

**Board of Governors
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NUCLEAR AND RADIATION SAFETY

Report by the Director General



IAEA

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Item 15 of the Conference's provisional agenda
(GC(65)/1 and Add.1)

Nuclear and Radiation Safety

Report by the Director General

Summary

Pursuant to resolution GC(64)/RES/9, 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 for safety;
- 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 and the General Conference consider and take note of this report.

Nuclear and Radiation Safety

Report by the Director General

A. General



(Photo: N. Kurova-Chernavina/IAEA)

1. This report has been produced for the 65th regular session (2021) of the General Conference in response to resolution GC(64)/RES/9, in which the General Conference requested the Director General to report in detail on implementation of the resolution and on other relevant developments in the intervening period. This report covers the period from 1 July 2020 to 30 June 2021.
2. During the period of this report, some Agency activities were postponed due to national and international measures taken to limit the spread of the COVID-19 virus. In many cases, solutions were developed to continue activities remotely. Events planned for this period that were postponed will be addressed in future reports. This includes the Seventh Review Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) as well as the Eighth Review Meeting of the Convention on Nuclear Safety (CNS). Documents GOV/INF/2020/8, GOV/INF/2021/6, GC(64)/INF/6 and GOV/INF/2021/35-GC(65)/INF/9 provide specific updates regarding COVID-19 and Agency activities.
3. 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 in establishing or strengthening their safety infrastructure and regulatory framework as well as building competency in several areas related to nuclear and radiation safety.¹

4. The Agency continued to encourage Member States to become Contracting Parties to the CNS, the 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

5. In March 2021, a report by the Director General containing the draft *Nuclear Safety Review 2021* was submitted to the Board of Governors. The final version of the *Nuclear Safety Review 2021*, prepared in the light of discussions at the Board of Governors, is provided as an information document at the 65th regular session of the Agency's General Conference. The *Nuclear Safety Review 2021* includes the global trends and the Agency's activities in 2020. It also presents priorities and related activities for 2021 and beyond, as identified by the Agency, for strengthening nuclear, radiation, transport and waste safety, and EPR. These priorities are addressed in the Agency's Programme and Budget, including outcomes, outputs, timelines and performance indicators.³

6. The tenth Treaty Event took place during the 64th 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.⁴

7. The Agency continued to provide legislative assistance to its Member States to support the development of adequate national legal frameworks and to promote adherence to the relevant international legal instruments. Specific bilateral legislative assistance was provided to 12 Member States through written comments and advice on drafting national nuclear legislation. One regional workshop on harmonizing national nuclear law with international and European law was held in person. As an online alternative to some in-person activities, four virtual activities on different aspects of nuclear law were held. A new series of interactive webinars on nuclear law amassed over 2500 streams, with participation from officials from over 100 countries. Given the success of this series, and in response to expressed interest from industry, law firms, non-governmental organizations, civil society and academia, a webinar was held for the general public entitled 'Nuclear Law in Practice: The IAEA Perspective.' At the November 2020 meeting of the Board of Governors, the Director General during his opening statement announced the convening of the IAEA's first-ever International Conference on Nuclear Law from 7 to 11 February 2022. In April 2021, the Call for Announcement and Call for Papers was published. The International Conference on Nuclear Law: The Global Debate is expected to be a major event, providing a unique forum for leading global experts from governments, industry, academia and civil society to share experiences and discuss topical issues. In addition to nuclear and radiation safety, the conference will cover other branches of international and national nuclear law: security,

¹ This relates to operative paragraphs 1 and 2 of resolution GC(64)/RES/9.

² This relates to operative paragraph 19 of resolution GC(64)/RES/9.

³ This relates to operative paragraphs 4 and 127 of resolution GC(64)/RES/9.

⁴ This relates to operative paragraph 19 of resolution GC(64)/RES/9.

safeguards and civil liability for nuclear damage, as well as other related fields of law at the national, regional, and international levels. The Secretariat continues the preparation for this important event.⁵

8. The Agency held a virtual Plenary Meeting of the Regulatory Cooperation Forum (RCF) to promote the RCF Strategic Plan 2020–2024 established in September 2020, which addresses common challenges in developing a regulatory framework for countries introducing or expanding nuclear power programmes.⁶

9. The Agency held virtual meetings of the Steering Committee of the Regulatory Cooperation Forum and Support Meeting with the European Commission (EC) in November 2020 and June 2021 to review the status of regulatory infrastructure development in countries receiving support from the RCF that are also recipients of EC support and to foster the exchange of experience. The June meeting also focused on the implementation of the RCF Strategic Plan 2020–2024. The Agency also held a virtual Regulatory Cooperation Forum Meeting on the Capacity Building Programmes of Regulatory Bodies and Technical Support Organizations in March 2021 to review the status of the capacity building programmes of regulatory bodies and to foster the exchange of information.⁷

10. The Agency held a virtual Technical Meeting to Share Approaches to and Experiences in the Management of Regulatory Oversight for the Operation of a First Nuclear Power Plant in June 2021 to gather Member States' experience in establishing an effective regulatory framework for safety and to develop guidance on good practices for newcomer countries. The Agency also held a virtual consultancy meeting to present and discuss the strategic approach and first components of a generic road map on nuclear safety capacity development for embarking countries in August 2020.⁸

11. The Agency held a virtual Training Workshop on the Preparation of a Feasibility Study for a New Research Reactor Project in May 2021 to provide the participating Member States with practical information and knowledge on preparing a feasibility study for a new research reactor project, taking into account operation, utilization and safety requirements. The Agency also held a virtual Training Workshop on the Assessment of the National Nuclear Infrastructure to Support a New Research Reactor Project in December 2020, and a virtual inspector training course for Member States embarking on a nuclear power programme and those expanding their programmes in May 2021.⁹

12. The Agency published an electronic handbook on radiation safety culture in health care settings in March 2021.¹⁰

13. The Agency held a virtual consultancy meeting on the interfaces between safety and security cultures to develop related guidance for Member States in November 2020.¹¹

14. The meetings of the International Nuclear Safety Group (INSAG) and Advisory Group on Nuclear Security (AdSec) in 2020 and 2021 included discussions on a joint publication regarding the safety and security interface. A draft publication continues to be developed jointly by INSAG and AdSec. The

⁵ This relates to operative paragraphs 19 and 98 of resolution GC(64)/RES/9.

⁶ This relates to operative paragraph 2 of resolution GC(64)/RES/9.

⁷ This relates to operative paragraphs 2, 25, 28 and 97 of resolution GC(64)/RES/9.

⁸ This relates to operative paragraph 3 of resolution GC(64)/RES/9.

⁹ This relates to operative paragraphs 3, 7 and 49 of resolution GC(64)/RES/9.

¹⁰ This relates to operative paragraph 5 of resolution GC(64)/RES/9.

¹¹ This relates to operative paragraphs 5 and 6 of resolution GC(64)/RES/9.

Agency also published *The Nuclear Safety and Nuclear Security Interface: Approaches and National Experiences* (Technical Reports Series No. 1000) in March 2021.¹²

15. The Agency established a new term of the Global Nuclear Safety and Security Network (GNSSN) Steering Committee in 2020, including conducting a virtual meeting to introduce members, and share initial priorities and ideas, in August 2020. The Agency also held a virtual consultancy meeting on the GNSSN Strategic Plan in January 2021 to revise key strategic documents and agree on proposed priorities in preparation for the next meeting of the Steering Committee. In addition, the Agency held the 15th Meeting of the Steering Committee of the GNSSN virtually in January 2021 and the 16th Meeting in June 2021 to revise and approve the foundational documents guiding Secretariat activities for the GNSSN programme, and to develop an action plan for the remainder of the current term of the Steering Committee.¹³

16. The Agency held a virtual consultancy meeting on the Asian Nuclear Safety Network's Activity Plan for 2021–2023 in October 2020 to review and draft a plan to support capacity building on nuclear safety. The Agency also held the 16th Meeting of the Steering Committee of the Forum of Nuclear Regulatory Bodies in Africa (FNRBA) virtually in February 2021 to enable the Steering Committee members to discuss the implementation of the FNRBA work programme as well as the cooperation with the African Commission on Nuclear Energy and the African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology, and to set strategic priorities for the 2022–2023 work plans. In addition, the Agency held two virtual Meetings of the Steering Committee of the European and Central Asian Safety Network (EuCAS), the fifth in August 2020 and the sixth in November 2020, to review EuCAS's achievements, establish the 2021 work plan and discuss the long-term development plan.¹⁴

17. The Agency participated in two Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO) Steering Committee virtual meetings in July 2020 and November 2020. Eight additional meetings were held under the FORO extrabudgetary programme. The topics covered included harmonization of inspection practices for research reactors; regulatory practices in the licensing of nuclear reactor operators; safety culture in industrial radiography facilities; licensing criteria and inspection requirements for centralized radiopharmacies; and maintenance of the FORO web-based information technology platform. The Agency also participated in two virtual meetings of the European Nuclear Safety Regulators Group (ENSREG) Working Group 1 in September 2020 and February 2021 to exchange information in the area of nuclear safety and specifically on the Integrated Regulatory Review Service (IRRS) programme and the conduct of IRRS–Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) correlated missions. The Agency held a virtual training course for experts identified by ENSREG for participating in ARTEMIS missions requested under the EC Directive 2011/70/Euratom in November–December 2020.¹⁵

¹² This relates to operative paragraph 6 of resolution GC(64)/RES/9.

¹³ This relates to operative paragraphs 8 and 100 of resolution GC(64)/RES/9.

¹⁴ This relates to operative paragraphs 8 and 100 of resolution GC(64)/RES/9.

¹⁵ This relates to operative paragraph 9 of resolution GC(64)/RES/9.

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



(Photo: IAEA)

18. 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, as well as through technical cooperation projects. During the reporting period, Angola, the Congo and Qatar became new Contracting Parties to the CNS, bringing the total number of Contracting Parties to 91. The Agency, based on the decisions of the Contracting Parties on a plan of further actions, held a virtual Officers' Meeting in March 2021 to commence the wrapping-up of the eighth review cycle and to initiate further actions with regard to merging the Eighth and Ninth Review Meetings in 2023 (from 20 to 31 March), as well as modalities of the Organizational Meeting planned to be held in October 2021.¹⁶

19. The Agency held a virtual Educational Workshop to Promote the CNS in December 2020 to provide assistance and educational information on the process for joining and meeting the obligations of the CNS. The Agency also held a virtual Workshop for Permanent Mission Representatives on the Convention on Nuclear Safety in November 2020 to provide representatives assistance with, and educational information on, the CNS review process and obligations, as well as the process for joining the Convention.¹⁷

20. 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, the Congo became a new Contracting Party to the Joint Convention, bringing the total number of Contracting Parties to 84.¹⁸

21. The Agency held a virtual Organizational Meeting for the Seventh Review Meeting of the Contracting Parties to the Joint Convention in September–October 2020 and also held a virtual Workshop for Incoming and Outgoing Officers of the Joint Convention in October 2020 for the outgoing officers of the Sixth Review Meeting to provide their feedback and experience to the incoming officers of the Seventh Review Meeting. Furthermore, the Agency held a virtual meeting of the General Committee of the Joint Convention Seventh Review Meeting in December 2020 to discuss the Joint

¹⁶ This relates to operative paragraphs 17 and 19 of resolution GC(64)/RES/9.

¹⁷ This relates to operative paragraph 19 of resolution GC(64)/RES/9.

¹⁸ This relates to operative paragraph 19 of resolution GC(64)/RES/9.

Convention Presidency's proposals for the new timeline leading up to the Seventh Review Meeting to be held 27 June to 8 July 2022, as well as the adapted templates for National Presentations and for the Rapporteur's Report. The new date for the Fourth Extraordinary Meeting of the Joint Convention was decided by the Contracting Parties to be 14 to 16 February 2022.¹⁹

22. The Agency held a virtual national workshop to provide technical assistance to Pakistan in adhering to the Joint Convention in March 2021.²⁰

23. The Agency continued to encourage Member States' adherence to the Early Notification Convention and the Assistance Convention. In the reporting period, two countries, Côte d'Ivoire and Namibia, joined the Early Notification Convention and two countries joined the Assistance Convention, bringing the total number of Parties to 127 and 122, respectively.²¹

24. As of 30 June 2021, 140 States had made a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources, of which 123 had also notified the Director General of their intention to act in a harmonized manner in accordance with the Code's supplementary Guidance on the Import and Export of Radioactive Sources. A total of 145 States have nominated points of contact to facilitate the export and import of radioactive sources. In addition, 42 States have 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.²²

25. The Agency held a virtual International Meeting on the Application of the Code of Conduct on the Safety of Research Reactors in June 2021 to discuss and exchange experience on the application of the Code.²³

26. The Agency conducted a survey of 123 radiation safety regulatory bodies in order to identify the impacts of the COVID-19 pandemic on the safety of facilities using radiation sources and on their regulatory oversight. The survey showed that Member States would welcome new guidance on effective implementation of regulatory functions during exceptional circumstances. It also identified concerns over a potential increased risk of radioactive sources becoming orphaned should the pandemic's economic impact result in the closure of facilities. The Agency also held virtual webinars on the impact of the COVID-19 pandemic on the regulatory activities for the safety of radiation sources for Latin America in July 2020, Africa and Europe in August 2020, and Asia and the Pacific in September 2020.²⁴

27. The Agency held a virtual Technical Meeting on the Application of Graded Approach in Regulating Nuclear Installations in February 2021 to exchange experience and best practices regarding the application of a graded approach to optimize the use of regulatory resources. The Agency also held a virtual Technical Meeting on Managing Regulatory Experience in October 2020 to discuss the concept of regulatory experience and how to identify and use lessons learned to enhance regulatory effectiveness.²⁵

28. The Agency held the 16th Meeting of the Steering Committee of the Technical and Scientific Support Organization Forum virtually in March 2021 to provide feedback on the recent achievements

¹⁹ This relates to operative paragraph 17 of resolution GC(64)/RES/9.

²⁰ This relates to operative paragraph 19 of resolution GC(64)/RES/9.

²¹ This relates to operative paragraph 19 of resolution GC(64)/RES/9.

²² This relates to operative paragraphs 20 and 108 of resolution GC(64)/RES/9.

²³ This relates to operative paragraphs 22 and 49 of resolution GC(64)/RES/9.

²⁴ This relates to operative paragraphs 2 and 25 of resolution GC(64)/RES/9.

²⁵ This relates to operative paragraphs 25 and 26 of resolution GC(64)/RES/9.

as well as on the Forum's self-assessment methodology. The Agency also held the First Programme Committee Meeting for the 2022 International Conference on Challenges Faced by Technical and Scientific Support Organizations in Enhancing Nuclear Safety and Security virtually in April 2021 to prepare for the conference, which is to be held in the Russian Federation in 2022.²⁶

29. The Secretariat continued to assist Member States in their efforts to adhere to the relevant nuclear liability instruments. A virtual seminar to discuss matters relating to civil liability for nuclear damage was organized in October 2020 for Government officials in Pakistan, with the assistance of members of the International Expert Group on Nuclear Liability (INLEX).²⁷

30. Following a request by Canada, on behalf of the Contracting Parties to the Convention on Supplementary Compensation for Nuclear Damage (CSC), in February 2021, the Secretariat hosted a virtual Preparatory Meeting for the Second Meeting of the Contracting Parties and Signatories to the CSC in order to adopt the Terms of Reference for future CSC meetings and take a number of preparatory decisions relating to the next CSC meeting, to be held at the end of 2021 or in early 2022.²⁸

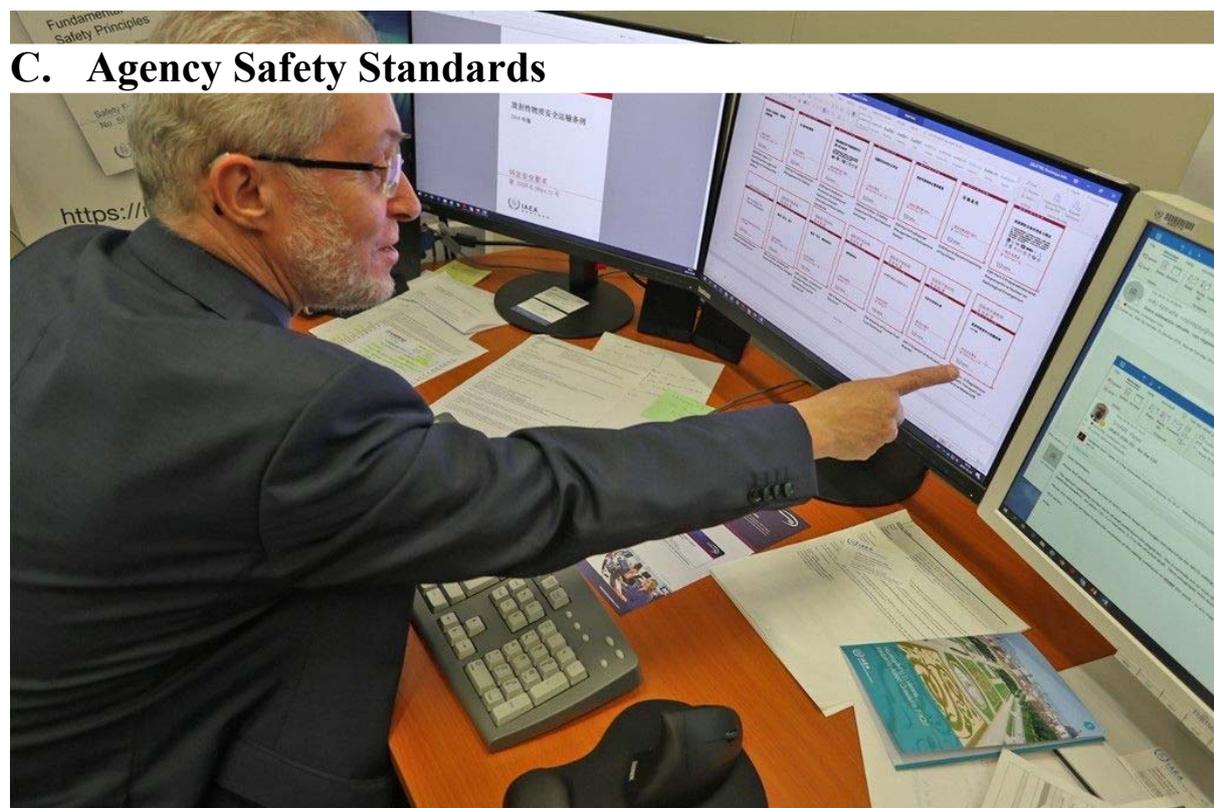
31. The 21st regular meeting of INLEX, which took place virtually in April 2021, provided a forum to present new developments in Member States and activities by the Secretariat in the field of civil liability for nuclear damage, as well as to discuss future outreach activities. In addition, INLEX discussed liability issues concerning nuclear fusion installations, operators' right of recourse under the nuclear liability conventions and the exclusion of operators' liability for on-site property damage.²⁹

²⁶ This relates to operative paragraph 28 of resolution GC(64)/RES/9.

²⁷ This relates to operative paragraph 32 of resolution GC(64)/RES/9.

²⁸ This relates to operative paragraph 32 of resolution GC(64)/RES/9.

²⁹ This relates to operative paragraph 33 of resolution GC(64)/RES/9.



(Photo: IAEA)

32. The Commission on Safety Standards (CSS) met virtually in November 2020 and in April 2021. The Waste Safety Standards Committee met virtually in November 2020. The Transport Safety Standards Committee met virtually in November 2020 and June 2021. The Nuclear Safety Standards Committee met virtually in November 2020 and June 2021. The Radiation Safety Standards Committee met virtually in November 2020 and June 2021. The Emergency Preparedness and Response Standards Committee met virtually in November 2020 and June 2021.³⁰

33. The Interface Group, which gathers together chairs of the Safety Standards Committees and the Nuclear Security Guidance Committee, reviewed three publication proposals for possible safety–security interfaces following a recommendation from the Secretariat’s Coordination Committee on Safety Standards and Nuclear Security Series Publications.³¹

34. The Secretariat introduced a number of initiatives and efficiencies to optimize and streamline the processing times for publications within existing resources. The Secretariat also carried out a prognosis of further work to be done and determined that an increase in safety standards publications is expected over the coming three years. The Secretariat is developing an action plan that will aim to find a sustainable solution, while recognizing that the Secretariat’s budgetary framework is unlikely to grow. The Director General discussed this matter with the CSS Chair in November 2020.³²

35. The CSS endorsed the following draft Safety Guides for submission for publication: *Leadership, Management and Culture for Safety in Radioactive Waste Management (DS477)*; *Format and Content of the Package Design Safety Report for the Transport of Radioactive Material (DS493)*; *Operational Limits and Conditions and Operating Procedures for Nuclear Power Plants (DS497A)*; *Modifications*

³⁰ This relates to operative paragraphs 36 and 38 of resolution GC(64)/RES/9.

³¹ This relates to operative paragraphs 6 and 36 of resolution GC(64)/RES/9.

³² This relates to operative paragraph 37 of resolution GC(64)/RES/9.

to Nuclear Power Plants (DS497B); *The Operating Organization for Nuclear Power Plants* (DS497C); *Core Management and Fuel Handling for Nuclear Power Plants* (DS497D); *Maintenance, Testing, Surveillance and Inspection in Nuclear Power Plants* (DS497E); *Recruitment, Qualification and Training of Personnel for Nuclear Power Plants* (DS497F); *Conduct of Operations at Nuclear Power Plants* (DS497G); *Seismic Hazards in Site Evaluation for Nuclear Installations* (DS507); *Safety Assessment for Research Reactors and Preparation of the Safety Analysis Report* (DS510A); *Safety in the Utilization and Modification of Research Reactors* (DS510B); *Equipment Qualification for Nuclear Installations* (DS514); and *Criticality Safety in the Handling of Fissile Material* (DS516).³³

36. The Agency held a webinar entitled ‘An Introduction to the IAEA Safety Standards’ in December 2020. The Agency also launched two e-learning modules on its safety standards: an overview of the safety standards, which is available in English and Russian; and guidance for drafting safety standards.³⁴

37. The Agency published one General Safety Guide and seven Specific Safety Guides: *Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSG-14); *Storage of Spent Nuclear Fuel* (IAEA Safety Standards Series No. SSG-15 (Rev. 1)); *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Safety Standards Series No. SSG-16 (Rev. 1)); *Radiation Safety in Well Logging* (IAEA Safety Standards Series No. SSG-57); *Radiation Safety in the Use of Nuclear Gauges* (IAEA Safety Standards Series No. SSG-58); *Radiation Safety of Accelerator Based Radioisotope Production Facilities* (IAEA Safety Standards Series No. SSG-59); *Design of Auxiliary Systems and Supporting Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-62); and *Design of Fuel Handling and Storage Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-63).³⁵

38. The Agency included all new safety standards and nuclear security guidance publications in the Nuclear Safety and Security Online User Interface (NSS-OUI) platform.³⁶

39. 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 a draft report on the evaluation of occupational exposure to ionizing radiation. Moreover, as recommended by the CSS, the Secretariat continued the preparation of a draft Safety Report on the implications of the 2012 UNSCEAR report to the General Assembly and its Annexes on attribution of health effects and inference of risk.³⁷

³³ This relates to operative paragraph 39 of resolution GC(64)/RES/9.

³⁴ This relates to operative paragraph 39 of resolution GC(64)/RES/9.

³⁵ This relates to operative paragraph 40 of resolution GC(64)/RES/9.

³⁶ This relates to operative paragraph 40 of resolution GC(64)/RES/9.

³⁷ This relates to operative paragraph 41 of resolution GC(64)/RES/9.



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



(Photo: V. Vrbik/Research Centre Řež, Czech Republic)

40. The Agency had planned eight IRRS missions during the reporting period. However, owing to the COVID-19-related travel restrictions, seven were postponed and one was conducted in a virtual format. The Agency conducted one virtual IRRS follow-up mission in Lithuania in November–December 2020. The Agency held a virtual Technical Meeting on Self-Assessment of Regulatory Infrastructure for Safety (SARIS) in November 2020 to share experiences on the national self-assessment process and to familiarize the participants with the new online version of SARIS. The Agency also held a series of national workshops on IRRS and self-assessment based on the SARIS methodology and the new online version of SARIS (eSARIS) to assist Member States in initiating the IRRS process, and conducting their self-assessments in preparation for their missions. These workshops were held virtually, with Sweden in January 2021, Thailand in February 2021, Belgium in April 2021, and Romania and Turkey in May 2021.³⁸

41. The Agency had planned four ARTEMIS missions during the reporting period. However, owing to the travel restrictions, all ARTEMIS missions were postponed. The Agency held a virtual training course for experts taking part in ARTEMIS missions in February 2021.³⁹

42. The Agency created a task force to work closely with the ENSREG subgroup on the optimization of the delivery of a correlated IRRS–ARTEMIS mission. The first meeting took place in February 2021 to define the objectives, scope of collaboration and timeline.⁴⁰

43. The Agency held a virtual consultancy meeting on enhancing the commissioning review area during Pre-Operational Safety Review Team (Pre-OSART) missions in September 2020 to provide feedback on the work undertaken to enhance the commissioning Working Notes Outlines used in Operational Safety Review Team (OSART) and Corporate OSART missions. The Agency also held a virtual consultancy meeting on enhancing the Pre-OSART mission process in December 2020.⁴¹

³⁸ This relates to operative paragraphs 42, 43, 44, 45 and 46 of resolution GC(64)/RES/9.

³⁹ This relates to operative paragraphs 43, 44, 45 and 46 of resolution GC(64)/RES/9.

⁴⁰ This relates to operative paragraphs 9 and 46 of resolution GC(64)/RES/9.

⁴¹ This relates to operative paragraphs 43, 44 and 45 of resolution GC(64)/RES/9.

44. The Agency conducted an Integrated Safety Assessment of Research Reactors in the Czech Republic in August 2020.⁴²
45. The Agency conducted a Site and External Events Design (SEED) mission in Poland in June 2021, as well as a follow-up SEED mission on the review of site selection for NPPs and a SEED mission on site characterization for NPPs, both in Kenya, in March 2021.⁴³
46. The Agency conducted two Integrated Nuclear Infrastructure Review missions: a Phase 1 follow-up mission in Kenya in June 2021 and a Phase 2 mission in Uzbekistan in May–June 2021.⁴⁴
47. The Agency conducted a Safety Aspects of Long Term Operation (SALTO) follow-up mission in Sweden in September 2020.⁴⁵
48. The Agency continues to address radiation safety infrastructure in Member States that have expressed an interest in establishing or enhancing their cancer control capacity through imPACT (integrated missions of the Programme of Action for Cancer Therapy) Reviews. Five such missions were conducted in Mali and Senegal in July–December 2020, the Central African Republic in December 2020, Nepal in February 2021 and the Democratic Republic of the Congo in June 2021. One imPACT follow-up mission was conducted in Jamaica in February 2021.⁴⁶
49. The Agency conducted a virtual Education and Training Appraisal mission in November–December 2020 to assess national provisions on education and training in radiation safety in Jordan.⁴⁷
50. The Agency completed the Phase I of the Technical Safety Review (TSR-DS) of the Paks 2 Preliminary Safety Analysis Report and has started the Technical Safety Review (TSR-PSA) of the Paks 2 Probabilistic Safety Assessment Report in Hungary in December 2020 and March 2021, respectively.⁴⁸
51. The Agency conducted four Safety Culture Continuous Improvement Process missions: in the Russian Federation in August 2020, Poland in November 2020, the Netherlands in February 2021 and Bangladesh in June 2021.⁴⁹
52. The Agency conducted one virtual Peer Review of Operational Safety Performance Experience mission for Tractebel Engineering at the Doel and Tihange NPPs in Belgium in December 2020.⁵⁰
53. The Agency held a virtual workshop on lessons learned from Occupational Radiation Protection Appraisal Service missions in October 2020. The Agency also published the *Occupational Radiation Protection Appraisal Service (ORPAS) Guidelines* (IAEA Services Series No. 43) in September 2020.⁵¹
54. The Agency has made available new e-learning training materials for Emergency Preparedness Review (EPREV) reviewers, hosts and team leaders that include improvements in operational guidance. The Agency has also made modifications to the Emergency Preparedness and Response Information

⁴² This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁴³ This relates to operative paragraphs 12, 43 and 44 of resolution GC(64)/RES/9.

⁴⁴ This relates to operative paragraphs 3, 7, 43 and 44 of resolution GC(64)/RES/9.

⁴⁵ This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁴⁶ This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁴⁷ This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁴⁸ This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁴⁹ This relates to operative paragraphs 5, 43 and 44 of resolution GC(64)/RES/9.

⁵⁰ This relates to operative paragraphs 43 and 44 of resolution GC(64)/RES/9.

⁵¹ This relates to operative paragraphs 45 of resolution GC(64)/RES/9.

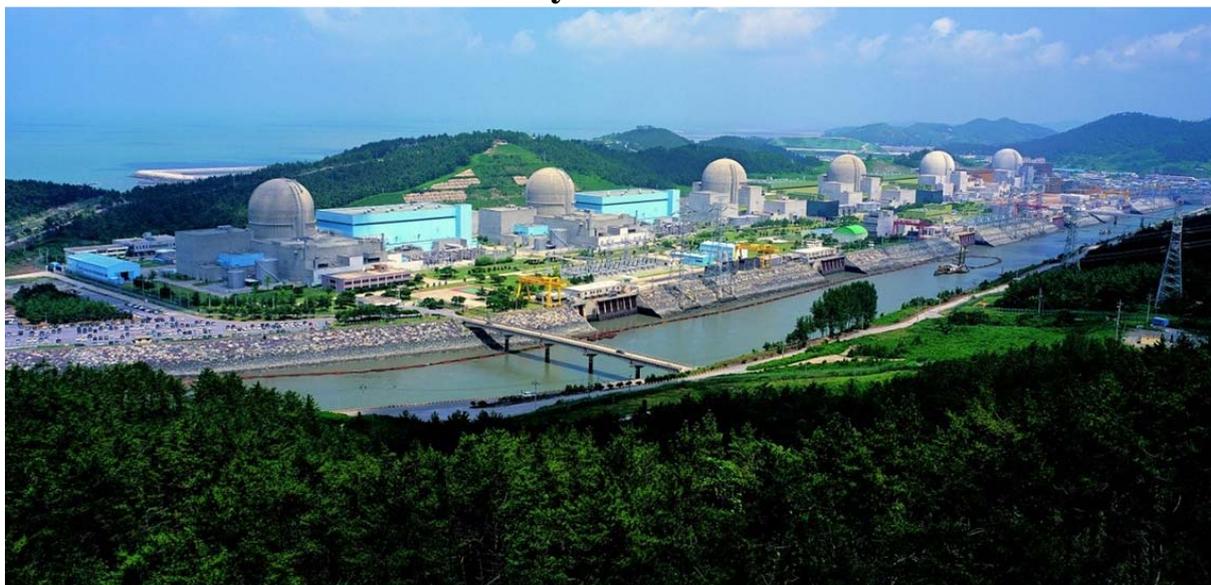
Management System (EPRIMS) to improve the self-assessment process and include information on EPREV reports and findings.⁵²

55. The 28th Regular Meeting of the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) took place virtually to review IACRNE activities since the 27th Regular Meeting; review EPR activities for each participating and corresponding organization; discuss international EPR exercises conducted since June 2019; and discuss and agree upon the IACRNE work plan for the next two-year period. The Agency also submitted a proposal to the World Health Organization (WHO) for better coordination between EPREV and the WHO Joint External Evaluation service's module on radiation emergencies.⁵³

⁵² This relates to operative paragraphs 42, 45 and 123 of resolution GC(64)/RES/9.

⁵³ This relates to operative paragraphs 47 and 125 of resolution GC(64)/RES/9.

E. Nuclear Installation Safety



(Photo: IAEA)

56. The Agency, in collaboration with Argonne National Laboratory, held a virtual Workshop on Safety Analysis and Safety Documents for Research Reactors in March 2021 for Member States to discuss and share experiences in performing safety analyses for research reactors, as well as the preparation, updating and reviewing of safety documents for such facilities. The Agency also held a virtual Workshop on Periodic Safety Review (PSR) for Research Reactors in November 2020 for Member States to exchange information and experiences related to establishing and implementing PSR for research reactors based on Agency safety standards.⁵⁴

57. The Agency held a virtual Meeting on Regulatory Review and Assessment and Inspection of Research Reactors in October 2020 to provide a forum for exchange of information and experience between the participating Member States on the review and assessment of safety submissions and regulatory inspection of research reactors.⁵⁵

58. The Agency held a virtual Training Workshop on Integrated Management Systems for Research Reactors in June 2021 to provide the participating Member States with practical information on, and to encourage the exchange of experience in, the establishment, implementation and continuous improvement of management systems for research reactors.⁵⁶

59. The Agency held a virtual Technical Meeting on Research Reactor Ageing Management, Refurbishment and Modernization in May–June 2021 to bring together operators, designers and regulators of research reactors to discuss issues and experience related to the ageing management, refurbishment and modernization of research reactors.⁵⁷

60. The Agency held a virtual workshop for the Iran Nuclear Regulatory Authority on the use of PSR in support of long term operation (LTO) in November 2020. The Agency held two virtual consultancy meetings on the development of a Safety Report on PSR in support of LTO in November 2020 and

⁵⁴ This relates to operative paragraphs 49 and 53 of resolution GC(64)/RES/9.

⁵⁵ This relates to operative paragraphs 25 and 49 of resolution GC(64)/RES/9.

⁵⁶ This relates to operative paragraphs 49 and 98 of resolution GC(64)/RES/9.

⁵⁷ This relates to operative paragraphs 49 and 52 of resolution GC(64)/RES/9.

February 2021 to discuss safety concerns and lessons learned associated with the use of PSR for LTO and to develop a draft publication on the use of PSR to support decision making for LTO or licence renewal of NPPs.⁵⁸

61. The Agency held a virtual Workshop on Ageing Management of Civil Structures in November 2020 to provide training on Agency safety standards related to LTO and ageing management; on lessons learned from SALTO peer review missions; on national approaches and regulatory requirements for LTO and ageing management; and on the scope of civil structures in LTO.⁵⁹

62. The Agency held the following International Generic Ageing Lessons Learned Phase 5 virtual meetings: a Steering Committee meeting in December 2020; meetings of Working Group 1 on Mechanical Components in September 2020, October 2020 and April 2021; meetings of Working Group 2 on Electrical and Instrumentation and Control Components in August 2020 and June 2021; meetings of Working Group 3 on Civil Structures in September 2020, October 2020 and June 2021; meetings of Working Group 4 on Regulatory Experience in September 2020, November 2020 and May 2021; and a meeting of Working Group 5 on Water–Water Energetic Reactors (WWER) in February 2021.⁶⁰

63. The Agency held one virtual workshop and one hybrid support mission on knowledge management and the human resource aspects of LTO for Koeberg NPP, South Africa, in July and September 2020.⁶¹

64. The Agency held a virtual Technical Meeting on the Enhancement of Methods, Approaches and Tools for Development and Application of Probabilistic Safety Assessments in September–October 2020. In addition, the Agency held two virtual consultancy meetings for the revision of *Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-4) in July 2020 and March 2021, and also held a virtual Technical Meeting on Experience in the Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants in May 2021 to provide the participants with an opportunity to contribute to the revision of this Safety Guide.⁶²

65. The Agency held a virtual Workshop on Nuclear Power Plant Safety Assessment for Embarking Countries in June 2021 to enhance the participants' understanding of the role of NPP safety assessment and to enable them to discuss relevant experiences, focusing on the needs of embarking countries, particularly the specifics of and challenges in the evaluation of NPP design safety assessment.⁶³

66. The Agency held a virtual Technical Meeting on Protection of Nuclear Installations against External Hazards in November 2020 to review the progress of extrabudgetary programme activities supporting the development and implementation of the relevant safety standards. The Agency held two virtual kick-off meetings, on the optimization of protection against external hazards in August 2020 and on the development of guidelines for the earthquake experience database in December 2020.⁶⁴

67. The Agency virtually held the Third Research Coordination Meeting on Probabilistic Safety Analysis Benchmark for Multi-Unit, Multi-Reactor Sites in August 2020. The Agency also held a webinar entitled 'Expanding NPP Risk Assessment to Multi-Unit Context: Achievements and

⁵⁸ This relates to operative paragraphs 51 and 53 of resolution GC(64)/RES/9.

⁵⁹ This relates to operative paragraphs 51 and 52 of resolution GC(64)/RES/9.

⁶⁰ This relates to operative paragraph 52 of resolution GC(64)/RES/9.

⁶¹ This relates to operative paragraphs 51, 52 and 99 of resolution GC(64)/RES/9.

⁶² This relates to operative paragraph 53 of resolution GC(64)/RES/9.

⁶³ This relates to operative paragraphs 3 and 53 of resolution GC(64)/RES/9.

⁶⁴ This relates to operative paragraph 54 of resolution GC(64)/RES/9.

Challenges' in July 2020 to provide a forum to summarize the results of the Agency project on multi-unit probabilistic safety assessment.⁶⁵

68. The Agency, jointly with the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA), held a Workshop on the Current Implementation Status of Measures to Manage Open Phase Conditions in Electrical Power Systems of Nuclear Power Plants in October 2020 to follow up and capture the various practices and design provisions regarding open phase conditions that have been implemented to upgrade existing plant designs, and to highlight any difficulties that have been encountered in their implementation.⁶⁶

69. The Agency held a virtual Workshop on Severe Accident Analysis for Bushehr NPP-1 in the Islamic Republic of Iran and supporting organizations in October 2020 to provide a forum for presenting, discussing and sharing experience in the analysis of severe accidents at NPPs with pressurized water reactor technology, with a particular focus on severe accident management strategies at NPPs with WWER-type reactors.⁶⁷

70. The Agency held a virtual Technical Meeting on Accident Management for Advanced Reactors in September 2020, where participants discussed the applicability of *Accident Management Programmes for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-54) to advanced reactor designs, either water or non-water cooled. The Agency also held a virtual Training Workshop on the Development of Severe Accident Management Guidelines Using the IAEA's Severe Accident Management Guideline Development Toolkit in October 2020.⁶⁸

71. The Incident Reporting System for Research Reactors and the Fuel Incident Notification and Analysis System (FINAS) continued to facilitate the exchange of information on nuclear incidents and accidents in Member States. The Agency continued to operate and maintain the FINAS database jointly with the OECD/NEA. In 2020, the number of reports submitted to FINAS increased by 3, bringing the total number of reports to 293. More than 80% of the world's nuclear fuel facilities are currently part of the system. The Agency held a virtual Technical Meeting for the National Coordinators of FINAS in October 2020 to exchange information on incidents submitted to the database and discuss the implementation of corrective actions arising from these and other such incidents.⁶⁹

72. The Agency co-organized with the OECD/NEA a virtual Technical Meeting of the International Reporting System for Operating Experience National Coordinators — Recent Events in Nuclear Power Plants in October 2020 to share lessons learned from operating experience at NPPs and to exchange information on recent safety significant events at NPPs.⁷⁰

73. The Agency held the Small Modular Reactor (SMR) Regulators' Forum Steering Committee and Working Group virtual meetings in November 2020 and April 2021 to provide an opportunity for the members to receive reports from and provide guidance to the forum working groups. The Agency also held three consultancy meetings in support of the review of the applicability of Agency safety standards to novel advanced reactors and particularly SMRs, transportable SMRs, high temperature gas cooled reactors, lead fast reactors, sodium fast reactors and molten salt reactors. A preparatory consultancy meeting was held in February 2021 to identify key areas of novelty for these technologies when

⁶⁵ This relates to operative paragraph 55 of resolution GC(64)/RES/9.

⁶⁶ This relates to operative paragraph 57 of resolution GC(64)/RES/9.

⁶⁷ This relates to operative paragraphs 12, 58 and 60 of resolution GC(64)/RES/9.

⁶⁸ This relates to operative paragraphs 58 and 60 of resolution GC(64)/RES/9.

⁶⁹ This relates to operative paragraph 61 of resolution GC(64)/RES/9.

⁷⁰ This relates to operative paragraph 61 of resolution GC(64)/RES/9.

compared to large land-based water cooled NPPs. This was followed by a consultancy meeting in March 2021 to agree on the applicability of the review approach, complete the identification of areas of novelty and review the applicability of the safety standards on siting, design for external hazards and waste management facilities and decommissioning. A follow-up consultancy meeting was held in May 2021 to review the applicability of the safety standards on reactor design safety and the safety of nuclear fuel cycle facilities.⁷¹

74. The Agency held a virtual consultancy meeting on safety assessment and safety analysis of SMRs in October 2020 to share experience on the different aspects of safety assessment and safety analysis for SMRs and to complete parts of the corresponding draft Safety Report.⁷²

⁷¹ This relates to operative paragraph 62 of resolution GC(64)/RES/9.

⁷² This relates to operative paragraphs 53 and 62 of resolution GC(64)/RES/9.

F. Radiation Safety and Environmental Protection



(Photo: R. Cruz Suárez/IAEA)

75. The Agency held the International Conference on Radiation Safety: Improving Radiation Protection in Practice in November 2020. The outcomes of the Conference show that Member States are increasingly: recognizing the need to apply the principles of justification and optimization in circumstances where actions are being considered to reduce radiation exposure; seeking advice and guidance from the Agency in relation to managing existing exposure situations; understanding the role and responsibility of the regulatory body in addressing radiation exposure related to non-medical human imaging; and aware of the importance of having a strong ethical basis for the application of radiation protection principles.⁷³

76. The Agency held three virtual Regional Workshops on National Policy and Strategy for Radiation Safety and Security of Radioactive Material in November–December 2020, March 2021 and April 2021.⁷⁴

77. The Agency continued to support the Information System on Occupational Exposure (ISOE), jointly operated by the Agency and the OECD/NEA. The Agency also attended the virtual ISOE Management Board Meeting in December 2020.⁷⁵

78. The Agency continued to promote the use of the Information System on Occupational Exposure in Medicine, Industry and Research (ISEMIR) in Member States. The Agency organized jointly with the African ALARA Network a webinar on occupational radiation protection optimization in industrial radiography and on the use of ISEMIR in April 2021. The Agency also conducted a global survey on the ISEMIR Industrial Radiography tool from October 2020 to February 2021. A virtual consultancy meeting on ISEMIR Industrial Radiography was held in May 2021 to analyse the results of the global survey. In addition, the Agency initiated the extension of the ISEMIR programme to cover industrial processes involving naturally occurring radioactive material (NORM).⁷⁶

⁷³ This relates to operative paragraphs 39, 63 and 71 of resolution GC(64)/RES/9.

⁷⁴ This relates to operative paragraphs 6 and 63 of resolution GC(64)/RES/9.

⁷⁵ This relates to operative paragraph 64 of resolution GC(64)/RES/9.

⁷⁶ This relates to operative paragraph 65 of resolution GC(64)/RES/9.

79. The Agency held a webinar entitled ‘Tips and Tricks for the Practice of Internal Dosimetry in Occupational Radiation Protection’ in October 2020.⁷⁷

80. The Agency held a virtual Technical Meeting on the Regulatory Forum for Safety of Uranium Production and NORM in December 2020 to review the progress made in activities identified as high priority at the Regulatory Forum’s 2019 Annual Meeting.⁷⁸

81. The Agency held an Africa Regional Webinar on the Regulation of the Safe Transport of Naturally Occurring Radioactive Material (NORM) Associated with Mining and Processing in March 2021.⁷⁹

82. The Agency held a virtual Technical Meeting on the Justification and Optimization of Protection of Patients Requiring Multiple Imaging Procedures in October 2020 to review the latest data on patient exposure from recurrent radiological imaging and agree on further guidance as well as actions needed to strengthen justification and optimization of protection of patients whose medical conditions require multiple medical imaging procedures. In addition, the Agency held a virtual Technical Meeting on Developing Effective Methods for Radiation Protection Education and Training of Health Professionals, in March 2021 and a virtual National Training Course on Regulatory Control of Safety and Security for Radiotherapy Practice for the staff of the National Regulatory Authority in Radiation Protection (ARNR) of Uruguay in April 2021.⁸⁰

83. The Agency conducted a joint Abdus Salam International Centre for Theoretical Physics (ICTP)–IAEA Workshop on Risk Assessment in Advanced Radiotherapy Techniques virtually in February–March 2021. The Agency also held three webinars relating to medical exposure from July–August 2020 and nine webinars relating to radiation protection in medicine from July 2020–April 2021.⁸¹

84. The Agency held a virtual Regional Workshop for Good Laboratory Practice in the Measurement of Radon and Inter-Comparison Exercise for Passive Measurements and Quality Assurance in Measurement of Radon in November 2020. The Agency also held a virtual regional workshop in December 2020 where participants were trained in how to analyse responses to a survey regarding knowledge and risk perception with respect to radon and use the results to design a radon risk communication strategy.⁸²

85. The Agency held the fourth and fifth meetings of the International Steering Group for the project on Radionuclides in Food and Drinking Water in Non-Emergency Situations virtually in March 2021 and June 2021, respectively. The Steering Group highlighted the importance of having a harmonized approach to the management of radionuclides in both food and drinking water, and the draft text of an IAEA Technical Document (TECDOC) prepared by the project joint secretariat of the Food and Agriculture Organization of the United Nations, WHO and the Agency was approved. At its meeting in May 2021, the Codex Committee on Contaminants in Foods reviewed the draft TECDOC with a view to publishing it on the Codex website.⁸³

86. As advised by the Radiation Safety Standards Committee, the Agency formed a working group to review and advise the Secretariat on the need for guidance on existing exposure situations. The working

⁷⁷ This relates to operative paragraph 66 of resolution GC(64)/RES/9.

⁷⁸ This relates to operative paragraphs 67 and 94 of resolution GC(64)/RES/9.

⁷⁹ This relates to operative paragraphs 67 and 82 of resolution GC(64)/RES/9.

⁸⁰ This relates to operative paragraph 69 of resolution GC(64)/RES/9.

⁸¹ This relates to operative paragraph 70 of resolution GC(64)/RES/9.

⁸² This relates to operative paragraphs 12 and 72 of resolution GC(64)/RES/9.

⁸³ This relates to operative paragraphs 73 and 75 of resolution GC(64)/RES/9.

group met virtually three times during the reporting period, and recommendations are being prepared. It decided to conduct a survey among members to understand the current situation and implementation of *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3) requirements for existing exposure situations. Initial results of the survey indicated the need for further guidance possibly at the level of a Safety Guide. The Agency also held a virtual consultancy meeting to start work on a Safety Report on radiation safety in trade of commodities in September 2020.⁸⁴

87. The Agency held a webinar on the radiation safety of consumer products in November 2020 to provide a platform to share knowledge about relevant safety requirements and principles for regulating the manufacture and use of consumer products; gain an understanding of related technologies and their features; and learn about national experiences in applying safety requirements when dealing consumer products.⁸⁵

88. The publication *Inventory of Radioactive Materials Resulting from Historical Dumping, Accidents and Losses at Sea — For the Purposes of the London Convention 1972 and Protocol 1996* (IAEA-TECDOC-1776) was most recently updated in 2015. The Agency communicates with the secretariat of the related Convention at the International Maritime Organization and updates the inventory when requested to do so.⁸⁶

⁸⁴ This relates to operative paragraph 74 of resolution GC(64)/RES/9.

⁸⁵ This relates to operative paragraph 75 of resolution GC(64)/RES/9.

⁸⁶ This relates to operative paragraph 77 of resolution GC(64)/RES/9.

G. Transport Safety



(Photo: D. Calma/IAEA)

89. The Agency held a virtual Technical Meeting on Denials of Shipment – Issues and Solutions in March 2021 to provide a forum to discuss the options for addressing denials of, and delays in, the shipment of radioactive material. The discussions held during the meeting, and the conclusions from the meeting, were summarized in the Chair’s report provided to Member States. A virtual consultancy meeting was held in May 2021 to define the Terms of Reference of a working group on this topic.⁸⁷

90. The Agency held a virtual Regional Training Course on Safe Transport of Radioactive Material in January 2021 to provide training on the Agency’s *Regulations for the Safe Transport of Radioactive Material* IAEA Safety Standards Series No. SSR-6 (Rev.1) to members of Competent Authorities who are responsible for ensuring implementation of and compliance with Agency and other international transport safety requirements.⁸⁸

91. The Agency launched Version 2.0 of Modules 1–4 of the transport safety e-learning platform to reflect IAEA Safety Standards Series No. SSR-6 (Rev.1), in English in October 2020 and in Spanish in June 2021.⁸⁹

92. The Agency observed the Dialogue between Coastal and Shipping States, which continued to discuss the maritime transport of radioactive material. The programmes and plans of Action of the Dialogue scheduled for implementation in 2020 were affected by the COVID-19 pandemic. However, a virtual meeting was held in December 2020, in which France handed over the chair of the Dialogue to Australia, and the participants were updated on the progress made towards the creation of a secure

⁸⁷ This relates to operative paragraph 81 of resolution GC(64)/RES/9.

⁸⁸ This relates to operative paragraphs 12 and 82 of resolution GC(64)/RES/9.

⁸⁹ This relates to operative paragraph 82 of resolution GC(64)/RES/9.

website for participants in the Dialogue and discussed a 2021 programme of work in the context of the 2019–2021 Road Map.⁹⁰

93. The Agency held a virtual Regional Meeting for the Endorsement of the Guidelines for Cooperation in Preparedness for and Response to Nuclear or Radiological Emergencies in Coastal Ports and at Sea in the Mediterranean Region in October 2020. The Agency also held a virtual Regional Workshop to Finalize Preparations for the Exercise on the Project on Cooperation in Preparedness for and Response to Nuclear or Radiological Emergencies in Coastal Ports and at Sea in the Mediterranean Region in June 2021.⁹¹

⁹⁰ This relates to operative paragraph 84 of resolution GC(64)/RES/9.

⁹¹ This relates to operative paragraph 84 of resolution GC(64)/RES/9.

H. The Safety of Spent Fuel and Radioactive Waste Management



(Photo: ZWILAG Würenlingen Interim Storage Facility)

94. The Agency held a virtual Technical Meeting on Guidance on Preparing for and Conducting Regulatory Reviews and Assessments of Geological Disposal Programmes in November 2020. The Agency also published *Application of the Graded Approach to Post-Closure Safety Assessment for the Disposal of Disused Sealed Radioactive Sources in Boreholes* (IAEA-TECDOC-1928) in October 2020.⁹²

95. The Agency held a virtual consultancy meeting to review and revise *Radiation Protection and the Management of Radioactive Waste in the Oil and Gas Industry* (Safety Reports Series No. 34) and its corresponding training package in December 2020.⁹³

⁹² This relates to operative paragraph 88 of resolution GC(64)/RES/9.

⁹³ This relates to operative paragraph 89 of resolution GC(64)/RES/9.

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



(Photo: IAEA)

96. The Agency held a virtual Regional Workshop on Safety Assessment for Decommissioning of Small Facilities and Application of a Graded Approach in April 2021 to provide a platform for discussion and exchange of information, knowledge and lessons learned in performing safety assessment for decommissioning of small medical, industrial and research facilities, and the application of a graded approach to different aspects of decommissioning of small facilities.⁹⁴

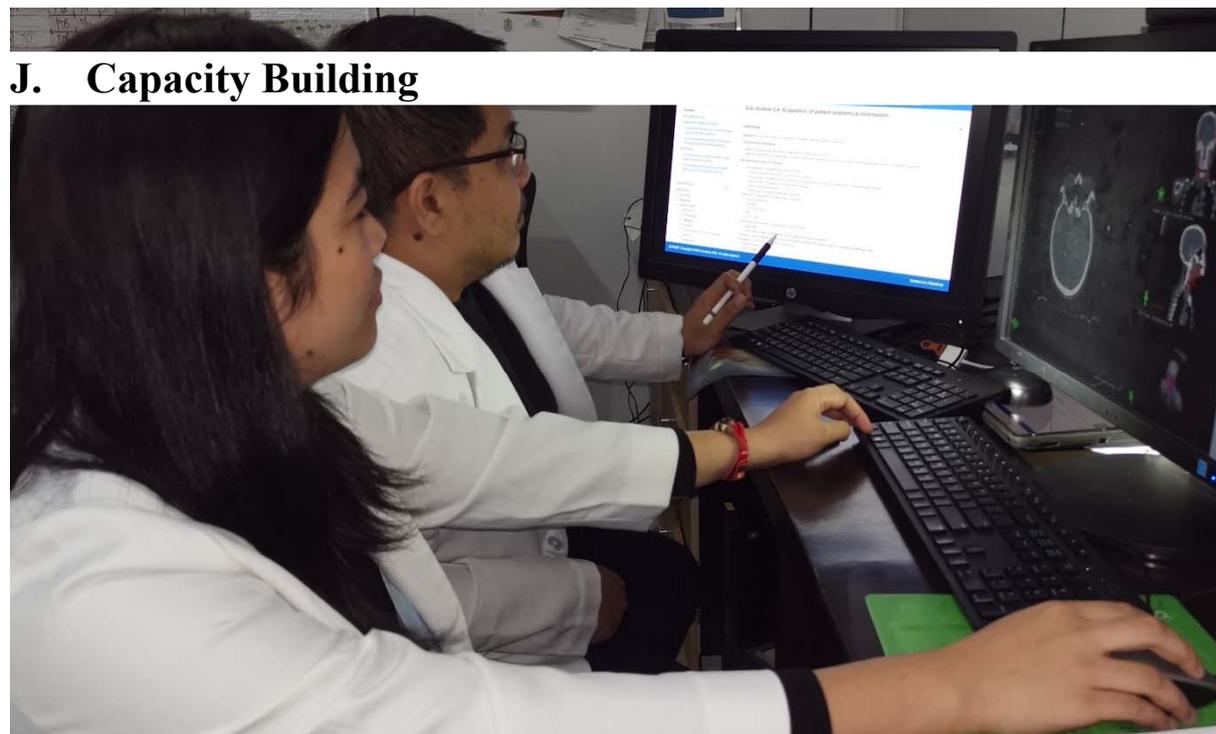
97. The Agency held the Third Technical Meeting of the International Project on Completion of Decommissioning (COMDEC) virtually in October 2020 to collect, analyse and exchange Member State experiences regarding the completion of decommissioning and the release of sites from regulatory control. The Agency also held the Third Technical Meeting of the International Project on Decommissioning of Small Facilities virtually in May 2021. In addition, the Agency held a virtual Regional Workshop on Project Management for Decommissioning of Small Facilities in May 2021 to discuss and exchange experiences on the management of decommissioning projects for small medical, industrial and research facilities, including aspects related to outsourcing of tasks or entire projects to external contractors.⁹⁵

98. The Agency held an Annual Meeting of the Coordination Group for Uranium Legacy Sites (CGULS) virtually in November 2020 to continue the information exchange forum and technical coordination activities of Member States and international organizations participating in the CGULS. The Agency also held another Annual Meeting of the CGULS, focusing on understanding the capacity building needs of Member States in Central Asia, to support sustainable remediation of the uranium legacy sites in the region, virtually in May 2021. Furthermore, the Agency held a virtual training event under the CGULS on theoretical aspects of piloting an unmanned aerial vehicle in April 2021 to provide operators with an understanding of the principles of using drone technology to map uranium legacy sites in Central Asia.⁹⁶

⁹⁴ This relates to operative paragraphs 12, 53 and 93 of resolution GC(64)/RES/9.

⁹⁵ This relates to operative paragraph 93 of resolution GC(64)/RES/9.

⁹⁶ This relates to operative paragraph 95 of resolution GC(64)/RES/9.



(Photo: J. Corpuz/Southern Philippines Medical Center)

99. The Agency held a virtual Regional Workshop on Policies and Strategies for Nuclear Safety Capacity Building in December 2020 to support Arab Member States in their efforts to establish and maintain nuclear safety capacity building programmes, including education and training, human resource development, knowledge management and knowledge networks.⁹⁷

100. The Agency held four Postgraduate Educational Courses on Radiation Protection and the Safety of Radiation Sources, in English in Ghana, from November 2020 to March 2021, and Malaysia, from May to November 2021; in French in Morocco, from November 2020 to April 2021; and in Russian in Belarus, from January 2020 to July 2021. The Agency also held a virtual meeting of Course Directors in November 2020 to share experiences and good practices in the conduct of postgraduate courses on this topic.⁹⁸

101. The Agency held two virtual consultancy meetings on the development of virtual and hybrid versions of the International and National Schools on Nuclear and Radiological Leadership for Safety in March 2021 and May 2021. The Agency also held a virtual consultancy meeting on the use of tools and resources for conducting the virtual version of the School in May 2021.⁹⁹

102. The Agency held a virtual consultancy meeting on the development of a master's degree curriculum for EPR in January 2021 to finalize the draft curriculum, discuss the structure and description of its main components, and identify relevant career paths. The Agency also initiated conversations with interested partner universities to launch a pilot version of the curriculum in 2021–2022.¹⁰⁰

⁹⁷ This relates to operative paragraph 97 of resolution GC(64)/RES/9.

⁹⁸ This relates to operative paragraphs 12, 39 and 98 of resolution GC(64)/RES/9.

⁹⁹ This relates to operative paragraph 98 of resolution GC(64)/RES/9.

¹⁰⁰ This relates to operative paragraphs 98 and 115 of resolution GC(64)/RES/9.

103. The Agency conducted 12 Knowledge Management Assist Visit related events for 10 Member States.¹⁰¹

104. The Agency's Steering Committee on Education and Training in Radiation, Transport and Waste Safety met virtually in November–December 2020 to advise the Agency on the implementation of its Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020, and on the status of the establishment of national strategies in this area. In addition, the Agency's Steering Committee on Regulatory Capacity Building and Knowledge Management met virtually in December 2020 to exchange information on the current activities of the Agency in managing, developing and strengthening regulatory competence.¹⁰²

¹⁰¹ This relates to operative paragraph 99 of resolution GC(64)/RES/9.

¹⁰² This relates to operative paragraphs 97, 99 and 102 of resolution GC(64)/RES/9.



K. Safety Management of Radioactive Sources

(Photo: Teollisuuden Voima Oyj)

105. The Agency held a virtual European Regional Meeting on the Implementation of the Guidance on the Management of Disused Radioactive Sources in January 2021 to enable Member States in the Europe region to exchange experiences on the safe management and secure protection of disused radioactive sources.¹⁰³

106. The Agency held three virtual Regional Meetings on the Implementation of the Guidance on the Management of Disused Radioactive Sources, for Africa in March 2021, Asia and the Pacific in April 2021, and Latin America and the Caribbean in May 2021.¹⁰⁴

107. The Agency held a virtual technical briefing for Member States on the formalized process for the exchange of information regarding the Code of Conduct on the Safety and Security of Radioactive Sources in February 2021 to facilitate consultation on the formalized process.¹⁰⁵

108. The Agency promoted the Scrap Metal Tool Kit, which is a web-based collaboration platform for information exchange related to the control of radioactive material inadvertently incorporated into scrap metal or semi-finished products of the metal recycling industries, and e-learning courses on this topic. In the reporting period, 820 participants took part in these e-learning courses.¹⁰⁶

109. The Agency held two virtual consultancy meetings on the coordinated research project (CRP) on Developing a Phenomena Identification and Ranking Table and a Validation Matrix, and Performing a Benchmark for In-Vessel Melt Retention, in November 2020 and March 2021.¹⁰⁷

110. The Agency published *Analysis of Options and Experimental Examination of Fuels for Water Cooled Reactors with Increased Accident Tolerance (ACTOF)* (IAEA-TECDOC-1921) in July 2020, which compiles experimental data on new fuel types and cladding materials, and assesses modelling

¹⁰³ This relates to operative paragraphs 6 and 105 of resolution GC(64)/RES/9.

¹⁰⁴ This relates to operative paragraph 105 of resolution GC(64)/RES/9.

¹⁰⁵ This relates to operative paragraph 108 of resolution GC(64)/RES/9.

¹⁰⁶ This relates to operative paragraph 109 of resolution GC(64)/RES/9.

¹⁰⁷ This relates to operative paragraphs 58 and 110 of resolution GC(64)/RES/9.

code capacity to predict the behaviour of the components and the integral performance of accident tolerant fuel designs under normal and transient conditions.¹⁰⁸

111. The Agency held a virtual Research Coordination Meeting for the CRP on the Development of Approaches, Methodologies and Criteria for Determining the Technical Basis for Emergency Planning Zone for Small Modular Reactor Deployment in August 2020.¹⁰⁹

112. The Agency held a virtual Research Coordination Meeting for the CRP on the Effective Use of Dose Projection Tools in the Preparedness and Response to Nuclear and Radiological Emergencies in June–July 2021.¹¹⁰

¹⁰⁸ This relates to operative paragraph 110 of resolution GC(64)/RES/9.

¹⁰⁹ This relates to operative paragraphs 62, 110 and 113 of resolution GC(64)/RES/9.

¹¹⁰ This relates to operative paragraph 110 of resolution GC(64)/RES/9.

L. Nuclear and Radiological Incident and Emergency Preparedness and Response



(Photo: K. Smith/IAEA)

113. The Agency conducted a ConvEx-2c exercise in December 2020 based on a full-scale national emergency exercise in Finland. The exercise involved 80 Member States and eight international organizations. Participating Member States reviewed emergency information exchanged and determined appropriate actions to be taken to protect the public. The Agency merged this exercise with the conduct of one of its four annual full response exercises to test its internal emergency response procedures. The Agency also conducted a ConvEx-2b exercise in March 2021 with the largest number of participants to date, which involved 29 Member States and 5 international organizations acting as ‘Assisting Players’ and 18 Member States acting as ‘Requesting States’.¹¹¹

114. The Agency conducted four ConvEx-2e exercises, with France in August 2020, Kazakhstan in November 2020, the Netherlands in December 2020, and the United Arab Emirates in March 2021. These exercises tested the Agency’s assessment and prognosis process and tools as well as the interactions with the host countries to review and publish Status Summary Reports. The Agency also conducted a ConvEx-2f exercise with public information officers and communication team leaders from the Agency and six international organizations in June 2021. The purpose of this exercise was to update the participants on the current standard operating procedures that will be used during the ConvEx-3 exercise in October 2021.¹¹²

115. The Agency also conducted three full response exercises, in December 2020, March 2021 and June 2021, to test its ability to fulfil response roles under the Incident and Emergency System (IES) and to train IES responders. Finland, the Netherlands and Belgium were the respective hosts of the accident scenarios used in the exercises, which allowed for a thorough testing of information exchange with participating Member States. It also allowed for the testing of the Agency’s assessment and prognosis capabilities.¹¹³

116. The Agency held a virtual tabletop exercise in August 2020 to test the Agency’s Response and Assistance Network (RANET) operational arrangements, the International Radiation Monitoring

¹¹¹ This relates to operative paragraph 112 of resolution GC(64)/RES/9.

¹¹² This relates to operative paragraph 112 of resolution GC(64)/RES/9.

¹¹³ This relates to operative paragraph 112 of resolution GC(64)/RES/9.

Information System (IRMIS) and the Agency's assessment and prognosis process and tools. The exercise used the Agency's Unified System for Information Exchange in Incidents and Emergencies (USIE), assessment and prognosis, and IRMIS Exercise websites.¹¹⁴

117. The Agency held three virtual Task Group Meetings for the preparation of the ConvEx-3 (2021) exercise, in September 2020, November 2020 and April 2021.¹¹⁵

118. The Agency held a virtual International Workshop on Developing a Protection Strategy for a Nuclear or Radiological Emergency in June 2021 to train the personnel of relevant response organizations on how to develop, justify and optimize a protection strategy for a nuclear or radiological emergency, in accordance with the requirements of *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7), as well as on the expected elements of the strategy.¹¹⁶

119. The Agency held two virtual Regional Workshops on Developing a Protection Strategy for a Nuclear or Radiological Emergency, in March 2021 for Europe and in April 2021 for Latin America. The Agency also held a virtual National Workshop on Developing a Protection Strategy for a Nuclear or Radiological Emergency for Algeria in November 2020 on drafting technical guidance in nuclear installation emergency preparedness and response.¹¹⁷

120. During the reporting period, the Agency held 14 webinars to raise awareness about its assessment and prognosis response role, process and tools. In addition, the Agency conducted three virtual training events for experts in Member States on the use of the Reactor Assessment Tool, which now includes a comprehensive methodology for conducting a prognosis for the response to an emergency at an NPP. Furthermore, the Agency conducted a virtual consultancy meeting in November 2020 to provide Member States with a live demonstration of a prototype version of a future database of accident scenarios and associated source terms, as well as to receive feedback on this prototype. The Agency conducted the Second Research Coordination Meeting for the CRP on the effective use of dose projection tools in the preparedness and response to nuclear and radiological emergencies in June 2021.¹¹⁸

121. The Agency organized 43 webinars on topics related to national emergency preparedness for, and response to, nuclear or radiological emergencies, based on IAEA guidance to support Member States in the implementation of GSR Part 7. One webinar (topic: hazard assessment) was delivered in five of the IAEA's official languages.¹¹⁹

122. The International Network for Education and Training in Emergency Preparedness and Response (iNET-EPR) held a series of virtual consultancy meetings between August 2020 and June 2021, including one for each of the three iNET-EPR Working Groups to develop a work plan for 2021; one for the Bureau of the Network; one for the design of the iNET-EPR web portal; and seven involving the 173 entities participating in the Network, to inform them of the Network's IT portal, launched in October 2020.¹²⁰

¹¹⁴ This relates to operative paragraphs 112 and 119 of resolution GC(64)/RES/9.

¹¹⁵ This relates to operative paragraph 112 of resolution GC(64)/RES/9.

¹¹⁶ This relates to operative paragraph 113 of resolution GC(64)/RES/9.

¹¹⁷ This relates to operative paragraphs 12 and 113 of resolution GC(64)/RES/9.

¹¹⁸ This relates to operative paragraph 114 of resolution GC(64)/RES/9.

¹¹⁹ This relates to operative paragraph 115 of resolution GC(64)/RES/9.

¹²⁰ This relates to operative paragraphs 8, 97, 100 and 115 of resolution GC(64)/RES/9.

123. The Agency's USIE website was used by contact points of States Parties to the Early Notification Convention and the Assistance Convention and by Member States in all workshops on arrangements for notification, reporting and assistance, as well as in all ConvEx exercises. Overall, the USIE Exercise site was used by the Agency and Member States for 80 exercises within the reporting period.¹²¹

124. The Agency held a two-part webinar series for International Nuclear and Radiological Event Scale (INES) National Officers in November–December 2020 and January–May 2021 to provide them with a thorough overview of the rating methodology as presented in the soon to be published 2019 edition of the INES User's Manual.¹²²

125. In response to regular requests from the Secretariat, seventeen Member States that were registered in RANET provided updates on their RANET national capabilities, and one new Member State registered.¹²³

126. In response to a request for assistance from Lebanon, the Agency arranged an assistance mission with the involvement of Member States registered in RANET in September 2020. The assistance mission, comprised of four experts from Denmark and France as well as four Agency staff members, measured radiation levels at several locations and assessed the impact of the explosion on the safety and security of radioactive material and sources in hospitals, scrapyards and the Beirut port. In addition, environmental samples collected by Lebanese authorities were analysed in laboratories in France and Switzerland as part of the Agency assistance. These laboratories confirmed that there were no elevated radiation levels detected in the samples.¹²⁴

127. The Agency held 11 webinars on international assistance in case of a nuclear or radiological safety or security related emergency: Why do we need RANET? from August 2020–April 2021 to outline the operational arrangements developed by the Agency to help Member States to request, provide and receive the assistance in case of a nuclear or radiological emergency, be it safety or security related.¹²⁵

128. The Agency held the Tenth Meeting of the Representatives of Competent Authorities Identified under the Early Notification Convention and the Assistance Convention virtually in June 2020. The meeting adopted nine conclusions, with 22 associated actions for the Secretariat and Member States. The Agency continued to work on the items that required Agency action.¹²⁶

129. The Agency held a webinar entitled 'Emergency Public Communication' in October 2020.¹²⁷

130. The Agency held a virtual workshop on IRMIS in September–October 2020 to improve the participants' awareness and understanding of IRMIS, including training on roles, features and information sharing arrangements for monitoring data. The Agency also held a virtual consultancy meeting to discuss the IRMIS public website in October 2020.¹²⁸

131. The Agency held a virtual event on EPRIMS self-assessment based on GSR Part 7 in August 2020, which served as a forum to present EPRIMS and its benefits; provided the participants with hands-on

¹²¹ This relates to operative paragraph 117 of resolution GC(64)/RES/9.

¹²² This relates to operative paragraph 117 of resolution GC(64)/RES/9.

¹²³ This relates to operative paragraphs 107 and 119 of resolution GC(64)/RES/9.

¹²⁴ This relates to operative paragraph 119 of resolution GC(64)/RES/9.

¹²⁵ This relates to operative paragraphs 107 and 119 of resolution GC(64)/RES/9.

¹²⁶ This relates to operative paragraph 120 of resolution GC(64)/RES/9.

¹²⁷ This relates to operative paragraph 121 of resolution GC(64)/RES/9.

¹²⁸ This relates to operative paragraph 122 of resolution GC(64)/RES/9.

training on EPRIMS self-assessment with regard to GSR Part 7; shared national experiences regarding EPRIMS; and discussed progress made, challenges faced and good practices.¹²⁹

132. The Agency held three virtual Workshops on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies, in July 2020, April 2021 and May 2021 to assist Member States in developing national operation arrangements that are consistent with the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm (2019)). In addition, the Agency held a virtual Workshop on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies in February 2021 for participants from the US Department of Energy, US Environmental Protection Agency, US Nuclear Regulatory Commission and US Department of State.¹³⁰

133. The Agency held a virtual Technical Meeting on Next Generation Reactors and EPR in September 2020, which focused on discussion of developments in the definition of EPR arrangements for SMRs.¹³¹

134. The Agency continued to conduct quarterly emergency drills between the IEC and the World Meteorological Organization (WMO) Regional Specialized Meteorological Centres to test the process for requesting and receiving WMO standard products during the response to a nuclear or radiological emergency. The Agency also continued to liaise with nine international organizations regarding the development of the exercise documents and preparing the conduct of the ConvEx-3 (2021) full scope international exercise. In addition, the Agency received a request from the United Nations Office on Drugs and Crime to become an IACRNE corresponding organization and coordinated the processing of this request.¹³²

¹²⁹ This relates to operative paragraph 123 of resolution GC(64)/RES/9.

¹³⁰ This relates to operative paragraph 124 of resolution GC(64)/RES/9.

¹³¹ This relates to operative paragraphs 62 and 113 of resolution GC(64)/RES/9.

¹³² This relates to operative paragraph 125 of resolution GC(64)/RES/9.

Annex 1

Table of Concordance

Table of Concordance between Resolution GC(64)/RES/9 Operative Paragraphs (OPs) Associated with Agency Action and Paragraphs of this Report

OP	Report Paragraph	OP	Report Paragraph	OP	Report Paragraph
1	3	46	40, 41, 42	88	94
2	3, 8, 9, 26	47	55	89	95
3	10, 11, 46, 65	49	11, 25, 56, 57, 58, 59	93	96, 97
4	5	51	60, 61, 63	94	80
5	12, 13, 51	52	59, 61, 62, 63	95	98
6	13, 14, 33, 76, 105	53	56, 60, 64, 65, 74, 96	96	<i>Activity delayed due to COVID-19 pandemic.</i>
7	11, 46	54	66	97	9, 99, 104, 122
8	15, 16, 122	55	67	98	7, 58, 100, 101, 102
9	17, 42	57	68	99	63, 103, 104
12	45, 69, 84, 90, 96, 100, 119	58	69, 70, 109	100	15, 16, 122
17	18, 21	60	69, 70	102	104
19	4, 6, 7, 18, 19, 20, 22, 23	61	71, 72	105	105, 106
20	24	62	73, 74, 111, 133	107	125, 127
22	25	63	75, 76	108	24, 107
25	9, 26, 27, 57	64	77	109	108
26	27	65	78	110	109, 110, 111, 112
28	9, 28	66	79	112	113, 114, 115, 116, 117
32	29, 30	67	80, 81	113	111, 118, 119, 133
33	31	69	82	114	120
36	32, 33	70	83	115	102, 121, 122
37	34	71	75	117	123, 124
38	32	72	84	119	116, 125, 126, 127
39	35, 36, 75, 100	73	85	120	128
40	37, 38	74	86	121	129
41	39	75	85, 87	122	130
42	40, 54	77	88	123	54, 131
43	40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52	81	89	124	132
44	40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52	82	81, 90, 91	125	55, 134
45	40, 41, 43, 53, 54	84	92, 93	127	5



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