Radiation and Transport Safety

Objective

To achieve global harmonization of the development and application of the Agency's safety standards in this area, and to increase the safety of radiation sources, and thereby raise the levels of protection of people against the harmful effects of radiation.

Regulatory Infrastructure

Member States without nuclear installations continued to make use of the Agency's Integrated Regulatory Review Service (IRRS) in 2016. The Agency conducted IRRS missions to five Member States without operating nuclear power plants — Belarus, Estonia, Italy, Kenya and Lithuania. It also conducted an IRRS training course in Vienna, Austria, in December, specifically for radiation safety reviewers taking part in IRRS missions. The training course was attended by more than 40 participants from 18 Member States. The Agency conducted radiation safety advisory missions to Antigua and Barbuda, Cambodia, Ecuador, El Salvador, Liberia, Madagascar, Morocco, Qatar and Sri Lanka, to assess and provide expert guidance on strengthening national regulatory infrastructures.

The Agency organized four national workshops on regulatory infrastructure self-assessment, held in Georgia, Kenya, Nigeria and Spain. It also held two regional workshops on this topic: in Vienna, Austria, attended by 15 participants from 12 Member States, and in Amman, Jordan, attended by 15 participants from 5 Member States. Twenty-seven Member States in the Africa region participating in a regional project entitled 'Enhancing and Sustaining the National Regulatory Bodies for Safety (AFRA)' used the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) methodology to develop and implement national action plans for improving their national regulatory body. These action plans are being used to strengthen their regulatory infrastructure in line with the requirements established in *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (IAEA Safety Standards Series No. GSR Part 3).

Two Schools for Drafting Regulations on Radiation Safety were organized by the Agency for Member States in Europe and in Africa, involving 43 participants from 22 Member States. The Agency used its Control of Sources Network platform to prepare and implement these activities.

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 on the Import and Export of Radioactive Sources was held in Vienna, Austria, from 30 May to 3 June. The meeting served as a forum for the exchange of information on national implementation of the Code of Conduct and its additional guidance. It included plenary sessions devoted to, inter alia, the international and regional initiatives related to safety and security of radioactive sources, 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, and ongoing and new initiatives to assist States in the implementation of the safety and security principles of the Code.

The Agency also organized the third Open-ended Meeting of Legal and Technical Experts to Develop Internationally Harmonized Guidance for Implementing the Recommendations of the Code of Conduct on the Safety and Security of Radioactive Sources in Relation to the Management of Disused Radioactive Sources.

The Agency started one regional project for Member States in the Caribbean region and one interregional project on the control of radioactive sources throughout their life cycle, focusing on the management of sources at the end of their life. The projects have been designed to support the development of regulatory frameworks and operations for conditioning disused sealed radioactive sources.

Radiation Protection

The International Basic Safety Standards (GSR Part 3) require governments to provide information on levels of radon indoors and, if necessary, to establish and implement an appropriate action plan. In May, the Agency assisted Member States in evaluating the need for a national action plan through a Workshop on the Control of Public Exposure in Compliance with the International Basic Safety Standards. Organized in cooperation with the World Health Organization and the National Nuclear Regulator of South Africa, the workshop was attended by 31 participants from 16 Member States and an international organization. The participants shared experience with the management of land contaminated from past practices, radionuclides in food and drinking water in non-emergency situations, and radon in buildings.

In March, the Agency held a Technical Meeting on Justification of Medical Exposure in Diagnostic Imaging, in Vienna, Austria, attended by 56 participants from 28 Member States and 5 international organizations. Participants shared experience with the medical diagnostic applications of ionizing radiation and identified opportunities for strengthening the justification of its use. The Agency also organized a Technical Meeting on Patient Dose Monitoring and the Use of Diagnostic Reference Levels for the Optimization of Protection in Medical Imaging, in Vienna, Austria, in late May and early June. The meeting was attended by more than 60 participants from 35 Member States and 8 international organizations and professional bodies. Participants focused on identifying strengths and weaknesses in the use of diagnostic reference levels for optimization of patient safety and improving medical practice.

"The Agency also conducted seven webinars on radiation protection in medicine in 2016, involving 1350 participants from 90 Member States."

During the year, e-learning courses on Safety and Quality in Radiotherapy and on Radiation Dose Management in Computed Tomography were made available on the Agency web site to assist radiology professionals in the safe and appropriate use of these technologies (Fig. 1). The Agency also conducted seven webinars on radiation protection in medicine in 2016, involving 1350 participants from 90 Member States.

In April, the Agency issued *Criteria for Radionuclide Activity Concentrations for Food and Drinking Water* (IAEA-TECDOC-1788). The publication considers the various international standards to be applied at the national level for the assessment of radionuclides in food and drinking water under different circumstances for the purposes of control, other than in a nuclear or radiological emergency.

The Agency's Occupational Radiation Protection Appraisal Service (ORPAS) provides Member States, on request, with an independent assessment and evaluation of their national occupational radiation protection programme. In 2016, the Agency conducted ORPAS missions to Costa Rica and Ghana, an ORPAS follow-up mission to Uruguay, and preparatory ORPAS missions to Malaysia, Morocco and Paraguay.

The Agency, in collaboration with the Regional European and Central Asian ALARA Network, organized a regional training course on occupational radiation protection programmes and safety culture in late May and early June, in Vilnius, Lithuania. The training course was attended by 23 participants from 19 Member States, who received training in occupational exposure monitoring and the dosimetry and technical services necessary for workplace monitoring. The Agency organized two regional workshops on the implementation of the International Basic Safety Standards (GSR Part 3). The first workshop was held in Vienna, Austria, in August, attended by 36 participants from 17 Member States in the Asia and the Pacific region. The second workshop was held in Chisinau, Republic of Moldova, in December, attended by 32 participants from 18 Member States in the Europe region.

FIG. 1. The Agency provided training in the safe and effective use of new equipment to staff of the Nuclear Medicine Department at Yangon General Hospital in Yangon, Myanmar.

In the framework of a regional project entitled 'Enhancing National Capabilities on Occupational Radiation Protection in Compliance With Requirements of the New International Basic Safety Standards', Member States in Africa assessed the capabilities of their dosimetry services to measure the quantity of a radiation dose in a person's body (Fig. 2). The project participants also developed guidelines to help Member States improve the performance of existing dosimetry services, thereby strengthening occupational radiation protection in Africa.

FIG. 2. Experts from Member States in Africa participated in a meeting in Accra, Ghana, to present and discuss the results of the 2016 regional dosimetry intercomparison exercise to assess the capabilities of their dosimetry services.

The Agency and Fukushima Prefecture, Japan, continued to cooperate on activities relating to off-site decontamination, management of radioactive waste, and radiation monitoring and assistance in environmental mapping using unmanned aerial vehicles. In 2016, the Agency provided technical assistance and support to Fukushima Prefecture, including the development of methodologies for decontamination of publicly accessed areas, remediation of water ecosystems, safety assessment of temporary storage sites and assessment of the results of radiation monitoring.

Transport Safety

The Agency continued to support capacity building for regulatory oversight of transport of radioactive material in over 80 Member States in the Africa, Asia and the Pacific, Europe, and Latin America and the Caribbean regions in 2016. As part of a regional project entitled 'Enhancing Governmental and Regulatory Safety Infrastructure to Meet the Requirements of the New IAEA Basic Safety Standards', the Agency assisted Latin American and Caribbean Member States in strengthening competencies for the safe transport of radioactive material

in the region. Participating Member States shared information on the status of their national transport regulations and identified opportunities for further harmonization of national transport regulations in the region.

The Agency continued to develop an e-learning platform for a transport safety training programme on the Cyber Learning Platform for Network Education and Training (CLP4NET). In 2016, the modular structure of this training programme was completed and modules on radiation protection, regulatory infrastructure, international transport safety regulations, transport package inspection, and others were filled with relevant training materials.

Radiation Safety Information Management System

The web based Radiation Safety Information Management System (RASIMS) platform is a tool that enables Member States to monitor the status and level of implementation of their radiation safety infrastructure in line with the Agency's safety standards. The Agency organized two regional workshops for RASIMS National Coordinators at the Agency's Headquarters in Vienna, Austria. The first workshop took place in April, attended by RASIMS National Coordinators from 20 Member States in the Europe region. The second workshop took place in November, attended by RASIMS coordinators from 16 Member States in the Latin America and the Caribbean region. The workshops allowed the coordinators to update RASIMS with information on radiation safety infrastructure in their countries, as well as providing an opportunity for identifying improvements to RASIMS.