

**RADIATION PROTECTION MANUAL OF GAMMA RADIATION PROCESSING FACILITY (GRAPF)
(OPERATIONAL, MAINTENANCE, EMERGENCY ASPECTS)**

A. ADMINISTRATION AND SAFETY ASSURANCE

- (a) Administrative hierarchy / organisational set up
- (b) Authorised Personnel - Training and qualification of plant personnel, their knowledge in radiation safety, responsibilities of personnel, their availability in adequate number, Policies in case of long leave/absence of certified personnel
- (c) Local safety committee: constitution, functions and responsibilities
- (d) Procedures for reporting to the regulatory agency on unusual occurrences and periodic radiation safety status
- (e) Procedures in case of change or repairs of safety system /interlocks, certification of log book entry by FIC/ RSO
- (f) Record of maintenance - source storage, maintenance schedule, radiation monitoring, calibration of survey meters, etc.
- (g) Control and distribution of irradiator operating keys
- (h) Industrial safety aspects - fire equipment, safety accessories etc.
- (i) Facility security arrangements, fencing and personnel movement control etc.
- (j) Removal and storage of contaminated material, if any.
- (k) Medical assistance - First aid facility, location, periodic medical examination (once a year), medical facilities and treatment facilities for radiation incidents

B. MONITORING

- (a) Radiation monitoring - Type of area monitors, sensitivity, range, location, interlock alarm set levels (DM plant/unloading bay, control room) and radiation survey meter
- (b) Contamination Monitoring - On line monitoring & sample measurement, method of collecting samples of pool water, accessible surfaces of source raise system)
- (c) Personnel Monitoring - Number of PM badges, procedure for their issuance, safe place for storage, etc.

C. OPERATIONAL PROCEDURES

- (a) Sequential procedures for raising the source as per the design (with flow chart)
- (b) Familiarization and procedure for modifications

D. MAINTENANCE PROCEDURE FOR SAFETY SYSTEMS / INTERLOCKS

- (a) Periodic Maintenance - Daily/ weekly/ monthly/ quarterly/ yearly: items, procedures and schedules
- (b) Procedure for maintenance of D.M. water supplies
- (c) Maintenance and checking of alarm/ warning devices

E. SOURCE REPLENISHMENT PROCEDURES

- (i) Details of the agency responsible for source supply & source loading operation
- (ii) Procedure for transporting the source flask from the source manufacturer to the facility
- (iii) Procedure for unloading the source flask at the facility
- (iv) Procedure for taking the source flask into & out of the irradiation cell
- (v) Procedure for lifting the source flask down/up from the water pool
- (vi) Technical specification & test certificate of devices used for lifting the source flask (hoist etc.)
- (vii) Procedure for transferring the sources from the flask to the source frame
- (viii) List of source handling tools, equipments and safety accessories used for source loading operation

F. EMERGENCY PLANNING AND PROCEDURES

- (a) Organisational structure and communication links
- (b) Name, address, and telephone numbers of agencies to be contacted in case of emergency
- (c) Emergency contact telephone/ telex nos. and address of
 - (i) Head of institution
 - (ii) Facility-in-charge
 - (iii) Radiological safety officer (RSO)
 - (iv) Regulatory agency (AERB)
 - (v) Fire officer (Local)
 - (vi) Local fire station
 - (vii) Local police
 - (viii) Local medical hospital, Radiation therapy hospitals (Nearest)
 - (ix) Radiation source supplier
- (d) Type of emergencies envisaged - Prevention/ handling of emergencies, investigation methods, etc. during major leaks of water, explosion or fire or smoke, radiation emergency, crisis management in case of emergency, earthquake, floods, other natural calamities.