applicability of the Agency's safety standards to these technologies were assessed in the draft publication, and gaps and areas for additional consideration were identified.[60]

62. The Agency is implementing a plan to address the issues identified in the draft Safety Report by revising the safety standards and developing supporting publications. The Agency is also developing a repository of knowledge on the safety and security of small and medium sized or modular reactors (SMRs) and innovative technologies, including a technology-specific compilation of examples, case studies and good practices.[61]

63. The Agency completed the development of a medium-term strategy on SMRs in September 2022 and the development of an online portal outlining the Agency's activities on SMRs.[62]

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[59] This relates to operative paragraph 42 of resolution GC(66)/RES/6.

[60] This relates to operative paragraph 43 of resolution GC(66)/RES/6.

[61] This relates to operative paragraphs 43 and 69 of resolution GC(66)/RES/6.

[62] This relates to operative paragraphs 43 and 69 of resolution GC(66)/RES/6.

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

ORPAS reviewers observing a Clearance Assessment System for Pipes assessing a pipe for naturally occurring radioactive material (NORM) residue, Abu Dhabi Oil Refining Company, United Arab Emirates in November 2022.

64. The Agency conducted 11 IRRS missions — to Argentina in August–September 2022, to Slovakia and Türkiye in September 2022, to Finland and Singapore in October 2022, to Sweden in November 2022, to Bangladesh and Bosnia and Herzegovina in November–December 2022, to the Czech Republic in May 2023, and to Belgium and the Netherlands in June 2023. In addition, the Agency organized a national information meeting for IRRS and self-assessment workshops, using the Agency's self-assessment methodology and tool for countries preparing to host IRRS missions. A virtual workshop was conducted for France in January 2023, and in-person workshops were conducted for Saudi Arabia in August 2022 and for Bulgaria in February 2023.[63]

65. The Agency held an international training course for reviewers in IRRS missions in Vienna in April 2023 and a regional training course in Paris in June 2023. During these training courses, participants who might take part in future IRRS missions acquired knowledge of the IRRS process and the conduct of such missions.[64]

66. Seven ARTEMIS missions were conducted by the Agency — in Malta in October 2022, in Austria in November 2022, in Finland in November–December 2022, in Slovakia in February 2023, in Sweden

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[63] This relates to operative paragraphs 44, 45 and 48 of resolution GC(66)/RES/6.

[64] This relates to operative paragraphs 48 and 106 f resolution GC(66)/RES/6.

in April 2023, in Portugal in May 2023 and in Croatia in June 2023. One ARTEMIS follow-up mission was conducted in Germany in November 2022.[65]

67. The Agency held a training course to identify and train experts for future ARTEMIS missions in Vienna in January 2023 and three training courses for experts taking part in ARTEMIS missions in Vienna in September 2022, and virtually in February and June 2023.[66]

68. An Integrated Nuclear Infrastructure Review for Research Reactors follow-up mission was held in Nigeria in November 2022 to assess the implementation of recommendations made to enhance the national nuclear infrastructure for new research reactor projects.[67]

69. The Agency held three Site and External Events Design (SEED) missions — in Romania in August 2022, in Uzbekistan in January 2023, and in Türkiye in June 2023. A SEED follow-up mission was held in Romania in May 2023.[68]

70. The Agency conducted two Technical Safety Reviews (TSRs) of the probabilistic safety assessment (PSA) documentation — for Laguna Verde NPP in Mexico in March–November 2022 and for Kozloduy NPP Units 5 and 6 in Bulgaria in December 2022–March 2023.[69]

71. The Agency further expanded the TSR peer review service to include a module for the review of the reactor design and conducted a TSR-PSA for Kozloduy NPP in Bulgaria, in March 2023.[70]

72. The Agency conducted a Safety Culture Continuous Improvement Process mission in Poland in November–December 2022.[71]

73. In October 2022, the Agency held an Independent Safety Culture Assessment (ISCA) mission in Brazil. An ISCA follow-up mission was held in Thailand in January 2023.[72]

74. A Peer Review of Operational Safety Performance Experience expert mission was held by the Agency in December 2022 in Argentina.[73]

75. The Agency held three Assessment and Evaluation of the Occupational Radiation Protection Appraisal Service (ORPAS) missions — in Slovakia in June–July 2022, in Nigeria in July 2022 and in the Philippines in October 2022 — and four ORPAS follow-up missions — in the United Arab Emirates in October 2022, in Peru in November 2022, and in Costa Rica and in Morocco in December 2022.[74]

76. In October 2022, the Agency held an Education and Training Appraisal mission in Nigeria.[75]

77. The Agency conducted seven Advisory Missions on Regulatory Infrastructure for Radiation Safety and Nuclear Security (RISS) — in Djibouti, in Gabon and in Uruguay in September 2022, in the

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[65] This relates to operative paragraphs 44, 45 and 48 of resolution GC(66)/RES/6.

[66] This relates to operative paragraphs 46 and 48 of resolution GC(66)/RES/6.

[67] This relates to operative paragraphs 3, 7, 44 and 45 of resolution GC(66)/RES/6.

[68] This relates to operative paragraphs 44 and 45 of resolution GC(66)/RES/6.

[69] This relates to operative paragraphs 44 and 45 of resolution GC(66)/RES/6.

[70] This relates to operative paragraphs 6, 44 and 47 of resolution GC(66)/RES/6.

[71] This relates to operative paragraphs 5, 44 and 46 of resolution GC(66)/RES/6.

[72] This relates to operative paragraphs 5, 44 and 45 of resolution GC(66)/RES/6.

[73] This relates to operative paragraphs 44 and 45 of resolution GC(66)/RES/6.

[74] This relates to operative paragraphs 44 and 45 of resolution GC(66)/RES/6.

[75] This relates to operative paragraphs 44 and 45 of resolution GC(66)/RES/6.

Plurinational State of Bolivia in November 2022, in Benin in January 2023, in Saint Kitts and Nevis in April 2023, and in Honduras in June 2023.[76]

78. One Emergency Preparedness Review (EPREV) mission was held in Morocco in October–November 2022 and three EPREV follow-up missions were held — in Hungary in July 2022, in Slovenia in October 2022 and in Canada in June 2023.[77]

79. In cooperation with European Union Member States, the Agency finalized the development of supplementary guidelines on the preparation and conduct of IRRS-ARTEMIS back-to-back missions. IRRS–ARTEMIS missions were conducted in a back-to-back manner in Slovenia (IRRS in April 2022 and ARTEMIS in November 2022), in Finland (IRRS in October 2022 and ARTEMIS in November 2022), in Slovakia (IRRS in September 2022 and ARTEMIS in February 2023), and in Sweden (IRRS in November 2022 and ARTEMIS in April 2023).[78]

80. The Agency held a Safety Aspects of Long Term Operation (SALTO) mission in Sweden in August–September 2022 and a SALTO follow-up mission in Bulgaria in June 2023. The Agency also conducted one safety review mission on ageing management and continued safe operation at the High Flux Reactor in Petten in the Netherlands, using the SALTO methodology for research reactors.[79]

81. Five Operational Safety Review Team (OSART) missions were conducted by the Agency — in the Republic of Korea in October–November 2022, in France in November–December 2022, in the Netherlands in January–February 2023, in the United States of America in March 2023, and in Belgium in April–May 2023. Three OSART follow-up mission were held in the United Arab Emirates in September 2022, in France in May 2023 and in the Russian Federation in May–June 2023.[80]

82. The Agency conducted an Integrated Safety Assessment of Research Reactors (INSARR) mission to Belgian Reactor 2 in Belgium in February 2023 and an INSARR follow-up mission to the LVR-15 research reactor in the Czech Republic in January 2023. In addition, the Agency conducted a pre-INSARR mission virtually to the Philippine Research Reactor's Subcritical Assembly for Training, Education and Research in the Philippines in March 2023.[81]

83. The Agency held a Training Workshop for Reviewers in Future Integrated Safety Assessment of Research Reactors Missions in Vienna in October 2022, where participants who might take part in future INSARR missions acquired knowledge on the methodology used for such missions.[82]

84. The Agency continued to cooperate with the World Health Organization (WHO) within the framework of the Inter-Agency Committee on Radiological and Nuclear Emergencies in areas of joint interest, in line with the Joint Radiation Emergency Management Plan of the International Organizations. This cooperation also addressed the development and implementation of safety standards on EPR. This includes collaboration between EPREV and WHO Joint External Evaluation stakeholders

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[76] This relates to operative paragraphs 44, 45 and 117 of resolution GC(66)/RES/6.

[77] This relates to operative paragraphs 44 and 51 of resolution GC(66)/RES/6.

[78] This relates to operative paragraphs 45 and 48 of resolution GC(66)/RES/6.

[79] This relates to operative paragraphs 45 and 49 of resolution GC(66)/RES/6.

[80] This relates to operative paragraphs 45 and 49 of resolution GC(66)/RES/6.

[81] This relates to operative paragraphs 45 and 50 of resolution GC(66)/RES/6.

[82] This relates to operative paragraphs 45, 47 and 50 of resolution GC(66)/RES/6.

to ensure the coordinated assessment of relevant national arrangements against the respective safety standards, which are co-sponsored by the Agency and the WHO.[83]

E. Nuclear Installation Safety

The closing session of the International Conference on Topical Issues in Nuclear Installation Safety in Vienna in October 2022.

85. The Agency held a Regional Workshop on Regulatory Supervision of Research Reactors in Africa in Rabat in August 2022, which provided participants with practical knowledge and information, based on the relevant Agency safety standards, about regulatory review and assessment of safety submissions in the licensing process of research reactors.[84]

86. During the reporting period, the Agency continued developing a publication related to the review of experience in safety assessment and design safety of fusion facilities.[85]

87. A Technical Meeting on Operation, Maintenance and Ageing Management for Research Reactors was held by the Agency in Vienna in November 2022 to provide a forum for the exchange of information and experiences related to good practices for operation, maintenance and implementation of ageing management practices for research reactors.[86]

88. In April 2023, the Agency held a Technical Meeting to Develop a Safety Report on the Safety Aspects of Ageing Management during Design, Construction and Commissioning of Nuclear Power

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[83] This relates to operative paragraphs 51 and 134 of resolution GC(66)/RES/6.

[84] This relates to operative paragraph 53 of resolution GC(66)/RES/6.

[85] This relates to operative paragraph 57 of resolution GC(66)/RES/6.

[86] This relates to operative paragraphs 22 and 58 of resolution GC(66)/RES/6.

Plants in Vienna to collect Member States' experiences in the regulation and implementation of nuclear safety aspects for ageing management in the design, construction and commissioning phases of NPPs.[87]

89. The Agency held the First International Generic Ageing Lessons Learned (IGALL) Phase 6 Steering Committee Meeting in Vienna in December 2022. The Agency also held the following IGALL Phase 6 meetings: two meetings of Working Group 1, on mechanical components, in September 2022 and May 2023; two meetings of Working Group 2, on electrical and instrumentation and control components, in October 2022 and May 2023; two meetings of Working Group 3, on civil structures, in November 2022 and May 2023; and two meetings of Working Group 4, on regulatory experience, in November 2022 and June 2023.[88]

90. In September 2022, the Agency held the 16th Technical Meeting of the CANDU Owners Group and the IAEA on the Exchange of Operational Safety Experience of Pressurized Heavy Water Reactors in Romania. In October 2022, the Agency, in cooperation with the Canadian Nuclear Safety Commission, held a workshop on pressure tube ageing in CANDU-type NPPs in Ottawa. In November 2022, the Agency held the CANDU Senior Regulators' Meeting in Islamabad to enhance the safety of NPPs using CANDU-type reactors through the sharing of operating and regulatory experience among the regulatory bodies of countries with such NPPs.[89]

91. In September 2022, the Agency held a Regional Workshop on the Application of Level 1 Probabilistic Safety Assessment in Bangkok to provide a forum for the participating Member States to share knowledge and exchange information on Level 1 PSA.[90]

92. The Agency launched the External Events Notification System to monitor all types of external events challenging nuclear installations around the clock worldwide, provide prompt alerts to the Agency's Incident and Emergency Centre for its timely response, and support damage assessment for nuclear installations and for large cities where industrial or medical sources are expected to be present.[91]

93. The Agency held a Steering Committee Meeting for the coordinated research project (CRP) "Climate Change Challenges to the Safety of Nuclear Installations" in Chicago, United States of America, in May 2023, where a benchmarking exercise for hazard design and safety assessment of NPPs in relation to climate change was conducted.[92]

94. A Technical Meeting on the Optimization of Protection of Advanced Reactors Against External Hazards was held by the Agency in Vienna in December 2022, where participants shared practices and methods related to hazard assessment and design for advanced reactors.[93]

95. The Agency developed a draft Specific Safety Guide provisionally entitled *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants* (DS523), a revision of IAEA Safety Standards Series No. SSG-3, providing recommendations on various aspects of Level 1 PSA, such as multi-unit considerations. The Agency continues developing the draft Specific Safety Guide provisionally entitled *Development and Application of Level 2 Probabilistic Safety Assessment*

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[87] This relates to operative paragraph 58 of resolution GC(66)/RES/6.

[88] This relates to operative paragraph 58 of resolution GC(66)/RES/6.

[89] This relates to operative paragraph 59 of resolution GC(66)/RES/6.

[90] This relates to operative paragraph 59 of resolution GC(66)/RES/6.

[91] This relates to operative paragraph 60 of resolution GC(66)/RES/6.

[92] This relates to operative paragraphs 41 and 60 of resolution GC(66)/RES/6.

[93] This relates to operative paragraph 60 of resolution GC(66)/RES/6.

for Nuclear Power Plants (DS528), a revision of IAEA Safety Standards Series No. SSG-4, where multi-unit aspects are addressed in the context of Level 2 PSA.[94]

96. The Agency held the International Conference on Topical Issues in Nuclear Installation Safety: Strengthening Safety of Evolutionary and Innovative Reactor Designs in Vienna in October 2022, where recommendations were issued in the areas of robust safety demonstration, harmonization and standardization, international collaboration, experimental data and tools, and integrated use of deterministic and probabilistic considerations for evolutionary and innovative reactor designs.[95]

97. In November 2022, the Agency held the first meeting of the CRP "Development of Neutronic and Thermal-Hydraulic Coupled Calculational Methodologies for Research Reactors including Treatment of Uncertainties" in Vienna. A training workshop was held in Lemont, United States of America, in March 2023, to train participants on state-of-the-art tools for research reactor analysis and to pave the way for further development and application of schemes and methodologies in research reactor design, operation, utilization and safety.[96]

98. In March 2023, the Agency held a Training Course on Effective Operating Experience and Continuous Performance Improvement Programmes at Nuclear Power Plants in Vienna to train participants on enhancing operational safety through the operating experience feedback programme, task observation and coaching, performance indicators, self-assessment and benchmarking.[97]

99. A Technical Meeting on Safety Demonstration of Innovative Technology in Power Reactor Designs was held by the Agency in Vienna in June 2023, where participants shared experiences in resolving or mitigating uncertainties associated with innovative technologies while demonstrating the safety of such technologies. Challenges and potential solutions related to the safety demonstration of innovative technology in power reactors, covering different design stages, were also discussed.[98]

100. The Agency and the Generation IV International Forum held a joint workshop on the safety of non-water cooled reactors virtually in May–June 2023 to exchange technical information on the safety approach to the design of, and application of Agency safety standards on design safety and safety assessment to, high temperature gas cooled reactors and molten salt reactors.[99]

101. The Agency held a Technical Meeting on the Software Reliability of Digital Instrumentation and Control Systems for Nuclear Power Plant Safety in Vienna in December 2022 to provide participants with an opportunity to share experiences, practices and approaches related to demonstrating the software reliability of programmable digital instrumentation and control systems important for NPP safety.[100]

102. In March 2023, in Vienna, the Agency held a Technical Meeting on Modernization of Instrumentation and Control of Nuclear Power Plants Designed According to Earlier Standards: Safety Considerations to exchange information on the safety implications of plant-wide backfitting of digital instrumentation and control systems.[101]

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[94] This relates to operative paragraph 61 of resolution GC(66)/RES/6.

[95] This relates to operative paragraph 63 of resolution GC(66)/RES/6.

[96] This relates to operative paragraphs 3, 41 and 63 of resolution GC(66)/RES/6.

[97] This relates to operative paragraph 63 of resolution GC(66)/RES/6.

[98] This relates to operative paragraph 63 of resolution GC(66)/RES/6.

[99] This relates to operative paragraph 63 of resolution GC(66)/RES/6.

[100] This relates to operative paragraph 64 of resolution GC(66)/RES/6.

[101] This relates to operative paragraph 64 of resolution GC(66)/RES/6.

103. The Agency published *Modelling and Simulation of the Source Term for a Sodium Cooled Fast Reactor Under Hypothetical Severe Accident Conditions* (IAEA-TECDOC-2006) in September 2022.[102]

104. In Mach 2023, the Agency held a Technical Meeting on the Safety Approach for Liquid Metal Cooled Fast Reactors and the Analysis and Modelling of Severe Accidents in Vienna, where participants exchanged information on the design of liquid metal cooled fast reactors, with regard to the general approach to design safety and the consideration of severe accidents in the design and safety assessment of sodium cooled and lead cooled innovative reactors, with an emphasis on the analysis and modelling of severe accidents.[103]

105. The Agency organized the Second Research Coordination Meeting on Developing a Phenomena Identification and Ranking Table and a Validation Matrix, and Performing a Benchmark for In-Vessel Melt Retention in Vienna in November 2022, where participants discussed the current status of the project and agreed on the outcomes of several project activities.[104]

106. A Joint IAEA–World Association of Nuclear Operators Technical Meeting to Share Operating Experience was held in Istanbul in November 2022 to exchange operating experience from water cooled, water moderated power reactors.[105]

107. The Agency held a Technical Meeting on Safety and Performance Aspects in the Development and Qualification of High Burnup Nuclear Fuels for Water-Cooled Reactors in Vienna in November 2022 to discuss current achievements and challenges in the deployment of high burnup fuels in the current water cooled reactor fleet.[106]

108. The Agency held two regional workshops, one on risk-informed decision making in Prague in September 2022, and another on severe accident management and analysis of off-site consequences in Budapest in October 2022, where participants exchanged national experiences, discussed current issues and challenges and charted the path forward for further developments in these topical areas.[107]

109. The International Reporting System for Operating Experience (IRS), Incident Reporting System for Research Reactors (IRSRR) and the Fuel Incident Notification and Analysis System (FINAS) continued to facilitate the exchange of information on nuclear incidents and accidents in Member States. In 2022, 81 reports were submitted to the IRS; 3 reports were submitted to the IRSRR, bringing the total number of reports in the IRSRR system to 241, with 62 Member States currently part of IRSRR database; and the number of reports submitted to FINAS increased by 7, bringing the total number of reports in the FINAS system to 303. About 90% of the world's nuclear fuel cycle facilities are currently part of FINAS.[108]

110. The Agency held a Technical Meeting for National Coordinators of the Joint IAEA–OECD/NEA Fuel Incident Notification and Analysis System in Paris in September 2022 to exchange information on

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[102] This relates to operative paragraph 65 of resolution GC(66)/RES/6.

[103] This relates to operative paragraph 65 of resolution GC(66)/RES/6.

[104] This relates to operative paragraphs 41, 65 and 119 of resolution GC(66)/RES/6.

[105] This relates to operative paragraph 119 of resolution GC(66)/RES/6.

[106] This relates to operative paragraph 119 of resolution GC(66)/RES/6.

[107] This relates to operative paragraph 67 of resolution GC(66)/RES/6.

[108] This relates to operative paragraph 68 of resolution GC(66)/RES/6.

incidents submitted to the FINAS database, and to discuss the implementation of corrective actions arising from these and other such incidents.[109]

111. The Agency held a virtual Workshop on Operating Experience Feedback for Nuclear Fuel Cycle Facilities in April 2023 to provide FINAS users with practical information on establishing programmes for operating experience feedback for nuclear fuel cycle facilities and on the updated features of FINAS.[110]

112. A Technical Meeting for the National Coordinators of the Incident Reporting System for Research Reactors was held by the Agency in Vienna in March 2023 to provide a forum to discuss and exchange information on root causes, corrective actions and lessons learned on safety significant events at research reactor facilities.[111]

113. The Agency held a meeting of the Small Modular Reactor Regulators' Forum in Vienna in November–December 2022 to provide an opportunity for members to receive reports from, and provide guidance to, the forum's working groups. It also provided an opportunity for the members to discuss strategic and administrative issues.[112]

114. The Nuclear Harmonization and Standardization Initiative (NHSI) was initiated by the Agency in early 2022 in response to growing interest in advanced reactors, including small modular reactors. NHSI consists of two tracks: an 'industry track' and a 'regulatory track'. The regulatory track has established three working groups that are complementarily progressing towards helping regulators to work together in regulatory reviews of new reactors. The first working group aims to build a framework for sharing information among regulators. The second working group is developing an international pre-licensing regulatory design review, and the third working group aims at leveraging other regulatory reviews and at ensuring that regulators to work together while undertaking design reviews. The overall timeline, membership and scope of each working group has been agreed, and the work plan is being implemented, currently spanning October 2022–end of 2024. Each working group will produce a publication to capture the outcomes of the work.[113]

115. The Agency held an International Workshop on Instrumentation and Control and Computer Security for Small Modular Reactors in Paris in March 2023 to enhance participants' understanding of, and to support the development of technical capabilities related to, computer security and instrumentation and control for small modular reactors and microreactors.[114]

116. The Agency organized two Regional Educational Workshops on Regulatory Challenges in SMRs in November 2022, in Sydney, Australia, hosted by the Australian Radiation Protection and Nuclear Safety Agency and, in December 2022, in Buenos Aires, hosted by the Nuclear Regulatory Authority of Argentina. Aimed at embarking countries, the workshops were designed to enhance the knowledge of regulatory bodies on challenges in regulating SMRs.[115]

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[109] This relates to operative paragraph 68 of resolution GC(66)/RES/6.

[110] This relates to operative paragraphs 60 and 68 of resolution GC(66)/RES/6.

[111] This relates to operative paragraphs 50 and 68 of resolution GC(66)/RES/6.

[112] This relates to operative paragraph 69 of resolution GC(66)/RES/6.

[113] This relates to operative paragraphs 7 and 69 of resolution GC(66)/RES/6.

[114] This relates to operative paragraph 69 of resolution GC(66)/RES/6.

[115] This relates to operative paragraph 69 of resolution GC(66)/RES/6.

F. Radiation Safety and Environmental Protection

Participants at the mentoring session of the Second Technical Meeting on Methods for Radiological and Environmental Impact Assessment (MEREIA) in Vienna in November 2022.

117. The Agency organized a mission to Seoul in November 2022 to provide expert assistance and discuss the regulatory framework for large particle accelerator facilities during the National Workshop on Radiation Safety in Accelerator Facilities, an event held under the bilateral cooperation project with the Republic of Korea through the Nuclear Safety and Security Commission, the Korea Institute of Nuclear Safety and the Pohang Accelerator Laboratory.[116]

118. The Second Technical Meeting on Methods for Radiological and Environmental Impact Assessment (MEREIA) was held by the Agency in Vienna in November–December 2022 to present and discuss the work carried out under the programme.[117]

119. The Agency continued to support the Information System on Occupational Exposure (ISOE), jointly operated by the IAEA and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA). Moreover, the ISOE Management Board Meeting and the Bureau Meeting were held in Paris in December 2022.[118]

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[116] This relates to operative paragraph 70 of resolution GC(66)/RES/6.

[117] This relates to operative paragraph 70 of resolution GC(66)/RES/6.

[118] This relates to operative paragraph 71 of resolution GC(66)/RES/6.

120. With the aim of promoting the use of the Information System on Occupational Exposure in Medicine, Industry and Research — Industrial Radiography (ISEMIR-IR) in Latin America, an Agency mission took place in Santiago de Chile in October 2022 on the margins of the Regional Congress of Radiological and Nuclear Safety. A global survey on ISEMIR-IR was conducted from October 2022 to March 2023 to collect information on occupational exposure and on experience regarding radiation protection in industrial radiography.[119]

121. The Agency organized the International Conference on Occupational Radiation Protection: Strengthening Radiation Protection of Workers — Twenty Years of Progress and the Way Forward, the third in a series of conferences on occupational radiation protection, in Geneva, Switzerland, in September 2022. The conference identified emerging issues in the area of occupational radiation protection and covered topics such as the implementation of safety standards on occupational radiation protection, commitment to safety culture and exchange of operating experience. A 'call for action' document was drafted as an outcome of the conference.[120]

122. The Agency launched the ISEMIR-N web-based platform (as an extension of ISEMIR) in July 2022 to improve the dose assessment capabilities of Member States in industrial processes involving NORM. This platform facilitates information exchange for regular collection and maintenance of data on occupational exposure and enables trends in collective occupational doses (or individual doses) in different NORM industrial operations to be analysed to enhance the protection of workers.[121]

123. Four Workshops for Radiation Safety Information Management System (RASIMS) Coordinators were conducted by the Agency in Vienna, in September and November 2022, and in March and April 2023, to assist RASIMS national coordinators in providing or updating information on their national radiation safety infrastructures in the system.[122]

124. A Technical Meeting on Radiation Protection of Paediatric and Pregnant Patients was held by the Agency in Vienna in February–March 2023 to exchange information and identify any need for the development of guidance and tools for ensuring the radiation protection of paediatric and pregnant patients undergoing diagnostic and therapeutic medical exposures.[123]

125. In May 2023, a Joint IAEA–Argonne National Laboratory International Workshop on Radiation Protection Optimization in Fluoroscopy Guided Interventional Procedures was held by the Agency in Houston, United States of America, to enhance participants' knowledge of safety standards and good practice regarding radiation protection of patients and staff in image guided interventional procedures, as well as to support the improvement of their practical skills and competence in the field.[124]

126. The Joint ICTP–IAEA Workshop on Radiation Protection in Image Guided Interventional Procedures was held in Trieste, Italy, in October 2022, where scientists from developing and emerging countries received training on image guided interventions.[125]

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[119] This relates to operative paragraph 72 of resolution GC(66)/RES/6.

[120] This relates to operative paragraph 73 of resolution GC(66)/RES/6.

[121] This relates to operative paragraphs 72 and 74 of resolution GC(66)/RES/6.

[122] This relates to operative paragraph 75 of resolution GC(66)/RES/6.

[123] This relates to operative paragraph 76 of resolution GC(66)/RES/6.

[124] This relates to operative paragraphs 76, 106, 110, of resolution GC(66)/RES/6.

[125] This relates to operative paragraphs 76, 106, 110, of resolution GC(66)/RES/6.

127. A new version of the Agency's Safety in Radiation Oncology incident reporting system for radiotherapy and radionuclide therapy events, including a smartphone friendly interface, was released in August 2022.[126]

128. 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.[127]

129. In October 2022, the Agency extended its Practical Arrangements with the Conference of Radiation Control Program Directors in the area of radiation safety and monitoring to cover areas related to the preparation of guidance and other relevant materials addressing radiation exposure where natural radiation, in particular radon, exists.[128]

130. The Agency published *Exposure Due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency* (IAEA-TECDOC-2011) in September 2022 and finalized a draft Safety Report provisionally entitled *Exposure due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency. Part 1: Technical Material*. Both documents are co-sponsored by the Food and Agriculture Organization of the United Nations (FAO) and the WHO.[129]

131. The Agency, in collaboration with the FAO, finalized and presented an information paper on radionuclides in feed and food, including drinking water, at the Codex Committee on Contaminants in Foods meeting held in April 2023.[130]

132. In February 2023, the Agency published *Regulatory Control of Exposure Due to Radionuclides in Building Materials and Construction Materials* (Safety Reports Series No. 117) to provide practical guidance on the regulatory control and compliance demonstration of building and construction materials that give rise to radiation exposures.[131]

133. During the reporting period, the Agency finalized a draft Safety Guide provisionally entitled *Application of the Concept of Exemption* (to be published as IAEA Safety Standards Series No. GSG-17), which provides recommendations to governments, regulatory bodies, operating organizations and technical service providers in radiation protection in Member States on the application of the concept of exemption and on the application of screening values for decision making in existing exposure situations, including the trade of commodities.[132]

134. The Agency continued working on the development of a technical document on radiation safety in international trade of commodities.[133]

135. 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

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[126] This relates to operative paragraph 77 of resolution GC(66)/RES/6.

[127] This relates to operative paragraph 78 of resolution GC(66)/RES/6.

[128] This relates to operative paragraph 79 of resolution GC(66)/RES/6.

[129] This relates to operative paragraph 80 of resolution GC(66)/RES/6.

[130] This relates to operative paragraph 80 of resolution GC(66)/RES/6.

[131] This relates to operative paragraphs 81 and 82 of resolution GC(66)/RES/6.

[132] This relates to operative paragraph 81 of resolution GC(66)/RES/6.

[133] This relates to operative paragraph 82 of resolution GC(66)/RES/6.

secretariat of the related Convention at the International Maritime Organization and updates the inventory when requested to do so.[134]

G. Transport Safety

Participants in the First Meeting of the Denial of Shipment Working Group in Vienna in January 2023.

136. In January 2023, the Agency held the First Meeting of the Denial of Shipment Working Group in Vienna in order to define the structure and Terms of Reference of the Working Group and to identify a way forward to address issues related to denial of shipment of radioactive material. The Working Group agreed to aim to achieve its objectives by means of three sub-working groups: on data collection and analysis, on potential solutions to address denial of shipment matters and on training and outreach. The Group also agreed, inter alia, to draft a code of conduct to facilitate the safe and secure transport of radioactive material, to be further considered as a potential solution, among others, to address the issue.[135]

137. The Agency launched e-learning modules on the safe transport of radioactive material in Chinese and Spanish in November 2022. Translation of these e-learning modules into Arabic and French is in progress.[136]

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[134] This relates to operative paragraph 83 of resolution GC(66)/RES/6.

[135] This relates to operative paragraph 87 of resolution GC(66)/RES/6.

[136] This relates to operative paragraph 88 of resolution GC(66)/RES/6.

138. A Regional Workshop on the Regulation of the Safe Transport of Naturally Occurring Radioactive Material Associated with Mining and Processing was held by the Agency in Vienna in October 2022 to assess and strengthen the application of the *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)) to the transport of NORM associated with mining and processing.[137]

H. Safety of Spent Fuel and Radioactive Waste Management

The ARTEMIS team visited the ONKALO deep geological disposal facility for spent fuel in Finland in December 2022.

139. In September 2022, the Agency held a Technical Meeting on the Coordination of Activities and Projects Related to the Safety of Geological Disposal in Vienna to present and review ongoing activities and projects, including regulatory preparedness, demonstration of operational and long-term safety, and the use of monitoring programmes, as well as to coordinate, discuss and draft a road map for future activities.[138]

140. The Agency held the Annual Meeting of the Forum on the Safety of Near Surface Disposal in Vienna in September 2022 to assist Member States in strengthening the safety of near surface disposal through the development of guidance, methods and tools, as appropriate, as well as through the exchange of information on good practices.[139]

141. In November–December 2022, the Agency conducted an independent international review of Finland's radioactive waste and spent fuel management programme, including evaluation of progress at the ONKALO deep geological disposal facility for spent fuel, and discussions of a future review of the

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[137] This relates to operative paragraphs 74 and 90 of resolution GC(66)/RES/6.

[138] This relates to operative paragraphs 94 and 95 of resolution GC(66)/RES/6.

[139] This relates to operative paragraph 94 of resolution GC(66)/RES/6.

pre-operational safety of a spent fuel encapsulation plant and of the ONKALO deep geological disposal facility[140].

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

Participants in the Technical Meeting of the International Working Forum on Regulatory Supervision of Legacy Sites on Long-Term Post-Remediation Management in Vienna in October 2022.

142. The Agency organized the International Conference on Nuclear Decommissioning: Addressing the Past and Ensuring the Future in Vienna in May 2023 to discuss achievements, challenges and lessons learned in the decommissioning of nuclear facilities, highlighting current priority needs and sharing information on strategies and approaches that enhance safe, secure and cost-effective implementation of programmes.[141]

143. A Technical Meeting on the revision of *Decommissioning Strategies for Facilities Using Radioactive Material* (Safety Reports Series No. 50) was held by the Agency in Vienna in August 2022 to discuss the draft of the revised Safety Report and to collect feedback from Member States for the finalization of the revision.[142]

144. In March 2023, the Agency held the Sixth Technical Meeting on the International Project on Decommissioning of Small Medical, Industrial and Research Facilities in Cairo to further review and discuss Member States' experiences with the decommissioning of small medical, industrial and research facilities, and to continue the development of case studies for selected types of small facilities.[143]

145. A Technical Meeting on the Protection of Groundwater in In Situ Recovery for Uranium Production was held by the Agency in Vienna in December 2022 to exchange information and share

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[140] This relates to operative paragraph 95 of resolution GC(66)/RES/6.

[141] This relates to operative paragraph 101 of resolution GC(66)/RES/6.

[142] This relates to operative paragraph 101 of resolution GC(66)/RES/6.

[143] This relates to operative paragraphs 101 and 102 of resolution GC(66)/RES/6.

experiences related to regulatory and technological aspects of the protection of groundwater using the in situ recovery method for uranium production.[144]

146. The Agency held a Technical Meeting on the Management of Remediated Areas in Grand Junction, United States of America, in August–September 2022 to review and exchange experiences on the key aspects related to long-term surveillance and management of remediated sites.[145]

147. A Regional Workshop on the Effective Operation of an Unmanned Aerial Vehicle Based Gamma-Spectrometry System to Investigate Uranium Legacy Sites was held by the Agency in Tashkent and Yangiobod, Uzbekistan, in August 2022 to train participants in performing airborne gamma spectroscopy measurements and data analysis.[146]

148. In November 2022, a Joint Workshop of the International Working Forum on Regulatory Supervision of Legacy Sites and the Coordination Group for Uranium Legacy Sites on Challenges to Remediation and Regulatory Supervision of Legacy Sites was held by the Agency in Centurion, South Africa, to promote information exchange and to discuss current challenges to remediation and regulatory supervision of legacy sites in Africa.[147]

149. The Agency held a Technical Meeting of the International Working Forum on Regulatory Supervision of Legacy Sites on Long-Term Post-Remediation Management in Vienna in October 2022 to promote information exchange and to discuss strategies, experiences and challenges regarding long-term, post-remediation management of areas affected by past activities or events.[148]

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[144] This relates to operative paragraph 102 of resolution GC(66)/RES/6.

[145] This relates to operative paragraph 103 of resolution GC(66)/RES/6.

[146] This relates to operative paragraphs 103 and 106 of resolution GC(66)/RES/6.

[147] This relates to operative paragraphs 103 and 104 of resolution GC(66)/RES/6

[148] This relates to operative paragraphs 103 and 104 of resolution GC(66)/RES/6

J. Capacity Building

Participants in the International School on Nuclear and Radiological Leadership for Safety in Cairo in October 2022.

150. The Agency held two Training Courses on Leadership, Management and Culture for Safety, in Vienna in August 2022 and May 2023, to provide information on the requirements of *Leadership and Management for Safety* (IAEA Safety Standards Series No. GSR Part 2) and their practical application.[149]

151. The IAEA–Korea Institute of Nuclear Safety (KINS) Basic Professional Training Course on Nuclear Safety was held in Daejeon, Republic of Korea, for ANSN members in September 2022 to provide participants with a basic knowledge of the principles of nuclear safety, including the related legal and regulatory framework.[150]

152. The Agency held an Interregional Workshop on the Fundamentals of Regulatory Inspections of Nuclear Power Plant during Construction and Operation at Zwentendorf NPP in May 2023.[151]

153. The Agency held five International Schools on Nuclear and Radiological Leadership for Safety — in Cairo in October 2022; in Mexico City in November 2022; in Hiratsuka, Japan, in February–March 2023; in Vienna in May 2023; and in Nice, France, in June 2023. Additionally, a national School was held in Islamabad in December 2022. Moreover, the Agency published *IAEA School on Nuclear and*

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[149] This relates to operative paragraphs 5 and 106 of resolution GC(66)/RES/6

[150] This relates to operative paragraphs 8, 106 and 108 of resolution GC(66)/RES/6.

[151] This relates to operative paragraph 106 of resolution GC(66)/RES/6

Radiological Leadership for Safety: Standard Syllabus 2022 (Training Course Series No. 75) in December 2022.[152]

154. In August 2022, the Agency held the Annual Meeting of the Directors of the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources in Vienna to share experiences and good practices in the conduct of these courses.[153]

155. The Agency held four Postgraduate Educational Courses in Radiation Protection and the Safety of Radiation Sources — in Buenos Aires in March–September 2022, in Accra in October 2022–March 2023, in Athens in October 2022–March 2023 and in Rabat in October 2022–March 2023.[154]

156. In September 2022, the Agency signed Practical Arrangements with the Malaysian Nuclear Agency and the National Nuclear Energy Commission of Brazil to cooperate in the area of education and training related to radiation, transport and waste safety.[155]

157. The Agency held the Annual Meeting of the Steering Committee on Education and Training in Radiation, Transport and Waste Safety in Vienna in November–December 2022 to seek advice from Member States on the implementation of a strategic approach to education and training activities, and to exchange information on the status of the establishment of national strategies in this area.[156]

158. The Agency extended its cooperation in EPR with the Response and Assistance Network Capacity Building Centre in Japan in November 2022.[157]

159. The Agency held a Regional Workshop on Public Information and Communication: Standards, Mechanisms and Challenges for Regulatory Bodies for Nuclear Safety and Security in Belgrade in October 2022 to share and discuss experiences in effective communication with the public and other stakeholders, as well as within regulatory bodies for nuclear safety and security, and to provide participants with information on related Agency safety standards.[158]

160. During the reporting period, the Agency conducted 12 Knowledge Management Assist Visit related events for 11 Member States.[159]

161. The Agency held a Regional Workshop on Nuclear Safety Knowledge Management Programmes for Regulatory Bodies in Vienna in July 2022 to provide participants with the skills and competencies for developing nuclear safety knowledge management programmes at both the national and organizational levels.[160]

162. A Regional Workshop on Capacity Building and Competence Assessment for Regulatory Bodies was held by the Agency in Vienna in September 2022 to exchange experience on the methodology for the systematic assessment of regulatory competence needs.[161]

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[152] This relates to operative paragraphs 106 and 110 of resolution GC(66)/RES/6.

[153] This relates to operative paragraph 106 of resolution GC(66)/RES/6.

[154] This relates to operative paragraph 106 of resolution GC(66)/RES/6.

[155] This relates to operative paragraphs 79 and 106 of resolution GC(66)/RES/6.

[156] This relates to operative paragraphs 88, 105 and 106 of resolution GC(66)/RES/6.

[157] This relates to operative paragraphs 106 and 120 of resolution GC(66)/RES/6.

[158] This relates to operative paragraph 107 of resolution GC(66)/RES/6.

[159] This relates to operative paragraph 107 of resolution GC(66)/RES/6.

[160] This relates to operative paragraph 110 of resolution GC(66)/RES/6.

[161] This relates to operative paragraphs 3 and 110 of resolution GC(66)/RES/6.

163. The Agency held a Regional Workshop on Radiological Environmental Impact Assessment for Nuclear Installations in Manila in October 2022 to enhance the understanding and competence of regulatory bodies and future operators with regard to investigation of site characteristics and assessment of radiological environmental impact for nuclear installations.[162]

164. A Regional Training Course on Authorization and Inspection of Radiotherapy Facilities with Linear Accelerators was held by the Agency in Abuja in May 2023 to strengthen the capacity of regulatory body staff for carrying out their regulatory functions, including authorization, review and assessment, inspection and enforcement at facilities using linear accelerators for radiotherapy.[163]

165. In July 2022, the Agency held an International Workshop on Termination of a Nuclear or Radiological Emergency in Vienna, where participants were trained on the arrangements for termination of a nuclear or radiological emergency and the subsequent transition from the emergency exposure situation to either an existing or planned exposure situation.[164]

K. Safe Management of Radioactive Sources

A gamma source removal to a mobile hot cell.

166. During the reporting period, the Agency continued to provide advice on the management of orphan sources to Member States that have requested assistance, including Afghanistan, Mozambique, Nepal, Saint Lucia and Singapore, as well as to Solomon Islands.[165]

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[162] This relates to operative paragraphs 3 and 110 of resolution GC(66)/RES/6.

[163] This relates to operative paragraphs 3, 77 and 110 of resolution GC(66)/RES/6.

[164] This relates to operative paragraphs 111 and 122 of resolution GC(66)/RES/6.

[165] This relates to operative paragraph 114 of resolution GC(66)/RES/6.

167. The Agency continued promoting the Scrap Metal Tool Kit, a web-based collaboration and information exchange platform related to the control of radioactive material inadvertently incorporated into scrap metal or semi-finished products of the metal recycling industries. The Agency also continued promoting its e-learning course on the topic. In the reporting period, 1300 participants registered for the e-learning course.[166]

168. A Consultancy Meeting was held in January 2023 to review *Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries* (IAEA Safety Standards Series No. SSG-17).[167]

L. Nuclear and Radiological Incident and Emergency Preparedness and Response

Full response mode exercise in Vienna in September 2022.

169. During the reporting period, the Agency supported the Arab Atomic Energy Agency in the development of a road map for Arab cooperation in EPR towards an effective regional EPR programme, including the robust and consistent application of Early Notification and Assistance Conventions across the Arab region.[168]

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[166] This relates to operative paragraph 118 of resolution GC(66)/RES/6.

[167] This relates to operative paragraph 118 of resolution GC(66)/RES/6.

[168] This relates to operative paragraphs 1, 19 and 120 of resolution GC(66)/RES/6.

170. The Agency conducted a Level 2e Convention Exercise (ConvEx-2e) in July 2022 based on a national emergency exercise in Kazakhstan. In November 2022, the Agency conducted a ConvEx-2f exercise with the designated public information officers of six international organizations to test the procedures for the coordination of public information during an emergency response as described in the Joint Radiation Emergency Management Plan of the International Organizations.[169]

171. The Agency held a Technical Meeting on Draft Safety Guides Related to Protection Strategy and Criteria for a Nuclear or Radiological Emergency in Vienna in February 2023 to review the draft texts of the proposed new Safety Guide provisionally entitled *Protection Strategy for a Nuclear or Radiological Emergency* (DS534) and of the revision of *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSG-2), and to enable the participants to provide feedback for their further improvement.[170]

172. The Agency continued developing two EPR Series publications that will help Member States implement effective EPR arrangements for the response to a nuclear or radiological emergency at an NPP. The first, provisionally entitled *Considerations for Implementing an On-Site Emergency Preparedness and Response Plan for Nuclear Power Plants*, will provide guidance and practical examples concerning how to develop such on-site EPR plans for NPPs. The second, provisionally entitled *Classification, Assessment and Prognosis During Nuclear Power Plant Emergencies* will provide guidance and tools for emergency classification at NPPs, as part of the assessment and prognosis of a nuclear emergency at an NPP.[171]

173. In November 2022, the new Emergency Classification Tool was released on the Agency's Assessment and Prognosis Tools website and was presented at the Technical Meeting on Draft Safety Guides Related to Protection Strategy and Criteria for a Nuclear or Radiological Emergency held in February 2023. This new tool provides Member States with operational guidance on the assessment and prognosis of the most appropriate emergency class, based on the information available. It will also help Member States in the timely sharing of technical information during the response to an NPP emergency.[172]

174. The Agency held a National Workshop on First Responders with the Focus on Medical Response on the Scene and Decontamination in San José in July 2022 to provide training to first responders as part of the assistance provided by the Agency, at the request of Costa Rica, for the implementation of nuclear security systems and measures within the framework of the 2022 FIFA U-20 Women's World Cup that took place in August 2022 in Costa Rica.[173]

175. The Agency held a National Workshop on Emergency Preparedness and Response in Koriyama, Japan, in February 2023, where participants acquired knowledge and practical skills for an effective response to a nuclear or radiological emergency. It was aimed at examining the concept of protection strategies, including the use of emergency response criteria, in the context of the lessons from the Fukushima Daiichi accident.[174]

176. The Agency's Unified System for Information Exchange in Incidents and Emergencies (USIE) web portal was used by contact points of States Parties to the Early Notification Convention and the

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[169] This relates to operative paragraphs 121, 130 and 134 of resolution GC(66)/RES/6.

[170] This relates to operative paragraph 122 of resolution GC(66)/RES/6.

[171] This relates to operative paragraph 124 of resolution GC(66)/RES/6.

[172] This relates to operative paragraphs 122 and 124 of resolution GC(66)/RES/6.

[173] This relates to operative paragraph 125 of resolution GC(66)/RES/6.

[174] This relates to operative paragraphs 4 and 125 of resolution GC(66)/RES/6.

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 notification of 19 events. More than 130 posts were made on the situation in Ukraine on the USIE platform. Overall, the USIE Exercise site was used by the Secretariat and Member States for about 58 exercises within the reporting period. In addition, there were 11 International Nuclear and Radiological Event Scale event ratings submitted through USIE.[175]

177. Three Member States registered their national assistance capabilities in the RANET system for the first time, bringing the total number of Member States registered in RANET to 41. No updates to existing registrations were received during the reporting period.[176]

178. The Agency assessed the RANET and assistance process for future needs or adjustments during a regional monitoring exercise held in Bodø, Norway, in May 2023 and tested the deployment and capabilities of the Agency's field response team.[177]

179. The conclusions of the 11th Meeting of the Representatives of Competent Authorities Identified Under the Early Notification Convention and the Assistance Convention held in June 2022, continued to be addressed by the Secretariat. Actions derived from these conclusions were conducted in regard to areas such as the following:[178]

- Support to Member States in the adherence process and in the implementation of the Early Notification and Assistance Conventions;
- Support for the preparation and conduct of EPR exercises, and continuous improvement of the USIE platform;
- Identification of impediments in signing Assistance Action Plans; and
- Contribution to the establishment of harmonized EPR arrangements, the development of the Database of Source Terms, the implementation of the International Radiation Monitoring Information System (IRMIS) and the International Radiological Information Exchange (IRIX) standards, and the conduct of ConvEx exercises.

180. The Agency held a regional training course on the IRIX format, IRMIS and monitoring data sharing in Phuket, Thailand, in June 2023 to improve participants' awareness and understanding of IRMIS, including with regard to roles, features and information sharing arrangements.[179]

181. Iraq, Jordan and Saudi Arabia joined IRMIS, bringing the number of States providing routine radiation monitoring data to 47.[180]

182. The Agency held an International Workshop on Self-assessment of Emergency Arrangements and Use of the Emergency Preparedness and Response Information Management System (EPRIMS)

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[175] This relates to operative paragraph 127 of resolution GC(66)/RES/6.

[176] This relates to operative paragraphs 116 and 128 of resolution GC(66)/RES/6.

[177] This relates to operative paragraph 128 of resolution GC(66)/RES/6.

[178] This relates to operative paragraph 129 of resolution GC(66)/RES/6.

[179] This relates to operative paragraph 131 of resolution GC(66)/RES/6.

[180] This relates to operative paragraph 131 of resolution GC(66)/RES/6.

virtually in April 2023 to familiarize the participants with, and train them on, the Agency's EPRIMS system.[181].

183. The Agency held three Workshops on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies in Vienna, in November 2022, February 2023 and April 2023, to assist Member States in developing national operational arrangements that are consistent with the Agency's *Operations Manual for Incident and Emergency Communication*.[182]

184. The Agency organized a virtual meeting of the Inter-Agency Committee on Radiological and Nuclear Emergencies in June 2023 for representatives of international organizations that are participating organizations and co-sponsors of the Joint Radiation Emergency Management Plan of the International Organizations, and representatives of corresponding organizations and entities with activities or an interest in the field of nuclear and radiological emergency preparedness and response.[183]

185. The Agency participated as an observer in the virtual meetings of the OECD/NEA's Expert Group on a Post-Accident Food Safety Framework (EGFSF) held in September and December 2022 and in April 2023. The overarching objective of the EGFSF is to identify options for the development of a neutral, internationally recognized methodology, based on purely scientific assessments and reviewed by a panel of international experts, to solve some of the remaining food safety issues.[184]

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[181] This relates to operative paragraph 132 of resolution GC(66)/RES/6.

[182] This relates to operative paragraph 133 of resolution GC(66)/RES/6.

[183] This relates to operative paragraphs 51 and 134 of resolution GC(66)/RES/6.

[184] This relates to operative paragraph 134 of resolution GC(66)/RES/6.

Annex
Table of Concordance

Table of Concordance Between Resolution GC(66)/RES/6 Operative Paragraphs (OPs) Associated with Agency Action and Paragraphs of this Report

OP	Report Paragraph	OP	Report Paragraph	OP	Report Paragraph
1	2,169	49	80,81	94	139,140
2	2,8,10,27	50	82,83,112	95	139,141
3	9,13,14,28,68,97,162,163 164	51	78,84,184	101	142,143,144
4	4,175	53	85	102	144,145
5	10,11,72,73,150	57	86	103	146,147,148,149
6	12,15,50,71	58	87,88,89	104	148,149
7	13,68,114	59	90,91	105	56,147,157
8	14,16,17,18,19,20,21,22, 23,24,151	60	92,93,94,111	106	6,7,9,25,30,34,65,125,126, 150,151,152,153,154,155, 156,157,158
9	25,26	61	29,95	107	159,160
12	27,28,29,30	63	13,29,96,97,98,99,100	108	16,17,18,19,20,21,22,23, 24,151
17	31,32,33,34	64	101,102	110	10,125,126,153,161,162, 163,164
19	3,5,6,7,31,32,33,34,35,36, 37,169	65	103,104,105	111	165
20	38,39,40,41	67	108	114	166
22	87	68	109,110,111,112	116	177
25	8,42	69	62,63,113,114,115,116	117	38,39,40,41,77
26	43	70	117,118	118	167,168
28	44,45	71	119	119	105,106,107
30	46	72	120,122	120	158,169
32	47	73	121	121	170
33	48	74	122,138	122	165,171,173
37	49,50	75	123	124	172,173
38	51,52	76	124,125,126	125	174,175
39	49,53,58	77	127,164	127	176
40	54,55,56,58	78	128	128	177,178
41	57,93,97,105	79	129,156	129	179
42	59,60	80	130,131	130	170
43	61,62,63	81	132,133	131	180,181
44	64,66,68,69,70,71,72,73, 74,75,76,77,78	82	132,134	132	182
45	64,66,68,69,70,73,74,75, 76,77,79,80,81,82,83	83	135	133	183
46	67,72	87	136	134	84,170,184,185
47	26,71,83	88	137,157	136	4
48	64,65,66,67,79	90	138		

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