Incident and Emergency preparedness and response in case of a Nuclear or Radiological Event

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El Organismo Internacional de Energía Atómica creó en 2005 el Centro de Incidentes y Emergencias (IEC). En el artículo se analizan las convenciones internacionales que se aplican a los Estados Miembro, como la de Emergencias, Asistencia en caso de accidente nuclear o emergencia radiológica y Pronta notificación de accidente nuclear.

Se expone también el trabajo del IEC y su relación con otros organismos como la OMS o la FAO.

El artículo presenta el proceso seguido por el Centro para la respuesta a incidentes, así como la preparación ante emergencias y los informes posteriores.

In 2005, the International Atomic Energy Agency created the Incident and Emergency Centre (IEC). This article analyzes the international conventions that apply to Member States, such as the conventions on Assistance in the Case of a Nuclear Accident or Radiological Emergency and on Early Notification of a Nuclear Accident. It also describes the work of the IEC and its relations with other bodies such as the WHO and the FAO.

The article presents the process followed by the Centre for emergency preparedness and response to incidents and the subsequent reports.

The IAEA is the world's centre for cooperation in the nuclear field. The IAEA works with its Member States and partners worldwide to promote safe, secure and peaceful nuclear technologies. The IAEA's Statute assigns functions to the Secretariat in relation to radiation emergencies, including the fostering of international cooperation in the area of emergency preparedness and response. 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) (often called the Emergency Conventions) place specific legal obligations on the IAEA with regard to emergency preparedness and response.

In 2005, the IAEA established the Incident and Emergency Centre (IEC). As the global focal point for international preparedness, communication and response to nuclear and radiological incidents or emergencies irrespective of their cause, the IEC stands at the centre of coordinating effective and efficient activities worldwide. While emergency response capabilities have existed within the IAEA since the conclusion of the two conventions, in the 1980s, the decision to create an integrated Centre within the IAEA became more pressing with the increase in the use of nuclear applications as well as heightened concern over the malicious use of nuclear or radioactive materials. The IEC provides around-the-clock assistance to States in dealing with nuclear and radiological events irrespective of their cause.

The IAEA Statute and the Early Notification Convention and the Assistance Convention are the basis of IEC's work.

The Emergency Conventions

The Conventions were developed in 1986. Following the Chernobyl accident, the public opinion and even the nuclear community were shaken. The world questioned nuclear power and particularly its safety. It became clear that more international cooperation to strengthen nuclear safety was needed.

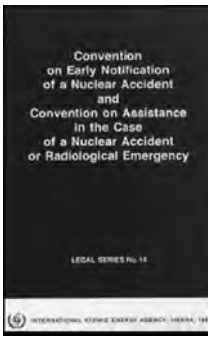
The IAEA and its Member States agreed during a Technical Meeting in Vienna in July 1986 on a draft of the Early Notification and Assistance Conventions. Shortly thereafter the Conventions were opened for signature.

The Emergency Conventions are the prime legal instruments that establish an international framework to facilitate the exchange of information and the prompt provision of assistance in the event of a nuclear accident or radiological emergency. They place specific obligations on the Parties and the IAEA, with the aim of minimizing consequences for health, property and the environment.

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

This Convention requires that States Parties cooperate between themselves and with the IAEA to facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimize its consequences and to protect life, property and the environment. The IAEA is charged with using its best endeavours to promote, facilitate and support the cooperation between the States Parties. In the event of a nuclear accident or radiological emergency the IAEA's functions are to: make available to a State Party or a Member State requesting assistance appropriate resources for the purpose of conducting an initial assessment of the nuclear accident or radiological emergency; transmit requests for assistance and relevant information to States Parties that may possess the necessary resources; offer its good offices to the States Parties or Member States; liaise with relevant international organizations to obtain and exchange relevant information; and, on request, co-ordinate the assistance at the international level that becomes available. Each State Party and the Agency have identified 24-hour warning points to which a request for assistance can be directed, as well as Competent Authorities who are authorized to send requests and to arrange for the provision of assistance. The Agency maintains an up-to-date list of such authorities and warning points and provides it to States Parties, Member States and relevant international organizations.

Convention on Early Notification of a Nuclear Accident



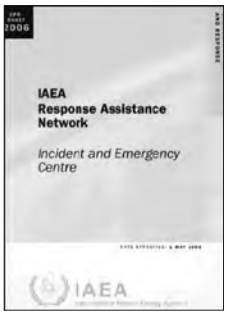
This Convention aims to strengthen international co-operation in order to provide relevant information about nuclear accident or radiological emergency as early as possible in order that transboundary radiological consequences can be minimized. States Party commit that, in the event of a nuclear accident that may have transboundary radiological consequences, they will notify countries that may be affected and the IAEA, and provide relevant information including: nature of the nuclear accident or radiological emergency, time of occurrence, exact location, facility or activity involved, assumed cause and foreseeable development relevant to transboundary effects, general characteristics of any release (nature, magnitude, effective height), current and forecast meteorological conditions relevant to transboundary effects, results of environmental monitoring relevant to transboundary effects, off-site protective measures taken or planned, predicted behaviour over time of the release, and further information on the development of the nuclear accident or radiological emergency. The IAEA in turn forthwith informs States Parties, Member States, other States that may be physically affected and relevant international organizations of a notification received and promptly provides other information on request. Each State Party and the Agency have identified 24-hour warning points to which a notification can be directed, as well as competent authorities who are authorized to send notifications and verify information provided. The Agency maintains an up-to-date list of such authorities and warning points and provides it to States Parties, Member States and relevant international organizations

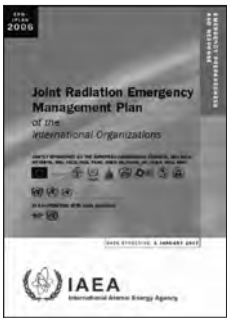
IEC's WORK

Under the Conventions and the IAEA Statute, the IEC coordinates the actions of global experts and efforts within the IAEA. It also helps to coordinate the responses of States as well as other international organizations, such as the WHO (World Health Organization), FAO (Food and Agricultural IAEA) or WMO (World Meteorological Organization) in case of a nuclear and radiological incident or emergency.

Response

Response to incidents and emergencies can involve exchange of information, provision of advice, coordination of field response and the provision of public information. The IEC ensures that the IAEA's incident and emergency arrangements are fully operational, efficient and effective. This includes training a broad range of IAEA staff to respond to emergencies as well as training external experts. In order to coordinate a global response, the IEC hosts a Response Assistance Network (RANET) under which IAEA Member States, Parties to the Conventions, and relevant international organizations are able to register their response capabilities.





In 2000, the Agency established a global response assistance network called ERNET. Renamed in 2006, RANET is becoming a network of national assistance capabilities to respond rapidly, and in principle on a regional basis, to nuclear and radiological incidents or emergencies.

In late 2006, the third edition of RANET, the main assistance network document, was published. It is a complete revision of the previous edition with all relevant sections updated to reflect a new operational and broader concept for the network. RANET is a network aiming to facilitate assistance in case of a nuclear and radiological incident or emergency in a timely and effective manner. In order to ensure an effective and efficient international response to an event, Member States are encouraged to register under RANET.

Being well prepared is the basis for effective and efficient international responses to emergencies. To achieve this, the IEC maintains the Joint Radiation Emergency Management Plan of the International Organizations and regularly organizes and supports various levels of exercises. These exercises are referred to as Convention Exercise (ConvEx). A ConvEx-1 tests communication; a ConvEx-2 tests response times; and a ConvEx-3 tests the full operation of the information exchange mechanism worldwide.

The IAEA Board of Governors approved the International Action Plan for strengthening international preparedness and response system for nuclear and radiological emergencies in 2004. This Action Plan, under the legal framework of the Assistance and Early Notification Conventions, is serving to improve and strengthen the international preparedness and response system. The IEC coordinates and supports the implementation of the Action Plan.

Preparedness

A central focus of the Centre is helping States by continuously working to refine standards and guidance for strengthening their preparedness. The IEC has developed practical tools and training programmes to assist in promptly applying the standards; and organizes or supports a variety or training mechanisms and exercises. The IEC continually updates documents that can be used by national authorities.

Through regional and national training courses using standardized teaching materials, the IEC exchanges information and assists in applying guidance. This guidance include international requirements for emergency preparedness, practical manuals for first responders, medical responders, radiological assessors, national planners and other participants of emergency preparedness and response system.

The Centre also conducts appraisal missions (Emergency Preparedness Review missions) to IAEA Member States be their requests to assist in developing or strengthening national capabilities for response consistent with international requirements.

Preparing First Responders

The IEC trains and prepares first responders (i.e. police, fire fighters, medical staff) for radiological incidents and emergencies, including the possibility of terrorist acquisition and use of radioactive materials. Radiological emergencies continue to occur throughout the world in unexpected places — often involving lost, stolen, damaged, discarded or found sources. Experience shows that even relatively minor radiological emergencies can have a severe social, economic and psychological impact nationally and internationally. In order to minimize these impacts, effective action by first responders is essential.

In almost all radiological emergencies, first responders and local officials, supported by national officials, take action first. Since radiological emergencies are rare, local responders have little or no experience in dealing with them, which often leads to an inadequate response. The level of preparedness required at the local and national levels in order to respond adequately to radiological emergencies is modest.

The IEC has found that for many States the best approach for assisting them in developing an adequate response capability is to provide them with detailed practical procedures (and associated training) that can be readily adapted for local use. In recognition of this critical need, a "Manual for First Responders to a Radiological Emergency" has been published to provide practical guidance for those responding within the first few hours of a radiological emergency (the emergency service personnel — fire brigade, police, forensic investigation, local medical teams — who would initially respond at the local level and the national officials who would support this early response). The guidance is co-sponsored by the International Association of Fire and Rescue Services (CTIF), the Pan American Health Organization (PAHO) and the WHO. (http://www-ns.iaea.org/tech-areas/emergency/emergency-response-actions.asp)

The IEC's First Responders Manual covers all the basic concepts and terms that could possible be needed by first responders and uses text that can be easily converted into national guidelines for use by first responders. The first section is aimed at actions that should be taken by the incident commander (IC) and the overall direction of the first response. Another section contains actions for specific responders and teams that will quickly respond under the direction of the IC. The actions in these two sections serve as a basis for training.

The document was developed with the understanding that the responses to radiological and chemical emergencies are very similar, albeit characterized by some specific differences. In both radiological and chemical emergencies, the major goals of the response are the same, namely 1) to protect the public; and 2) to protect emergency personnel during response. In both cases, our senses (e.g. smell or sight) may not be able to detect hazardous levels of the material. Therefore, the initial response is often carried out based on secondary indications of the hazards. These can include labels, signs or placards indicating the presence of a hazardous material, the appearance of medical symptoms in exposed individuals or readings from specialized instruments.

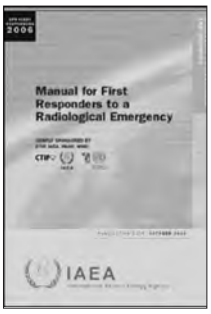
An excercise in Indonesia involving a "dirty bomb" is used to train local officials on ways to respond to security.

However, there are the following differences:

— Responders generally have no experience with radiation emergencies as they are very rare.

— Even very low levels of radiation, that pose no significant risk, can be detected rapidly with simple, commonly available instruments.

— Radioactive materials can cause radiation exposure even when persons are not in contact with them.



— The health effects resulting from radiation exposure may not appear for days, weeks or even years (chemicals may also cause delayed effects, such as cancer induction, although the immediate health effects are often the main concern).

— The public, media and responders often have an exaggerated fear of radiation.

With both chemical and radiological emergencies, first responders at the initial stage of response are the same (local officials and emergency services personnel typically carry it out). Furthermore, the basic actions of first responders to radiological emergencies should not differ, in general, from those taken in response to emergencies involving other hazardous materials.

There is also a separate section with instructions on how to perform various specific tasks. This information is also presented in cards that summarize, in bullet form, the detailed action guides presented in previous sections. These cards are to be used in the field by emergency services personnel during an actual response.

Reporting

An important component of the global incident and emergency response system is the notification and reporting arrangements and systems operated by the IEC. The IEC operates systems that are reliable and secure.

Member States, Non-Member States and international organizations have historically reported events and requests for assistance to the IAEA through the ENATOM arrangements using the ENAC web site, phone or fax. Under these arrangements, States have nominated Competent Authorities and National Warning Points who are able to receive, convey and quickly provide authoritative information on incidents and emergencies.

The IEC also operates the NEWS reporting and information exchange system aiming to communicate to the technical community, the media and the public events that are either rated at level 2 or above using the International Nuclear Event Scale (INES).

With the creation of the IEC, the Nuclear Events Web-based System (NEWS) has become part of the reporting and information exchange system operated by the IEC (http://www-news.iaea.org/news/). In an effort to facilitate repor-

ting, the Centre is developing a single system to incorporate both existing reporting systems

The INES scale communicates to the scientific and technical community, the media and the public in a consistent way the safety significance of events associated with radiation or radioactive material. INES is an important tool for communicating the right message — the safety significance of events and their potential consequences — at the right time. While the vast majority of events will be of interest only in the region or State where the event occurs, some will attract international interest. Therefore, participating States have set up mechanisms for such communications, using INES, through the Nuclear Event Web-based System (NEWS).

Initially, INES was developed in 1990 by international experts convened jointly by the IAEA and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA) for communicating the significance of events at nuclear installations. Since then, INES has been expanded to meet the growing need for communication on the significance of all events associated with radiation and radioactive material, including transport related events.

INES covers a wide range of practices, including industrial uses such as radiography, uses of radiation sources in hospitals, operations at nuclear facilities, and transport of radioactive material. By putting events relating to all these practices into their proper perspective, INES can facilitate a common understanding among the technical community, the media and the public.

INES is intended to be applicable for all events, the vast majority of which relate to failures in equipment or procedures. Whilst many such events do not result in any actual consequences for individuals, it is recognized that some are of greater safety significance than others. If all such events were rated at Level 0, the scale would be of no value in putting these events into perspective. Thus, it was agreed at its original inception that the INES scale needed to cover not only actual consequences but also potential consequences.

Effective national and global response capabilities are essential to minimize the impacts from nuclear incidents and radiological emergencies and to build public trust in the safety and security of nuclear energy. The increased use of nuclear energy and more acute security concerns require a proportionate increase in national, regional and international capabilities to respond to an accident or incident. In this context, the IEC will continue serving as the world's focal point for incident and emergency preparedness and response.

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