

RADIATION SAFETY AND NUCLEAR SECURITY AUTHORITY

Guide on the development of an Emergency Preparedness and Response Plan

1. Introduction

A licensee authorised to possess or use radioactive sources shall establish and maintain an Emergency Preparedness and Response Plan (EPRP) to ensure that appropriate, timely and coordinated actions can be taken in the event of a radiological emergency.

In accordance with section 31(1) of the Radiation Safety and Nuclear Security Act 2018 (RSNS Act), every licensee shall develop and maintain an emergency response plan as required by the Authority for implementation in the event of a radiological emergency.

The plan shall assign responsibilities for a systematic, coordinated and effective response. The EPRP shall take into account the conditions of the licence, the nature of the authorised activity and the associated radiological hazards.

The level of emergency preparedness and the detail of the EPRP shall be commensurate with the nature and magnitude of the radiological hazard. The EPRP shall be site-specific, practical and readily available to personnel responsible for implementing it.

2. Content of the EPRP

The EPRP shall, as a minimum, address the following:

2.1 Facility, Activity and Source Information

The plan shall provide sufficient information to support an effective response, including:

- name and location of the facility/activity;
- description of activities involving radioactive sources;
- radioactive source inventory, including radionuclide, activity and identification;
- source locations and storage arrangements; and
- relevant site/facility layout, access routes and emergency exits.

2.2 Emergency Scenarios and Hazard Assessment

The licensee shall identify reasonably foreseeable emergencies associated with the source and activity, as applicable, including:

- loss, disappearance or theft of a radioactive source;
- unauthorised removal or access to a source;
- fire, flooding or other events affecting a source;
- damage to a source or source-containing device;
- source stuck in an exposed position;
- accidental or suspected radiation exposure;
- radioactive contamination;

- transport or movement accidents; and
- natural or other external events that may affect the source.

For each relevant scenario, the EPRP shall identify the initial actions, responsible persons, notification requirements and protective measures.

2.3 Emergency Organisation and Responsibilities

The plan shall clearly define the emergency organisation and responsibilities, including:

- person responsible for activating and coordinating the response;
- Radiation Protection Officer (RPO);
- source operators and other relevant workers;
- management responsibilities; and
- security, first-aid, medical and other support personnel, as applicable.

2.4 Notification and Communication

The plan shall establish arrangements for prompt notification and communication, including:

- internal notification and activation of the EPRP;
- notification of the RSNSA;
- notification of Police, Fire and Rescue Services and medical services, where necessary;
- notification of other relevant authorities or organisations;
- out-of-hours communication; and
- communication with responding organisations throughout the emergency.

Current emergency contact details shall be maintained in the EPRP.

2.5 Immediate Response and Protective Actions

The EPRP shall provide clear instructions for the initial response, including, as applicable:

- stopping the activity and withdrawing personnel from danger;
- preventing unauthorised access;
- establishing and controlling the affected area;
- accounting for personnel;
- preventing the spread of contamination;
- radiation and contamination monitoring;
- protection of workers, emergency responders and members of the public; and
- securing or recovering the radioactive source.

Source recovery shall only be undertaken by appropriately trained and equipped personnel.

2.6 Radiological and Medical Response

The plan shall establish arrangements for:

- radiation and contamination monitoring;
- identification and assessment of potentially exposed or contaminated persons;
- use and evaluation of personal dosimetry;
- first aid and medical assessment;
- recording and assessment of potential radiation exposure; and
- provision of relevant radiation information to medical personnel.

2.7 Emergency Equipment and Resources

The plan shall identify the emergency equipment and resources required for the identified scenarios, as applicable, including:

- radiation/contamination monitoring instruments;
- personal protective equipment;
- communication equipment;
- warning barriers and signage;
- contamination control materials; and
- specialised source recovery equipment.

Emergency equipment shall be suitable, readily accessible and maintained in a serviceable condition.

2.8 Recovery, Reporting and Follow-up

The EPRP shall establish arrangements for:

- recovery and securing of the radioactive source;
- decontamination and management of radioactive waste, where applicable;
- restoration of the facility/activity;
- assessment and recording of personnel doses;
- investigation of the emergency;
- corrective and preventive actions;
- notification and reporting to the RSNSA; and
- recording of lessons learned.

3. Training, Drills and Review

Personnel assigned emergency responsibilities shall be appropriately trained and familiar with the EPRP and their respective duties.

Emergency arrangements shall be periodically tested through drills or exercises, as appropriate to the nature and complexity of the activity. Deficiencies identified during an emergency, drill or exercise shall be documented and addressed.

The EPRP shall be reviewed and updated:

- periodically;
- following an emergency, drill or exercise;
- following significant changes to the facility, source or activity;
- following changes to emergency personnel or responsibilities; or
- when required by the RSNSA.

Records of training, drills, exercises, reviews and corrective actions shall be maintained.

4. Appendices

The EPRP should include, as applicable:

- Facility/Site Layout Plan;
- Radioactive Source Inventory;
- Emergency Contact List;
- Emergency Notification Flowchart;
- Emergency Equipment Inventory; and
- Scenario-Specific Emergency Action Sheets.

RSNSA Expectation

The EPRP shall be a practical, site-specific and operational document that can be immediately used by personnel during a radiological emergency.

It shall clearly establish who is responsible, what actions are to be taken, when they are to be taken and how the response is to be coordinated.

The EPRP shall not merely describe the Licensee's general radiation protection arrangements. It shall demonstrate how the licensee will respond to the specific emergencies that could reasonably arise from the radioactive sources and activities under its control.

Radiation Safety and Nuclear Security Authority

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