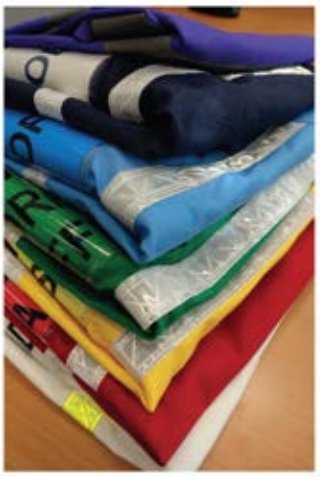
EMERGENCY PREPAREDNESS AND RESPONSE TECHNICAL SERVICES CATALOGUE

IAEA 60 Years
Atoms for Peace and Development




ERM

EMERGENCY PREPAREDNESS AND RESPONSE TECHNICAL SERVICES CATALOGUE

Effective national and global response capabilities are essential to minimize the impacts from nuclear and radiological emergencies and to build public trust in the safety and security of nuclear technology. The IAEA promotes the international Emergency Preparedness and Response (EPR) framework, which is based on international legal instruments to efficiently implement roles in response to nuclear or radiological incidents and emergencies regardless of whether they arise from accident, negligence or deliberate act.

Capacity Building

Education and Training

Networks

Tools

The IAEA helps maintain and strengthen effective EPR capabilities on national and international levels. As part of these activities, the IAEA prepares safety standards and guidelines and provides technical tools to assist Member States in building EPR capacities.

This catalogue provides detailed IAEA service-related and capacity building information to Member States to assist them in strengthening and maintaining their national and local EPR.
The technical service fact sheets within this catalogue are for informational purposes only. Member States desiring a specific service should send a request through formal channels to the IAEA Incident and Emergency Centre.

For more information on Emergency Preparedness and Response services,

please contact: iec-information@iaea.org

or

go to: https://www-ns.iaea.org/tech-areas/emergency/default.asp?s=1&l=5.

CAPACITY BUILDING

IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

CAPACITY BUILDING

Building EPR Capacity

Why is this important?

The global nuclear community is experiencing a period of dynamic change. The introduction of new nuclear power plants, the rapid expansion of existing nuclear power programmes and the wider use of radioactive sources and ionizing radiation in general highlight the need for continued and improved international cooperation to address the associated challenges.

The IAEA, through its Incident and Emergency Centre (IEC), is implementing a global programme to improve the effectiveness of emergency preparedness and response (EPR) in Member States by building capacity at the national, regional and international levels. The EPR capacity building programme is comprehensive and built upon IAEA Safety Standards, good practices and lessons learned. It is aimed at building and strengthening the preparedness and response abilities of individuals, organizations, and systems to perform core functions sustainably, and to continue to improve and develop over time.

What do I need to know?

Capacity building is an inherent part of IAEA's initiatives and activities underway in EPR. Success of the IAEA EPR Capacity Building programme stresses the interrelationship of several components, to include — developing human resources (training, workshops, exercises, capacity building centres), developing organizational and institutional infrastructures and legal frameworks and conducting large-scale exercises to test preparedness and response capability levels, strengths and weaknesses.

Essential programme information:

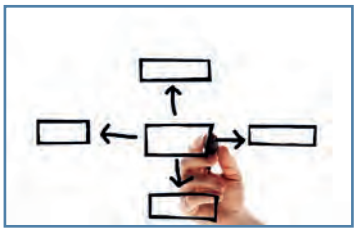
The IAEA provides both standardized and customized training programmes and materials, e-learning tools, train-the-trainer workshops, and training simulator equipment. IAEA also maintains a roster of regional experts who can provide assistance. It covers wide areas of EPR topics for various specialists involved in EPR.

What actions are recommended?

Member States interested in capacity building services, should send a request to the IAEA Incident and Emergency Centre.

Member States should work with the IAEA to periodically evaluate their EPR needs and programmes for building capacity.

Member States are encouraged to contact the IAEA should they need further information on building EPR capacity.



For a list of training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

What is IAEA's strategy for EPR capacity building?

STRATEGY FOR EPR CAPACITY BUILDING PROGRAMME

The IAEA's strategy for building capacity in EPR uses an integrated approach that works toward realistic and measurable objectives, outputs, and activities to develop, strengthen and sustain emergency preparedness for effective response nationally, regionally and internationally.

This strategy strives to be cost-effective, providing support to Member States in developing their own country-specific action plans based on high-priority needs.

Both at the policy level and the operational level, some of the goals of the EPR capacity building strategy include: building consensus, developing collaborative networks for information exchange; and improving intergovernmental and interagency EPR capabilities.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

16-2981

IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

CAPACITY BUILDING

School of Radiation Emergency Management

Why is this important?

One of the major lessons learned from past nuclear and radiological emergencies (such as the Chernobyl, Goiânia and Fukushima Daiichi accidents) is that a nuclear or radiological emergency is unpredictable and can occur anywhere and at any time. Experience from responses to these and other emergencies has clearly demonstrated the importance of Member States having efficient management systems in place that includes, among other components, emergency plans, procedures, and internally consistent national criteria—and even more importantly, having properly trained personnel to effectively coordinate and implement emergency preparedness and response (EPR) arrangements in their countries.

One function of the IAEA is to assist Member States in developing appropriate training programmes for personnel to prepare for and respond to nuclear and radiological emergencies. The *School of Radiation Emergency Management* is part of IAEA's ongoing efforts to designate capacity building centres on different EPR areas of specialization, and is consistent with similar IAEA regional initiatives aimed at providing participants with in-depth knowledge in different aspects of EPR to handle nuclear or radiological emergencies.

What do I need to know?

Students through classroom lectures, presentations and practical exercises will receive a comprehensive grounding in the basic principles of EPR in nuclear or radiological incidents and emergencies, based upon IAEA Safety Standards, technical guidance and tools on EPR.

School information:

Who should attend this school? Qualified professionals from organizations involved in planning for and response to a nuclear and radiological emergency are invited to enrol in this school.

What should I know before I attend? The school is key in the IAEA's strategy for Capacity Building on Emergency Preparedness and Response. The school syllabus is modular and flexible, topics selected designed with the aim of ensuring participants receive through training on EPR principles based on the most recently published IAEA Safety Standards and Guidelines. This structure allows highlighting some significant elements of an EPR programme.

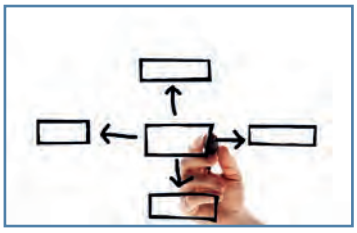
How long is this school? The duration of the school is three weeks, but can be shorter or longer based on selected curriculum content.

What actions are recommended?

Member States desiring information on the school, can send a request for information to the IAEA Incident and Emergency Centre.

Member States should select qualified professionals from organizations involved in planning for and response to a nuclear and radiological emergency.

Member States are encouraged to contact the IAEA should they consider having national courses on this subject.



For a list of training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches in this school? IAEA and international lecturers.

What could a school curriculum cover?

RADIATION EMERGENCY MANGEMENT SCHOOL MODULES

Modular topics could include:

- Basic elements of preparedness for and response to nuclear and radiological emergencies
- Emergency management systems
- Protective actions
- Instructions to the public
- Radiological responses
- Nuclear emergencies

Exercises could include:

- Simulated situations of a nuclear or radiological emergency
- Visits to an actual emergency operations centre
- Visits to a nuclear facility

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

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EDUCATION AND TRAINING

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Emergency Preparedness and Response

EDUCATION AND TRAINING

Communication with the Public in a Nuclear or Radiological Emergency

Why is it important?

Experience from nuclear and radiological emergencies highlights public communication as one of the most important challenges in emergency management. Communicating effectively with the public about nuclear and radiological emergencies will help mitigate the risks, support the implementation of protective actions and contribute to minimizing fear.

Effective public communication needs to be timely, clear, factually correct, objective and easily understandable. This can only be achieved by establishing a public communication programme with a specific strategy tailored to the relevant scenarios and key audiences. Failure to do so will consequently lead to a loss of the public's trust in the response organization jeopardizing compliance with protective actions. Therefore, effective public communication during nuclear or radiological emergencies needs be to be well prepared and trained for in advance.

What do I need to know?

This training course provides practical training to those responsible for communicating with the public and the media, and for coordinating with all sources of official information, in a nuclear or radiological emergency. This training course shows how to strengthen the efficiency of public communications in preparedness and response to a nuclear or radiological emergency, including supporting the implementation of public protective actions, mitigating the consequences of misconception, and gaining and maintaining public trust. This training is based on the *Communication with the Public in a Nuclear or Radiological Emergency* (EPR-PUBLIC COMMUNICATIONS, 2012).

Course information:

Who should attend this course? Participants are public information officers at facility, local and national levels, emergency managers and emergency coordinators.

What should I know before I attend this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

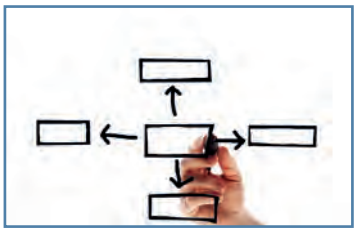
- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7),*
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA Series No. GS-G-2.1*)
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA Series No. GSG-2)*
- *Establishing the Safety Infrastructure for a Nuclear Power Programme (IAEA Series No. SSG 16)*

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who are public information officers at facility, local and national levels, emergency managers and emergency coordinators.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

How long is this course? The course duration is 5 days.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

Through lectures and exercises, this training course covers communication principles and tools to assist PIOs in achieving effective communication during a nuclear and radiological emergency and to help in mitigating its effects.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Communication with the Public in a Nuclear or Radiological Emergency (EPR-PUBLIC COMMUNICATIONS, 2012)

http://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Communcation_web.pdf

Method for Developing a Communication Strategy and Plan for a Nuclear or Radiological Emergency (EPR-PUBLIC COMMUNICATIONS PLAN, 2015)

http://www-pub.iaea.org/MTCD/Publications/PDF/EPR-CommPlan2015_web.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)

http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1)

http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

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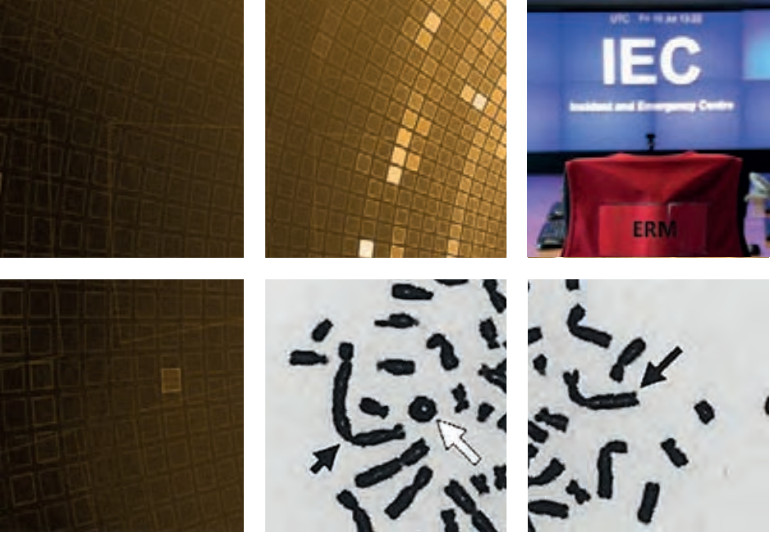


IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Cytogenetic Dosimetry: Applications in a Nuclear or Radiological Emergency

Why is it important?

Cytogenetic Dosimetry is a biological form of dosimetry that focuses on chromosome and cell analysis in cases of actual or suspected overexposure of individuals to ionizing radiation. Cytogenetic dosimetry can estimate the whole body absorbed dose, providing relevant information for medical treatment and eventual prognosis of an exposed individual. This analysis provides one source of diagnostic information that needs to be collected and considered when a nuclear or radiological emergency is investigated.

What do I need to know?

The purpose of this multiple-day training course is to provide information to participants on how to select and implement, in a standardized manner, the appropriate cytogenetic techniques to ensure comparable dose assessments following accidental exposure to ionizing radiation. It is based on the IAEA publication *Cytogenetic Dosimetry: Applications in Preparedness for and Response to Radiation Emergencies (EPR- BIODOSIMETRY 2011)*.

This training is presented at the technical level through lecture materials, tools and other resources. Upon completion, participants should have a comprehensive understanding of this subject.

Course information:

Who should attend this course? This is a technical training class, biologists, medical technologists, and laboratory staff performing biological dosimetry and relevant medical specialists (physicians, radiopathologists and haematologists) should attend.

What should I know before attending this course? This training course on preparedness and response for nuclear and radiological emergencies follows *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)*, *Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1),* and *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2,)*. Participants attending this training should be familiar with these IAEA Safety Standard Series publications.

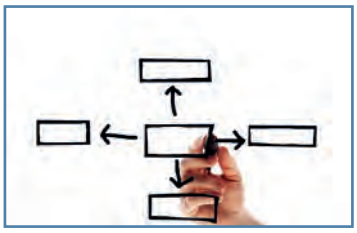
How long is this course? The course duration is 4 to 5 days.

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who perform biological dosimetry (technical/ medical specialists).

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

CYTOGENETIC DOSIMETRY: APPLICATIONS IN A NUCLEAR OR RADIOLOGICAL EMERGENCY	
Through lectures, case studies and exercises this training course covers, for example:	
• Basics of biological effects of ionizing radiation. • Basics of biodosimetry. • Retrospective dosimetry by translocation analysis. • Premature chromosome condensation analysis. • Cytokinesis block micronucleus assay.	• Automatic analysis of chromosomal assay. • Biodosimetry in mass casualty events. • Applied statistics for biological dosimetry. • Safety of laboratory staff and quality programmes. • Case studies of accident investigations.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Cytogenetic Dosimetry: Applications in Preparedness for and Response to Radiation Emergencies (EPR-BIODOSIMETRY 2011)
http://www-pub.iaea.org/MTCD/publications/PDF/EPR-Biodosimetry%202011_web.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)
http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1)
http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

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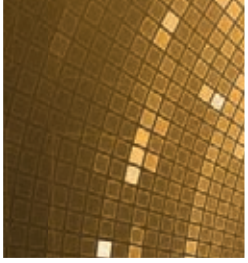
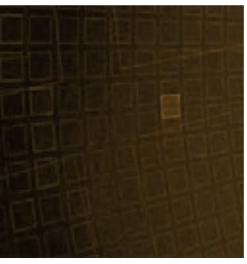


IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Development and Use of Operational Intervention Levels for Reactor Emergencies

Why is it important?

Member States need to establish or enhance capabilities for protecting the public in the event of a severe emergency at a reactor or its spent fuel pool.

OILs (Operational Intervention Levels) are operational criteria that allow the prompt implementation of protective actions and other response actions on the basis of monitoring results that are available during a nuclear or radiological emergency.

What do I need to know?

The purpose of this multiple-day training course is to enable the participants to understand the need for OILs as part of the protection strategy for nuclear and radiological emergencies as emphasized by IAEA Safety Standards, EPR-Series publications, Technical Documents and Accident Reports.

This training course will support Member States in establishing or enhancing adequate capabilities for protecting the public in the event of a severe emergency at a reactor or its spent fuel pool, by providing a detailed explanation on the use of IAEA's default OILs and the methodology for their derivation and revision.

In addition, it will contribute to the harmonization of national criteria for implementing protective actions and other response actions.

Course information:

Who should attend this course? Participants should ideally be involved in the development of national criteria for the implementation of protective actions and other response actions during a nuclear or radiological emergency. Background knowledge in emergency preparedness and response for nuclear and radiological emergencies and in the evaluation of monitoring results is of clear advantage.

What should I know before attending this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

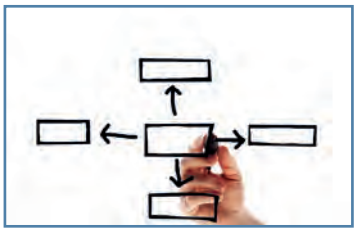
- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA General Safety Requirement, Series No. GSR Part 7),*
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GS-G-2.1*)
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GSG-2)*

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who develop national criteria for the implementation of protective actions and other response actions during emergencies.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

How long is this course? The course duration is 4 days.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

OILs TRAINING

Through lectures, practical sessions and exercises, this training course covers:

- Practical considerations for the use of OILs during the response to an emergency.
- Detailed review of the methodology for deriving default OIL values.
- General considerations concerning the revision of the default OIL values to account for different underlying assumptions or methodological approaches.
- Detailed review of the spreadsheets used to calculate IAEA's default OIL values.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

IAEA Safety standards for protecting people and the environment: Preparedness and Response for a Nuclear or Radiological Emergency, No. GSR Part 7 http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

***Email*: iec-information@iaea.org**
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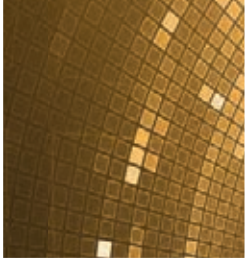
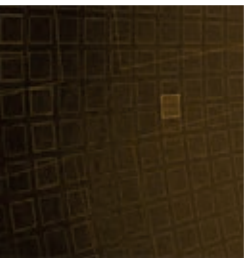
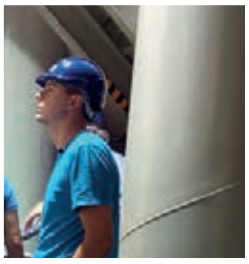




IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

EPR for Embarking Countries

Why is it important?

For countries embarking on or expanding an existing nuclear power programme, the establishment of capabilities and arrangements for emergency preparedness and response (EPR) to a nuclear or radiological emergency is one of the principal tasks in the development of a national infrastructure for nuclear power. Effective EPR is a key element to achieving overall plant safety and security.

What do I need to know?

The purpose of this multiple-day training course is to provide participants with information on meeting the international safety standards in EPR and understanding the concepts presented in the IAEA publication *Considerations in Emergency Preparedness and Response for a State Embarking on a Nuclear Power Programme (*EPR-EMBARKING 2012).

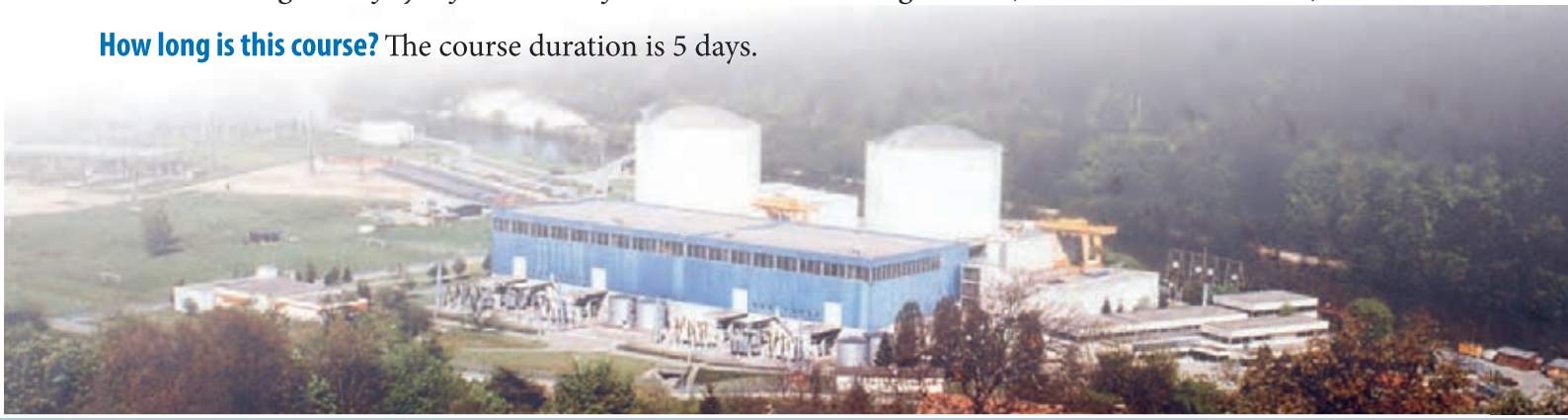
Course information:

Who should attend this course? Participants are managers of a national nuclear power programme and professionals working at a national level of EPR.

What should I know before attending this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7),*
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA Series No. GS-G-2.1*)
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA Series No. GSG-2)*
- *Establishing the Safety Infrastructure for a Nuclear Power Programme (IAEA Series No. SSG 16)*

How long is this course? The course duration is 5 days.

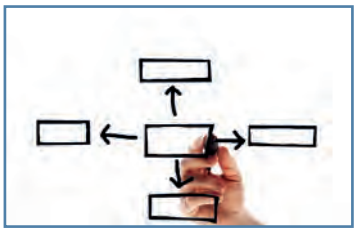


What actions are recommended?

Application of the EPR-EMBARKING (2012) publication will assist Member States embarking on nuclear power programmes to develop EPR.

Member States desiring training in this area should send an official request to the IAEA Incident and Emergency Centre.

Member States should select professionals working on nuclear power programmes and emergency preparedness and response at a national level to participate in this training.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

EPR FOR EMBARKING COUNTRIES	
Through lectures and exercises, this training course covers, for example:	
• International Requirements for Emergency Preparedness and Response. • Establishing Arrangements and Capabilities for Emergency Preparedness and Response For A State Embarking on a Nuclear Power Programme.	• International Assistance for a Radiation Emergency. • Emergency Preparedness Review. • IAEA Publications on Preparedness and Response for Radiation Emergency.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Considerations in Emergency Preparedness and Response for a State Embarking on a Nuclear Power Programme (EPR-EMBARKING 2012) *http://www-pub.iaea.org/books/IAEABooks/8836/Considerations-in-Emergency-Preparedness-and-Response-for-a-State-Embarking-on-a-Nuclear-Power-Programme*

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

Establishing the Safety Infrastructure for a Nuclear Power Programme (IAEA Series No. SSG 16) http://www-pub.iaea.org/MTCD/publications/PDF/Pub1507_Web.pdf

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***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

16-3077

IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Evaluating Preparedness for a Nuclear or Radiological Emergency

Why is it important?

Emergency response exercises are a key component of a good emergency preparedness and response program. They can provide unique insight into the state of preparedness of emergency response organizations. The adequacy of emergency response arrangements can be evaluated through the audit and review of plans, procedures and infrastructure and complemented by evaluations conducted through exercises.

Nuclear and radiological emergency response exercises are a powerful tool for verifying and improving the quality of emergency response arrangements. Each exercise represents a significant investment of effort, resources and people. It is therefore important for each exercise to yield the maximum benefit. That benefit depends primarily on the quality of the preparation, conduct and evaluation of the exercise.

What do I need to know?

This training course presents concepts, terminology and the process for the preparation, conduct and evaluation of an exercise to test preparedness for a nuclear or radiological emergency. Participants will gain practical knowledge on how to organize, conduct and evaluate an emergency response exercise. This training is based on the *Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency* (IAEA/EPR-EXERCISE, 2005).

Course information:

Who should attend this course? Participants are emergency preparedness coordinators who will have a key role in the organization of exercises to test preparedness for nuclear or radiological emergencies; technical and scientific support personnel who will lead the development of exercise scenarios and simulated radiological data; emergency planners; and specialists in associated training.

What should I know before attending this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

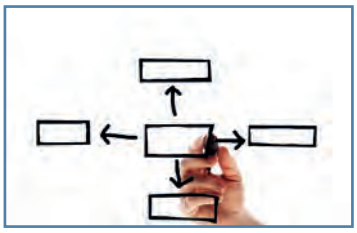
- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA General Safety Requirements, Series No. GSR Part 7)*;
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GS-G-2.1*);
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GSG-2).*

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who have direct responsibilities testing emergency preparedness (See "*Who should attend this course?*").

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

How long is this course? The course duration is 5 days.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

This course covers response exercises for emergencies involving all types of facilities and activities as described in emergency preparedness categories I to V. It includes lectures on: general concepts of exercises to test preparedness; preparation process and exercise manual; exercise objectives; scenario, injects and data; radiological data for exercises; and exercise evaluation.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Preparation, Conduct and Evaluation of Exercises to Test Preparedness for a Nuclear or Radiological Emergency (EPR-EXERCISE, 2015) http://www-pub.iaea.org/MTCD/Publications/PDF/Exercise2005_web.pdf

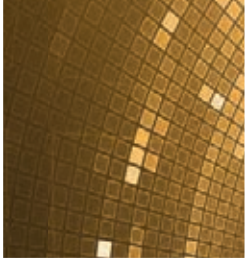
Preparedness and Response for a Nuclear or Radiological Emergency General Safety Requirements IAEA Safety Standards Series No. GSR Part 7, http://www-pub.iaea.org/books/IAEABooks/10905/Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency

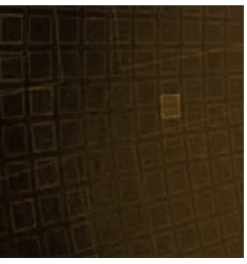
Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide IAEA Safety Standards Series No. GSG-2 http://www-pub.iaea.org/books/IAEABooks/8506/Criteria-for-Use-in-Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency

Arrangements for Preparedness for a Nuclear or Radiological Emergency Safety Guide IAEA Safety Standards Series No. GS-G-2.1 http://www-pub.iaea.org/books/IAEABooks/7503/Arrangements-for-Preparedness-for-a-Nuclear-or-Radiological-Emergency

Email: **iec-information@iaea.org**
Visit: **https://www-ns.iaea.org/tech-areas/emergency/**

16-2510

IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

First Response to a Radiological Emergency

Why is this important?

Radiological emergencies can happen anywhere and at anytime. They are those emergencies that involve radioactive contamination and radiation exposure occurring as a result of radioactive materials that have been released into the environment, for example — as in an accident, as an abandoned or lost source, or as an act of terrorism. Such a release could expose people, contaminate their surroundings and personal property.

Experience shows that local emergency services (e.g., local medical, law enforcement, and fire brigades) will have the most important role in the early response to a radiological emergency. Within hours, national officials may also have an important role to play in supporting the response at the local level.

What do I need to know?

The purpose of this multiple-day training course is to provide participants with the concepts and the operational response steps necessary for first responders. The manual used during this training is task-based and provides guidance on functional elements for first response organizations (e.g. Incident Commander, Fire Department, Law Enforcement, Emergency Medical Technicians and Radiological Assessors) on the procedures to follow when responding to a radiological emergency. It includes all types of radiological emergencies, including those resulting from nuclear security events.

Course information:

Who should attend this course? Participants who are first responders to a radiological emergency, such as law enforcement teams, fire brigades, emergency medical services, public information officers, resource coordinators, first responder monitors, forensic evidence management teams, national officials and emergency services personnel and managers.

What should I know before attending this course? This training course on preparedness and response for nuclear and radiological emergencies follows *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)*, *Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1)*, and *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2,)*. Participants should be familiar with these IAEA Safety Standards Series publications.

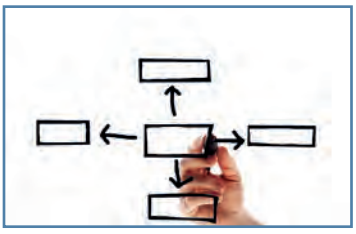
How long is this course? The course duration is 5 days.

What actions are recommended?

Member States desiring training should send a request to the IAEA Technical Cooperation Department (TC) formally requesting training.

Member States should select participants who are first responders to a radiological emergency (see *"Who should be taking this course?"*).

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

FIRST RESPONSE TO A RADIOLOGICAL EMERGENCY	
• Assessment of radiological hazard and establishment of inner cordoned area; • Basic concepts of emergency preparedness and response; • Exposure pathways and protective actions; • Field triage for mass casualties' event; • Guidelines on personnel protection and public protection; • Lessons learned from past radiological emergencies; • Monitoring and decontamination of the public, responders, vehicles and equipment;	• Response organization (Command and Control System) and concept of operations; • Role of the IAEA in strengthening Member States preparedness to respond to radiation emergencies. • Sample media and public statements for different scenarios of radiological emergencies; • Tasks of specific responders/teams to include the law enforcement team, fire brigade, emergency medical services, public information officers, first responder monitors, forensic evidence team and national officers.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf
First Response to a Radiological Emergency, Training Materials (2010), available in English, French, Russian and Spanish, http://www-pub.iaea.org/books/IAEABooks/7973/First-Response-to-a-Radiological-Emergency-Training-Materials
E-Learning Tools for First Response to a Radiological Emergency (2009), http://www-pub.iaea.org/books/IAEABooks/8178/E-Learning-Tools-for-First-Response-to-a-Radiological-Emergency
Portable Digital Tool for Assisting First Responders to a Radiological Emergency, https://www-ns.iaea.org/tech-areas/emergency/iec/fra/html/about.htm
Manual for First Responders to a Radiological Emergency (EPR - FIRST RESPONDERS, 2006), http://www-pub.iaea.org/books/IAEABooks/7606/Manual-for-First-Responders-to-a-Radiological-Emergency

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

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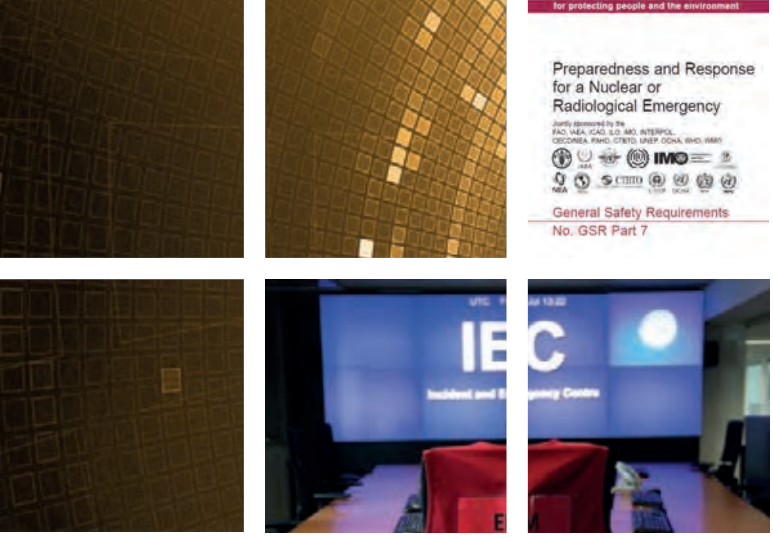


IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

GSR Part 7 | Preparedness and Response for a Nuclear or Radiological Emergency

Why is this important?

To ensure that training keeps pace with changes in the IAEA Safety Standards, the IAEA continually monitors and reviews its training material in parallel with these changes. Sometimes the outcome from these reviews is that training material prepared will then need to be improved to reflect updated requirements or recommendations. This ensures that IAEA training is responsive to Member States needs for any new or updated skills necessary to implement new or updated Safety Standards.

In November 2015, *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)* was published; it was cosponsored by 13 international organizations and established by the IAEA Board of Governors as a Safety Standard. This new publication takes into account developments and experience gained since 2002. It replaces the 2002 edition issued as P*reparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GS-R-2)*.

What do I need to know?

The purpose of this multiple-day training course is to provide participants with a review and comparison of the changes to the requirements between the previous IAEA Safety Standards Series No. GS-R-2 and the new No. GSR Part 7. Participants will discuss the impact of these changes on existing national emergency preparedness and response frameworks. Participants will also have the opportunity to discuss potential implementation challenges as well as identify areas that require further guidance and support.

Course information:

Who should attend this course? Participants whose responsibilities in preparing for and responding to a nuclear or radiological emergency at national, regional, or local levels, as well as at the facility level can enrol in this training. The actual work they perform, as well as relevant background activities in their home countries, will be considered in the selection process.

What should I know before I attend this course? Participants should be familiar with IAEA Safety Standards Series No. GS-R-2. Also, since the training will be conducted in English, participants should have sufficient proficiency to follow lectures and express themselves without difficulty.

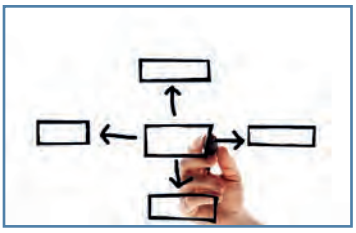
How long is this course? The course duration is 5 days.

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who are involved in emergency planning at different levels.

Member States are encouraged to contact the IAEA should they consider having national courses on this subject.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover? (See table)

PREPAREDNESS AND RESPONSE FOR A NUCLEAR OR RADIOLOGICAL EMERGENCY, GSR PART 7	
• Information on the process of revision of IAEA Safety Standards Series No. GS-R-2 • General information on updates to the format and contents in IAEA Safety Standards Series No. GSR Part 7 in comparison to IAEA Safety Standards Series No. GS-R-2 • Revisions introduced to the general, functional and infrastructural requirements • Impacts on national emergency preparedness and response frameworks • Challenges in the implementation of the revised safety requirement • Needs for further guidance and support for the application of the safety requirement	**New or revised concepts and approaches include, for example:** • Dosimetric criteria (generic criteria and reference levels) • Emergency planning zones and distances • Hazard assessment and categories • Protection of emergency workers and helpers in an emergency • Protection strategies • System for placing radiological health hazards in perspective • Termination of a nuclear or radiological emergency

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Email: **iec-information@iaea.org**
Visit: **https://www-ns.iaea.org/tech-areas/emergency/**

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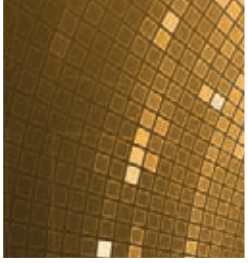
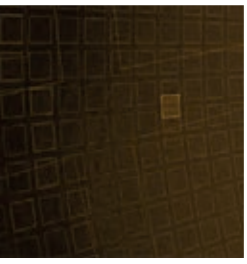


IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Medical Response to a Nuclear or Radiological Emergency

Why is it important?

Nuclear or radiological emergencies can result in radiation overexposure of persons, requiring significant and adequate medical response. The response involves nuclear facility, hospital and other personnel, emergency workers, medical patients, and members of the general public. In addition, the responders could also be exposed to radiation or be contaminated as a consequence of the response. This represents a challenge for emergency responders and, without adequate preparedness of the medical community for such nuclear or radiological emergencies, medical management of the situation could be ineffective.

Experience has shown that in many nuclear and radiological emergencies, the severity and extent of the medical consequences could be reduced by effective medical preparedness. Training in this area will ensure that a country is more effectively prepared for the medical response to emergencies.

What do I need to know?

The training course explains concepts about the medical response to nuclear or radiological emergencies. It provides guidance about early diagnosis, general management, specific treatment and other elements related to the organization of the medical response. It is based on the IAEA and WHO cosponsored publications, mainly the *Generic Procedures for Medical Response during a Nuclear or Radiological Emergency* (IAEA/EPR-MEDICAL 2005). This course is designed and given at the national level.

Course information:

Who should attend this course? This course is designed for participants indicated in these medical area:

- **Response at the scene:** medical first responders, emergency medical technicians, ambulance attendants and medical personnel in general who may be called to respond at the scene of a radiological emergency or at a nuclear facility.
- **Response at the hospital:** emergency physicians, nursing staff, support staff and medical administrators who may be called upon to receive and manage the critical care for overexposed, contaminated or potentially contaminated patients in the hospital at the emergency room.
- **Advanced medical care:** medical specialists providing an overview about the management of severely exposed or internally contaminated patients.

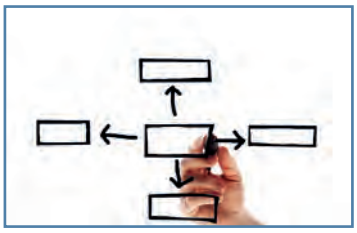
What should I know before attending this course? This course for medical first responders follows requirements found in *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Safety Requirement Series No. GSR Part 7*). Participants attending this training should be familiar with these safety requirements and other IAEA medical publications as listed in Resources on page two of this fact sheet.

What actions are recommended?

Member States desiring training should send a request to the Incident and Emergency Centre of the IAEA.

Member States should select medical doctors and other healthcare professionals who may become involved in a nuclear or radiological emergency for the training.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

How long is this course? There are three modules in this series—each lasting three days for a total of nine days.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

MEDICAL RESPONSE TO A RADIATION OR NUCLEAR EMERGENCY	
Through lectures and exercises, this training course covers, for example:	
• First response at the scene. • Managing patients with radiological contamination and/or overexposure. • Protecting responders. • Transferring patients to hospitals or other health centres. • Setting up the emergency area.	• Receiving the patient. • Diagnosis and radiological considerations of patients involved in nuclear or radiological emergencies. • Discharging or transferring patients to conventional medical facilities. • Advanced techniques and methods to diagnose, assess and treat overexposed individuals.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Generic Procedures for Medical Response During a Nuclear or Radiological Emergency (EPR-MEDICAL, 2005) http://www-pub.iaea.org/MTCD/Publications/PDF/EPR-MEDICAL-2005_web.pdf

Medical Preparedness and Response for a Nuclear or Radiological Emergency, Training Manuals, *http://www-pub.iaea.org/books/IAEABooks/8831/Medical-Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency*

Medical Preparedness and Response, Educational Material, 2002, *http://www-pub.iaea.org/books/IAEABooks/6598/Medical-Preparedness-and-Response*

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

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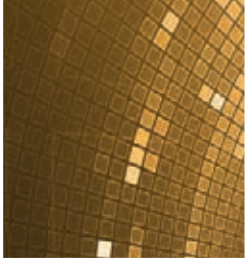
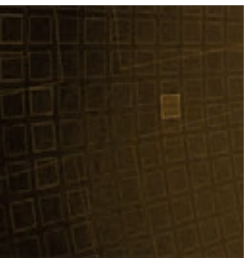


IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Notification, Reporting and Requesting Assistance in the Case of a Nuclear or Radiological Emergency

Why is it important?

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)* are the prime legal instruments that establish an international framework to facilitate the exchange of information and the prompt provision of assistance upon request in the event of a nuclear or radiological emergency, with the aim of minimizing the consequences.

The IAEA Secretariat is the depository for these international conventions and the global focal point, through its Incident and Emergency Centre (IEC), for coordinating international communication, assistance and response to nuclear and radiological emergencies with and for Member States.

What do I need to know?

The purpose of this multiple-day training course is to provide information to participants through procedures and hands-on experience, how to efficiently use the tools available for international communication on nuclear and radiological emergencies. The course covers notification procedures, updates to initial information, criteria for reporting nuclear and radiological emergencies as well as procedures for requesting or providing international assistance in case of a nuclear or radiological emergency.

Course information:

Who should be attending this course? Participants should be staff from the officially designated emergency contact points for the IAEA in their countries, and have responsibilities for notification, reporting and requesting assistance.

What should I know before attending this course? This training course is based on the Articles contained in both the *Early Notification Convention* and *the Assistance Convention*. It is also based on the requirements found in *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA Series No. *GSR Part 7*).

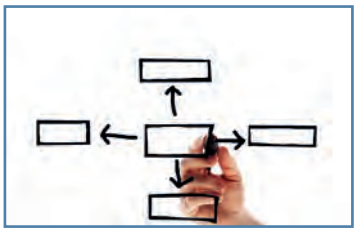
How long is this course? The course duration is 4 days.

What actions are recommended?

Member States desiring training should send a request to the Incident and Emergency Centre of the IAEA.

Member States should select participants who are the officially designated emergency contact points for the IAEA, and responsible for notification, reporting and requesting assistance.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

NOTIFICATION, REPORTING AND REQUESTING ASSISTANCE
The training programme closely follows the IAEA Operations Manual for Incident and Emergency Communication (EPR-IEComm, 2012). Training covers:
• Designation of emergency contact points; • Exercises and drills, and response procedures for a set of identified events; • Sessions on the restricted attachment to EPR-IEComm, 2012, which contains details of the emergency communication channels; • Practical training on the use of the Unified System for Information Exchange in Incidents and Emergencies (USIE) web-site for notification and reporting.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Operations Manual for Incident and Emergency Communication (EPR-IEComm 2012)
http://www-pub.iaea.org/MTCD/Publications/PDF/EPR_IEComm-2012_Web.pdf

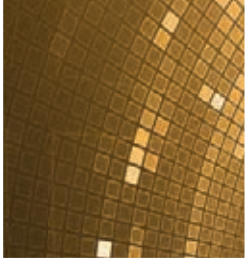
IAEA Unified System for Information Exchange in Incidents and Emergencies (USIE)
https://iec.iaea.org/usie/actual/LandingPage.aspx

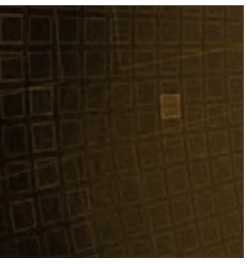
Convention on Early Notification of a Nuclear Accident
https://www.iaea.org/publications/documents/treaties/convention-early-notification-nuclear-accident

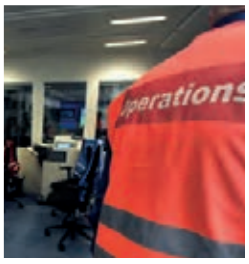
Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
https://www.iaea.org/publications/documents/treaties/convention-assistance-case-nuclear-accident-or-radiological-emergency

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

16-2508



IAEA 60 Years
Atoms for Peace and Development

Emergency Preparedness and Response

EDUCATION AND TRAINING

Optimization of EPR

Why is it important?

To optimize the use of resources for effective response, the IAEA Safety Standards Series recommend that emergency preparedness and response (EPR) plans be coordinated and integrated within each Member State. Planning should not be done by one organization or agency without consultation of the others. In addition, Member States should establish optimized national generic and operational criteria to take urgent protective actions in compliance with international standards and taking local and national conditions into account to effectively respond to nuclear or radiological emergencies.

What do I need to know?

This training course provides participants with an in-depth understanding of the concepts and the process for optimizing decision-making during the preparedness phase, the urgent response phase and the transition phase of an emergency. It also provides practical knowledge of the principles and methods for optimizing EPR arrangements within an all-hazard approach as well as hands-on application of the principles for optimization of emergency plans at the national and regional levels.

Course information:

Who should attend this course? Participants should be staff with direct responsibilities in the national or regional planning for nuclear or radiological emergencies.

What should I know before attending this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA General Safety Requirement, Series No. GSR Part 7),*
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GS-G-2.1*)
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA General Safety Guide, Series No. GSG-2)*

How long is this course? The course duration is 3 days.

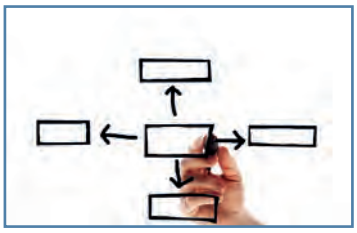
Who teaches this course? IAEA and international lecturers.

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who have direct responsibilities in the national or regional planning for nuclear or radiological emergencies.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

What does this course cover?

OPTIMIZATION OF EMERGENCY PREPAREDNESS AND RESPONSE
Through lectures and exercises, this training course covers, for example:
• Knowledge, principles and methods for optimizing: * Decision-making during preparedness and urgent response phases, * Preparedness and response arrangements within an all-hazard approach, * Emergency plans at the national and regional levels.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency (EPR-METHOD, 2003)
http://www-pub.iaea.org/MTCD/Publications/PDF/Method2003_web.pdf

Preparedness and Response for a Nuclear or Radiological Emergency General Safety Requirements IAEA Safety Standards Series No. GSR Part 7, http://www-pub.iaea.org/books/IAEABooks/10905/Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency General Safety Guide IAEA Safety Standards Series No. GSG-2 http://www-pub.iaea.org/books/IAEABooks/8506/Criteria-for-Use-in-Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency

Arrangements for Preparedness for a Nuclear or Radiological Emergency Safety Guide IAEA Safety Standards Series No. GS-G-2.1 http://www-pub.iaea.org/books/IAEABooks/7503/Arrangements-for-Preparedness-for-a-Nuclear-or-Radiological-Emergency

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16-2505

IAEA 60 Years
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Emergency Preparedness and Response

EDUCATION AND TRAINING

Preparedness and Response for an Emergency at a Research Reactor

Why is it important?

Research reactors are small nuclear reactors — too small to generate electricity, but they do play an important role in making radioactive isotopes, for example, for use in research, medicine and agriculture.

Even though research reactors are relatively small compared to nuclear power reactors, emergencies can still happen, making it necessary to train personnel in emergency preparedness and response to ensure that workers, the public and the environment are kept safe and are not impacted should an accident occur.

IAEA Safety Standards require research facility operators to maintain the same sort of emergency planning that much larger nuclear power reactors do. These plans include, among other things, how to assess and classify events, how to respond to events, and how to establish protective actions when needed.

What do I need to know?

This training course provides assistance to Member States in their response to a research reactor emergency. The information within includes action guides for the facility emergency response team, instructions, practical procedures and tools and can be easily adapted by a Member State to build a basic capability to respond to a research reactor emergency. The training materials are designed to train the reactor facility responders on how to apply *Generic Procedures for Response to a Nuclear or Radiological Emergency at Research Reactors* (IAEA/EPR-RESEARCH REACTOR, 2011) to effectively respond to a research reactor emergency.

Course information:

Who should attend this course? Participants should be emergency planners at facility and local levels, emergency response coordinators and emergency managers.

What should I know before I attend this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7)*;
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA Series No. GS-G-2.1*);
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA Series No. GSG-2).*

How long is this course? The course duration is 5 days.

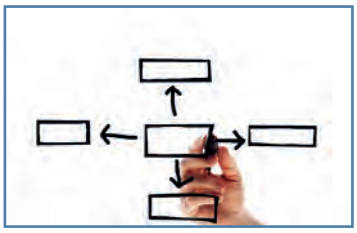
Who teaches this course? IAEA and international lecturers.

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who are emergency planners at facility and local levels, emergency response coordinators and emergency managers.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

What does this course cover?

PREPAREDNESS AND RESPONSE FOR AN EMERGENCY AT A RESEARCH REACTOR
Through lectures and exercises, this training course covers, for example:
• Developing procedures for on-site and off-site protective actions; • Establishing response teams (structure roles and responsibilities); • Organizing emergency response actions at a reactor site; • Reviewing Threat Category II and III research reactor sites.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Generic Procedures for Response to a Nuclear or Radiological Emergency at Research Reactors (EPR-RESEARCH REACTOR, 2011) http://www-pub.iaea.org/books/IAEABooks/8698/EPR-Research-Reactor-Generic-Procedures-for-Response-to-a-Nuclear-or-Radiological-Emergency-at-Research-Reactors

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency

(IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

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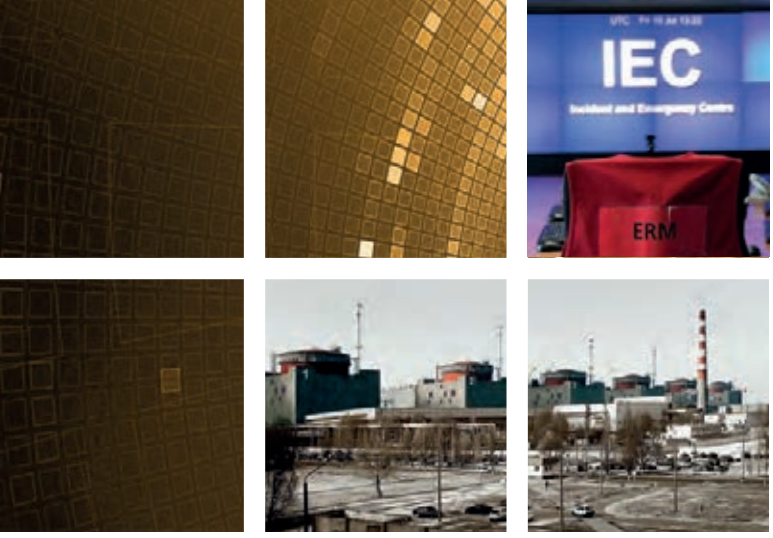

IAEA 60 Years
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Emergency Preparedness and Response

EDUCATION AND TRAINING

Protecting the Public During a Nuclear Power Reactor Emergency

Why is it important?

An emergency at a nuclear power plant which may involve damage to fuel in the reactor core or in a spent fuel pool can have devastating effects, including possible loss of life, severe health effects and psychological impact, as well as economic and sociological consequences. These effects can be prevented or mitigated by the prompt implementation of protective actions and other response actions.

What do I need to know?

This training course provides participants with an understanding of the actions necessary to protect the public in the event of an emergency involving actual or projected severe fuel damage in a light water reactor (LWR) or spent fuel pool. It provides and explains the basis and the criteria for decisions regarding public protective actions during an emergency. This training is based on *Actions to Protect the Public in an Emergency due to Severe Conditions at a Light Water Reactor* (EPR-NPP PUBLIC PROTECTIVE ACTIONS 2013).

Participants will be trained on: making decisions to protect the public based on nuclear power plant conditions; making decisions to protect the public based on environmental measurements made after a release of radioactive material; and putting the radiological health hazard in perspective for the public.

Course information:

Who should attend this course? Participants are decision-makers and their support staff, emergency planners at facility and local levels, emergency response coordinators and emergency managers.

What should I know before attending this course? Participants attending this training should be familiar with these IAEA Safety Standards Series Publications:

- *Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7),*
- *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (*IAEA Series No. GS-G-2.1*)
- *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (*IAEA Series No. GSG-2)*

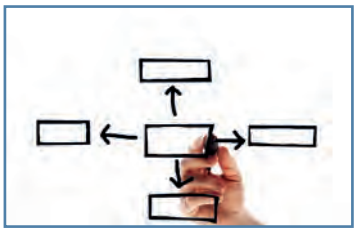
How long is this course? The course duration is 5 days.

What actions are recommended?

Member States desiring training should send a request to the IAEA Incident and Emergency Centre.

Member States should select participants who are decision makers and their support staff, emergency planners at facility and local levels, emergency response coordinators and emergency managers.

Member States are encouraged to contact the IAEA should they need further assistance with this course.



For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Who teaches this course? IAEA and international lecturers.

What does this course cover?

PROTECTING THE PUBLIC DURING A NUCLEAR POWER REACTOR EMERGENCY	
Through lectures and exercises, this training course covers, for example:	
• Overall concepts. • Protective actions and other response actions. • Response actions for those potentially exposed. • Tools to support protective action decision making.	• Emergency classification system. • Off-site emergency zones and distances. • Putting radiological health hazard in perspective for the public.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Actions to Protect the Public in an Emergency due to Severe Conditions at a Light Water Reactor (EPR - NPP Public Protective Actions, 2013), available in English and Russian *http://www-pub.iaea.org/books/IAEABooks/10362/Actions-to-Protect-the-Public-in-an-Emergency-due-to-Severe-Conditions-at-a-Light-Water-Reactor*

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA Series No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA Series No. GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

16-2980

NETWORKS

TOOLS

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Emergency Preparedness and Response

TOOLS

Assessment and Prognosis

Why is this important?

In a nuclear or radiological emergency, situational awareness and the understanding of the potential hazards, how they may evolve during the emergency, are critical in order to properly respond and to plan for any eventual changes in the course of response actions.

The need for this situational awareness was clearly demonstrated in the Fukushima Daiichi accident, an extremely complex, severe and evolving emergency, which featured not only one nuclear power unit under blackout conditions, but multiple units in the midst of an unprecedented earthquake and tsunami devastating the region.

The global response required not only an understanding of the humanitarian conditions in the areas affected by the earthquake and tsunami, but also the understanding of the technical conditions at the Fukushima Daiichi NPP, which were in many ways uncertain. Indeed, information channels, resources and arrangements for information sharing were pushed to their limits.

At the time of the Fukushima Daiichi accident, the role of the IAEA covered four distinct aspects in the response to a nuclear or radiological emergency: (1) notification and exchange of official information through officially designated contact points; (2) provision of timely, clear and understandable public information; (3) provision and facilitation of international assistance upon request; and (4) coordination of the interagency response.

This role did not include the provision of a prognosis of the potential evolution of the accident or an assessment of its possible consequences.

The IAEA Action Plan on Nuclear Safety that was subsequently enacted as a result of the Fukushima Daiichi accident expanded the IAEA's role during emergency response to cover the need "… to provide Member States, international organizations and the general public with timely, clear, factually correct, objective and easily understandable information during a nuclear emergency on its potential consequences, including analysis of available information and prognosis of possible scenarios based on evidence, scientific knowledge and the capabilities of Member States."

What do I need to know?

The IAEA fulfils this expanded response role through the Incident and Emergency System (IES) and the Incident and Emergency Centre (IEC). To make this expanded role operational, the IAEA uses existing guidance, tools and expert personnel resources, with the extended capabilities of various Member States registered in the IAEA Response and Assistance Network (RANET) who make their national resources available to conduct assessment and prognosis during an emergency.

The IAEA has also developed new tools and procedures to assist in this process. These tools assess public protective actions, event classification, the state of critical safety functions and prognosis accident development. Ultimately, these tools will be used to produce effective communication material for distribution to our partners in Member States, International Organizations and to the public during a radiological or nuclear emergency.

What actions are recommended?

Provide data through EPRIMS at the preparedness stage and contribute to its Reactor Technical Information database.

Invite the IAEA to participate in bilateral exercises to exercise the Agency's assessment and prognosis process.

Assist the IAEA with the development of new tools, procedures and guidance for assessment and prognosis.

Share experiences with the IAEA and other Member States on the Agency's assessment and prognosis process to identify areas for continuous improvements.

ASSESSMENT AND PROGNOSIS OBJECTIVE AND IMPLEMENTATION

In its expanded response role, the IAEA's objective is to assess where and what protective and other response actions need to be taken by the Accident State and to provide advice, if needed to Accident State and impacted States. The IAEA will implement the following actions as needed:

- Development of a 'reasonably' bounding estimation of the potential progression and the associated radiation exposure pathways, based on available information, evidence and scientific knowledge;
- Evaluation of relevant information to assess if the public is safe and will continue to be safe, and if not, identification of protective and/or other response actions that should be considered;
- Evaluation of relevant information to assess if workers and emergency workers are safe and will continue to be safe, and if not, identification of additional actions that should be considered;
- Identification of actions that should be considered to address issues associated with international trade and interests;
- Assessment of protective and other response actions being implemented, recommended or discussed to assess if these are effective and, if not, identification of actions that should be considered by Member States, international organizations and the IAEA Secretariat;
- Provide active Member States alerts in which response actions may need to be considered;
- Conduct on-going assessments and prognosis based on progression of the event.

Based on the IAEA Safety Standards, the capabilities of the IAEA Secretariat, its Member States and relevant international organizations through RANET and/or adjacent agreements, the IAEA is now able to implement this expanded response role, making sound technically-based determinations to forecast the ongoing event and advise on public safety.

Resources

IAEA Report on Assessment and Prognosis in Response to a Nuclear or Radiological Emergency, International Experts Meeting, 20-24 April 2015
https://www.iaea.org/sites/default/files/iem9-assessment-and-prognosis.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/ranet.asp?s=1&l=65**

16-2986

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Emergency Preparedness and Response

TOOLS

Communication in a Nuclear or Radiological Emergency

Why is it important?

Nuclear and radiological emergencies pose many challenges, the degree of difficulty in meeting these challenges depends on several factors—one of which is public reaction. When a crisis occurs, the need to communicate is immediate. Experience and lessons learned from previous emergencies have shown that effective crisis communication can positively affect the way the public reacts to an emergency. The broader implications for preparedness and response indicate that emergency communication needs to be well-planned, well-executed and well-integrated into every stage of managing an emergency.

For this reason, organizations designate a Public Information Officer (PIO) or a team responsible for developing and releasing information in an emergency to the public and to the media. They are also responsible for coordinating with all sources of official information to ensure a consistent message is being provided to the public.

What do I need to know?

Whether an organization's public information programme consists of one person or several PIOs, it is important for all PIOs to be properly trained, to have tools and to have resources available. Likewise, it is important to have a well-established public communication programme with a specific strategy adapted to the relevant scenarios and key audiences.

The PIO gathers, verifies, coordinates, and disseminates accurate, accessible, and timely information on the emergency to both internal and external stakeholders as well as to the media and general public. The aim of IAEA's PIO tools is to provide practical guidance for public information officers on the preparation for and response to a nuclear or radiological emergency.

What IAEA tools are available for PIOs?

The IAEA offers a PIO Toolkit with a broad range of tools for public information officers responsible for communicating with the public and the media in a nuclear or radiological emergency. They cover how public communication can be integrated in the incident command system, selecting a spokesperson, drafting an initial press release, as well as covering what influences public trust and risk perception. The toolkit includes:

- Method for Developing a Communication Strategy and Plan for a Nuclear or Radiological Emergency (IAEA/EPR-Public Communication Plan, 2015);
- Communication with the Public in a Nuclear or Radiological Emergency (IAEA/EPR-Public Communications, 2012), available in English, French and Spanish;
- Communication with the Public in a Nuclear or Radiological Emergency —Training Materials (IAEA/EPR-Public Communications 2012).

What actions are recommended?

Members States seeking in Public Communication can contact:
iec-information@iaea.org

Member States can find publication resources for emergency planning in the area of public communication at
http://www-pub.iaea.org/books/

Member States interested in the latest news on Emergency Preparedness and Response can follow **@IAEAIEC** on Twitter.

For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

Other Important Information

The IAEA offers assistance and training upon request to Member States through trained international experts.

The training courses offered on the IAEA publication EPR-Public Communications, 2012. The training course provides practical training to those responsible for communicating with the public and the media, and for coordinating with all sources of official information, in a nuclear or radiological emergency. It presents the way in which to reach the goals to strengthen the efficiency of public communications in preparedness and response to a nuclear or radiological emergency, which include supporting the implementation of public protective actions, mitigating the consequences of fear, and gaining and maintaining public trust.

The training course is offered to all Member States. Participants are public information officers at facility, local and national levels, emergency managers and emergency coordinators. It is a five-day training course available in English, French, Japanese, Russian and Spanish.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Method for Developing a Communication Strategy and Plan for a Nuclear or Radiological Emergency (EPR-Public Communication Plan, 2015) http://www-pub.iaea.org/books/IAEABooks/10866/Method-for-Developing-a-Communication-Strategy-and-Plan-for-a-Nuclear-or-Radiological-Emer

Communication with the Public in a Nuclear or Radiological Emergency (EPR - Public Communications, 2012), http://www-pub.iaea.org/books/IAEABooks/8889/Communication-with-the-Public-in-a-Nuclear-or-Radiological-Emergency

Communication with the Public in a Nuclear or Radiological Emergency – Training Materials
http://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Communcation-Manual/Start.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

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Emergency Preparedness and Response

TOOLS

Considerations in EPR for New and Expanding Nuclear Power Programmes

Why is this important?

Safety in the operation of a nuclear power plant (NPP) is of great importance for the protection of people, society and the environment in those Member States considering embarking on a nuclear power programme for the first time as well as those considering expanding an existing programme.

Furthermore, developing a nuclear power programme requires a good deal of careful planning, preparation and investment in a sustainable safety and security infrastructure that provides legal, regulatory, technological, human, industrial, and financial support to ensure that these nuclear installations operate in a safe and secure manner.

One of the challenges for the governments of embarking countries is that they must also provide for robust emergency preparedness and response (EPR) arrangements and capabilities to enable timely and effective response in a nuclear or radiological emergency.

Although EPR is a national responsibility, the IAEA has been supporting Member States through its programmes to assist them in setting up national emergency and preparedness frameworks that are aligned with international safety standards. The establishment of capabilities and arrangements for emergency preparedness and response to a nuclear emergency is one of the principal tasks in the development of a national infrastructure for nuclear power. State-of-the-art emergency preparedness and response is a key element to achieving overall plant safety.

What do I need to know?

The objectives of the IAEA publication: *Considerations in Emergency Preparedness and Response for a State Embarking on a Nuclear Power Programme* (EPR-EMBARKING 2012), are to assist those Member States that are considering embarking on a nuclear power programme to develop an adequate level of emergency preparedness and response to radiation emergencies prior to commissioning their first NPP, and to ensure the maintenance of the EPR programme throughout the lifetime of the facility.

This publication supports the IAEA Fundamental Safety Principles and the international requirements on emergency preparedness and response formulated in *Preparedness and Response for a Nuclear or Radiological Emergency* (IAEA General Safety Requirements No. GSR Part 7), and the corresponding IAEA safety guides *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (No. GS-G-2.1) and *Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency* (No. GSG-2). Furthermore, this publication is consistent with other IAEA publications developed to provide guidance for States embarking on a nuclear power programme, notably *Milestones in the Development of a National Infrastructure for Nuclear Power* (IAEA Nuclear Energy Series No. NG-G-3.1), and *Establishing the Safety Infrastructure for a Nuclear Power Programme* (IAEA Specific Safety Guide No. SSG-16).

What actions are recommended?

Application of the EPR-EMBARKING (2012) publication will assist Member States embarking on nuclear power programmes to develop EPR.

Member States desiring training in this area should send an official request to the IAEA Incident and Emergency Centre.

Member States should select professionals working on nuclear power programmes and emergency preparedness and response at a national level to participate in this training.

For a list of additional training and dates scheduled by the IAEA, check the IAEA Meeting Schedule.

What other services does the IAEA provide in this area?

The IAEA provides training to assist in the application of the EPR-Embarking 2012 publication. The training materials provide practical tools for emergency planning for Member States starting new or expanding existing NPP programmes. This training and the tools provided will assist the Member State to develop an adequate level of emergency preparedness and response to nuclear and radiation emergencies prior to commissioning their first NPP.

Participants are managers of a national nuclear power programmes and managers of national emergency preparedness and response programmes. This five-day training course is only available in English.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Considerations in Emergency Preparedness and Response for a State Embarking on a Nuclear Power Programme (IAEA EPR-Embarking 2012) http://www-pub.iaea.org/books/IAEABooks/8836/Considerations-in-Emergency-Preparedness-and-Response-for-a-State-Embarking-on-a-Nuclear-Power-Programme

Preparedness and Response for a Nuclear or Radiological Emergency (IAEA General Safety Requirements. No. GSR Part 7) http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

Arrangements for Preparedness for a Nuclear or Radiological Emergency (IAEA General Safety Guide, No. GS-G-2.1) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1265web.pdf

Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (IAEA General Safety Guide, No GSG-2) http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1467_web.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

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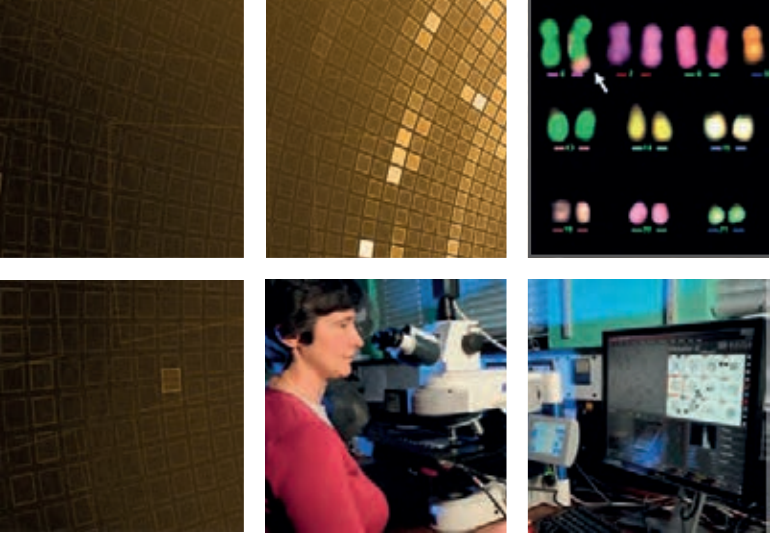

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Emergency Preparedness and Response

TOOLS

Cytogenetic Dosimetry | Applications in a Nuclear or Radiological Emergency

Why is this important?

Cytogenetic Dosimetry is a biological form of dosimetry that focuses on chromosome and cell analysis in cases of actual or suspected over exposure of individuals to ionizing radiation. Cytogenetic dosimetry can estimate the whole body absorbed dose, providing relevant information for medical treatment and eventual prognosis of an exposed individual. This analysis provides one source of diagnostic information that needs to be collected and considered when a nuclear or radiological emergency is investigated. It also provides useful information that can be applied for the treatment and prognosis of these patients, especially in whole body overexposure cases.

Dicentric analysis is a key component of cytogenetic biodosimetry, as it has the necessary sensitivity and specificity for assessing medically significant radiation doses; it has become a routine component of the radiation protection programmes of many Member States. Experience of its application in thousands of cases of actual or suspected overexposures has confirmed the value of this method but, at the same time, has helped to define its limitations.

What do I need to know?

Biological dosimetry analyse the damage to chromosomes to estimate the absorbed doses to whole body. It should be emphasized that chromosomal aberrations are used as a dosimeter and provide one input, frequently a very important one, into the compendium of information that needs to be collected and considered when a nuclear or radiological emergency is investigated.

Diagnostic sources of information may come from other biologically based radiation biomarkers, as well as clinical signs and symptoms that persons might display, and also from physical measurements, such as those made on personal monitoring badges and using thermoluminescence, optically stimulated luminescence or electron spin resonance on solid matrix components from (i.e. dental enamel, fingernails, extracted bone, etc.) or associated (i.e. watch or spectacles, etc.) with the irradiated persons.

Questioning patients and witnesses on basic facts, such as time in the locality and distance from the radiation source may also assist with dose calculations. All of these sources of information may be combined with biological dosimetry to obtain a clearer evaluation of a case.

What actions are recommended?

Application of the EPR-BIODOSIMETRY (2011) publication will provide technical information for selecting the appropriate cytogenetic technique for dose assessment.

Member States desiring training in this area should send an official request to the IAEA Incident and Emergency Centre.

Member States should select laboratory staff performing biological dosimetry, relevant medical specialists as well as biologists, medical technologists and health physicists for the training.

Member States are encouraged to contact the IAEA should they need further information.

Other Important Information

This IAEA publication *Cytogenetic Dosimetry: Applications in Preparedness for and Response to Radiation Emergencies* (EPR-BIODOSIMETRY 2011) third edition, reflects the considerable advances that have been made in the field of cytogenetic biological dosimetry during the past decade. This publication is available both in English and Spanish.

The primary objective of this publication is to provide the user with technical information for selecting and implementing, in a standardized manner, the appropriate cytogenetic technique to ensure comparable dose assessment following accidental exposure to ionizing radiation. The publication describes the four possible cytogenetic methods currently available for biological dosimetry.

What other services does the IAEA provide in this area?

The IAEA provides training on applications of cytogenetic dosimetry in emergency preparedness and response with an objective to train participants on how to select and implement, in a standardized manner, the appropriate cytogenetic technique to ensure comparable dose assessment following accidental exposure to ionizing radiation. Participants from all Member States are invited to attend. This training is aimed at laboratory staff performing biological dosimetry and relevant medical specialists; however, biologists, medical technologists, health physicists may also attend. This four-day training course is only available in English.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

Cytogenetic Dosimetry: Applications in Preparedness for and Response to Radiation Emergencies (EPR-BIODOSIMETRY 2011) - http://www-pub.iaea.org/MTCD/publications/PDF/EPR-Biodosimetry%202011_web.pdf

Cytogenetic Dosimetry: Applications in Preparedness for and Response to Radiation Emergencies – Training Materials - http://www-pub.iaea.org/MTCD/Publications/PDF/EPR-Biodosimetry/Start.pdf

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Emergency Preparedness and Response

TOOLS

EPRIMS | Emergency Preparedness and Response Information Management System

Why is this important?

Emergencies involving radioactive materials can pose many challenges, the degree of difficulty in meeting these challenges depends on several factors — one of which is ensuring national emergency preparedness and response (EPR) arrangements are adequate and in line with international standards. Without adequate preparedness there can be no effective response in the case of an emergency.

Assessing EPR arrangements on a national level is a complex task. Each emergency response system involves a broad range of stakeholders. To assist Member States, the IAEA has developed the Emergency Preparedness and Response Information Management System — ***EPRIMS*** — an interactive, web-based tool used to assess EPR arrangements and share this information.

EPRIMS enables Member States to assess their response arrangements to ensure they are consistent with IAEA Safety Standards. It also indicates where further improvement may be necessary. Additionally, multiple users in a Member State can work simultaneously with EPRIMS and enter own their data, which speeds up the self-assessment process. Additionally, EPRIMS contains a knowledge management database of nuclear reactor technical information which will aid Member States in the assessment and prognosis of a nuclear emergency.

What do I need to know?

EPRIMS provides many features, for example:

- Provides multi-user entry of data with dialogue capabilities ensures a broad involvement of EPR professionals in each Member State in the assessment of their own EPR capabilities;
- Allows distinct input for different emergency preparedness categories, reflecting differences in EPR arrangements for nuclear power plant (NPP) and other activities;
- Shares information as needed with other countries. EPRIMS helps to promote the harmonization of EPR arrangements and capabilities at an international level;
- Provides an online review and analysis of data and gives an overview by country, sub-region, region or inter-regionally;
- Strengthens national capabilities by identifying areas for improvement and sharing different approaches;
- Improves assessment and prognosis during emergencies by providing reactor technical information;
- Reflects the updated requirements in GSR Part 7.

What actions are recommended?

EPRIMS is open to all Member States. Each State is required to register one National Coordinator for EPRIMS.

National Coordinators are responsible for adding all national users as relevant stakeholders to be involved in the process.

National Coordinators decide on how the information will be shared with the IAEA and other Member States.

Member States are encouraged to contact the IAEA Incident and Emergency Centre should they need further information on EPRIMS.

Other Important Information

EPRIMS COUNTERPARTS IN MEMBER STATES

Since EPRIMS data is entered by relevant national counterparts, Member States are invited to nominate one or more National Coordinators. The National Coordinators could, for example, be from the Nzational Competent Authority under the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, or from an organization with responsibilities in nuclear or radiological emergency preparedness and response at the national level. They will be responsible for managing national information in EPRIMS as well as for coordinating self-assessments and reactor technical information with the IAEA's Incident and Emergency Centre.

National Coordinators can add as many national users as needed so that all relevant stakeholders can be involved in the process. Every national coordinator can decide to share this information with the IAEA only or with other Member States. Only authorized national users can see the information entered into EPRIMS.

Resources

Emergency Preparedness and Response Information Management System (EPRIMS) https://www-ns.iaea.org/tech-areas/emergency/eprims.asp?s=1

Operations Manual for Incident and Emergency Communication (EPR-IEComm 2012) http://www-pub.iaea.org/MTCD/publications/PDF/EPR_IEComm-2012_Web.pdf

Email: **iec-information@iaea.org**
Visit: **https://www-ns.iaea.org/tech-areas/emergency/**

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Atoms for Peace and Development

Emergency Preparedness and Response

TOOLS

First Responders Toolkit

Why is this important?

When a radiological emergency happens, the immediate and skilled action of first responders is critical. Experience shows that local emergency services (e.g. local medical, law enforcement and fire services) will have the most important roles in the early response to a radiological emergency. Within hours, national officials may also have an important role to play in supporting the response at the local level.

What do I need to know?

The IAEA has developed a number of practical tools that can be useful for those required to respond within the first few hours of a radiological emergency. The contents of the First Responders toolkit will help inform responders so they and plan, prepare and respond accordingly. The toolkit provides the following resources:

- *First Responders to a Radiological Emergency* (IAEA Publication: EPR-FIRST RESPONDERS 2006). This publication provides practical guidance for first responders during the first few hours of a radiological emergency, and for national teams who may also support early response. This publication provides guidance in the form of action guides, instructions and data that can be assist in building a basic capability to respond to a radiological emergency.

Training materials include:

- First Response to a Radiological Emergency CD (EPR-FIRST RESPONDERS/T 2009);
- E-learning CD (EPR-First Responders/E-learning 2009);
- First Response to a Radiological Emergency CD (EPR-FIRST RESPONDERS/T 2009);
- Preparation, Conduct and Evaluation CD (EPR-EXERCISE/T 2006);
- Medical Preparedness and Response CD (EPR-MEDICAL/T 2002);
- Portable Digital Tool CD (EPR-First Responders/PDA 2009) for assisting first responders to a radiological emergency. This may be used by emergency service personnel as an aid in the field when responding to a radiological emergency. It is based on the material in the IAEA Manual for First Responders to a Radiological Emergency and contains quick guides with response actions, instructions and information useful in the first response to a radiological emergency. The tool has been designed for use on portable devices, such as hand-held computers and smart phones, and requires only a web browser to be used.
- Set of pocket-sized information and checklist cards;
- Poster on how to recognize and initially respond to an accidental radiation injury;
- Leaflet on how to recognize and initially respond to an accidental radiation injury;
- Leaflet on the basics of radiation and radiation protection.

What actions are recommended?

Using the First Responder toolkit will assist in building capacities in emergency response.

Member States desiring training should send request to the IAEA Incident and Emergency Centre.

Member States should select participants who have duties that are directly related to First Response during a radiological emergency.

Member States are encouraged to contact the IAEA should they need further assistance in this area.

What other services does the IAEA provide in this area?

The IAEA provides training to complement the operational response concepts described in the IAEA publication *First Responders to a Radiological Emergency.* This a task-based manual that provides guidance for the first response organizations on the procedures to follow when responding to a radiological emergency.

The training course is offered to all Member States. Participants are first responders to a radiological emergency and national teams that may support them.

This training course is originally designed as a ten-day training module, but can also be condensed to five days. The training is available in English, French, Russian and Spanish.

Resources

IAEA Meeting Schedule http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf

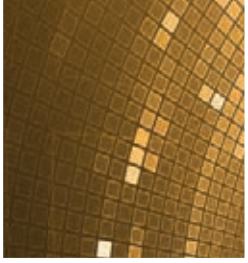
Manual for First Responders to a Radiological Emergency (IAEA/CTIF/PAHO/WHO) (EPR-First Responders, 2006), available in Arabic, English, French, Russian and Spanish https://www-ns.iaea.org/tech-areas/emergency/technicalproducts.asp?s=1&l=1#2

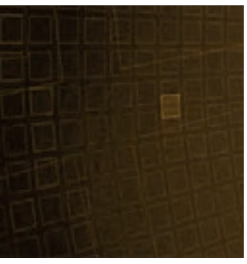
Training Materials for First Responders to a Radiological Emergency (2009), available in English, French, Russian and Spanish https://www-ns.iaea.org/tech-areas/emergency/technicalproducts.asp?s=1&l=1#2

Portable digital tool for assisting first responders to a radiological emergency for first responders on how to respond to a radiological emergency http://www-pub.iaea.org/MTCD/publications/PDF/EPR-First_Res-PDA/html/default.htm

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/**

16-2989



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INES | International Nuclear and Radiological Event Scale

Why is this important?

Experience from nuclear and radiological emergencies highlights public communication as one of the most important challenges in emergency management. The International Nuclear and Radiological Event Scale — ***INES*** — is a tool provided by the IAEA and designed to facilitate the communication of nuclear and radiological events from the perspective of the safety significance of the events. The aim is to keep the public and media, as well as the technical community, accurately informed on the occurrence of events associated with nuclear and radiological incidents.

What do I need to know?

INES covers activities at nuclear facilities, transport of radioactive material and a wide spectrum of practices in industry and medicine. It applies to events associated with the use, storage and transport of radioactive material and sources, whether or not the event occurs at a facility. This includes the loss or theft of radioactive sources or packages and discovery of orphan sources, such as sources being discovered in the scrap metal.

INES is intended for use in civil (non-military) applications and only relates to the safety aspects of an event. It is NOT appropriate to use INES to assess or to compare safety performance between facilities, organizations or countries nor to classify emergencies for the purpose of triggering emergency response actions.

INES uses a numerical rating to explain the significance of nuclear or radiological events., for example:

- Events are classified at seven levels: Levels 1–3 are "incidents" and Levels 4–7 "accidents". The scale is designed so that the severity of an event is about ten times greater for each increase in level on the scale (i.e. the scale is logarithmic);
- Events without safety significance are rated as Below Scale/Level 0;
- Events that have no relevance to radiation or nuclear safety are not rated on the scale;
- Events are considered in terms of their impact to three different areas: impact on people and the environment, impact on radiological barriers and control and impact on defence in depth;

What actions are recommended?

Member States are encouraged to use INES in communicating the safety significance of events.

Member States are invited to officially designate INES National Officers via official channels.

Member States are encouraged to review the guidance and good practices on INES.

Member States are encouraged to use INES Rating Interactive Learning Tool to assist in understanding and applying the INES methodology.

Other important information

Officially designated INES National Officers from almost 80 countries use INES to communicate to the public on the safety significance of events.

INES is not a formal reporting system and participation is voluntary. Member States are encouraged to communicate internationally events rated at Level 2 and above and events attracting international public interest. More than 900 events were communicated internationally over the past two decades.

What other services does the IAEA provide in this area?

The IAEA has developed an eLearning tool to assist users in understanding and applying the INES methodology. The tool follows the structure of the INES User's Manual which facilitates the task of rating the safety significance of events using the scale. The tool leads the user through the description of the scale, through detailed definitions of the levels and through criteria for each level in regard to the impact of the events to people and the environment, radiological barriers and controls at facilities, and the impact on the defence in depth.

Resources

INES: The International Nuclear and Radiological Event Scale User's Manual, 2008
http://www-pub.iaea.org/books/IAEABooks/10508/INES-The-International-Nuclear-and-Radiological-Event-Scale-User-s-Manual-2008-Edition

INES eLearning http://iec.iaea.org/inesrilt

The Use of the International Nuclear and Radiological Event Scale (INES) for Event Communication Guidelines and Good Practices for Setting up a National Framework on the Effective Use of INES for Event Communication, 2014 http://www-pub.iaea.org/MTCD/Publications/PDF/INES_web.pdf

***Email*: ines@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/ines.asp**

16-2997

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TOOLS

IRMIS | International Radiation Monitoring Information System

Why is this important?

While many Member States operate radiation monitoring networks, radiation monitoring information generated from them cannot be fully exchanged and used by other countries in a timely manner during nuclear or radiological incidents and emergencies unless provisions are made to this end.

The IAEA has been developing the International Radiation Monitoring Information System — ***IRMIS*** — to provide Member States with a mechanism to report, share, visualize and analyse large amounts of routine (from fixed stationary radiation monitors) and emergency radiation monitoring data in near real-time. The routine exchange of monitoring data serves as a continuous test of the data sharing arrangements and ensures the data's availability during emergencies.

IRMIS is intended to help decision makers in implementing protective actions and other response actions during a nuclear or radiological emergency.

What do I need to know?

IRMIS supports the implementation of the *Convention on Early Notification of a Nuclear Accident* by providing a mechanism for the reporting and visualization of large quantities of environmental radiation monitoring data during nuclear or radiological emergencies.

IRMIS complements the IAEA's Unified System for Information Exchange in Incidents and Emergencies (USIE) by giving Member States, international organizations and the IAEA access to this data.

IRMIS is not an early warning system that automatically reports when there are significant deviations in values or when values are detected above certain levels. However configuration of the IRMIS visualisation features can be used to help official Contact Points determine when elevated measurements may indicate where actions to protect the public may be warranted.

All data reported in IRMIS remains the ownership of the reporting Member State. The data is reported in one of two categories: routine data in the form of radiation dose rates from fixed monitoring stations; or radiation monitoring data during a nuclear or radiological emergency. Routine data and radiation monitoring data can be visualized independently or together as needed.

What actions are recommended?

Member States should nominate IRMIS contact points and data providers to voluntarily provide routine radiation monitoring data to IRMIS.

Member States should send nominations of official contact points and data providers to **irmis.contact-point@iaea.org**

Official contact points need to familiarize themselves with utilizing and uploading emergency data to IRMIS by using it during training and exercises.

Member States wishing to use IRMIS during their planned exercises should contact IAEA at least a week before the exercise, at: **iec3@iaea.org**

Other Important Information

A number of options are included within IRMIS:

- **Customized Colour Palette** – Dose rate data in IRMIS are plotted on a map using pre-defined colour palette to represent the ranges of dose rates. The default colour palette is set according to the IAEA Operational Intervention Levels (OILs). Users can adjust the colour palette to their national OILs, event specific OILs or any other levels preferred. The dose rate data layer will then display the new colour palette on the map.
- **Data list** – In addition to seeing the visual display of measurements on a map, users have access to a data list that lists either the latest or maximum value (as selected by the user) per location. The list may be sorted chronologically, by location or by the reported values.
- **Time Series** – Users wishing to evaluate the change in measured values over a selected time period for a given location may choose to display the results as part of a time series.
- **Protective Actions** – Users can disply the *Protective Actions* reported to the IAEA during a nuclear or radiological emergency, indicating areas where protective measures are being considered or implemented.

Can IRMIS be used during an emergency exercise? IRMIS provides the capability for simulated measurement results to be displayed during exercises conducted by Member States with the IEC. This provides a valuable tool to the Member States for the conduct of emergency exercises.

Who has Access to IRMIS? All users of USIE — to include official Contact Points defined under the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency* — and Permanent Missions to the IAEA have access to IRMIS. Organizations officially designated to voluntarily report radiation monitoring data to IRMIS also have access to the system.

Resources

The Convention on Early Notification of a Nuclear Accident, 1986,
http://www.iaea.org/publications/documents/infcircs/convention-early-notification-nuclear-accident

Email: **iec-information@iaea.org**
Visit: **https://iec.iaea.org/irmis and https://iec.iaea.org/irmis-exercise**

16-2992

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JPLAN| Joint Radiation Emergency Management Plan of the International Organizations

Why is this important?

Good planning in advance of an emergency can substantially improve the response. The *Joint Emergency Management Plan of the International Organizations* — ***JPLAN*** — describes the inter-agency framework for preparedness and response to an actual, potential or perceived nuclear or radiological emergency, regardless of whether it arises from an accident, negligence or deliberate act.

The *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency* are the prime legal instruments that establish this international framework, facilitating information exchange and prompt assistance in the event of a radiation emergency in order to minimize consequences. The JPLAN is developed, maintained and sponsored by the members of the Inter-Agency Committee on Radiological and Nuclear Emergencies - IACRNE.

What do I need to know?

Member States have the ultimate responsibility to protect life, health, property, the environment and quality of life within their territories. National regulatory bodies require site-specific emergency plans for their nuclear installations. Despite extensive precautions, if a release of radioactive material leads to an actual, potential or perceived emergency, other Member States will require information to be able to advise on protective actions.

The JPLAN provides the basis for a coordinated and harmonized international response to nuclear or radiological emergencies. It is not intended to interfere with or replace the emergency response arrangements of international organizations. However, all relevant international organizations are invited to consider these arrangements in their own emergency management plans.

The JPLAN describes the arrangements of the participating international organizations and the measures for developing, maintaining, exercising and improving these arrangements. The JPLAN does not include detailed procedures for its implementation.

Inter-Agency Committee on Radiological and Nuclear Emergencies - IACRNE

The IACRNE was established in September 1986 in the aftermath of the Chernobyl accident.

The 18 Members of IACRNE develop, maintain and co-sponsor the JPLAN.

IACRNE members participate in preparation, conduct and evaluation of the large-scale ConvEx-3 exercise.

The IAEA provides the Secretariat for the IACRNE and coordinates the development and maintenance of the JPLAN.

What are the objectives of the JPLAN?

- Provide a common understanding of the emergency preparedness and response roles and responsibilities, objectives, authorities, capabilities and arrangements of each participating international organization, and any relevant interagency arrangements;
- Provide an overall concept of operations between the international organizations based on the emergency response objectives, responsibilities, authorities, capabilities and arrangements of each participating international organization, and any existing inter-agency arrangements, in order to facilitate a timely, effective and coordinated response;
- Facilitate the development of agreements among the participating international organizations on operational emergency preparedness and response issues, if appropriate;
- Provide a common understanding of the process for improving the interagency response arrangements;
- Provide a common understanding of roles and responsibilities of the participating international organizations with respect to: international standards, supporting national capabilities through provision of guidance and training, relevant research, emergency exercises and other preparedness considerations;
- Guide the managers in each participating organization who need to ensure that all appropriate arrangements are given the necessary support within their organization;
- Facilitate the well-founded development and maintenance of plans and procedures for each organization and the training of individuals in their use;
- Draw the attention of personnel in States and international organizations to these arrangements and to facilitate the development of compatible arrangements, if appropriate.

Resources

Joint Radiation Emergency Management Plan (EPR-JPLAN 2013) http://www-pub.iaea.org/MTCD/Publications/PDF/EPRJplan2013_web.pdf

***Email*: iec-information@iaea.org**
***Visit*: https://www-ns.iaea.org/tech-areas/emergency/inter-agency-matters.asp?s=1&l=4**

16-2993


UTC Fri 10 Jul 13:22
IEC
Incident and Emergency Centre
ERM

For Further Information

Email: iec-information@iec.org

Write to:
Incident and Emergency Centre
Department of Nuclear Safety and Security
International Atomic Energy Agency
Vienna International Centre, PO Box 100
1400 Vienna, Austria

Goto:
https://www.iaea.org/topics/emergency-preparedness-and-response-epr

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