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Item 14 of the Conference's provisional agenda
(GC(64)/1 and Add.1)

NUCLEAR AND RADIATION SAFETY

Report by the Director General



IAEA

Atoms for Peace and Development

Board of Governors General Conference

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Nuclear and Radiation Safety

Report by the Director General

Summary

Pursuant to resolution GC(63)/RES/7, a report covering the following subjects is submitted to the Board of Governors and the General Conference for their consideration:

- General;
- Conventions, regulatory frameworks and supporting non-legally binding instruments 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; and

- Endorse the revised Process for Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance (2019 Edition) as contained in Annex 1, Attachment 1.

Nuclear and Radiation Safety

Report by the Director General



A. General



1. This report has been produced for the 64th regular session (2020) of the General Conference in response to resolution GC(63)/RES/7¹, 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 2019 to 30 June 2020.

2. During the period of this report, a number of Agency activities were postponed or deferred due to national and international measures taken to limit the spread of the virus causing COVID-19. In many cases, solutions were developed to continue activities remotely. However, in a few cases, events planned for this period needed to be postponed until late 2020 and early 2021 and will be addressed in next year's report. This includes the Fourth Extraordinary Meeting of the Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) and the Organisational Meeting of the Seventh Review Meeting of the Joint Convention as well as the Eighth Review Meeting of the Convention on Nuclear Safety (CNS).

¹ A short table is included in Annex 2 to help with the identification of activities undertaken by the Agency against relevant operative paragraphs.

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.²

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.³

5. In March 2020, a report by the Director General containing the draft *Nuclear Safety Review 2020* was submitted to the Board of Governors. The final version of the *Nuclear Safety Review 2020*, prepared in the light of discussions at the Board of Governors, is provided as an information document at the 64th regular session of the Agency's General Conference. The *Nuclear Safety Review 2020* includes the global trends and the Agency's activities in 2019. It also presents priorities and related activities for 2020 and beyond, as identified by the Agency, for strengthening nuclear, radiation, transport and waste safety. These priorities are addressed in the Agency's Programme and Budget for 2020–2021, including outcomes, outputs, timelines and performance indicators.⁴

6. The ninth Treaty Event took place during the 63rd 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.⁵

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 17 Member States through written comments and advice on drafting national nuclear legislation. Assistance in gaining a better understanding of the relevant international legal instruments was also provided to Member States through awareness missions and workshops conducted in Member States; three regional workshops on nuclear law were conducted. The ninth session of the Nuclear Law Institute was held in Vienna in October 2019 and was attended by 65 participants from 56 Member States. The two-week course aimed at enhancing knowledge of nuclear law, as well as assisting in drafting, amending or reviewing national nuclear legislation.⁶

8. The Agency held an Interregional Training Course on Radiation Protection for Nuclear Embarking Countries in Lemont, United States of America, in November 2019 that provided participants with an international perspective on the development of comprehensive and effective radiation protection programmes in line with the Agency's safety standards. The Agency also held an Interregional Training Course on Promoting Effective Interaction Among Nuclear Industry, Regulatory Body and Stakeholders in countries introducing or expanding nuclear power programmes in Tokyo in

² This relates to operative paragraphs 1 and 2 of resolution GC(63)/RES/7.

³ This relates to operative paragraph 19 of resolution GC(63)/RES/7.

⁴ This relates to operative paragraphs 4 and 127 of resolution GC(63)/RES/7.

⁵ This relates to operative paragraph 19 of resolution GC(63)/RES/7.

⁶ This relates to operative paragraphs 19 and 98 of resolution GC(63)/RES/7.

September–October 2019. The purpose of the event was to enhance knowledge and understanding of the roles and responsibilities of the Nuclear Energy Programme Implementing Organization (NEPIO), owner, operator and regulatory body following the three phases of the IAEA Milestones Approach and to ensure effective interactions between these institutions and the stakeholders, including the public.⁷

9. The Agency held a Technical Meeting on Management, Leadership and Culture for Safety — Exploring the Application of the Core Concepts in Vienna in August 2019 to share experiences in applying IAEA Safety Standards Series No. GSR Part 2 *Leadership and Management for Safety* in all types of activities and facilities, and at different stages of their lifecycle.⁸

10. The Agency held two workshops on safety culture self-assessment for regulatory bodies, one in Mexico in July 2019 and one in Jordan in October 2019.⁹

11. During the 63rd regular session of the General Conference, the Agency held an International Nuclear Safety Group Forum on the safety–security interface. Experts provided insights on the interface and announced that they were working on a joint publication with the Advisory Group on Nuclear Security on this topic.¹⁰

12. The Agency held a Technical Meeting on Managing the Interface between Safety and Security for Nuclear Fuel Cycle Facilities in Vienna in October 2019 to provide Member States with a forum to discuss their national experience. The Agency also held a Technical Meeting on Member States Specific Approaches on the Regulatory Oversight of the Safety and Security Interface for Nuclear Installations in Vienna in December 2019.¹¹

13. The Sixth Plenary Meeting of the Global Nuclear Safety and Security Network (GNSSN) took place during the 63rd regular session of the Agency’s General Conference. The meeting focused on challenges related to the development of a sustainable radiation and nuclear safety infrastructure in line with the Agency’s safety standards and international good practices, and Member States learned of the Agency’s Consolidated Plan for Safety which is a tool to assist Member States in addressing these challenges.¹²

14. The Steering Committee of the Asian Nuclear Safety Network (ANSN) met in Singapore in November 2019 to review the progress of ANSN activities and review the draft ANSN Progress Report for 2018–2019. The Agency held the 14th and 15th meetings of the Steering Committee of the Forum of Nuclear Regulatory Bodies in Africa (FNRBA) in Vienna in August 2019 and February 2020, respectively. The objective of the meetings was to discuss recent achievements of the FNRBA and to follow up on the Strategic Action Plan, as well as to discuss the present status of the regulatory systems in FNRBA countries and to revise the FNRBA strategic plan with partner organizations.¹³

15. The Agency participated in two Ibero-American Forum of Radiological and Nuclear Regulatory Agencies (FORO) Steering Committee meetings, one in Santiago in June–July 2019 and another in Recife, Brazil, in December 2019. Six additional meetings were held under the FORO extrabudgetary programme. The topics covered included: safety culture in industrial radiography facilities; periodic

⁷ This relates to operative paragraph 3 of resolution GC(63)/RES/7.

⁸ This relates to operative paragraphs 5 and 98 of resolution GC(63)/RES/7.

⁹ This relates to operative paragraphs 5, 43 and 44 of resolution GC(63)/RES/7.

¹⁰ This relates to operative paragraph 6 of resolution GC(63)/RES/7.

¹¹ This relates to operative paragraph 6 of resolution GC(63)/RES/7.

¹² This relates to operative paragraphs 2, 8 and 100 of resolution GC(63)/RES/7.

¹³ This relates to operative paragraphs 8 and 100 of resolution GC(63)/RES/7.

verification and maintenance of reusable packaging for the transport of radioactive material not subject to design approval; harmonization of inspection practices for research reactors; licensing criteria and inspection requirements for centralized radiopharmacies; regulatory practices in the licensing of nuclear reactor operators; and maintenance of the FORO web-based information technology platform. The Agency participated in the European Nuclear Safety Regulators Group (ENSREG) meeting in Brussels in November 2019. The Agency also participated in two meetings of the ENSREG Working Group 1 (WG1) in Brussels in October 2019 and February 2020 to exchange information in the area of nuclear safety and specifically on the conduct of Integrated Regulatory Review Service (IRRS) missions. The Agency also received updates from ENSREG WG1 regarding topical peer reviews for input as necessary to the Agency's work on ageing management of nuclear power plants (NPPs).¹⁴

¹⁴ This relates to operative paragraph 9 of resolution GC(63)/RES/7.

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



16. The Agency continued to encourage Member States, especially those planning, constructing, commissioning or operating NPPs, or considering a nuclear power programme, to become Contracting Parties to the 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. The Agency held a CNS Educational Workshop for Regulatory Cooperation Forum Members in Vienna in July 2019 to provide assistance and educational information on the process for joining and meeting obligations, including participation in the Review Meetings. The Agency conducted a workshop with seven Member States to promote the CNS and the Joint Convention in Vienna in August 2019. The Agency held two Officers Meetings for the Eighth Review Meeting of the CNS in Vienna in September 2019 and February 2020. The purpose of these events was to finalize and endorse the templates to be used in preparation for and during the Eighth Review Meeting, including templates for the national presentations, country review reports, and coordinator's analysis, and to facilitate the review process cycle in order to prepare for the review meeting. In the reporting period, Benin and the Plurinational State of Bolivia became new Contracting Parties to the CNS, bringing the total number of Contracting Parties to 88.¹⁵

17. 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. The Agency held a Regional Workshop to promote the Joint Convention in Centurion, South Africa, in October 2019. In the reporting period, Benin, the Plurinational State of Bolivia and Eritrea became new Contracting Parties to the Joint Convention, bringing the total number of Contracting Parties to 83.¹⁶

18. The Agency continued to encourage Member States' adherence to the Early Notification Convention and the Assistance Convention. In the reporting period, Benin, Ecuador, and Eritrea adhered to the Early Notification Convention and to the Assistance Convention, bringing the total number of Parties to 125 and 120, respectively.¹⁷

19. As of 30 June 2020, 141 States had made a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources, of which 123, including four States in the reporting period, 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

¹⁵ This relates to operative paragraphs 17 and 19 of resolution GC(63)/RES/7.

¹⁶ This relates to operative paragraph 19 of resolution GC(63)/RES/7.

¹⁷ This relates to operative paragraph 19 of resolution GC(63)/RES/7.

radioactive sources. Thirty-nine 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, including fifteen States in the reporting period.¹⁸

20. The Agency held the International Conference on Research Reactors: Addressing Challenges and Opportunities to Ensure Effectiveness and Sustainability in Buenos Aires in November 2019. The purpose of this conference was to foster the exchange of information on operating and planned research reactors, and to provide a forum in which reactor operators, managers, users, regulators, designers and suppliers could share experiences and address common challenges and opportunities in order to ensure effectiveness and sustainability in all relevant areas, including nuclear safety, security, operation, utilization, infrastructure and management.¹⁹

21. The Agency held a Technical Meeting on the Safety of Research Reactors Under Project and Supply Agreements and a Review of their Safety Performance Indicators in Vienna in July 2019 for Member States to exchange information on the safety status of their research reactors and on their experience in applying the provisions of the Code of Conduct on the Safety of Research Reactors.²⁰

22. The Agency held the International Conference on Effective Nuclear and Radiation Regulatory Systems: Working Together to Enhance Cooperation in November 2019 in the Hague, Netherlands, which was attended by 238 participants from 75 Member States and five International Organizations. The Conference President's summary and conclusions provided comments on the status of operating and planned nuclear facilities, large accidents, control of radiation sources, radiation in medicine, safety and security culture, capacity building, and set out challenges and issues faced by regulatory bodies to be addressed in international cooperation, as well as issues for consideration by governments. These challenges and issues are to be reviewed at the next instance of the conference.²¹

23. The Agency held a Regional Workshop on Communication and Consultation, and Sharing Operational and Regulatory Experience on the Safety of Radiation Sources in Sofia in September 2019 to enhance the activities of regulatory bodies with respect to communication and consultation with relevant stakeholders and to promote the establishment of a system for sharing experience in radiation safety.²²

24. The Agency held the 15th Meeting of the Steering Committee of the Technical and Scientific Support Organization (TSO) Forum in Vienna in February 2020 to review the recent achievements of the TSO Initiative in assisting Member States in building their technical and scientific capacity. The Agency held a TSO Forum national meeting on developing and strengthening technical and scientific capacity in Centurion, South Africa, in November 2019 to support South Africa in developing its strategy related to the TSO Forum.²³

25. The Secretariat continued to assist Member States in their efforts to adhere to the relevant nuclear liability instruments. In June 2020, the Director General sent letters to selected Member States encouraging them to adhere to relevant nuclear liability treaties, notably to those States which already operate nuclear power plants, or are considering, or working towards, introducing nuclear power, but are currently not party to any nuclear liability convention. Letters were also sent to States which are

¹⁸ This relates to operative paragraphs 20 and 108 of resolution GC(63)/RES/7.

¹⁹ This relates to operative paragraphs 22 and 49 of resolution GC(63)/RES/7.

²⁰ This relates to operative paragraphs 22 and 49 of resolution GC(63)/RES/7.

²¹ This relates to operative paragraph 25 of resolution GC(63)/RES/7.

²² This relates to operative paragraph 26 of resolution GC(63)/RES/7.

²³ This relates to operative paragraph 28 of resolution GC(63)/RES/7.

party to either the Paris Convention on Third Party Liability in the Field of Nuclear Damage or the Vienna Convention on Civil Liability for Nuclear Damage, with a view to enhancing treaty relations among States party to different nuclear liability conventions, in line with the recommendations on how to achieve a global nuclear liability regime adopted in 2012 by the IAEA International Expert Group on Nuclear Liability (INLEX) under the IAEA Action Plan on Nuclear Safety (GOV/2011/59-GC(55)/14).²⁴

26. A Workshop on Civil Liability for Nuclear Damage for Newcomer Countries, hosted by the Government of the United Arab Emirates in Abu Dhabi in March 2020, was attended by 74 participants from 25 Member States. The Secretariat also conducted a mission to Saudi Arabia in September 2019. Both activities were conducted with the assistance of experts from INLEX.²⁵

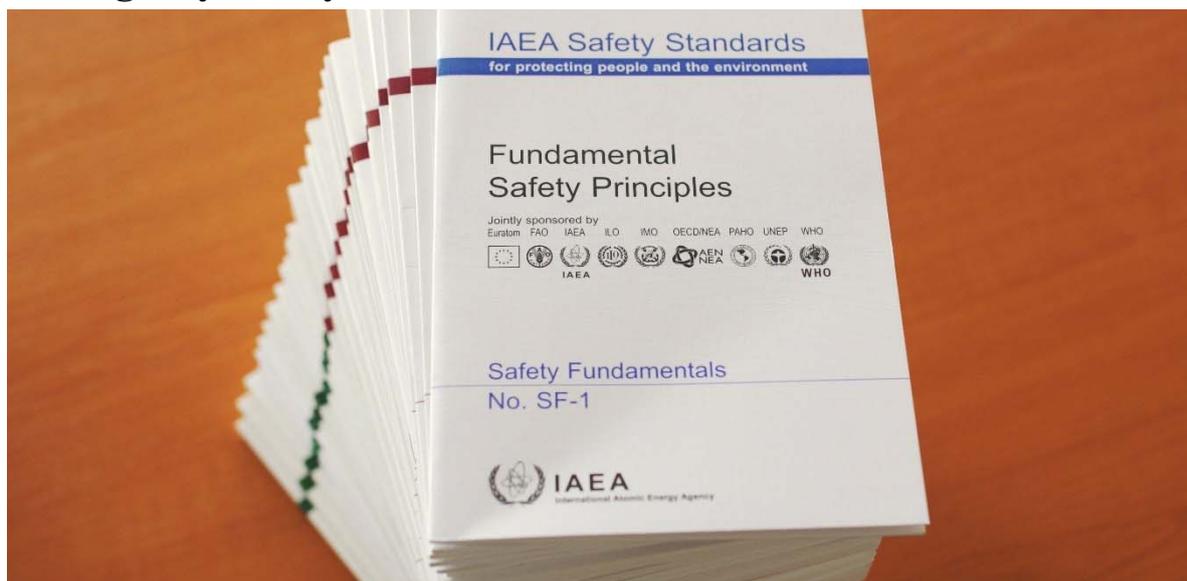
27. The 20th regular meeting of INLEX took place as a virtual meeting in June 2020 to hear about new developments and activities by the Secretariat in the field of civil liability for nuclear damage and to discuss future outreach activities.²⁶

²⁴ This relates to operative paragraph 32 of resolution GC(63)/RES/7. The INLEX recommendations are available at: <https://www.iaea.org/sites/default/files/17/11/actionplan-nuclear-liability.pdf>.

²⁵ This relates to operative paragraphs 32 and 33 of resolution GC(63)/RES/7.

²⁶ This relates to operative paragraph 33 of resolution GC(63)/RES/7.

C. Agency Safety Standards



28. The Commission on Safety Standards (CSS) met in Vienna in December 2019 and held a virtual meeting in June 2020. The Waste Safety Standards Committee met in Vienna in October 2019 and for an online review and approval process in June 2020. The Transport Safety Standards Committee met in Vienna in October–November 2019 and for an online review and approval process in June 2020. The Nuclear Safety Standards Committee and the Radiation Safety Standards Committee both met in Vienna in November 2019 and for an online review and approval process in June 2020. The Emergency Preparedness and Response Standards Committee met in Vienna in December 2019 and for an online review and approval process in June 2020. The Agency used electronic means to facilitate the remote participation of Member States' representatives in the meetings of the CSS and Safety Standards Committees.²⁷

29. The CSS endorsed the following draft Safety Guides for submission for publication: *Seismic Hazards in Site Evaluation for Nuclear Installations* (DS507); *Seismic Design for Nuclear Installations* (DS490); *Design of Nuclear Installations against External Events Excluding Earthquakes* (DS498); *Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material* (DS469); *Remediation Strategy and Process for Areas Affected by Past Activities or Events* (DS468); *Protection against Internal Hazards in the Design of Nuclear Power Plants* (DS494); *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material, 2018 Edition* (DS496); and *Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material, 2018 Edition* (DS506).²⁸

30. The Agency issued five Specific Safety Guides: *Deterministic Safety Analysis for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-2 (Rev. 1)); *Design of the Reactor Core for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-52); *Design of the Reactor Containment and Associated Systems for Nuclear Power Plants* (IAEA Safety Standards Series No. SSG-53); *Radiation Safety of X Ray Generators and Other Radiation Sources Used for Inspection Purposes and for Non-medical Human Imaging* (IAEA Safety Standards Series No. SSG-55); and *Design of the Reactor*

²⁷ This relates to operative paragraphs 36 and 38 of resolution GC(63)/RES/7.

²⁸ This relates to operative paragraphs 6, 36 and 54 of resolution GC(63)/RES/7.

Coolant System and Associated Systems for Nuclear Power Plants (IAEA Safety Standards Series No. SSG-56).²⁹

31. Delays in the publication process were discussed at the CSS meeting in December 2019. The issue was mentioned in the CSS report of the sixth term 2016–2019 provided to the Director General and in the letter from the CSS Chair to the Director General in February 2020.³⁰

32. The Interface Group, which gathers together chairs of the Safety Standards Committees and the Nuclear Security Guidance Committee, reviewed five 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

33. The Agency included all new safety standards and nuclear security guidance publications in the Nuclear Safety and Security Online User Interface (NSS-OUI) platform. The NSS-OUI platform was used to develop a strategic plan for the revision of Safety Guides on the safety of nuclear fuel cycle facilities.³²

34. 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). 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.³³

²⁹ This relates to operative paragraphs 39 and 40 of resolution GC(63)/RES/7.

³⁰ This relates to operative paragraph 37 of resolution GC(63)/RES/7.

³¹ This relates to operative paragraph 6 of resolution GC(63)/RES/7.

³² This relates to operative paragraph 40 of resolution GC(63)/RES/7.

³³ This relates to operative paragraph 41 of resolution GC(63)/RES/7.

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



35. The Agency conducted three IRRS missions, to Canada in September 2019, the United Kingdom in October 2019, and Latvia in October 2019. Four IRRS follow-up missions were conducted, in Croatia in October 2019, Indonesia in November–December 2019, Japan in January 2020, and Malta in March 2020. The Agency held a consultancy meeting for the analysis of the IRRS missions conducted from 2015 to 2019 in Vienna in February 2020 to revise the current structure and expected content of the analysis reports, as well as to initiate the analysis of missions conducted from 2015 to 2019. The Agency held a consultancy meeting on e-learning training for IRRS reviewers in Vienna in July 2019 to develop refresher e-learning training material for preparation of reviewers invited to IRRS missions. The Agency established a task force and held a series of internal meetings to review the lessons identified from the first IRRS–ARTEMIS (Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation) combined mission in Spain in order to improve the efficiency of future combined missions. Provisions were developed accordingly, including for minimizing duplication and improving coordination activities. The proposals for improvement were presented and discussed during a meeting with Member States from the ENSREG sub-group in February 2020 in Vienna.³⁴

36. The Agency conducted one Operational Safety Review Team (OSART) mission in France in September 2019, and three OSART missions at NPPs in the pre-operational phase prior to initial fuel load, in Belarus in August 2019, Slovakia in November–December 2019, and Pakistan in March 2020. Four OSART follow-up missions were conducted, in the United Kingdom in September 2019, France in September–October 2019, Finland in November 2019, and Spain in November 2019. The Agency held a consultancy meeting on the development of the OSART mission highlights for the years 2016–2018 in Vienna in September 2019. The purpose of the meeting was to develop a document providing an analysis of the results of the OSART missions conducted during those years for all areas of review. The Agency held a regional training course for first time OSART reviewers in Laguna Verde, Mexico,

³⁴ This relates to operative paragraphs 9, 43, 44, 45 and 46 of resolution GC(63)/RES/7.

in July–August 2019 to inform participants of the OSART process and the Agency’s General and Specific Safety Requirements and Safety Guides applicable to nuclear installations.³⁵

37. The Agency conducted one Integrated Safety Assessment of Research Reactors mission in Nigeria in August 2019. The Agency planned to conduct Site and External Event Design (SEED) missions in Thailand (review of the site evaluation report for a new research reactor) and in Uzbekistan (review of the site selection report for the new power plant) in the reporting period. Both missions have been moved to late 2020 for implementation.³⁶

38. The Agency conducted an Integrated Nuclear Infrastructure Review (INIR) Phase 1 follow-up mission in Ghana in October 2019, an INIR Phase 2 mission in Egypt in October 2019, and an INIR Phase 3 mission in Belarus in February 2020.³⁷

39. The Agency conducted two pre-Safety Aspects of Long Term Operation missions that reviewed existing plant programmes and long term operation plans at an early stage of their preparation, in South Africa in September 2019 and Romania in February 2020.³⁸

40. The Agency conducted two ARTEMIS missions, in Germany in September 2019 and in Latvia in December 2019. The Agency held a consultancy meeting on the development of training material for the experts participating in ARTEMIS review service missions in Vienna in February 2020.³⁹

41. The Agency conducted five Advisory Missions on Regulatory Infrastructure for Radiation Safety, in Saint Vincent and the Grenadines in July 2019; Barbados, Grenada and the Central African Republic in September 2019; and Lesotho in October 2019. As decided by the Agency’s Peer Review and Advisory Services Committee, the Agency held consultancy meetings to prepare the guidelines for a proposed new advisory service on the regulatory infrastructure for radiation safety and security of radioactive material in Vienna in July 2019 and February 2020. The mission in the Central African Republic served as a pilot for this new service. 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) Review missions. Four such missions were conducted, in the Seychelles in July 2019, Burkina Faso in July–August 2019, the Democratic Republic of the Congo in September 2019, and Sri Lanka in October–November 2019. The Agency held a meeting with PACT partners about imPACT missions in Vienna in December 2019 to finalize the review methodology document and develop a workplan for collaboration for the 2020–2021 period.⁴⁰

42. The Agency conducted two Occupational Radiation Protection Appraisal Service (ORPAS) missions, in Nicaragua in July 2019 and Sri Lanka in November–December 2019. One ORPAS follow-up mission was conducted in Ghana in August 2019.⁴¹

³⁵ This relates to operative paragraphs 43, 44 and 45 of resolution GC(63)/RES/7.

³⁶ This relates to operative paragraphs 43 and 44 of resolution GC(63)/RES/7.

³⁷ This relates to operative paragraphs 43 and 44 of resolution GC(63)/RES/7.

³⁸ This relates to operative paragraphs 43 and 44 of resolution GC(63)/RES/7.

³⁹ This relates to operative paragraphs 43, 44, 45 and 46 of resolution GC(63)/RES/7.

⁴⁰ This relates to operative paragraphs 43, 44 and 45 of resolution GC(63)/RES/7.

⁴¹ This relates to operative paragraphs 43, 44 and 66 of resolution GC(63)/RES/7.

43. The Agency conducted one Education and Training Appraisal mission to assess education and training in radiation safety in Indonesia in November 2019.⁴²

44. The Agency conducted an Emergency Preparedness Review (EPREV) follow-up mission in the United Arab Emirates in September 2019. The Agency held a Technical Meeting on “Twenty Years of EPREV: Building on Two Decades of Experience” in Vienna in October 2019 to review experiences, share good practices, and identify lessons learned from twenty years of missions. During this meeting, the Agency also discussed a proposal for arrangements for coordination between EPREV and Module 18 of the World Health Organization’s (WHO’s) Joint External Evaluations. The proposal has been submitted to the WHO for comments.⁴³

45. The Agency conducted the Technical Safety Review of Safety Requirements of draft Nigerian regulations on design and construction, commissioning, safety of operation, and decommissioning of nuclear power plants in February 2020.⁴⁴

46. The Agency conducted one Safety Culture Continuous Improvement Process mission in the Russian Federation in September 2019.⁴⁵

47. The Agency held a Technical Meeting on Peer Reviews and Advisory Services in the Areas of Nuclear Safety and Security in June 2020 to interact with Member States and continue to assess and strengthen the overall structure, effectiveness, and efficiency of nuclear safety and security peer review and advisory services.⁴⁶

⁴² This relates to operative paragraphs 43 and 44 of resolution GC(63)/RES/7.

⁴³ This relates to operative paragraphs 43, 44, 45 and 47 of resolution GC(63)/RES/7.

⁴⁴ This relates to operative paragraphs 43 and 44 of resolution GC(63)/RES/7.

⁴⁵ This relates to operative paragraphs 5, 43 and 44 of resolution GC(63)/RES/7.

⁴⁶ This relates to operative paragraph 45 of resolution GC(63)/RES/7.

E. Nuclear Installation Safety



48. The Agency held an Interregional Training Course on Licensing and Construction Preparation and Oversight for New and Expanding Nuclear Power Programmes in Ulsan, Republic of Korea, in July 2019 to develop the participants' understanding of the NPP licensing process, as well as key activities in preparing for and overseeing construction. The Agency also held an Interregional Group Scientific Visit on Licensing of NPPs in Moscow in September 2019. The purpose of the scientific visit was to provide Member States embarking on new nuclear power programmes with practical guidance on the licensing process for NPPs.⁴⁷

49. The Agency held a Regional Meeting on Periodic Safety Reviews for Research Reactors in Chicago, United States of America, in August 2019. The purpose of this event was to provide a forum to share experiences and develop the knowledge and skills needed to perform Periodic Safety Reviews for research reactors, as well as to provide guidance on the application of the Agency's safety standards in this area.⁴⁸

50. The Agency organized two meetings of the Regional Advisory Safety Committee for Research Reactors, for the Europe region in Warsaw in December 2019, and for the Asia and the Pacific region in Sydney, Australia, in October 2019. The meetings provided a forum for safety committees of research reactor operating organizations to exchange information and share knowledge and experiences on the safety issues of common interest.⁴⁹

51. The Agency conducted an expert mission on the development of national regulations for research reactors in Quezon City, Philippines, in December 2019 to provide an overview of the experience in other Member States, to assist the regulator in reviewing their regulations against the Agency's safety standards, to discuss the remaining actions necessary for the regulator to finalize their safety requirements, and to provide recommendations for further activities. The Agency conducted an expert mission to support Morocco in implementing the regulatory process concerning research reactors in Rabat in October 2019 to provide support and advice to the regulator in developing and finalizing

⁴⁷ This relates to operative paragraphs 3 and 12 of resolution GC(63)/RES/7.

⁴⁸ This relates to operative paragraphs 49 and 53 of resolution GC(63)/RES/7.

⁴⁹ This relates to operative paragraphs 8 and 49 of resolution GC(63)/RES/7.

regulatory guidance documents, reviewing and assessing nuclear safety submittals, and conducting regulatory inspections of research reactor.⁵⁰

52. The Agency held a Technical Meeting on Use of Periodic Safety Reviews in Support of Long Term Operation Safety Assessments in Vienna in February 2020 to share experience and lessons learned.⁵¹

53. The Agency held a Technical Meeting on Development of a Safety Report on Regulatory Oversight of Ageing Management and Preparedness for Safe Long Term Operation of Nuclear Power Plants in Vienna in October 2019. The purpose of the event was to provide an opportunity for technical comments on the draft of the Safety Report developed within the framework of Phase 4 of the International Generic Ageing Lessons Learned (IGALL) programme.⁵²

54. The Agency held a Technical Meeting on Ageing Management for Nuclear Fuel Cycle Facilities in Vienna in October–November 2019 to provide Member States with a forum to share information and exchange experiences on the development and implementation of systematic ageing management programmes for nuclear fuel cycle facilities.⁵³

55. The Agency held a Technical Meeting on Phase 4 of the International Generic Ageing Lessons Learned (IGALL) Programme in Vienna in December 2019 to enable Member States to provide comments on the work done during IGALL Phase 4 and to collect suggestions for Phase 5. The Agency held the second IGALL Phase 4 Steering Committee meeting in Vienna in December 2019 to discuss and approve the IGALL Phase 4 Working Group results and the IGALL Phase 5 work plan. The Agency held the first IGALL Phase 5 water cooled, water moderated power reactor Group meeting in Vienna in January 2020.⁵⁴

56. The Agency held a Technical Meeting on Current Practices in Performing Comprehensive Evaluations of Safety and Periodic Safety Reviews of Nuclear Power Plants in Vienna in February 2020 to share experiences of Member States with nuclear power programmes with newcomers and to discuss regulations and plans, as well as applicable Agency safety standards.⁵⁵

57. The Agency held a Workshop on Advanced Probabilistic Safety Assessment (PSA) Approaches and Applications in Petten, Netherlands, in September 2019, where PSA practitioners exchanged information on current challenges in the application of advanced approaches and discussed a path forward. The Agency also held a Workshop on Deterministic Safety Analysis and the Format and Content of the Safety Analysis Report in Hangzhou, China, in September 2019, where participants exchanged information and experience on these topics. In addition, the Agency held a Workshop on Current Practices in the Preparation, Modification and Review of Safety Analysis Reports for Nuclear Power Plants in Shanghai, China in September 2019. Participants exchanged information on current approaches, challenges and experiences in preparing, modifying and reviewing safety analysis reports for NPPs.⁵⁶

⁵⁰ This relates to operative paragraphs 3 and 49 of resolution GC(63)/RES/7.

⁵¹ This relates to operative paragraphs 51 and 53 of resolution GC(63)/RES/7.

⁵² This relates to operative paragraphs 51 and 52 of resolution GC(63)/RES/7.

⁵³ This relates to operative paragraph 52 of resolution GC(63)/RES/7.

⁵⁴ This relates to operative paragraph 52 of resolution GC(63)/RES/7.

⁵⁵ This relates to operative paragraph 53 of resolution GC(63)/RES/7.

⁵⁶ This relates to operative paragraph 53 of resolution GC(63)/RES/7.

58. The Agency held a Technical Meeting on Multi-Unit Probabilistic Safety Assessment (MUPSA) in Vienna in October 2019 to share information and obtain feedback on the methodology of MUPSA developed and tested within the MUPSA project. The Agency also held two meetings of the Phase 3 MUPSA project in Vienna in September and November 2019. The purpose of these meetings was to review the final draft of the Safety Report on MUPSA.⁵⁷

59. The Agency held a Regional Workshop on Practical Experiences with the Application of Digital Instrumentation and Control Systems and Equipment at Nuclear Power Plants in Bucharest in November 2019. The purpose of the event was to share practical aspects and experiences concerning the application of modern instrumentation and control systems and equipment at NPPs focusing on areas that are deemed to be challenging, including long term operation, the use of commercial instrumentation and control products and computer security issues. The Agency also held a Technical Meeting on Critical Challenges with Digital Instrumentation and Control Systems at Nuclear Power Plants in Budapest in October 2019. The purpose of the meeting was to provide an international forum for sharing experiences and lessons learned in coping with major challenges associated with nuclear power plant instrumentation and control systems, providing instrumentation and control based support for plant performance improvement, and to assist the Agency in planning future activities on these topics. In addition, the Agency held a Technical Meeting on Safety Aspects of Using Smart Digital Devices in Nuclear Systems in Vienna in February 2020 to address design criteria considered for application of smart devices in nuclear systems and provide comments to the draft Agency Safety Report publication.⁵⁸

60. The Agency held a Technical Meeting on Digital Instrumentation and Control Systems for Upgrades and New Research Reactors in Vienna in July 2019 to provide a forum for an exchange of information and experience related to the technical and managerial aspects of research reactor projects, both modernization projects and projects for the design and construction of new facilities, that use digital instrumentation and control systems.⁵⁹

61. The Agency held a Technical Meeting on Current Practices in the Transition from Emergency Operating Procedures to Severe Accident Management Guidelines in Vienna in August 2019. The purpose of the meeting was to present and discuss current practices in the transition from emergency operating procedures to severe accident management guidelines and to share experience from Agency OSART missions.⁶⁰

62. The Agency held a Workshop on Recent Improvements of Severe Accident Management Guidelines in Idaho Falls, United States of America, in August 2019 to share Member State accident management strategies, including recent developments to Severe Accident Management Guidelines as per the Agency's safety standards. The Agency also held a regional training course on Actions to Protect the Public in an Emergency due to Severe Conditions at a Light Water Reactor in Tulln, Austria, in November 2019 to train participants on establishing or improving an adequate capability for protecting the public in the event of a severe accident at a nuclear power plant or spent fuel pool based on guidance and tools developed by the Agency.⁶¹

63. The Incident Reporting System for Research Reactors and the Fuel Incident Notification and Analysis System (FINAS) continue to facilitate the exchange of information on nuclear incidents and accidents in Member States. In 2019, the number of reports submitted to FINAS, a self-reporting system

⁵⁷ This relates to operative paragraphs 53 and 55 of resolution GC(63)/RES/7.

⁵⁸ This relates to operative paragraph 57 of resolution GC(63)/RES/7.

⁵⁹ This relates to operative paragraphs 3 and 57 of resolution GC(63)/RES/7.

⁶⁰ This relates to operative paragraph 58 of resolution GC(63)/RES/7.

⁶¹ This relates to operative paragraphs 58 and 60 of resolution GC(63)/RES/7.

for sharing information on lessons learned from incidents at nuclear fuel cycle facilities, increased by eight, bringing the total number of reports to 291. More than 80% of the world's nuclear fuel facilities are currently part of the system. The Agency continued to operate and maintain the FINAS database jointly with the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA) and held a consultancy meeting in Vienna in November 2019 to discuss and prepare a publication on experience feedback from the database.⁶²

64. The Agency held two Technical Meetings of the International Reporting System for Operating Experience National Coordinators in Paris in October 2019 (organized in cooperation with the OECD/NEA) and Gyeongju, Republic of Korea, in November 2019 (organized in cooperation with the CANDU Owners Group). The purpose of these meetings was to exchange and discuss experience on recent events that have occurred at nuclear power plants and to discuss analytical activities performed within the framework of the International Reporting System for Operating Experience.⁶³

65. The Secretariat established a Coordination Group on Small and Medium Sized or Modular Reactors (SMRs) to enhance the coordination of the Agency's activities on SMRs. This Group also addressed transportable nuclear power plants (TNPPs). The Secretariat held an informal technical briefing in August 2019 to inform Member States on the Agency's activities related to TNPPs.⁶⁴

66. The Agency held a Technical Meeting on Safety Assessment and Analysis of Small Modular Reactors in Vienna in November 2019 where participants shared information on approaches, challenges and experiences related to safety assessment and safety analysis of such reactors planned for near term deployment. They also provided feedback for the development of a Safety Report on safety assessment and analysis of SMRs.⁶⁵

67. The Agency held a Regional Workshop on Design Safety Assessment and Site Evaluation of Small Modular Reactors in Vienna in October 2019 to foster the exchange of information on approaches, challenges and experience regarding site evaluation and safety assessment for Small Modular Reactors planned for near-term deployment, as well as to be a forum for discussion on how the Agency's safety standards can help address relevant challenges and issues identified by participants.⁶⁶

68. The Agency held a meeting of the SMR Regulators' Forum, as well as working group meetings (manufacturing, commissioning and operation; design and safety analysis; human factors; and licensing issues) in Vienna in November 2019 and a videoconference of the Forum's Steering Committee in May 2020. The purpose of these meetings was to provide an opportunity for members to receive reports from and provide guidance to the working groups, as well as provide an opportunity for members to discuss strategic and administrative issues.⁶⁷

69. The Agency held an Interregional Workshop on Regulatory Framework and Licensing Issues for SMR Deployment in Ottawa in November 2019 to provide guidance to Member States on safety related aspects, the needed regulatory framework, and licensing issues that may arise from the deployment of SMRs. The Agency also held a consultancy meeting in July 2019 in Ottawa to begin gathering information on practical experience gained by regulatory bodies in the past ten years on licensing

⁶² This relates to operative paragraph 61 of resolution GC(63)/RES/7.

⁶³ This relates to operative paragraph 61 of resolution GC(63)/RES/7.

⁶⁴ This relates to operative paragraphs 7 and 62 of resolution GC(63)/RES/7.

⁶⁵ This relates to operative paragraphs 53 and 62 of resolution GC(63)/RES/7.

⁶⁶ This relates to operative paragraphs 12, 53 and 62 of resolution GC(63)/RES/7.

⁶⁷ This relates to operative paragraph 62 of resolution GC(63)/RES/7.

modern design SMRs. A questionnaire on past challenges of licensing SMRs was distributed to relevant Member States in March 2020.⁶⁸

⁶⁸ This relates to operative paragraph 62 of resolution GC(63)/RES/7.

F. Radiation Safety and Environmental Protection



70. The Agency held a Regional Workshop on Lessons Learned Applying the IAEA General Safety Requirements Part 3 in Buenos Aires in October 2019 to identify and discuss key challenges in implementing the International Basic Safety Standards in Member States with the intention of using the lessons learned as input to the International Conference on Radiation Safety: Improving Radiation Protection in Practice which will be held in November 2020. The Agency also organized the Second Meeting of the Programme Committee for the International Conference on Radiation Safety: Improving Radiation Protection in Practice in June 2020 to develop the draft programme for the Conference. The meeting was held online.⁶⁹

71. The Agency held a Regional Workshop on Lessons Learned Applying the IAEA General Safety Requirements Part 3 in Arusha, United Republic of Tanzania, in November 2019. The Agency also held a Technical Meeting on the Implementation of the IAEA Safety Guides for the Protection of the Public and the Environment in Vienna in April 2019 for Member States to advise the Agency on provisions for implementing the related Agency safety standards.⁷⁰

72. The Agency continued to support the Information System on Occupational Exposure (ISOE), jointly operated by the IAEA and the OECD/NEA. The IAEA ISOE Technical Centre in collaboration with the Nuclear and Radiation Safety Centre, Ministry of Ecology and Environment of China, organized the 2019 ISOE International Symposium on Occupational Exposure Management at Nuclear Facilities in Beijing in October 2019. The Symposium was co-sponsored by the IAEA and the OECD/NEA, and was supported by the Chinese Society of Radiation Protection, the Radiation Monitoring Centre of the China General Nuclear Power Corporation and the Beijing Society of Radiation Safety.⁷¹

⁶⁹ This relates to operative paragraphs 39 and 63 of resolution GC(63)/RES/7.

⁷⁰ This relates to operative paragraphs 39 and 63 of resolution GC(63)/RES/7.

⁷¹ This relates to operative paragraph 64 of resolution GC(63)/RES/7.

73. The Agency invited Member States in September 2019 to nominate national contact persons for the Agency's Information System on Occupational Exposure in Medicine, Industry and Research – Industrial Radiography (ISEMIR-IR) and Interventional Cardiology (ISEMIR-IC). The Agency held a consultancy meeting on the development and promotion of ISEMIR in Vienna in January 2020.⁷²

74. The Agency held a Regional Training Course on Evaluation and Expression of Measurement Uncertainty for External Dosimetry in Kuwait City in October 2019 to train participants on the investigation of measurement results, including defining measurement uncertainties in external dosimetry applications based on the relevant Agency safety standards. The Agency held a Regional Workshop on Basic Internal Dosimetry in Madrid in December 2019 to train participants on the methodologies and techniques used for direct (in vivo) and indirect (in vitro) measurements of internal exposure. The event also covered topics on pre-analytical and post analytical protocols in a quality assurance programme, including detection methods, facility requirements, background control, calibration, the determination of uncertainties and the limit of detection and data analysis and recording.⁷³

75. The Agency held a Regional Workshop on Calibration, Measurements and Dose Assessment for Extremity and Lens of the Eye Dosimetry in Montevideo in September 2019. The Agency also held a Regional Training Course on Safety Assessment for Industrial and Medical Facilities and Activities in Mexico City in October 2019. In addition, the Agency held a Regional Workshop on the Workplace Monitoring at End-user Facilities and Activities in Santiago in December 2019.⁷⁴

76. The Ninth International Symposium on Naturally Occurring Radioactive Material (NORM) (organized by Radiation Control Programme Directors in cooperation with the Agency) took place in Denver, United States of America, in September 2019. The purpose of the event was to harmonize approaches and methods for NORM management and provide guidance for their application.⁷⁵

77. The Agency held an IAEA/International Labour Organization (ILO) Joint Regional Meeting on Occupational Radiation Protection in NORM Industries in Abuja in July 2019 to exchange experiences on radiation protection in NORM industries, to enhance awareness on the protection and safety requirements/guidance of the Agency's safety standards, to introduce the ILO's holistic approach for radiation protection in NORM industries, and to enhance capabilities for radiation protection in NORM industries in Member States.⁷⁶

78. The Agency conducted a National Training Course on Radiation Protection of Patients and Workers in Interventional Radiology in Accra in December 2019 to provide participants with skills and abilities to improve radiation protection and safety of patients and workers in medical uses of radiation in interventional and cardiac fluoroscopic procedures. The training course also provided Member States with an opportunity to exchange their experiences in the area of radiation protection and safety in fluoroscopic procedures and learn about good practices to safely imaging patients and maintaining the 'as low as reasonably achievable (ALARA)' principle for worker exposure. The Agency also conducted a National Training Course on Implementation of the Principle of Justification in Medical Exposure in Caracas in October 2019.⁷⁷

⁷² This relates to operative paragraph 65 of resolution GC(63)/RES/7.

⁷³ This relates to operative paragraphs 39 and 66 of resolution GC(63)/RES/7.

⁷⁴ This relates to operative paragraph 66 of resolution GC(63)/RES/7.

⁷⁵ This relates to operative paragraphs 67 and 94 of resolution GC(63)/RES/7.

⁷⁶ This relates to operative paragraph 67 of resolution GC(63)/RES/7.

⁷⁷ This relates to operative paragraph 69 of resolution GC(63)/RES/7.

79. The Agency held a Regional Training Course on Radiation Protection of Paediatric Patients in Dar es Salaam, United Republic of Tanzania, in September 2019 to train participants on the optimization and justification of radiation exposure of paediatric patients in order to improve radiation protection.⁷⁸

80. The Agency conducted a Regional Workshop on Radiation Safety in Non-Medical Human Imaging and Consumer Products in Shanghai, China, in October 2019 to review national programmes on radiation exposure of the public in non-medical human imaging and consumer products and commodities, to promote the application of the requirements of the IAEA General Safety Requirements Part 3, to provide guidance on radiation safety in non-medical imaging and consumer products, and to review the practical challenges in the application of the requirements and share experiences.⁷⁹

81. The Agency held a Technical Meeting on the Implications of the New Dose Conversion Factors for Radon in Vienna in October 2019 to discuss recent ICRP and UNSCEAR documents on exposure to radon and to consider if the recommendations from the two organizations should be incorporated into the Agency's safety standards. Participants concluded that no changes are needed to the International Basic Safety Standards and recommended that the Agency and the organizations co-sponsoring the International Basic Safety Standards develop a position paper on the use of dose conversion factors for radiation protection.⁸⁰

82. The Agency conducted a Regional Workshop on Development of Radon Maps and the Definition of Radon-Prone Areas in Vilnius in July 2019. The Agency also conducted a Regional Workshop on Good Laboratory Practice in the Measurement of Radon in Berlin in November 2019 to discuss and share experiences on quality assurance of radon measurements using passive track detectors and demonstrate the necessary technical capacity. In addition, the Agency also held a Regional Workshop on Establishment of Effective Regulatory Control for Exposure Due to Radon at Workplaces in Debrecen, Hungary, in January 2020 to share experiences and best practices regarding implementation of the requirements of the International Basic Safety Standard for protection against radon in workplaces for both existing and planned exposure situations.⁸¹

83. The Agency conducted a Regional Workshop on Risk Communication Strategies Regarding Radon in Dwellings and Workplaces in Tashkent in October 2019 to discuss modern public relations technologies and how they could be used for radon communication strategies, and to develop a detailed workplan for the period 2020–2021.⁸²

84. The Agency organized the third meeting of the Steering Group for the project on developing guidance on radioactivity in food and drinking water in non-emergency situations in Vienna in September 2019. The Group prioritized future activities, including the development of a technical report on the assessment of radiation doses from natural radionuclides in food.⁸³

85. The Agency held the fourth consultancy meeting on exemption and international trade in contaminated non-food commodities in Vienna in July 2019 to address the comments and suggestions

⁷⁸ This relates to operative paragraphs 12 and 70 of resolution GC(63)/RES/7.

⁷⁹ This relates to operative paragraph 71 of resolution GC(63)/RES/7.

⁸⁰ This relates to operative paragraphs 41 and 72 of resolution GC(63)/RES/7.

⁸¹ This relates to operative paragraph 72 of resolution GC(63)/RES/7.

⁸² This relates to operative paragraph 72 of resolution GC(63)/RES/7.

⁸³ This relates to operative paragraph 73 of resolution GC(63)/RES/7.

from the Technical Meeting on the Concepts of Exemption and Clearance held in March 2019 and to finalize the draft Safety Guide *Application of the Concept of Exemption* (DS499).⁸⁴

86. The most recent update of *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 made in 2015. The Agency communicates with the Secretariat of the Convention at the International Maritime Organization and updates the inventory when requested to do so.⁸⁵

⁸⁴ This relates to operative paragraph 74 of resolution GC(63)/RES/7.

⁸⁵ This relates to operative paragraph 77 of resolution GC(63)/RES/7.

G. Transport Safety



87. The Agency held an Interregional Training Course on Inspections for Transport of Radioactive Material in Athens in December 2019 to train participants on inspections for transport of radioactive material. The course included a review of national inspection procedures with the objective to harmonize and improve them, a drafting exercise for inspection plans, as well as a simulated inspection. The Agency also held two regional training courses on the Agency's *Regulations for the Safe Transport of Radioactive Material* (IAEA Safety Standards Series No. SSR-6 (Rev. 1), Transport Regulations) in July 2019 in Kigali in English and in Ouagadougou in French. The purpose of these training courses was to educate the participants on the requirements for the transport of radioactive material and on activities of the competent authority for ensuring compliance with these requirements.⁸⁶

88. In 2019, the Agency launched version 1 of a transport safety e-learning platform with modules covering all the requirements of the Transport Regulations. The training is intended for everyone involved in the transport of radioactive material, with specific modules for regulatory bodies.⁸⁷

⁸⁶ This relates to operative paragraph 82 of resolution GC(63)/RES/7.

⁸⁷ This relates to operative paragraphs 39 and 82 of resolution GC(63)/RES/7.

H. The Safety of Spent Fuel and Radioactive Waste Management



89. The Agency held the First Plenary Meeting of the International Harmonization and Safety Demonstration Project for Predisposal Radioactive Waste Management (ECLIPSE) in Vienna in September-October 2019. The purpose of the meeting was to initiate ECLIPSE, as well as to finalize its terms of reference and work plan.⁸⁸

90. The Agency held the Annual Meeting of the Forum on the Safety of Near Surface Disposal in Vienna in October 2019 to assist Member States in strengthening the safety of near surface disposal through development of guidance, methods and tools, and exchange of information on good practices. The Agency also held a Technical Meeting of the Working Groups of the International Project on Demonstration of the Operational and Long-Term Safety of Geological Disposal Facilities for Radioactive Waste (GEOSAF Part III) in Ottawa in October 2019 to advance the GEOSAF III reports using input from Canadian experts involved in the development of safety cases and experience gained on operational and post-closure safety issues related to a disposal site under construction.⁸⁹

91. The Agency held an Interregional Meeting on Updating Safety Cases for Radioactive Waste Management in Arusha, United Republic of Tanzania, in September 2019 to review updated safety cases for radioactive waste management facilities that deal with disused sealed radioactive sources.⁹⁰

92. The Agency held a Technical Meeting on Current Practices and Developments in Research Reactor Spent Fuel Dry Storage in Vienna in March 2020 to share best practices among research reactor fuel specialists, identify gaps in collective knowledge or dissemination of knowledge pertaining to

⁸⁸ This relates to operative paragraph 88 of resolution GC(63)/RES/7.

⁸⁹ This relates to operative paragraph 88 of resolution GC(63)/RES/7.

⁹⁰ This relates to operative paragraph 89 of resolution GC(63)/RES/7.

research reactor spent fuel dry storage, and to determine the need for a coordinated research project, publication, or other type of Agency assistance to support Member States.⁹¹

⁹¹ This relates to operative paragraph 89 of resolution GC(63)/RES/7.

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



93. The Agency held the Second Technical Meeting of the International Project on Completion of Decommissioning (COMDEC) in Vienna in September 2019 to collect, analyse, and exchange Member State experiences regarding the completion of decommissioning and the release of sites from regulatory control. The Agency also participated in the Western European Nuclear Regulators Association Workshop on Regulatory Aspects of Decommissioning in Berlin in November 2019.⁹²

94. The Agency held the Second Technical Meeting of the International Project on Decommissioning of Small Medical, Industrial and Research Facilities in Vienna in February 2020 to review Member State experience and to initiate the development of case studies for selected types of small facilities.⁹³

95. The Agency conducted a Regional Training Course on Radiological Characterization for Decommissioning of Small Medical, Industrial and Research Facilities in Belgrade in July 2019. The purpose of the event was to train young professionals on the radiological characterization of shutdown medical, industrial and research facilities, as part of preparations for their decommissioning.⁹⁴

96. The Agency held a Technical Meeting on the Decommissioning of Uranium Production Facilities and Other Facilities Containing Naturally Occurring Radioactive Materials in Vienna in November 2019 to collect information on the decommissioning of uranium production facilities and other facilities containing NORM.⁹⁵

97. The Agency held a Regional Meeting on Remediation of Uranium Prospection, Mining, Processing Sites, and Sites Affected by NORM in Buenos Aires in November 2019. The purpose of the meeting was to discuss the application of international safety standards and good practices for regulatory control of activities involving NORM, including assessment, management, and environmental remediation of radioactive residues and waste with a focus on those arising from uranium prospection, uranium mining and milling, and those associated with phosphate and oil/gas production.⁹⁶

⁹² This relates to operative paragraph 93 of resolution GC(63)/RES/7.

⁹³ This relates to operative paragraph 93 of resolution GC(63)/RES/7.

⁹⁴ This relates to operative paragraphs 12 and 93 of resolution GC(63)/RES/7.

⁹⁵ This relates to operative paragraph 94 of resolution GC(63)/RES/7.

⁹⁶ This relates to operative paragraph 94 of resolution GC(63)/RES/7.

98. Several Agency missions and consultancy meetings, as well as one training activity and one technical meeting were organized under the umbrella of the Coordination Group for Uranium Legacy Sites to support the technical coordination of the remediation initiatives in Central Asia. This support included, for example, the review of ongoing projects in the region and training of local experts on the use of field and laboratory equipment for monitoring activities.⁹⁷

99. The Agency held an Interregional Workshop on the Concept of a Social Licence in the Remediation of Uranium Legacy Sites in Porto, Portugal, in September 2019 to familiarize participants with the concept of social licence in achieving safe and sustainable remediation of uranium legacy sites, provide practical examples, and to enable participants to learn from the Portuguese experience regarding regulatory supervision of legacy sites.⁹⁸

⁹⁷ This relates to operative paragraph 95 of resolution GC(63)/RES/7.

⁹⁸ This relates to operative paragraphs 95 and 96 of resolution GC(63)/RES/7.

J. Capacity Building



100. The Agency held a Regional Workshop on Capacity Building for Research Reactors for Member States from the Africa region and the Asia and the Pacific region in Aix-en-Provence, France, and Mol, Belgium, in February 2020. The purpose of the workshop was to provide support for countries which are planning to build research reactors or are expanding their research reactor programmes, including safety assessment leading to significant refurbishment of current facilities.⁹⁹

101. Two Postgraduate Educational Courses in Radiation Protection and the Safety of Radiation Sources were conducted in English in Kajang, Malaysia, and in French in Rabat. There was also a side event concerning the Postgraduate Educational Courses during the 63rd regular session of the Agency's General Conference to celebrate 100 editions of the course, share experiences, and discuss the impact of the training to improve radiation protection and safety.¹⁰⁰

102. The Agency held an Interregional Training Course on Siting for Nuclear Power Plants and an Interregional Workshop on the Fundamentals of Regulatory Inspections of Nuclear Power Plants during Construction and Operation at the Zwentendorf NPP in Austria in July 2019 and September 2019, respectively. The Agency also held an interregional hands-on inspector training activity in Istanbul, Turkey in July–August 2019 at a research reactor facility.¹⁰¹

103. The Agency held three International Schools of Nuclear and Radiological Leadership for Safety in Pakistan in July 2019, Morocco in November 2019, and Japan in February 2020. There was also a side event concerning the School during the 63rd regular session of the Agency's General Conference entitled 'Leading for Safety: What I learned at the IAEA School of Nuclear and Radiological Leadership for Safety', where early and mid-career professionals who had taken part in the School discussed how the course helped them develop as safety leaders.¹⁰²

⁹⁹ This relates to operative paragraphs 3 and 97 of resolution GC(63)/RES/7.

¹⁰⁰ This relates to operative paragraphs 12 and 98 of resolution GC(63)/RES/7.

¹⁰¹ This relates to operative paragraphs 3 and 98 of resolution GC(63)/RES/7.

¹⁰² This relates to operative paragraph 98 of resolution GC(63)/RES/7.

104. The Agency held a consultancy meeting on the development of a curriculum in line with the Agency's safety standards and international best practices for a master's degree on nuclear safety and security in Vienna in November 2019.¹⁰³

105. The Agency held a Regional Workshop on the Development of Nuclear Safety Knowledge Management Programmes for the Regulatory Body in Vienna in November 2019. The purpose of the workshop was to strengthen the skills and competencies of participants in developing nuclear safety knowledge management programmes at the national and organizational levels.¹⁰⁴

106. The Agency conducted a Knowledge Management Assist Visit in Armenia in November 2019 as part of preparations for plant life extension.¹⁰⁵

107. The Agency held a consultancy meeting on the assessment of the GNSSN programme and activities in Vienna in October 2019. The purpose of the meeting was to perform an assessment of the GNSSN programme and activities and to revise the GNSSN Steering Committee terms of reference and governance.¹⁰⁶

108. The Agency's Steering Committee on Education and Training in Radiation, Transport and Waste Safety met in Vienna in December 2019 to advise the Secretariat on the implementation of the Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020. The Steering Committee issued recommendations to revise and update the Strategic Approach 2011–2020, and to develop guidance on the role and duties of radiation protection officers and qualified experts.¹⁰⁷

109. The Steering Committee on Regulatory Capacity Building and Knowledge Management held its annual meeting in Vienna in December 2019. The Committee discussed the implementation of the Strategic Approach to Education and Training in Nuclear Safety 2013–2020. It also addressed other matters relevant to education and training, such as knowledge management, the methodology for Systematic Assessment of Regulatory Competence Needs, and a possible set of indicators for the implementation of the Strategic Approach 2013–2020.¹⁰⁸

¹⁰³ This relates to operative paragraph 98 of resolution GC(63)/RES/7.

¹⁰⁴ This relates to operative paragraph 99 of resolution GC(63)/RES/7.

¹⁰⁵ This relates to operative paragraphs 43, 44 and 99 of resolution GC(63)/RES/7.

¹⁰⁶ This relates to operative paragraph 100 of resolution GC(63)/RES/7.

¹⁰⁷ This relates to operative paragraphs 99 and 102 of resolution GC(63)/RES/7.

¹⁰⁸ This relates to operative paragraphs 99 and 102 of resolution GC(63)/RES/7.

K. Safe Management of Radioactive Sources



110. The Agency conducted an Interregional Training Course on Advanced Methodologies for Orphan Source Search and Recovery in Kuala Lumpur in July 2019.¹⁰⁹

111. In response to regular requests from the Secretariat, four Member States that were registered in the Agency's Response and Assistance Network (RANET) provided updates to their RANET national capabilities and one new Member State registered. Participants in the two workshops on arrangements for notification, reporting, and assistance, as well as in the ConvEx-2b and RANET Joint Assistance Team (JAT) exercises had the opportunity to practice the operational arrangements for requesting and providing international assistance through the Agency. Furthermore, the Agency's assistance arrangements and all emergency communication arrangements were updated in *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2019).¹¹⁰

112. In the Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance, held in Vienna in May 2019, participants reviewed the formalized process for the sharing of information as to States' implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance developed and endorsed by the Board of Governors and General Conference in 2006, to include the Guidance on the Management of Disused Radioactive Sources issued in 2018 and the organization of interregional meetings. The Report of the Chairman is in Attachment 2 of Annex 1 and the revised version of the 'formalized process' is enclosed as Attachment 1 to Annex 1 to this document for endorsement by the IAEA's policy making organs.¹¹¹

113. The Agency held a consultancy meeting on the validation of an online 'toolkit' and e-learning tool on radiation safety in scrap metal in Vienna in January 2020. The Agency also held a consultancy meeting to produce the final draft TECDOC entitled *Strategy for Prevention, Detection, and Response to the Inadvertent Presence of Radioactive Material in the Scrap Metal* in Vienna in June 2020. The purpose of the meeting was to revise the existing draft document, as well as incorporate the latest

¹⁰⁹ This relates to operative paragraph 105 of resolution GC(63)/RES/7.

¹¹⁰ This relates to operative paragraph 107 of resolution GC(63)/RES/7.

¹¹¹ This relates to operative paragraph 108 of resolution GC(63)/RES/7.

developments in Agency publications and experience of related activities in the Latin America and the Caribbean region and Africa region.¹¹²

114. The Agency conducted a Regional Workshop on Radiation Protection in Advanced Radiotherapy Technologies in Santiago in September 2019 to foster the exchange of experiences and good practices in radiation protection and optimization strategies in advanced radiotherapy technologies.¹¹³

¹¹² This relates to operative paragraph 109 of resolution GC(63)/RES/7.

¹¹³ This relates to operative paragraphs 69 and 110 of resolution GC(63)/RES/7.

L. Nuclear and Radiological Incident and Emergency Preparedness and Response



115. The Agency conducted a ConvEx-2d exercise in October 2019 based on a full-scale national emergency exercise in Sweden. The exercise involved 42 Member States and three international organizations. Participating Member States reviewed the 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 large-scale full response exercises to test its internal emergency response procedures. The Agency also conducted a full response exercise in December 2019 to test its ability to fulfil response roles under the Incident and Emergency System (IES) and to train IES responders. One Member State was the host of the accident scenario used in the exercise, 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.¹¹⁴

116. The Agency held one meeting in Abu Dhabi in November 2019 and one virtual meeting in June 2020 on ConvEx-3, scheduled to take place in Abu Dhabi in 2021. The purpose of the meetings was to review and discuss the progress made in preparing for the exercise; discuss, consolidate and agree on common exercise objectives; agree on key features of the exercise scenario; discuss and solve any open issues; and update the exercise work plan.¹¹⁵

117. The Agency held an International Workshop on Emergency Consequence Management in Vienna in July 2019 to present best practices on national arrangements for monitoring, sampling, and assessment during a nuclear or radiological emergency. The Agency also held a Regional Meeting on the Development of Basic Regulations on Emergency Planning in Manila in October 2019 to review and discuss the development of basic regulations on emergency planning and share related experience. In addition, the Agency also held two Regional Workshops on Developing a Protection Strategy for a Nuclear or Radiological Emergency in Vienna in August 2019 and Miharu, Japan, in November 2019.

¹¹⁴ This relates to operative paragraph 112 of resolution GC(63)/RES/7.

¹¹⁵ This relates to operative paragraph 112 of resolution GC(63)/RES/7.

The purpose of the workshops was to train personnel of relevant response organizations on how to develop, justify, and optimize a protection strategy for a nuclear or radiological emergency.¹¹⁶

118. The Agency held a Regional Workshop on the Principles for Emergency Preparedness and Response for SMRs in Vienna in December 2019. The purpose of the event was to provide a platform for European Member States to discuss the preparedness and response arrangements for an emergency at an SMR.¹¹⁷

119. The Agency held two consultancy meetings in Vienna in 2019 to discuss the implementation of the Agency's assessment and prognosis process in case of a nuclear or radiological emergency and to discuss an Agency assessment and prognosis methodology in case of an emergency at a spent fuel pool. The Agency also held three virtual consultancy meetings to draft specifications for the development of an Agency database of source terms, to develop prognosis components of the Agency's Reactor Assessment Tool for specific types of nuclear power reactors, and to review specifications for an Agency emergency classification tool. In addition, the Agency also conducted three webinars on the application of the assessment and prognosis process.¹¹⁸

120. The Agency held two Schools of Radiation Emergency Management in Rio de Janeiro, Brazil, in August–September 2019 for the Latin America and the Caribbean region, and in Taiyuan, China, in November 2019 for the Asia and the Pacific region. The purpose of the Schools was to train participants on how to develop and manage sustainable EPR programmes, based on Agency safety standards, technical guidelines, tools and training material.¹¹⁹

121. The Agency held a Regional Workshop on Capacity Building Centres on EPR in Vienna in July 2019 to discuss a revised concept for Capacity Building Centres for Emergency Preparedness and Response (CBCs-EPR) and to create a CBC-EPR network to strengthen synergies in the delivery of capacity building activities.¹²⁰

122. The Agency further enhanced the Unified System for Information Exchange in Incidents and Emergencies (USIE) website by continuing to improve features for information management. The Agency implemented the option of indicating preferred communication channels in the USIE address book. The automatic interface between USIE and the European Commission's WebECURIE was made operational at the end of 2019. USIE 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 Member States for approximately 100 of their exercises within 12 months. In addition, the Agency conducted four webinars on the application of various features of USIE.¹²¹

123. In response to a request from the Government of Peru, in December 2019 an Agency Assistance Mission involving RANET capabilities provided assistance in relation to a medical overexposure of a patient during a medical procedure.¹²²

¹¹⁶ This relates to operative paragraphs 113 and 115 of resolution GC(63)/RES/7.

¹¹⁷ This relates to operative paragraphs 62 and 113 of resolution GC(63)/RES/7.

¹¹⁸ This relates to operative paragraph 114 of resolution GC(63)/RES/7.

¹¹⁹ This relates to operative paragraphs 98 and 115 of resolution GC(63)/RES/7.

¹²⁰ This relates to operative paragraphs 97 and 115 of resolution GC(63)/RES/7.

¹²¹ This relates to operative paragraph 117 of resolution GC(63)/RES/7.

¹²² This relates to operative paragraph 119 of resolution GC(63)/RES/7.

124. The Agency held a RANET JAT exercise in Las Vegas, United States of America, in September 2019, where six Member States registered in RANET participated. As part of the exercise, participants managed and resolved administrative, logistical, technical, as well as safety and security of personnel matters that might arise during an Assistance Mission. The Agency also held a consultancy meeting to develop guidelines on the preparation and evaluation of RANET JAT exercises in Vienna in October 2019. The purpose of the meeting was to identify good practices in the preparation and evaluation of the RANET JAT and other exercises and to prepare draft guidelines for RANET JAT exercises.¹²³

125. As part of the ConvEx-2d exercise in October 2019, the Agency coordinated a RANET JAT mission to Sweden. Four Member States registered in RANET participated. The Agency tested, for the first time, the deployment of a Field Assistance Team that was integrated into the JAT. As part of the exercise, participants managed and resolved administrative, logistical, technical, as well as safety and security of personnel matters that might arise during an Assistance Mission.¹²⁴

126. The Agency held the Tenth Meeting of the Representatives of Competent Authorities Identified under the Early Notification Convention and the Assistance Convention in June 2020. For the first time in its 20-year history, this gathering of representatives of Competent Authorities took place virtually. The purpose of the meeting was to share information on national EPR arrangements and challenges; discuss the implementation of the Early Notification Convention, Assistance Convention, the safety requirements dealing with notification and information exchange, the provision of international assistance, and communication with the public contained in the Agency's safety standards; familiarize participants with the latest EPR documents and tools; discuss arrangements and challenges involved in the Agency's assessment and prognosis process; exchange information on international EPR cooperation; and learn from past emergencies and exercises.¹²⁵

127. The Agency held a Regional Workshop on Communication with the Public in a Nuclear or Radiological Emergency in Vienna in November 2019 to review the international guidance for communicating with the public throughout a nuclear or radiological emergency, discuss regional capabilities, and identify regional needs and expertise. The Agency also held a Workshop on Communication with the Public in a Nuclear or Radiological Emergency in Miharu, Japan, in November 2019 to provide information and practical guidance to officers acting within a command and control system on public communications during a nuclear or radiological emergency.¹²⁶

128. The Agency held a regional European and Central Asian Safety Network experts meeting in Athens in September 2019 on the importance of information exchange with neighbouring countries in the event of a nuclear or radiological emergency. The purpose of the meeting was to share experience on the importance of information exchange with neighbouring countries in the event of a nuclear or radiological emergency and to assist Member States in developing national operational arrangements consistent with the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2019).¹²⁷

129. The Agency held a Workshop on the Implementation of the International Radiation Monitoring Information System (IRMIS) in Vienna in October 2019 to improve participants' awareness and

¹²³ This relates to operative paragraph 119 of resolution GC(63)/RES/7.

¹²⁴ This relates to operative paragraphs 112 and 119 of resolution GC(63)/RES/7.

¹²⁵ This relates to operative paragraph 120 of resolution GC(63)/RES/7.

¹²⁶ This relates to operative paragraph 121 of resolution GC(63)/RES/7.

¹²⁷ This relates to operative paragraphs 8 and 121 of resolution GC(63)/RES/7.

understanding of IRMIS, including teaching roles, features, and information sharing arrangements for monitoring data. The Agency also conducted four webinars in on the application of IRMIS.¹²⁸

130. The Agency conducted four webinars on the use of the Emergency Preparedness and Response Information Management System (EPRIMS) to encourage Member States to provide information to EPRIMS.¹²⁹

131. The Agency held two Workshops on Arrangements for Notification, Reporting and Assistance in Nuclear or Radiological Incidents and Emergencies in Vienna in July 2019 and March 2020. The purpose of these workshops was to assist Member States in developing national operational arrangements that are consistent with the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2019).¹³⁰

132. The Agency published the 2019 *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2019) and the *Operations Manual for IAEA Assessment and Prognosis during a Nuclear or Radiological Emergency* (EPR-A&P 2019) in February 2020 in response to feedback on the content of the operational manuals and the latest developments of the Agency web systems and tools used in the implementation of the arrangements.¹³¹

133. The Agency conducted the second ConvEx-2f exercise with public information officers and communication team leaders from the CTBTO, FAO, ICAO, IAEA, IMO, OECD/NEA and WHO in December 2019. The purpose of the exercise, as specified in section 3.5 of the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2019) and the *Joint Radiation Emergency Management Plan of the International Organizations* (EPR-JPLAN 2017), was to practice coordinating public messaging during a nuclear or radiological emergency.¹³²

¹²⁸ This relates to operative paragraph 122 of resolution GC(63)/RES/7.

¹²⁹ This relates to operative paragraph 123 of resolution GC(63)/RES/7.

¹³⁰ This relates to operative paragraph 124 of resolution GC(63)/RES/7.

¹³¹ This relates to operative paragraph 124 of resolution GC(63)/RES/7.

¹³² This relates to operative paragraphs 112 and 125 of resolution GC(63)/RES/7.

Annex 1

Code of Conduct on the Safety and Security of Radioactive Sources

Revision of the Formalized Process

1. The Code of Conduct on the Safety and Security of Radioactive Sources (the Code of Conduct) was developed through, inter alia, a series of meetings with technical and legal experts. In September 2003, the Code of Conduct was approved by the Board of Governors and, in resolution GC(47)/RES/7.B, the General Conference welcomed the Board's approval of the Code of Conduct and endorsed the objectives and principles set out in it.
2. In 2004, the Guidance on the Import and Export of Radioactive Sources was developed following a similar process. It was then approved by the Board of Governors and endorsed by the General Conference in resolution GC(48)/RES/10.D. The text of the Guidance was issued as guidance supplementary to the Code of Conduct. A revision of the Guidance on the Import and Export of Radioactive Sources was approved by the Board of Governors and endorsed by the General Conference, in September 2011, in resolution GC(55)/RES/9.
3. Following a request of the General Conference in resolution GC(49)/RES/9, a Process for the Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance on the Import and Export of Radioactive Sources ('formalized process') was developed and subsequently endorsed by the Board of Governors in 2006, as set out in Annex 2 to document GOV/2006/40-GC(50)/3. In its resolution GC(50)/RES/10, the General Conference also recognized the value of information exchange on national approaches to controlling radioactive sources and took note of the Board's endorsement of the process.
4. The objective of the formalized process was to promote a wide exchange of information and lessons learned on national implementation of the Code of Conduct and its supplementary Guidance and to facilitate a periodic evaluation of progress made by States towards implementing the provisions of the Code of Conduct and its supplementary Guidance. In particular, it governs the preparation and performance of the meetings organized by the Agency to discuss the implementation of the Code and its supplementary Guidance on the Import and Export of Radioactive Sources.
5. In 2016, the Guidance on the Management of Disused Radioactive Sources was developed following a similar process as for the Code of Conduct and the Guidance on the Import and Export of Radioactive Sources. It was then approved by the Board of Governors and endorsed by the General Conference in resolution GC(61)/RES/8. The text of the Guidance was issued as guidance supplementary to the Code of Conduct in 2018.
6. In resolution GC(62)/RES/6, the General Conference requested the Secretariat "to continue to foster information exchange on implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Guidance on the Import and Export of Radioactive Sources and its Guidance on the Management of Disused Radioactive Sources".
7. The Secretariat revised the formalized process to include the supplementary Guidance on the Management of Disused Radioactive Sources and the interregional meetings.
8. An Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance was held in Vienna in May 2019 and was attended by 191 experts from 102

Member States and observers from three international organizations. The participants reviewed the revised formalized process and agreed to the proposed changes. The Report of the Chairman is in Attachment 2 to this Annex. It records that "As called for in the current version of the 'formalized process', it is suggested that the Secretariat submits this report, including the attached revised version of the 'formalized process', to the IAEA's policy-making organs for their information." The revised formalized process is enclosed as Attachment 1.

Annex 1

Attachment 1

Process for the Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance (2019 Edition)

1. The objective of the process is to promote a wide exchange of information on national implementation of the Code of Conduct on the Safety and Security of Radioactive Sources (the 'Code') and the supplementary Guidance on the Import and Export of Radioactive Sources and Guidance on the Management of Disused Radioactive Sources ('Guidance'). The information exchange would not replace the possible review of the Guidance on the Import and Export of Radioactive Sources and the Guidance on the Management of Disused Radioactive Sources foreshadowed in paragraphs 20 and 29, respectively, or the informal information exchange and consultation processes recommended in paragraphs 21 and 27, respectively, of these documents. Noting the non-binding nature of the Code and Guidance, such an exchange of information would:

- a) Assist States in their national implementation of the Code and Guidance, by enabling them to learn from the experiences of others and to evaluate their own progress on implementation of the Code and Guidance;
- b) Increase the knowledge of States concerning the capability of other States to manage Category 1 and 2 radioactive sources in a manner consistent with the provisions of the Code in order to facilitate the application of the import and export provisions of the Code and of the Guidance on the Import and Export of Radioactive Sources;
- c) Increase the awareness of the Secretariat about the implementation of the Code and Guidance to assist them in the planning of their regular and technical cooperation programmes; and
- d) Invite and encourage more States to implement (and politically commit to) the Code and Guidance.

2. The information exchange process should be voluntary in nature. It should encourage the broadest possible participation by all Member and non-Member States, whether or not they have made a political commitment to the Code and/or Guidance. Intergovernmental organizations may also be invited to attend as observers.

3. There should be two elements to such an information exchange:

- a) A dedicated international meeting, to be organized by the IAEA Secretariat and held every three years (ideally, in the year not currently used for the review processes under the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management). Such a meeting would provide a forum for a wide exchange of information on national implementation of the Code and Guidance. Each meeting should have a duration of five days. States participating in the meeting should be urged to submit national papers and presentations, but such submission should not be mandatory.
- b) Regional and interregional meetings to share information on experiences on implementing the Code and Guidance should be held as appropriate. Such meetings would be held on an as-needed basis and preferably prior to the international meeting, and reports from such meetings would be presented to the opening plenary of that international meeting. In order to reduce costs,

these meetings may be held in conjunction with other relevant meetings. Their organization would be left to the participants in each meeting. The IAEA Secretariat may wish to attend these meetings, if invited. The Chairs of these meetings may also wish to provide meeting summaries to the Secretariat for transmission to other States prior to the international meeting.

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

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

5. The papers may briefly describe the current circumstances in the country with regard to the aforementioned topics. They may also comment on achievements and success stories, on difficulties encountered and lessons learned and/or on areas where improvements were still needed, and set out the future strategies for addressing these matters. Papers should be brief, no more than ten pages in length. They should contain a one-page executive summary.

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

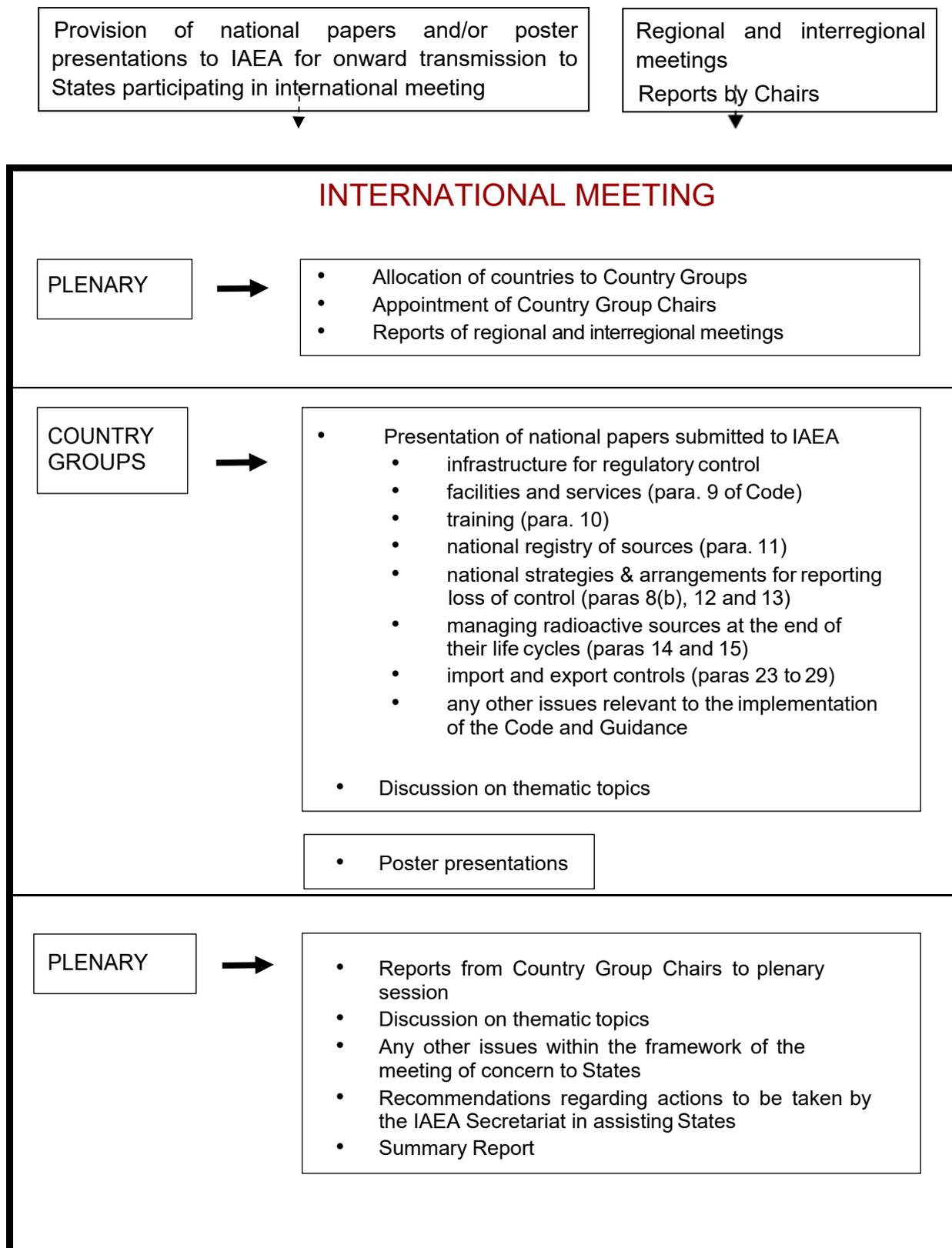
7. The opening plenary would be followed by meetings of Country Groups. Allocation of States to Country Groups would be done initially alphabetically, with discretion for the Secretariat to adjust that allocation to ensure that there is an approximately even spread of experience across the Groups. At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

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

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

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

Figure 1. Pictorial overview of process



Annex 1

Attachment 2

Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Supplementary Guidance

Vienna, Austria, 27–31 May 2019

Report of the Chairman

1. An Open-ended Meeting of Technical and Legal Experts to Share Information on States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources (the Code) and its Supplementary Guidance (Guidance on the Import and Export of Radioactive Sources, and Guidance on the Management of Disused Radioactive Sources) was held from 27 to 31 May 2019 at the IAEA Headquarters in Vienna under the chairmanship of Mr F. Feron (France).
2. The meeting was attended by 191 experts from 102 Member States of the IAEA (Afghanistan, Albania, Algeria, Argentina, Armenia, Australia, Azerbaijan, Bahrain, Bangladesh, Benin, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Comoros, Congo, Cuba, Cyprus, Côte d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Egypt, Estonia, Eswatini, Ethiopia, Finland, France, Gabon, Georgia, Germany, Ghana, Greece, Guatemala, Hungary, India, Indonesia, Islamic Republic of Iran, Iraq, Ireland, Jamaica, Jordan, Kenya, Republic of Korea, Lao People's Democratic Republic, Lebanon, Lesotho, Lithuania, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Morocco, Mozambique, Nepal, Niger, Nigeria, Oman, Paraguay, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russian Federation, Rwanda, Senegal, Serbia, Seychelles, Singapore, South Africa, Spain, Sri Lanka, Sudan, Switzerland, Syrian Arab Republic, Tajikistan, Thailand, Turkey, Uganda, Ukraine, United Kingdom, United Republic of Tanzania, United States of America, Uruguay, Uzbekistan, Viet Nam, Yemen, Zambia, Zimbabwe).
3. The meeting was also attended by observers from the International Source Suppliers and Producers Association (ISSPA), the International Irradiation Association (IIA) and the Nuclear Threat Initiative (NTI).
4. The Scientific Secretaries for the meeting were Ms O. Makarovska (Division of Radiation, Transport and Waste Safety (NSRW)) and Ms A. Rodriguez y Baena (Division of Nuclear Security (NSNS)).
5. The objective of the meeting was to promote a wide exchange of information on national implementation of the Code and Guidance. In line with the non-legally binding nature of the Code and the Guidance, participation in the meeting and submission of papers and presentations were on a voluntary basis, and the meeting was opened to all Member and non-Member States of the IAEA, whether or not they had made a political commitment to the Code and/or to the Guidance.
6. The meeting was opened by Mr Juan Carlos Lentijo, Deputy Director General, Head of the Department of Nuclear Safety and Security (DDG-NS). In his opening remarks, DDG-NS noted that, to date, 137 States have made a political commitment to implement the Code. Of those, 118 have also notified the Agency of their intention to act in accordance with the Code's supplementary Guidance on the Import and Export of Radioactive Sources, and 20 have done the same for the Guidance on the

Management of Disused Radioactive Sources, which was approved by the Board of Governors in September 2017. He emphasized how by implementing the Code and its supplementary Guidance, States have improved radiation safety and radioactive source security, nationally and globally, and noted three areas where improvements are needed: strengthening and sustaining of the independence of regulatory bodies; safety and security for the radioactive sources out of the regulatory control; capacity building in storage and disposal of disused radioactive sources. Finally, he thanked Canada and the United States of America for their extrabudgetary financial contributions to support broader participation in the meeting.

7. A number of presentations on topics relevant to the safety and security of radioactive sources were made by representatives of the IAEA Secretariat and invited participants in plenary sessions during the meeting. All presentations were made available to participants on a secured shared webpage. Therefore, their detailed contents are not replicated in this report and only a short summary is provided below.

Overview of the IAEA activities to support the Code and supplementary Guidance implementation

8. The Secretariat (Ms O. Makarovska, NSRW, and Ms A. Rodriguez y Baena, NSNS) provided participants with an overview of the IAEA activities related to safety and security. It included information on:

- Safety Standards, Nuclear Security Series publications and other IAEA publications;
- Assistance available to support States with the establishment of legislative and regulatory frameworks;
- Human capacity building through various training activities, including e-learning modules;
- The provision of peer review services (Integrated Regulatory Review Service, International Physical Protection Advisory Service, etc.) or expert advice services; and
- The provision of technical assistance aimed at ensuring the safety and security of radioactive sources, both in use and disused.

9. The Secretariat (Mr R. Pacheco, NSRW), provided a summary of the four regional and two interregional meetings held since 2016, noting that the current formalized process provides the opportunity to organize regional meetings and to report on their outcomes. Mr Pacheco noted that regional meetings are greatly appreciated by participants, as they complement international meetings and allow a focus on regional challenges and concerns. He also noted that, although progress has occurred in many areas, improvements are still needed in several areas. These areas for improvements are broadly consistent with the ones identified in paras 14 to 37.

10. The Secretariat (Ms S. Geupel, NSRW) provided a presentation on synergies between the Code of Conduct and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention). She emphasized that:

- the scope of the Joint Convention covers - inter alia - radioactive sources from the point at which they become disused to their final disposal;
- this Joint Convention and the Code and its associated Guidance, whilst different in their nature, complement each other as regards the management of disused sealed sources but only insofar as safety aspects are concerned.

11. The Secretariat (Mr Thierry Pelletier and Ms A. Rodriguez y Baena, NSNS) provided a summary on the results of the International Conference on the Security of Radioactive Material: The Way Forward for Prevention and Detection. Some key conclusions were that:

- enhancing the protection of radioactive material from malicious uses requires cooperation, coordination and communication among stakeholders, not only nationally but also across borders;
- a strong nuclear security culture is essential across all stakeholders;
- capacity building and sustainability are challenges currently faced in many States, even if legislation and regulations on the security of radioactive materials are established or being established in many States.

Summary of the countries' National papers and overview of Implementation Practices papers

12. The Secretariat (Ms O. Makarovska, NSRW) provided participants with a presentation summarizing the 47 countries' National papers that have been provided in advance (as of 20 May 2019) and recalled the purpose and modalities of the Implementation Practices papers initiative, which resulted in 42 papers submitted by 28 countries. She noted that the relevant templates had generally be followed. She also highlighted the complementary nature of National papers and Implementation Practices papers.

13. Following the presentation on Implementation Practices papers, there was a discussion on whether this initiative should or not continue. The conclusion was that this initiative was valuable, that States should be encouraged to submit Implementation Practices papers and that the IAEA should put in place an effective process to analyse and disseminate the corresponding information.

ISSPA Experience with the Code of Conduct

14. Mr R. Wassenaar, representing ISSPA, an association of 17 companies that manufacture and supply sealed radioactive sources and/or equipment with such sources, provided participants with an overview of the composition, mission and objectives of ISSPA in promoting the safe and secure uses of radioactive sources as well as of ISSPA experience with the Code. In the ISSPA presentation, it was stressed that, to facilitate the safe and secure import-export of the radioactive sources, it is important to have clarity (i) on the contents of the licences while avoiding over-prescriptive details and (ii) on exporter activities that are authorized when a positive answer to the request of consent has been received. The discussion allowed to hear actual examples of lack of clarity or potentially too detailed information required and of associated challenges for a supplier willing to contribute the safe and secure transport and use of radioactive sources. The participants took note of the feedback from industry.

Country Group presentations and discussions

15. As agreed at the opening session, participants were divided into three Country Groups that worked in parallel from the evening session on 27 May until the morning session on 30 May. Country Groups were chaired by Mr Mohammad Kharita (Qatar), Mr Faradally A. Ollite (Mauritius) and Ms Cristina Dominguez (Argentina). Chairs were supported by rapporteurs form the Secretariat: Mr J. Rodolfo Quevedo García (NSRW), Ms V. Kamenopoulou (NSRW), Mr D. Mroz (NSRW), Mr S. Vleugels (NSNS), Ms L. Aniuska Betancourt-Hernandez (NSNS) and Mr M. Waseem (NSNS).

16. Overall, 87 oral presentations took place. Once the Country Group sessions had ended, each Country Group Chair presented in the plenary session a summary of the Country Groups' presentations and discussions. The corresponding presentations were made available to participants on a secured shared webpage. Considering these presentations and the discussions that followed, the main findings are provided in paragraphs 17 to 42.

Infrastructure for regulatory control of the safety and security of radioactive sources

17. Most of the States have enacted laws on radiation safety. In many States the law covers both safety and security of the radioactive sources. More and more States have established a full set of regulations covering all activities related to the use of radioactive sources, others continue efforts to develop missing regulations.

18. Most of the States have stated that their domestic regulations are in compliance with IAEA Safety Standards and included requirement for physical protection for Category 1 sources. The rest of the States have recognized the need to update their legislation and regulations and have more than often already initiated the process to bring the legal and regulatory framework in line with the provisions of the Code and its supplementary Guidance and, more generally with the IAEA Safety Standards and Nuclear Security Guidance.

19. Many States are in the process of establishing a regulatory framework for the security of radioactive sources, which bears the additional challenge of having to involve many organizations (regulatory body, intelligence services, law enforcements agencies, etc.) and is sometimes complicated by the fact that the concept of "nuclear security" is believed to not apply to radioactive sources. Until this framework is established, some basic measures are often implemented.

20. Nearly all States have established a regulatory body (which may be composed of several departments or agencies as defined in IAEA GSR Part1 (Rev.1)) with core regulatory functions and activities (national inventory, review and assessment, authorization, inspection and enforcement, regulations promotion and roles in emergency preparedness and response). They are mostly in charge of both radioactive sources safety and security regulation. Several States also reported that systematic cooperation between the regulatory body and security responsible agencies promote implementation of an integrated approach to safety and security of radioactive sources.

21. Safety and security of radioactive sources are getting better integrated and many States consider them simultaneously during the authorization and inspection process.

22. However, effective independence of the regulatory body, as also required in IAEA GSR Part 1 (Rev.1) and further detailed in IAEA GSG-12 (Organization, Management and Staffing of the Regulatory Body for Safety), is not always achieved yet. In addition, having sufficient competent staff (see also para. 21) and sufficient financial resources remain frequently a challenge.

23. At the national level, memoranda of understanding are being generally concluded between the regulatory body and other national organizations with competence for security or/and safety (such as police, customs, border control, health authorities, intelligence and environmental agencies, first responders, in some cases: airports, emigration service, etc). For effective control on the import or export of radioactive sources, many regulatory bodies have agreements or cooperation procedures with customs and border control. Overall, most States are now convinced of the strong need of the national, regional and international cooperation to ensure an effective control over radioactive sources for their safety and security.

24. At the international level, bilateral and multilateral agreements are more and more signed between neighbouring States and beyond, including to facilitate the decision-making process for import and export of radioactive sources and to control associated shipment. Several States have recognized the benefits of the cooperation established with the United States of America, (Office of Radiological Security of the Department of Energy or the Nuclear Regulatory Commission), Canada and of the assistance received through IAEA projects (for example through the Integrated Nuclear Security Support Plan) or European Union (EU) projects in establishing or reinforcing their framework for safety and security.

25. Many States recognize the importance and benefit of self-assessment, IAEA advisory and peer review mission services in improving regulatory infrastructure for safety and security.

Training of staff in the regulatory body, law enforcement agencies and emergency service organizations

26. Some regulatory bodies have well established training programmes for their staff, but this is an area for improvement at many regulatory bodies as no systematic approach to training is implemented. Several States benefit from the support provided by the IAEA, by bilateral agreements (e.g. by Canada, USA, EU and other donors) or within regional cooperation frameworks. For some States, training opportunities provided by the IAEA is the only available option.

27. Many regulatory bodies make significant efforts to organize and provide training of the staff of law enforcement agencies, especially customs, and emergency service organizations. Joint drills or exercises are also opportunities used to enhance competency. Training activities are sometimes organised in the framework of national emergency preparedness and response infrastructure.

Facilities and services available to the persons authorized to manage radioactive sources

28. Availability of services varies significantly among the States. For example, almost all States have external dosimetry services but environmental monitoring or calibration services are not always available. Availability of the appropriate facilities and services for searching for missing radioactive sources and securing found sources, services for the intervention in the event of malicious act remains a challenge for many States.

Establishment and maintenance of a national register of radioactive sources

29. With a few exceptions, national registers exist in all States for Category 1 to Category 3 sources and IAEA Regulatory Authority Information System is often used to maintain it. Some States have extended the inventory to all radiation sources. Regulatory inspections and customs' information about imported or exported sources are generally used as a means of updating and verification. However, in some States, there is no established effective mechanism in place for the regular updating of the national register of radioactive source.

30. Some States are implementing or plan to implement tracking of the Category 1 and 2 sources, including tracking by reporting any change of location or physical tracking of devices containing the source.

National strategies for gaining or regaining control over orphan sources

31. Many States have practices and general guiding principles for managing found orphan sources and, quite often, the regulatory body takes the control of the discovered orphan source. Some States request IAEA support to help in securing those sources. However, few States have formalized strategies for gaining or regaining control over orphan sources, having a reliable national register and adequate import-export controls being among essential elements. Awareness of the source users, workers likely to encounter orphan sources and the general public about the risks and vulnerability of radioactive sources is often an area for improvement.

32. Some States reported on the national regulatory framework for the control of scrap metal and recycling products where radioactive material may be inadvertently incorporated, including on the practice of shipment radiation monitoring at site entrance. Many States recognized the need for such system and the benefits of international cooperation in this area (see also para. 41).

Approaches to managing radioactive sources when they become disused

33. Several States have removed disused radioactive sources from their territory with the support of Canada, USA, the IAEA and other partners.

34. With regard to disused sources, almost all States require from the licensees a back-end solution for the radioactive sources before import and/or use authorization is granted. Return to a supplier is almost always considered and allowed; many countries require guarantee of the source return to the supplier as

part of the authorization process. When return to a supplier was the option selected, maintenance of contractual agreement (especially financial aspects) and availability of transport package are areas not to overlook.

35. Even if return to a supplier is the current national practice, this option may not be applicable for radioactive sources acquired before such arrangements were in place and orphan sources.

36. Some States limit storage of disused sources at the users' sites and mandate transfer of such sources to a centralized facility.

37. Despite these arrangements, many States do not have national policy and strategy for the management of the disused radioactive sources, including re-use and recycling, long term storage and disposal. Several States are still lacking facilities for the interim management of disused radioactive sources. Many States have only provisional options for interim storage, either in a centralized facility (such as at the regulatory body's premises) or in situ at the licensee's premises. A majority of States have no disposal option(s); borehole disposal concept is being considered by a few States.

Experience with arrangements for implementing the import and export provisions of the Code and of the Guidance on the Import and Export of Radioactive Sources

38. Nearly all States report that only authorized facilities may import or export radioactive sources. However, not all States have fully implemented the Guidance provisions within an established process, for example by insertion into the regulations or licence conditions, and not all States follow them in practice even if worldwide implementation is progressing.

39. Some States have signed bilateral arrangements with other countries to harmonize regulatory procedures on the import and export of radioactive sources and reported that these arrangements are an efficient means of ensuring that provisions of the import and export Guidance are effectively implemented.

40. With regard to the list of national contact points compiled by the IAEA and made available on its website, the importance of keeping national contact points details updated and, if possible, designating alternate contact points to ensure continuity in case of absence of the primary contact point were emphasized, as well as having points of contact familiar with their expected roles and responsibilities.

41. Whereas previous meeting reported use of exceptional circumstances, there were no reported use of this provision during this meeting.

Additional topics relevant to the implementation of the Code and the Guidance

42. Maintenance of the safety or security equipment and infrastructure provided/donated by the IAEA or donor countries to ensure safety and security of radioactive sources may not have been sufficiently anticipated in many countries.

"Formalized Process"

43. Following a request of the IAEA General Conference, a formalized process for a periodic exchange of information and lessons learned and for the evaluation of progress made by States towards implementing the provisions of the Code was elaborated upon in June 2006 and subsequently noted by the IAEA Board of Governors. In particular, it governs the preparation and performance of the meetings organized by the IAEA to discuss the implementation of the Code and associated Guidance. The Secretariat suggested to update this process, essentially to introduce into the text the supplementary Guidance on the Management of Disused Sources (published in 2018) and the "interregional" meetings. Proposed revised version of the document, with suggested modifications in track mode, was put on screen and a few changes, to increase consistency within the document, were introduced. Participants agreed to the text as modified in plenary session.

Topical sessions' presentations and discussions

44. In addition to Country Group sessions, 3 topical sessions were also held in parallel:

- Safe and secure management of disused sources,
- Safe and secure management of radioactive material that is inadvertently present in the metal scrap,
- Safety-security interfaces for radioactive sources.

45. These sessions were chaired by Ms Margaret Cervera (USA), Mr Jarlath Duffy (Ireland) and Mr Faeizal Ali (Malaysia).

46. At the topical session on safe and secure management of disused sources a number of presentations were made by representatives of the IAEA Secretariat and invited participants on the following topics:

- Guidance on the Management of Disused Radioactive Sources (IAEA, Ms O. Makarovska);
- IAEA assistance for the disused radioactive sealed sources management (IAEA, Mr D. Bennett), including a report from the Technical Meeting on the Safety of Disposal of Disused Sealed Radioactive Sources in Near Surface and Geological Disposal Facilities;
- Industry perspective of the reuse and recycling of disused radioactive sealed sources management (ISSPA, Mr R. Wassenaar);
- National experience in disused radioactive sealed sources management Guidance implementation (Ukraine, Mr K. Fuzik);
- Regulatory experience in implementation of a borehole disposal facility for disused sealed radioactive source disposal (Malaysia, Mr F. Ali).

47. It was emphasized that the three options (return to a supplier, re-use and recycling, disposal) should be considered in developing national strategies for disused sources management as planning for only a single option would likely be problematic. ISSPA representative confirmed that recycling continues to be the industry's preferred option. Frequent challenges faced by States with transboundary movements of disused sources include finding a competent source manufacturer (not only original manufacturer) capable to accept the disused source and manage it safely, appropriate container availability (a valid Type B package and a valid special form source certificate may be needed) and addressing transportation costs and logistics. It was stressed that domestic centralized storage facilities are an essential element of a national strategy.

48. Finally, participants were encouraged to make a political commitment to the Code of Conduct and to adhere to the Guidance on the Management of Disused Radioactive Sources. IAEA made participants aware that Chad and the Philippines had just formally expressed political commitments to the Guidance on the Management of Disused Radioactive Sources.

49. At the topical session on safe and secure management of radioactive material that is inadvertently present in the metal scrap a number of presentations were made by representatives of the IAEA Secretariat and invited participants on the following topics:

- Activities on transboundary movement of radioactive material inadvertently incorporated into scrap metal (IAEA, NSRW, Mr Teodros Hailu);
- Assistance in the case of events with the inadvertent presence of radioactive material (IAEA, IEC, Mr Florian Baciu);
- Romanian national experience (Mr Alexandru Eremia and Ms Ruxandra Popescu, National Commission for Nuclear Activities Control Romania);
- South Africa national experience (Mr Nico Uys, South African Health Products Regulatory Authority South Africa).

50. The presence of radioactive material could be due to NORM (naturally occurring radioactive materials), presence of orphan sources (as it happened earlier this year in the Netherlands and Germany) or by contaminated metal due to previous treatment or conditioning. Since January 2014, 177 incidents were reported to the IAEA Incident and Trafficking Database on material out of regulatory control in the scrap metal industry, 87 of which were due to sealed sources. IAEA believes that events are under-reported.

51. Some States reported an existing regulatory framework for the control of scrap metal and recycling products where radioactive material may be inadvertently incorporated. Many participants recognized the need for such a system and the need for international cooperation and instruments in this area. Some States reported that scrap metal facilities were encouraged to do radiation monitoring and stressed strong need in improving such monitoring. At least 75% of portal alarms are caused by NORM. At some border crossing points, shipments of recyclable metal materials are radiologically monitored through administrative controls, visual inspections, and radiation level measurements. Conclusions of the topical session were in line with the results of Country Groups' presentations and discussions related to this topic that are summarized in paragraph 32. Participants agreed that this topic would benefit from higher visibility and greater awareness among the concerned stakeholders.

52. Considering that the recycling industry involves also transboundary shipments and taking note of previous initiatives (2009 Tarragona international conference, drafting of a code of conduct on the transboundary movement of radioactive material inadvertently incorporated into scrap metal and semi-finished products of the metal recycling industries), existing IAEA Safety Standards (especially SSG-17 *Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries*, and SSG-19 *National Strategy for Regaining Control over Orphan Sources and Improving Control over Vulnerable Sources*) or IAEA NSS-15 *Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control*, as well as the potential for updating those publications, for initiating an additional Guidance or updating of an existing Guidance to the Code, or developing another international instrument, *participants concluded that:*

- *The IAEA should continue to promote existing publications dealing with this topic;*
- *Various options are available to further address this topic and an evaluation of the benefits and drawbacks of these options should be made in the following months to decide on the best way forward.*

53. At the topical session on safety and security interfaces for radioactive sources a number of presentations were made by representatives of the IAEA Secretariat and invited participants on the following topics:

- Safety and security interfaces in regulatory activities (IAEA, Mr K. Horvath);
- Addressing safety and security aspects during inspection and authorization processes in Albania (Albania, Mr R. Paci);
- Implementation of authorization and inspection system in Cameroon - safety and security issues (Cameroon, Mr J.F. Beyala Ateba);
- Radiation safety and nuclear security interfaces: Paraguay's experience in developing authorization and inspection procedures (Paraguay, Mr F. Doncel Invernizzi);
- Safety-security interfaces - industry perspective (IIA, Mr M. Comben).

54. Nuclear safety and security share the same goal, which is to protect individuals, the public and the environment from harmful effects of ionizing radiation. However, the activities that address safety and security are different and, sometimes, actions taken to strengthen safety affect security, either positively or negatively. It is therefore essential to establish a well-coordinated approach to managing the interfaces between safety and security so that relevant measures are implemented in a manner that does not

compromise either safety or security and aims to capitalize on opportunities that may be available for mutual enhancement. Interfaces and associated coordination practices were identified in the field of implementation of regulatory functions, including registration, notification and authorization, inspection, enforcement and emergency/contingency management.

55. The implementation of graded approach, safety and security risk management, education and training and international cooperation are areas where the synergies of the two disciplines can be utilized. While it is a common goal of States to address the interfaces between safety and security, there is a range of different approaches being used by States to achieve this goal. These different approaches reflect the circumstances prevailing in various States such as the nature and scale of the facilities and activities being operated or undertaken and the nature of the national legal framework.

56. The provisions of combined training and advisory missions in radiation safety and nuclear security, recently developed by the IAEA to address the specific needs of the numerous regulatory bodies responsible for both areas in a harmonized manner, have been welcomed by participants. Participants encouraged the Secretariat to continue working on similar initiatives, which support countries in enhancing their national regulatory infrastructures for radiation safety and nuclear security of radioactive material, including radioactive sources.

Conclusions

57. In addition to political commitment to the Code and/or its supplementary Guidance, the National papers submitted prior to the meeting and the presentations made during the meeting show progress in implementing the provisions of the Code and its supplementary Guidance.

58. The main challenges or areas for improvement highlighted by this meeting are the following:

- a) Strengthening the national regulatory infrastructure for safety and security, especially for the States that have just established it, or are planning to do so. As a matter of fact, many States acknowledged areas of improvement in the security infrastructure and recognized challenges for the future implementation of the required measures.
- b) Establishment of national policy and strategy for
 - training in safety and security;
 - orphan sources search and recovery;
 - management of the disused radioactive sources.
- c) Strengthening and sustaining
 - effective independence of the regulatory body;
 - human resources at regulatory bodies;
 - national training capabilities in safety and security.
- d) Full and systematic implementation of the import-export Guidance provisions for evaluation, consent and notification.
- e) Financial provisions for the radioactive sources, to address end of life issues, including potential bankruptcy or sudden shutdown of the organization responsible for the sources or when source replacement by a supplier is not foreseen.
- f) Disused radioactive sources interim storage as a priority first step, conditioning and disposal.
- g) Inadvertent presence of the radioactive material in scrap metal and metal recycling products.

59. A revised version of the "formalized process" was agreed upon by participants and is attached to this report.

Recommendations

60. Considering the presentations made in plenary session, the National papers submitted prior to the meeting, the national presentations made during the meeting and the discussions that have taken place in the meeting, the following recommendations are made, without any priority in their order:

- a) States that have not yet expressed a political commitment to the Code or/and its supplementary Guidance should consider doing so, as soon as possible. For those States having already expressed such commitment but that did not submit a National Paper or/and did not deliver an oral presentation at this meeting, a more active participation in the "formalized process" is encouraged.
- b) The IAEA Secretariat should continue to promote political commitment to the Code and its supplementary Guidance and assist States in their implementation, in particular in the areas for improvement highlighted by this meeting.
- c) The Implementation Practice paper initiative should continue. States are encouraged to submit such papers, whenever they are ready, and the IAEA should develop process and tools to review them and disseminate them in an effective way.
- d) States should consider further clarifying in their regulations and/or procedures for the import-export of radioactive sources of Categories 1 and 2, with the support of the IAEA if needed, the contents of a shipment notification and the meaning of a positive answer to a request for consent issued as a result of the implementation of the Code and Guidance provisions.
- e) With regard to the inadvertent presence of radioactive materials in the metal scrap and metal recycling industry products, the IAEA should continue to promote its existing publications on this topic and, considering the various available options to increase awareness on this issue and to encourage harmonized approaches to prevent and manage such presence, from a safety and a security perspectives, evaluate the benefits and drawbacks of these options to decide on the best way forward.
- f) The IAEA should continue to offer, upon request of Member States, integrated training in radiation safety and nuclear security tailored to the specific needs of the numerous regulatory bodies that are responsible for both areas.
- g) The IAEA should continue to offer, upon request of Member States, safety and security advisory missions and peer review missions and Member States are encouraged to express such request.
- h) The IAEA should continue to include topical sessions in the agenda of future meetings. However, the format would benefit from improvement, especially to allow for more time for discussion and for inputs from States as well as a better link with Country Group discussions.
- i) As called for in the current version of the "formalized process", it is suggested that the Secretariat submits this report, including the attached revised version of the "formalized process", to the IAEA's policy-making organs for their information.

Fabien Feron

Chairman

31 May 2019

Annex 2 Table of Concordance

Table of Concordance between Resolution GC(63)/RES/7 Operative Paragraphs (OPs) Associated with Agency Action and Paragraphs of this Report

OP	Report Paragraph	OP	Report Paragraph/ Other comment	OP	Report Paragraph
1	3	47	44	89	91, 92
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40	30, 33	75	<i>Activity delayed by COVID-19.</i>	122	129
41	34, 81	77	86	123	130
43	10, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 106	81	<i>Technical Meeting on Denials of Shipment delayed due to COVID-19.</i>	124	131, 132
44	10, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 106	82	87, 88	125	133
45	35, 36, 40, 41, 44, 47	84	<i>Regional meeting for the endorsement of the Guidelines delayed due to COVID-19.</i>	127	5
46	35, 40	88	89, 90		



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