

## RESPONSIBILITIES OF PERSONNEL

### 1.0 Employer

The employer shall have responsibilities specified in Rule 20 of the Atomic Energy (Radiation Protection) Rules, 2004. The employer shall:

- (i) Designate, with the written approval of the Competent Authority, a person having qualifications as specified in this safety code, as Radiological Safety officer (RSO).
- (ii) Ensure the availability of adequate number of trained/certified operators for the operation of the facility.
- (iii) Ensure that the provisions of this safety code are implemented by the licensee, Radiological Safety Officer and other worker(s).
- (iv) Provide necessary facilities and equipment to the licensee, Radiological Safety Officer, trained certified operators and other worker(s) to carry out their functions effectively in conformity with the regulatory requirements.
- (v) Procure from the former employer, where applicable, the dose records and health surveillance reports of a worker prior to his employment in the facility.
- (vi) Provide personnel monitoring devices to workers, and ensure that they are worn as required, and also ensure that individual dose records are maintained as prescribed by the Competent Authority.
- (vii) Upon termination of service of a worker provide to his new employer, on request, his dose records and health surveillance reports.
- (viii) Furnish to each worker dose records and health surveillance reports of the worker in his employment annually, as and when requested by the worker and at the termination of his service.
- (ix) Inform the Competent Authority if the licensee or the Radiological Safety Officer (RSO) or any facility operator leaves the employment.
- (x) Constitute a local safety committee (LSC) to review the safety status of the facility periodically in terms of operational safety, servicing and maintenance and regulatory compliance. The Radiological Safety Officer shall be the Member-Secretary of the LSC. The Committee shall include members familiar with and experienced in the operation of the facility as well as members not directly connected with day to day operation of the facility. Competent Authority shall be informed about the Committee and its work.
- (xi) Ensure that the quality assurance program for servicing and maintenance of the facility is established. Records of the QA shall be maintained for inspection/audit by the Regulatory Body.

- (xii) Report to the Competent Authority of any change in the safety organisation of the facility.
- (xiii) Ensure that the operating and servicing manual is revised taking into consideration the operating experience and that the designer and manufacturer are advised accordingly. Revision of manuals shall incorporate any safety directive issued by the Regulatory Body.
- (xiv) Inform the Competent Authority, within twenty four hours of occurrence, of any accident involving radiation injury, a source or loss of source of which he is the custodian.
- (xv) Arrange for health surveillance of workers as specified under Rule 25 of Atomic Energy (Radiation Protection) Rules, 2004.
- (xvi) Obtain prior Approval from the Regulatory Body for any modifications, if required to be done in the facility.
- (xvii) Obtain prior Approval from the Regulatory Body for decommissioning the facility and, in the case of a GRAPF, disposal of the source.

(xviii) **Security of Sources**

- The employer shall ensure security of the radioactive sources at all times. The facility shall be secured against all envisaged theft, sabotage or any other kind of security threat.
- **Security Guidelines:** The facility should conform to the security guidance as provided in the AERB Safety Guide on ‘Security of Radioactive Sources in Radiation Facilities’, [No. AERB/RF-RS/SG-1 (2011)]

## **2.0 Licensee**

The licensee shall have responsibilities specified in Rule 21 of the Atomic Energy (Radiation Protection) Rules, 2004. The licensee shall ensure that:

- 2.1 All systems/components features are regularly serviced and maintained in good working order. Servicing and maintenance are carried out and as per the manual provided by the manufacturer/ designer and records are maintained. All component replacement record are maintained in the log book.
- 2.2 All applicable provisions specified in this safety code are established and maintained.
- 2.3 The necessary equipment to enable the working rules and emergency procedures to be efficiently carried out is readily available.
- 2.4 Radiation monitoring is carried out in accordance with the requirements of this safety code.

- 2.5 Radiation monitoring equipment and any other equipment provided to limit radiation exposure is regularly inspected, maintained and calibrated.
- 2.6 Periodic tests and inspections of safety systems and control mechanisms are carried out.
- 2.7 Spares of critical components are available in workable condition.
- 2.8 Records are maintained and are available for inspection by the relevant statutory authority.
- 2.9 Adequate instruction is given to employees concerning any radiation hazards associated with their work, and precautions necessary to limit radiation exposure of persons and to avoid radiation accidents and injuries.
- 2.10 No person is permitted to operate the radiation processing facility until he has been adequately trained and is competent to operate the radiation processing facility in accordance with the safety procedures.
- 2.11 The necessary supervision is provided to all employees in the performance of their work in accordance with the provisions of this safety code.
- 2.12 In case of actual or suspected exposure exceeding the prescribed dose limits to personnel, the Competent Authority is informed without delay in the prescribed format.
- 2.13 In the event of exposure received by any person in excess of the regulatory limits, Competent Authority is informed promptly of the occurrence of the incident, investigation and follow up actions including steps to prevent recurrence of such incidents.
- 2.14 In case of actual or suspected exposure exceeding the prescribed dose limits, appropriate medical procedures are carried out, medical reports are retained and full details of the incident are reported to the Competent Authority as soon as possible.
- 2.15 Periodic safety status report of the facility in the prescribed format is submitted to the Competent Authority.
- 2.16 Loading, replenishment, redistribution or disposal of sources is carried out only by the authorized source supplier.
- 2.17 Installation, repair and service of parts of the facility, which may affect radiation safety, are carried out through the original designer/supplier/manufacturer of the facility or by a qualified person in consultation with the Competent Authority.

- 2.18 Standard Operating Procedures (SOP), a display board listing of emergency contact numbers and a copy of emergency action plan are available in the control room.
- 2.19 Training and retraining of the operators in the safe operation of the facility are conducted periodically and records are maintained.
- 2.20 Appropriate fire authority is notified of the location of all radiation sources installed and is informed about the potential hazards at the facility.
- 2.21 Response procedures for handling an emergency situation are prepared in accordance with section 8 of this safety code and a copy is submitted to the Competent Authority.
- 2.22 Internal inspection/audit or other management control is established so that the safe operating procedures are implemented and the emergency procedures are rehearsed by workers.

### 3.0 Radiological Safety Officer (RSO)

#### 3.3.1 Qualification

- (i) A Degree in Engineering or in Science from a recognized university/institution with Physics as one of the subjects.  
or  
A Post Graduate Diploma/Degree in Radiological Physics from a recognized university/institution.  
or  
A Diploma in Engineering from a recognized university/institution with a minimum of five years of experience in radiation surveillance in a radiation processing facility supported by personnel monitoring (TLD) service.  
and  
Successful completion of radiation safety course recognized by the Competent Authority.
- (ii) Approval from the Competent Authority to function as a Radiological Safety Officer in an RPF.

#### 3.3.2 Responsibilities of the Radiological Safety Officer

The RSO shall have responsibilities specified in Rule 22 of the Atomic Energy (Radiation Protection) Rules, 2004. The RSO shall:

- (i) Carry out routine measurements and analysis of radiation levels in the controlled area, supervised area of the radiation facility and maintain records of the results thereof.
- (ii) Investigate any situation that could lead to potential exposures.

- (iii) Advise the employer regarding:
  - (a) The necessary measures aimed at ensuring that the regulatory constraints and the terms and conditions of the licence are adhered to.
  - (b) The safe storage and movement of radioactive material within the radiation facility.
  - (c) Initiation of suitable remedial measures in respect of any situation that could lead to potential exposures.
  - (d) Routine measurements and analysis of radiation and radioactivity levels in the off-site environment of the radiation processing facility and maintenance of the records thereof.
- (iv) Ensure that test and maintenance schedules for safety related components and systems are carried out in accordance with the schedule provided in Table-1 (a) and 1 (b) of Appendix-B.
- (v) Report on all hazardous situations along with details of any immediate remedial actions taken are made available to the employer and licensee for submitting to the Competent Authority.
- (vi) Ensure that personnel monitoring devices are provided to workers in the facility, used as required and securely stored in a radiation-free zone.
- (vii) Supervise during maintenance and test procedures on systems and components or in areas where radiation safety may be affected or where service/maintenance personnel may need to be given special protection.
- (viii) Ensure that monitoring instruments are calibrated periodically.
- (ix) Maintain servicing, operation log books and associated QA records.
- (x) Assist the employer in:
  - (a) Instructing the workers on hazards of radiation and on suitable safety measures and work practices aimed at ensuring that exposure to radiation is kept as low as reasonably achievable.
  - (b) The safe disposal of radioactive wastes.
  - (c) Developing suitable emergency response plans to deal with accidents and maintaining emergency preparedness.
- (xi) Advise the licensee on:
  - (a) The modifications in working conditions of a pregnant worker.
  - (b) The safety and security of radioactive sources.
- (xii) Furnish to the licensee and the Competent Authority periodic reports on the safety status of the radiation installation.
- (xiii) Inform the Competent Authority when he leaves the employment.

## **4.0 Operator**

### **4.1 Qualifications**

- (i) Degree in Science from a recognized University/Institution.

or

Diploma in Engineering from a recognized University/Institution.

- (ii) Successful completion of radiation safety course recognized by the Competent Authority.

#### 4.2 Responsibilities of Operator

The Operator shall:

- (i) Operate the facility as per written instructions and established Standard Operating Procedures.
- (ii) Assist in servicing/maintenance and testing.
- (iii) Use personnel dosimeter in correct manner at all times while working within the facility.
- (iv) Always be available in the control room when radiation processing facility is in operation.
- (v) Make complete and correct entries in the operation logbook.
- (vi) Promptly report to RSO of any malfunction (actual & suspected) of any system or deviation from any operating parameter.
- (vii) Report to the RSO in writing of any unusual occurrence or suspected exposure above normal levels and seek advice on remedial action.
- (viii) Assist the RSO to analyse and prevent such situations.

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