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# Incident and Emergency Preparedness and Response

## Objective

*To maintain and further enhance efficient Agency, national and international emergency preparedness and response (EPR) capabilities and arrangements for effective response to nuclear/radiological emergencies independent of their cause. To improve provision/sharing of information on nuclear or radiological incidents and emergencies among Member States, international stakeholders and the general public/media in preparedness stage and during response.*

## Strengthening Emergency Preparedness Arrangements

The Agency assisted Member States in strengthening their emergency preparedness and response (EPR) arrangements and capabilities through its peer review services and EPR training events and workshops held throughout the year. In 2017, the Agency conducted an Emergency Preparedness Review (EPREV) mission to Slovenia. It also developed new guidelines that improve the EPREV process by streamlining the self-assessment, clarifying the steps during the initiation and preparation phases, and aligning terminology and actions with those of other peer review services, where appropriate. The Agency streamlined the Integrated Regulatory Review Service (IRRS) questions on EPR to better align their scope to the regulatory aspects of EPR. It held two webinars to train EPR reviewers in carrying out IRRS missions, with 14 participants from Member States in different regions.

The Agency organized 53 training events and workshops — 41 at the regional level and 12 at the national level — to assist Member States in implementing the requirements established in *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSR Part 7). This included 3 regional and 3 national workshops dedicated to the new concepts and approaches in EPR addressed in GSR Part 7, and involved 314 participants from 44 Member States. Two regional workshops for Member States in Southeast Asia covered different aspects of GSR Part 7 relevant to regional priorities. During the first workshop, held in Singapore, 21 participants from 10 Member States defined a plan for developing a regional strategy for coordinating public communication in an emergency. At the second workshop, held in Pattaya, Thailand, 22 participants from 10 Member States defined the basis for a regional protocol for assessment and decision making. Around 170 experts attended a webinar covering medical preparedness and response for a nuclear or radiological emergency held jointly by the Agency and the World Health Organization.

The Agency approved a Safety Guide entitled *Arrangements for the Termination of a Nuclear or Radiological Emergency* (IAEA Safety Standards Series No. GSG-11) for publication. The guide was jointly sponsored by ten international organizations. During the year, the Agency conducted a first interregional workshop on applying the guidance and recommendations in GSG-11 for preparing to terminate an emergency and transition either to an existing exposure situation or to a planned exposure situation. The workshop, held in December in

Vienna and attended by 27 participants from 27 Member States, included a series of case studies and working sessions.

The Agency conducted five Schools of Radiation Emergency Management to address Member State requests for comprehensive training on all relevant EPR topics. Two Schools were held in Austria (Fig. 1) and one each in Japan, the Republic of Korea and Mexico. A total of 146 participants from 68 Member States took part.



FIG. 1. The School of Radiation Emergency Management involved a technical visit to the Lower Austria Fire Brigade School (Niederösterreichische Landes-Feuerwehrschnule) during the three week training course held in Traiskirchen, Austria, in October.

During 2017, 240 health professionals from 44 Member States participated in 4 national and 6 regional training activities related to medical preparedness and response to a nuclear or radiological emergency. The activities covered medical response and dose assessment for individuals involved in such emergencies.

## Response Arrangements with Member States

During 2017, the Agency organized 13 Convention Exercises (ConvEx) with Member States and international organizations. The exercises were carried out under the framework of the Convention on Early Notification of a Nuclear Accident (the Early Notification Convention) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the Assistance Convention), and were used to test emergency communication channels, assistance mechanisms and the Agency's assessment and prognosis process. Member State capabilities were also tested regarding: requesting assistance during a nuclear or radiological emergency and preparing for its receipt; exchanging emergency information on appropriate protective actions; and communicating with the public.

One of the exercises held was a 36 hour ConvEx-3 exercise organized within the framework of the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) (Fig. 2). Hosted by Hungary and involving 82 other Member States and 11 international organizations, this was the largest ConvEx-3 exercise to date. The exercise was based on a simulated scenario of a severe accident at the Paks nuclear power plant. Lessons learned were discussed at a Technical Meeting to Evaluate the ConvEx-3 (2017) Exercise, held in December in Vienna and attended by 75 participants from 56 Member States and 4 international organizations. Meeting participants finalized the ConvEx-3 (2017)



FIG. 2. Agency staff participate in a ConvEx-3 exercise hosted by Hungary in June to test the global emergency response to a simulated accident at a nuclear power plant.

International Emergency Response Exercise Report detailing the preparation, conduct and evaluation of the exercise.

The Agency further improved its Unified System for Information Exchange in Incidents and Emergencies (USIE) web site, adding a range of new functions. The improved portal now enables organizations registered on USIE to update information on an event using short messages in free text fields associated with a category (e.g. public information, meteorology); to easily identify the appropriate form for reporting events; and to register public information officers of organizations. States registered in the Response and Assistance Network (RANET) can now use USIE to update or confirm details of their RANET registration. The upgraded USIE web site also supports the storage of encrypted information, which can be accessed only by authorized users.

In April, the Agency launched its Assessment and Prognosis Tools web site, accessible to all USIE users. The site promotes understanding of the Agency's assessment and prognosis process by giving Member States access to the same tools and procedures used by Secretariat staff during emergencies. In November, the Agency updated the web site, revising the existing tools and making available additional technical features. During the year it held four webinars, attended by more than 50 experts, to assist Member States in using the tools.

In 2017, the Agency included innovative virtual reality exercises as part of both the Technical Meeting to Review the Draft Safety Guide on Preparedness and Response for an Emergency during the Transport of Radioactive Material, held in Vienna in October, and the Regional Workshop on Assessment and Prognosis during a Nuclear or Radiological Emergency, held in Vienna in November. In total, more than 100 experts participated in over 200 emergency response exercises during these two events, including activities such as on-scene hazard assessment, radiological surveying techniques in high dose rate environments and application of strategies for monitoring in an emergency.

In October, the Agency held the first RANET Joint Assistance Team exercise at the RANET Capacity Building Centre in Fukushima Prefecture, Japan, involving 30 experts from 7 Member States registered in RANET. The exercise simulated an Agency assistance mission with a Joint Assistance Team comprising field assistance teams and experts from support organizations in various Member States registered in RANET, as well as representatives of the Agency. The participants managed and resolved administrative, logistical and technical matters, and issues involving the safety and security of personnel that can arise during an assistance mission.

Ten countries updated their RANET registration details in 2017: the Czech Republic, Egypt, Hungary, the Republic of Korea, Pakistan, Slovenia, Spain, Switzerland, Turkey and Ukraine. This included updates to National Assistance Capabilities (NAC), updates to NAC coordinator details and the addition of NAC expertise and resources.

In June, 24 experts from 6 Member States took part in a simulated tabletop exercise conducted by participants in the Dialogue between Coastal and Shipping States and facilitated by the Agency. Participants practised transboundary cooperation and communication in emergencies relating to nuclear materials transported by sea.

Since 2010, the Agency has routinely provided emergency contact points with comprehensive training in operational arrangements for implementation of the Early Notification Convention and the Assistance Convention. In 2017, the Agency organized three workshops on notification, reporting and requesting assistance, involving more than 100 participants from 75 Member States.

An analysis of the communications tests led the Agency to request emergency contact points to review the use of their emergency communications channels; those lacking USIE web site users were reminded to register new users. More than 300 changes of user accounts on the USIE system were implemented, and more than 200 new users were added to the web site. The Agency also contacted Member States that did not have contact points for emergency communications and encouraged the designation of contact points in line with the *Operations Manual for Incident and Emergency Communication* (EPR-IEComm 2012).

The Agency conducted a total of eight national, regional and interregional workshops on effective communication with the public in an emergency, including a ‘train the trainers’ workshop held in Vienna in August. A total of 190 participants from 78 Member States took part in the workshops.

## Response to Events

In 2017, the Agency was informed by the competent authorities, or became aware through earthquake alerts or media reports, of 206 events involving or suspected to involve ionizing radiation (Fig. 3). It took response actions in 19 of these events. It made 7 offers

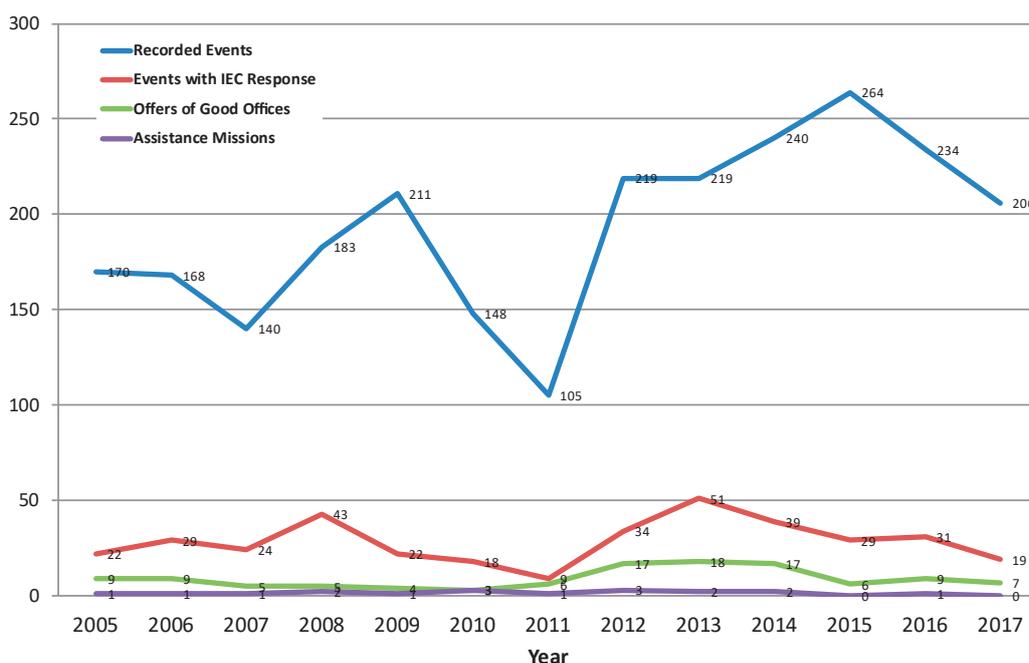


FIG. 3. Number of radiation events the Agency became aware of, and Agency responses, since 2005.

of good offices, including for events involving the loss of radioactive sources and those triggered by earthquakes. Since October 2017 the Agency collected, analysed and shared information and data with Member States and international organizations in response to elevated levels of Ru-106 in Europe.

## **Inter-Agency Coordination**

The 26th Regular Meeting of the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) was held in Brussels, Belgium, in November. Participants reviewed EPR activities in each organization, discussed lessons identified in the ConvEx-3 (2017) exercise, reviewed the exercise report and agreed on the IACRNE work programme for the next two years.

## **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 approximately 140 hours of training during the year, including 77 classes delivered to some 150 Agency staff responders. The Agency held four full response exercises during the year, including an exercise involving a radiological emergency triggered by a nuclear security event in December. In 2017, the Incident and Emergency Centre welcomed over 1000 visitors for presentations and tours of the operational area.