

Radiation and Transport Safety

Objective

To support Member States in improving radiation safety of people and the environment through the development of safety standards and providing for their application. To support Member States in establishing the appropriate safety infrastructure through support and implementation of the Code of Conduct on the Safety and Security of Radioactive Sources, and through safety reviews and advisory services. To support Member States in capacity building through education and training, and in encouraging the exchange of information and experience.

Radiation Safety and Monitoring

The Agency conducted four Occupational Radiation Protection Appraisal Service (ORPAS) missions — to Bosnia and Herzegovina, the Dominican Republic, Indonesia and Panama (Fig. 1) — and one follow-up mission to the United Republic of Tanzania. The missions encouraged national regulatory authorities, technical support organizations and end users to use a graded approach for control, monitoring and recording of occupational exposure.

The Agency held regional training courses on justification of medical radiation exposure and the use of referral guidelines in Warsaw in September, with 25 participants from 15 Member States, and on the appropriate and safe use of imaging in Tbilisi in June, with



FIG. 1. An ORPAS team visiting a plant for the production of sterile screw worm flies during the ORPAS mission to Panama.

19 participants from 12 Member States. It also conducted a workshop on responsibilities for radiation protection in medicine in Vienna in April with 45 participants from 28 Member States. The Agency, together with the Abdus Salam International Centre for Theoretical Physics, organized a course on quality assurance and dose management in hybrid imaging, held in Trieste, Italy, in September, with 69 participants from 48 Member States. The Agency developed an e-learning course on radiation protection in medicine for radiation technologists that focuses on C-arm fluoroscopy to increase awareness of dose reduction techniques.

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The Agency assisted Member States in sharing information and experience through a Technical Meeting on Experiences with the Implementation of the Bonn Call for Action, held in Vienna in March, with 34 participants from 21 Member States and 9 international organizations, and a Technical Meeting on Preventing Unintended and Accidental Exposures in Nuclear Medicine, held in Vienna in May, with 45 participants from 33 Member States and 11 international organizations.

The Agency continued to use webinars to reach medical professionals and other experts around the world. In 2018, it organized nine webinars on radiation protection of patients, with around 1500 participants from 100 Member States. In cooperation with the Conference of Radiation Control Program Directors (CRCPD), the European Radon Association and the World Health Organization (WHO), the Agency held six webinars on radon related topics for 750 participants from 58 Member States. In November, in cooperation with CRCPD, it held a webinar on naturally occurring radioactive material (NORM) with around 120 attendees from 63 Member States. The webinar was the first in a series to address worker protection in industrial activities involving NORM.

The Agency, in cooperation with the Food and Agriculture Organization of the United Nations, the United Nations Scientific Committee on the Effects of Atomic Radiation and WHO, completed a literature review of measurements of natural radionuclides in food published during the period 1998–2017. The data will be used to assess the range of radiation doses associated with different ‘cluster diets’, as defined by WHO in its Global Environmental Monitoring System (GEMS)/Food consumption database.

Regulatory Infrastructure

The Agency conducted six Integrated Regulatory Review Service (IRRS) missions to Member States without operating nuclear power plants – Australia, Austria, Chile, Georgia, Luxembourg and Moldova. It conducted ten Advisory Missions on Regulatory Infrastructure for Radiation Safety (AMRAS) – to Angola, Benin, Burkina Faso, Chad, El Salvador, Eswatini¹, Kuwait, Liberia, Mozambique and Rwanda. It also conducted three follow-up AMRAS missions – to Paraguay, Uganda and Uruguay. The AMRAS missions provided advice and, where appropriate, support to States in their efforts to establish or improve national regulatory infrastructure for radiation safety.

The Agency conducted an Education and Training Appraisal (EduTA) mission to Tajikistan and five advisory missions on education and training in radiation, transport and waste safety – to Brazil, Chile, Kyrgyzstan, Mexico and Panama. It provided specialized training in radiation, transport and waste safety through five Postgraduate Educational Courses in Radiation Protection and the Safety of Radiation Sources, in English, French and Spanish, held at the Agency affiliated regional training centres in Africa, Asia, Europe, and Latin America and the Caribbean.

In response to increasing Member State demand for guidance on strengthening regulatory requirements for education, training, qualification and competence of radiation protection officers and qualified experts, the Agency held three regional workshops: one

¹ The name ‘Eswatini’ replaces the former name ‘Swaziland’ as of 29 June 2018.

for Europe, held in Sliema, Malta, in October; one for the Asia and the Pacific region, held in Amman in November; and one for Latin America and the Caribbean, held in Panama City in December. It also held six ‘train the trainers’ workshops for radiation protection officers: in Montevideo in March; in Hanoi in May; in Tirana and in Dushanbe in June; and two in Rabat in November (one in French and one in English).

The Agency held a Regional Meeting on the Management of Radioactivity in Scrap Metal for Recycling and in Semi-finished Products in Abuja in June to assist African Member States in establishing national programmes for managing radioactive sources that could be found in scrap metal.

Agency support for Member States in establishing and strengthening their national regulatory infrastructure for radiation safety included five workshops focused on the establishment of a management system for the regulatory body, authorization and inspection of facilities, and regulatory control of cyclotrons and other new technologies. The workshops were attended by a total of around 100 participants from 25 Member States. The Agency also conducted seven expert missions to Member States to train regulatory staff in using and customizing the Regulatory Authority Information System (RAIS) 3.4 web system. Five RAIS servers were provided to Member States to assist regulatory bodies in managing safety related records.

The Agency held three Open-ended Meetings of Legal and Technical Experts on the 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 and Guidance on the Management of Disused Radioactive Sources. The first meeting, organized for the Europe region, was held in Bucharest in May and attended by 23 participants from 18 Member States; the second, for the Africa region, took place in Kampala in September and was attended by 32 participants from 28 Member States; and the third, for the Latin America and the Caribbean region, was held in Montevideo in October and attended by 19 participants from 12 Member States. The Agency also held an Interregional Open-ended Meeting of Legal and Technical Experts on Implementation of the Code of Conduct and its supplementary Guidance for Small Island Developing States in the Caribbean and Pacific Areas. At the meeting, held in Vienna in August, 34 experts from 17 Member States shared experiences on the application of the Code of Conduct and its supplementary Guidance.

At the Open-ended Meeting of Legal and Technical Experts on Implementation of the Guidance on the Import and Export of Radioactive Sources, held in Vienna in June, participants exchanged information and identified ways to promote the safe and secure management of radioactive sources during import and export worldwide. The meeting, attended by 155 experts from 86 Member States, concluded that there is currently no need to revise the Guidance, and that efforts should be focused on the full and systematic implementation of its existing provisions.

To support efforts by Member States to strengthen national regulatory frameworks and the safe and secure management of disused sealed radioactive sources, the Agency implemented a number of regional and international projects, including several meetings and workshops on cradle-to-grave control of radioactive sources, with an emphasis on the management of radioactive sources after the end of their useful life. This included the Regional Workshop: School on Drafting Regulations – Radiation Safety Stream attended by 21 experts from 14 European Member States, held in Vienna in August.

Transport Safety

The Agency published *Regulations for the Safe Transport of Radioactive Material: 2018 Edition* (IAEA Safety Standards Series No. SSR-6 (Rev. 1)). It also completed and piloted the e-learning training course on *Regulations for the Safe Transport of Radioactive Material: 2012 Edition* (IAEA Safety Standards Series No. SSR-6).

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Radiation Safety Information Management System

The Agency continued operating the Radiation Safety Information Management System (RASIMS) tool to assist Member States that receive technical support from the Agency in evaluating their application of the Agency's radiation safety standards. The Agency held two consultancy meetings in 2018, during which national coordinators from all regions tested and evaluated a new version of the tool that was under development. In October, 18 RASIMS national coordinators learned how to use the new version during an interregional workshop held in Vienna.