

# **EPREV**

## **EMERGENCY PREPAREDNESS REVIEW TEAMS**

A service of the  
**INTERNATIONAL ATOMIC ENERGY AGENCY**  
to review preparedness for nuclear and/or radiological  
emergencies in Member States

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## WHAT IS AN EPREV?

### *Summary*

Since its formation, the IAEA has conducted missions to facilitate the provision of advice and assistance to Member States in nuclear and radiation safety matters. While great attention is paid to ensuring design and operational excellence of the relevant facilities and practices, there always remains a possibility of accidents that can have consequences for the health of people, the environment and property. The nuclear accidents at Three Mile Island (USA) and at Chernobyl (Ukraine) are well-known. Less well-known yet equally serious accidents involving radiation sources include the damaged source in Goiânia, Brazil in 1987 resulting in contamination of a city and four fatalities; the re-entry of nuclear-powered satellites, such as the Cosmos satellite that dispersed radioactive material over large areas of Canada; the Costa Rica accident that resulted from the wrong calibration of hospital radiation therapy equipment and overexposed many people to radiation.

The IAEA is charged as part of its statutes to issue standards for safety and protection of health, environment and property to ionizing radiation and to provide for their application on request in Member States. In this regard, the Agency has issued International Basic Safety Standard for protection against ionizing radiation and for the safety of radiation sources (IAEA Safety Series No. 115], and several guides and technical documents that relate to emergency preparedness and response to nuclear and radiological accidents. In particular, the IAEA published IAEA-TECDOC-953 ('Method for the Development of Emergency Response Preparedness for Nuclear or Radiological Accidents') in 1997, which presents a concise methodology for the development of national capabilities for emergency response.

Additionally, the States Parties to the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the 'Assistance Convention') request the Agency - *inter alia* - to collect and disseminate to States Parties and Member States information concerning methodologies, techniques and available results of research relating to response to nuclear accidents or radiological emergencies; and to assist a State Party or a Member State when requested in any of the following - *inter alia* - or other appropriate

matters: i) preparing both emergency plans in the case of nuclear accidents and radiological emergencies and the appropriate legislation; and ii) developing appropriate training programmes for personnel to deal with nuclear accidents and radiological emergencies.

As part of the statutory function of providing for the application of the standards, and to be prepared to meet requests under the Assistance Convention, the Agency is running the EPREV (Emergency Preparedness REView) service for Member States or States Parties. Under this programme, international teams of experts conduct reviews of preparedness for nuclear and/or radiological emergencies in Member States on request by the government of the host country.

The EPREV programme provides an opportunity for emergency response planners in all countries to assist other planners through the dissemination of information on the best international practices. Each EPREV mission is conducted by a team of experts from several countries. Each of these experts has extensive experience in response and preparedness for nuclear and/or radiological emergencies. While the standards and other documents (such as IAEA-TECDOC-953) used by the teams to review emergency response preparedness are based on best international practices, the team is mandated and trained to take into account the specific conditions in the host country.

The scope of EPREVs is limited primarily to preparedness for response to nuclear and/or radiological emergencies. The main focus is on assessing the capability to respond to emergencies rather than on the risk of accidents or on the safety of facilities or practices.

In the course of detailed discussions with emergency response and planning personnel, review of documents and (optionally) observation of emergency exercises/drills, the review teams identify performance strengths that can be shared with others and areas where improvements should be achieved. Team members often discuss possible remedies for problem areas with their host country counterparts.

The EPREV programme is not intended to repeat the activities of the International Regulatory Review Team (IRRT), the operational safety assessment and review team (OSART) and the International Safety Assessment of Research Reactors (INSARR)

services, but is intended to be complementary to these programmes. An OSART and INSAR mission will include a review of the operational safety of the respective installation, and includes a review of the emergency response system for that installation. However the scope of the EPREV programme extends to cover off-site and national emergency response preparedness and preparedness for all radiation and nuclear accidents, irrespective of whether the country has nuclear power plants or not.

The EPREV programme is a relatively new service piloted in late 1999.

### ***Purpose and Goals***

The purpose of the EPREV programme is to assist Member States in preparing to respond in a timely, appropriate and co-ordinated manner on-site, locally, and nationally to nuclear and/or radiological emergencies by the dissemination of information on good practices.

In support of the EPREV purpose, the key goals of the EPREV programme are:

- to provide the host country with an impartial assessment of the capability to respond to nuclear and/or radiological emergencies;
- to identify the strengths in the host country which are unique and worthy of bringing to the attention of others;
- to identify areas where performance should be improved to meet international standards;
- to provide advice on ways improvements might be achieved;

### **EPREVs are not:**

- an audit against set codes and standards;
- a way to compare or rank countries in terms of emergency preparedness;
- a verification of whether or not national regulatory requirements are met;
- an inspection of the national regulatory requirements

### **EPREVs are:**

- peer reviews conducted by international teams of experts who have current knowledge of the area which they are reviewing
- an assessment based on international standards and guidance as well as on the expertise of the reviewers
- a review and technical exchange of experiences and practices at all levels.

In an EPREV, the evaluation of the host country's capability to respond is based on the combined expertise of the teams.

### ***Reasons for requesting an EPREV***

There will be many reasons why the government of a member state may request an EPREV. Some of the more common are summarised below.

- Compare host nation's arrangements with current international standards and best practice.
- Benefit from the EPREV team members' experience by considering how innovative and effective solutions that have been implemented by other member states could be adopted.
- Ensure the host nation's arrangements are complete at all levels and can be implemented effectively.
- Determine if the legal framework has ensured an appropriate set of arrangements for all types of facility, particularly those of differing risk.
- Highlight the aspects of the arrangements requiring the greatest attention to focus future developments when resources are limited.
- Highlight the need for additional training within organisations with emergency planning responsibilities.
- Identify possible objectives for future emergency exercises.
- Review of aspects of the arrangements thought to be inadequate or that require an independent review.
- Review of proposed arrangements for new and unfamiliar practices for which the international community already has experience.

## ***Confidentiality***

All team members will sign a confidentiality agreement prior to visiting the host country. The EPREV report will be issued in confidence to the host country unless the host country approves that it can be distributed more widely.

## ***Mission Types***

Various types of missions are available within the EPREV programme. The scope and depth is decided during a preparatory preliminary discussions between the requesting country and the IAEA.

The mission types that are available are described in terms of the number and the emergency planning category of the practice or practices being reviewed, as defined in IAEA-TECDOC 953.

### Category I EPREV

A category I EPREV is a review of a single category I practice. Category I practices include, for example, nuclear power stations.

On-site emergency preparedness for nuclear power stations is addressed during an OSART mission and, therefore, may or may not be covered separately by the EPREV. For category I practices, the scope of the EPREV usually addresses only off-site emergency preparedness aspects.

A category I EPREV usually examines the capability of the off-site response authorities at all levels to decide, implement and manage actions and operations to protect the population. A category I EPREV also includes:

- a review of the on-site emergency arrangements that are key to off-site emergency response, including the classification system, the ability to detect accidents and the on-site tasks carried out in direct support of the off-site emergency response organizations (e.g. radiological surveys, dose projections, as applicable); and
- the on-site/off-site interface in terms of notification, transfer of information and communication with

the public.

### Category II EPREV

A category II EPREV is a review of a single category II practice. Category II practices include, for example, plutonium fuel fabrication facilities, moderately large fuel storage facilities, and reactors with a thermal power between approximately 2 and 100 MW.

On-site emergency preparedness for research reactors within that category is addressed during an INSARR mission and, therefore, is not usually covered by the EPREV, which would normally only consider off-site emergency preparedness aspects. In all other cases, the category II EPREV addresses both on-site and off-site emergency preparedness aspects.

The off-site component of a category II EPREV is similar in all respects to a category I EPREV, as described above, however, the extent of planning at a national level would probably be less.

The on-site component of a category II EPREV examines the capability of the on-site organization to:

- detect and mitigate the consequences of an accident;
- decide, implement and manage actions and operations to protect the employees and persons at the site;
- notify the off-site authorities and provide support in terms of off-site impact assessment and protective action decision-making;
- coordinate with the off-site authorities on technical information sharing and communication with the public.

### Category III EPREV

A category III EPREV is normally a review of a single practice within emergency planning category III (as defined in IAEA-TECDOC-953). Category III consists of practices with no significant off-site risk but with a potential for accidents resulting in deterministic health effects on-site. Category III practices include, for example, gamma radiography facilities, radiation therapy facilities, some fuel processing facilities and research laboratories.

Emergency preparedness for research reactors within this category (with thermal power <2MW) is routinely addressed during an INSARR mission and, therefore, a category III EPREV usually does not cover research reactors.

A category III EPREV examines the capability of the on-site organization to:

- detect and mitigate the consequences of an accident;
- decide, implement and manage actions and operations to protect the employees and persons at the site;
- notify the off-site authorities and provide support in terms of off-site impact assessment and protective action decision-making.

#### Category IV EPREV

A category IV EPREV is a review of a single practice within emergency planning category IV. Category IV includes practices such as transportation of radioactive material, discovery of contamination from an unknown source or found sources, or satellite re-entry, where the location of the accident cannot be known precisely at the planning stage.

A category IV EPREV examines the capability of the local emergency services and of the regional and national authorities to:

- recognize an accident involving radioactive sources;
- mitigate and limit the consequences of the accident;
- get prompt assistance to assess the extent of the emergency;
- decide, implement and manage actions and operations to protect the population;
- recover the situation; and
- implement measures to monitor, control and treat exposed personnel and members of the public who may have been exposed or contaminated.

#### Category V EPREV

A category V EPREV is a review of national preparedness to deal with nuclear accidents occurring in a distant country.

This category of EPREV focuses on the country's overall ability to assess the need for, and manage the implementation of longer-term protective actions such as, for example, food monitoring and control.

#### Multiple EPREV

A multiple EPREV is a combination of some or all of the above. For example, a multiple EPREV could involve the review of several facilities, or several practices within the same category or even several categories.

## **HOW IS AN EPREV CARRIED OUT?**

### *Sequence of events*

A typical EPREV missions consists of the following stages:

- request from the host country, leading to a memorandum of understanding between the country and the IAEA;
- preparation, in some cases involving a pre-mission visit by senior members of the review team;
- carrying out the review through interviews and survey of facilities and equipment;
- exit briefing by the review team based on the preliminary findings; and
- presentation of the final report to the host country.

### *Request from a country*

A request for an EPREV is initiated by the country to the IAEA Emergency Preparedness and Response Unit. Following the request, an IAEA coordinator will be appointed, the host country will appoint an official EPREV liaison officer and an agreement will be reached with the hosting country on the objectives and the scope of the review. The host country can determine the extent of the review. The agreement will be documented in a simple exchange of letters or in a memorandum of understanding that

must be in place and signed prior to the commencement of the EPREV.

## ***Preparation***

### General

Preparation for an EPREV starts up to six months prior to the mission, depending on the scope of the review. It involves work by the host country as well as by the IAEA.

The host country is responsible for:

- gathering the relevant documentation
- informing all relevant organizations that an EPREV is to take place
- ensuring the availability of personnel and facilities required for the review
- arranging the logistics for the mission, including accommodation, local transportation and, as required, mobile communications
- providing one or several translators as needed

The IAEA is responsible for:

- recruiting the EPREV team
- training the EPREV team
- providing appropriate international standards and guidelines
- arranging for transportation to the host country

### Pre-mission visit

Depending on the scope of the EPREV, a pre-mission visit may be required. For a category I or II EPREV, this visit will normally be arranged.

The aim of this visit is to:

- clarify the scope and objectives of the EPREV
- introduce the team leader to the host country
- familiarize the team leader with the host country and the nature of the practice(s) and facility(ies) to be reviewed

- describe in detail what the host country can expect
- firm up the requirements in terms of documentation to be provided by the host country
- agree on a tentative schedule for the EPREV

Representatives from the key organizations will be expected to attend meetings during the pre-mission visit.

The pre-mission visit can last up to one week.

### Advance Information

To enable an EPREV team to perform effectively and efficiently while in the host country, the latter will prepare and provide to the IAEA a package including, as appropriate:

- relevant plans and procedures
- relevant legal statutes and regulatory requirements
- general information about the country, including special customs, laws, etc.
- relevant maps
- historical data regarding previous emergencies

This information must be provided in English at least two months prior to the mission.

### ***Team Composition***

An EPREV team usually consists of:

- one team leader, who is a specialist in the relevant area of emergency response, and who has international experience in the evaluation of emergency preparedness
- one IAEA coordination officer, who may also take part in the review
- up to four team members, depending on the scope of the review, including one deputy team leader, with broad expertise in the relevant main areas
- selected topic specialists as needed

The size of the team depends on the category and

scope of the EPREV.

Experts are recruited based on their technical skills in the area they will review, their investigative skills and their knowledge of the EPREV working language (English) and of the country's language. These experts change from one EPREV mission to the next.

### ***Carrying out the review***

The duration of the EPREV and the detailed schedule depend on the category and scope of the review to be carried out. In the case of a category I EPREV, normally the most demanding, the mission will normally last three weeks. On the other hand, a category IV EPREV can be carried out in one week with fewer team members.

The EPREV normally starts with a meeting of the team, followed by a meeting with the host country's liaison officer and representatives of the key organization. It is an opportunity to finalize the schedule and necessary logistics arrangements.

The review is carried out through:

- interviews with pre-designated representatives from the key organizations responsible for operation, response, emergency services, local, regional and national decision-making and resources
- inspection of the key facilities for operation, response and management
- inspection of the key equipment

Pre-scheduled interviews and visits may be followed by unscheduled interviews and visits, as determined by the reviewers, to clarify issues and complete the information gathering.

It is essential that the host country ensure the cooperation of the representatives interviewed and the availability of the facilities and equipment to review.

For EPREV missions longer than one week, a meeting is held at the end of each week between the team and the country's liaison officer to discuss the preliminary findings and clarify issues.

At the end of the EPREV, the review team

discusses the findings and evaluates the state of emergency preparedness and an exit briefing is prepared. At the exit meeting, the main findings and evaluation is presented and discussed during a meeting with representatives from the key organizations addressed in the EPREV. It is an opportunity to present the material that will form the main part of the final report, to clarify remaining issues, to correct factual errors and to discuss, in an open and constructive manner, ways to improve emergency preparedness in the host country.

### ***Evaluation criteria***

Experts are selected to ensure that a variety of national approaches to emergency response are represented. Their evaluation is then based on the International Basic Safety Standard for protection against ionizing radiation and for the safety of radiation sources (IAEA Safety Series No. 115), other relevant safety standards and TECDOC 955.

Both strengths and weaknesses are noted. Weaknesses are classified as either minor, important or critical. Critical weaknesses are those that could prevent a key emergency response objective from being met. Important weaknesses are those that could significantly affect the performance to meet key emergency response objectives without necessarily preventing their implementation. Minor weaknesses are those that, if corrected, could significantly improve the effectiveness of emergency response.

It is emphasised that scoring or grading of arrangements is not carried out as part of the evaluation.

### ***EPREV report***

A final report is produced within one month of the mission. It contains a list of strengths and weaknesses and the justification for the evaluation. It may also contain suggestions on how the improvements could be made, however, it will not recommend specific solutions.

The host country then has two months to review the report and provide comments on factual inaccuracies contained in it. A final report is issued within one month of the receipt by the IAEA of consolidated comments from the country's liaison officer.

### ***Following up after the mission***

Approximately two years after the EPREV mission, an EPREV follow-up visit will normally be conducted. During the follow-up visit, the team leader and IAEA coordination officer, joined as required by selected members of the EPREV team, evaluate the progress made in resolving the issues raised during the EPREV. They do this by interviewing personnel, reviewing documentation and conducting field visits. There would also be an opportunity to assist with the clarification of issues and their resolution where necessary. The status of the response to each recommendation and suggestion is determined, and is included in a follow-up report. Follow-up visits will also help the IAEA measure the effectiveness of the EPREV programme and provide information that can be shared with other Member States having similar challenges.

## OUTLOOK

The IAEA has an ongoing mechanism to evaluate the EPREV programme in an effort to increase its usefulness and effectiveness, incorporating new features and deleting outdated ones. The feedback of experience takes place in various ways. At the end of each mission, the EPREV team members are requested to fill in questionnaires to provide feedback on the EPREV process, including proposals for improvement. Similarly, the host country is asked to comment on each EPREV mission in general.

The IAEA is committed to ensuring the quality of the EPREV service. Countries will be encouraged to cooperate with the IAEA by requesting EPREV and providing experts for their conduct in other countries. The IAEA will promptly respond to requests for EPREV missions.

### **Further information**

Further information can be obtained from the:

*Emergency Preparedness and Response Unit,  
Division of Radiation and Waste Safety  
International Atomic Energy Agency  
Wagramerstrasse 5  
A-1400 Vienna, Austria  
Tel: +43 (1) 2600-22729  
Fax: +43 (1) 26007-22729  
Email: eru3@iaea.org*