Incident and Emergency Preparedness and Response

Objective

To maintain and further enhance efficient Agency, national and international [emergency preparedness and response] capabilities and arrangements for effective response to nuclear or radiological incidents and emergencies independent of the triggering event(s). To improve exchange of information on nuclear or radiological incidents and emergencies among Member States, international stakeholders, and the public and media in the preparedness stage and during response to nuclear or radiological incidents and emergencies, independent of the triggering events.

Strengthening Emergency Preparedness Arrangements

The Agency, responding to the growing interest in emergency preparedness and response (EPR) guidance for new reactors, organized a virtual Technical Meeting on Next Generation Reactors and Emergency Preparedness and Response in September. It also held a virtual research coordination meeting for the coordinated research project entitled 'Development of Approaches, Methodologies and Criteria for Determining the Technical Basis for Emergency Planning Zone for Small Modular Reactor Deployment', in August.

The Agency continued to support the implementation of the requirements established in *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7) by developing technical guidance and conducting capacity building activities. A total of 10 training events at the regional and interregional levels and 11 training events at the national level were implemented. In addition, 100 webinars with a total of over 12 000 attendees were conducted in Arabic, English, French, Russian and Spanish.

Response Arrangements with Member States

The Response and Assistance Network (RANET) Joint Assistance Team exercise that was scheduled for August in Fukushima Prefecture, Japan, was conducted as a virtual five day tabletop exercise. The event included assessment and prognosis, the use of the International Radiation Monitoring Information System (IRMIS) and activities relating to the coordination and delivery of international assistance through the RANET mechanism.

The Agency conducted a total of eight Level 2 Convention Exercises (ConvEx-2) in 2020.

The Agency supported nine Member States in conducting and evaluating their national emergency exercises. Member States used the Unified System for Information Exchange in Incidents and Emergencies (USIE) Exercise web site for 84 of their exercises in 2020.

Response to Events

The Agency was informed by the competent authorities responsible for implementing the Convention on Early Notification of a Nuclear Accident and/or the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency on behalf of national governments and international organizations, or became aware through earthquake alerts or media reports, of 177 events involving or suspected to involve ionizing radiation (Fig. 1). It interacted with Member States in 54 of these events. It made one offer of good offices — a process which denotes that the Agency is available to provide or arrange assistance, if requested by a Member State — and conducted one assistance mission upon request from Lebanon.

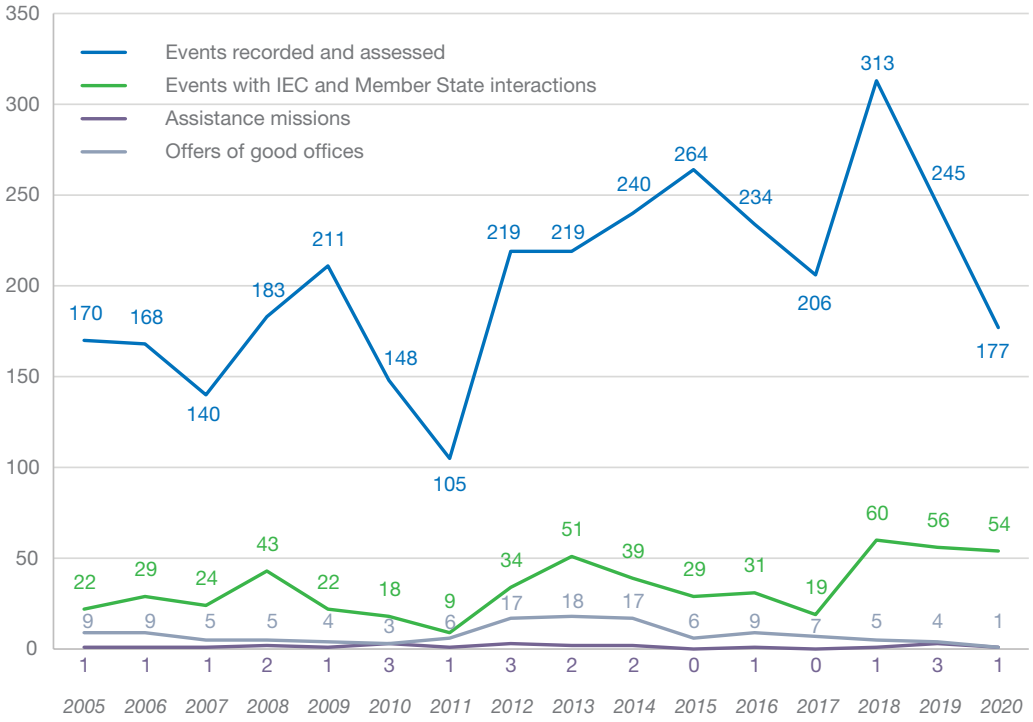

FIG. 1. Number of radiation events the Agency's Incident and Emergency Centre (IEC) recorded and assessed, and Agency responses, since 2005.

Inter-Agency Coordination

The Agency conducted a ConvEx-2f exercise in December with the involvement of the public information officers of Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) participating organizations.

In-house Preparedness and Response

The Agency organized a comprehensive programme of training classes and exercises to enhance the skills and knowledge of Agency staff members serving as qualified responders in the Incident and Emergency System. The programme offered 143 hours of training during the year, including 78 classes for 191 Agency staff responders. It successfully implemented blended and virtual learning, such that 53 classes comprising 85 hours of training were offered virtually. In addition, the Agency held five partial or full response exercises.

CASE STUDY

Agency Assistance to Lebanon in the Aftermath of the Beirut Blast

Early in the evening of 4 August 2020, a huge blast tore through Beirut. As the city reeled from its devastating impact, the Lebanese authorities requested the Agency's assistance to determine if radiation levels had increased as a result of the blast.

The Agency sent an Assistance Mission to Lebanon to provide support with radiation surveying, sampling and analysis. The Lebanese authorities had conducted radiation surveys and collected food, seawater, soil and building material samples at the scene of the blast. They recorded no unusual radiation values. The mission was requested to conduct independent radiation monitoring to confirm these measurements.

The Assistance Mission's radiation surveys did not find any unexpected radiation levels, only natural background radiation, and no evidence of artificial radionuclides. The team's findings confirmed those previously reported by the Lebanese authorities. Even though the mission took place more than a month after the explosion, it would still have detected any subsequent increase in radiation.

"The IAEA Assistance Mission was an important step in our process to reassure the public that the explosion did not result in any increased radiation levels in the environment," said Bilal Nsouli, Director of the Lebanese Atomic Energy Commission.

The team, comprising four experts from Denmark and France and four Agency staff members, measured radiation levels at several locations and assessed the impact of the explosion on the safety and security of radioactive material and sources at the port and in nearby hospitals and scrapyards.

The mission was conducted through the Agency's Response and Assistance Network (RANET), a network of States that offer assistance, on request, to minimize the actual or potential radiological consequences of a nuclear or radiological emergency.

In addition to on-site measurements, the environmental samples collected by the Lebanese authorities were analysed in laboratories in France and Switzerland as part of the Agency's assistance. These laboratories confirmed that there were no elevated radiation levels in the samples.

The Agency team also assessed the impact of the blast on radioactive material and sources stored in two hospitals close to the blast epicentre, assisting Lebanese authorities to confirm that radioactive sources at two hospitals were safe and secure.

The team recommended further actions to be taken in scrapyards, hospitals and the port to strengthen nuclear safety and security. These include training for scrapyard workers, better signage to indicate the presence of radioactive material and increased security for the storage of such material. Supporting the authorities with equipment was an important part of the mission, and during the mission the Agency team provided training in the use of handheld radiation detection equipment, which was also donated to the country.

"As Lebanon faces this challenging period, after the Beirut explosion and in the presence of COVID-19, we welcome the support the IAEA Assistance Mission provided to our response efforts," said Mr Nsouli. "We look forward to continuing to cooperate with the IAEA as we strengthen nuclear safety and security in the country."

In addition to support in nuclear safety and security, the Agency also worked with Lebanese national authorities to assess the damage to the health sector and the city's infrastructure. The Agency provided support on radiology and non-destructive testing to determine the safety of damaged buildings. It also shipped mobile X ray units and additional sets of real-time RT–PCR equipment and supplies for the diagnosis of COVID-19.

Experts from the Agency's Assistance Mission to Lebanon measure radiation levels at a scrapyard in Beirut on 14 September 2020.