

LARGE IRRADIATOR CHECKLIST

Detailed procedures, narrative descriptive statements, and annotated drawings should be submitted as appropriate to cover the matters outlined as follows:

A. The Plant

1. Conveyor System
2. Irradiator Control System
3. Ventilation System
4. Source Storage Pool
5. Water Treatment
6. Safety Devices (function and implementation)
7. Earthquake Detector

B. Plant Environment Control

1. Radiation Safety in Occupied Areas
2. Noxious Gas Production and Control
3. Prevention of Spread of Radioactivity
4. Collection, Storage, and Disposal of Radioactive Waste

C. Radiation Shielding (consultant reports and calculations)

1. Room Shield
2. Shielding Calculations
3. Shield Construction
4. Source Storage Pool

D. Site Description

1. Geographic Location

By city, etc. Property boundaries and description of adjoining areas, identifying pertinent use for which these areas are zoned.

2. Natural Site Characteristics

- Meteorology
- Topography
- Hydrology
- Geology
- Seismology

3. Property Description

- External
Identify plant in relation to other buildings on property—offices, warehouses, heating plant, electric and compressor plants, watchman's premises, etc.

- Internal
Identify use and occupancy factors of all areas under same roof as irradiation plant.

4. Appropriate maps and floor plans for preceding parts.

E. Plant Administration

1. Organization Chart
2. Training of Personnel (retraining also)
3. Operating Regulations
 - Standing Orders
 - Instruction Manual and Daily Procedures
 - Plant Maintenance (schedule, authorized procedures)
 - Source Handling (authorized personnel, permitted operations, security of source handling tools)
4. Key Control
 - Irradiation Plant and Tools
5. Radiation Safety Organization
 - Designated Radiation Safety Officer (duties and responsibilities)
6. Unattended Operation and Call-In Procedures
7. Internal Security
 - To restrict personnel in area to essential workers.

F. Safety Analysis

1. Design Safety Principles and Database
2. Normal Operating Conditions
3. Emergency Conditions

G. Operating, Radiation Safety, and Emergency Procedures

1. Description
 - 1.1 Biological Shield
 - 1.2 Source Storage Pool
 - 1.3 Radiation Source
 - 1.4 Source Hoist
 - 1.5 Product Movement
 - Product Conveyors
 - Carrier Boxes
 - 1.6 Safety Devices
 - Machine Key
 - Maze Door Lock
 - Source Hoist Control
 - Emergency Stop Cable and Button
 - Fixed Radiation Monitors
 - Start-up Timers
 - Source Moving Alarm
 - 1.7 Control Console
 - Operating Section
 - Start-up Indicator
 - Fault Indicators
 - Keyswitches
 - Master Control Timer
 - Overdose Control Timer
 - Monitoring at Console
 - Manual Control Panel
 - Ventilation System
 - Characteristics
 - Ozone

2. Operation
 - 2.1 Normal Start Up
 - In the Equipment Room
 - At the Control Console
 - In the Irradiation Room
 - Starting the Irradiator
 - 2.2 Normal Shut Down
 - 2.3 Emergency Shut Down
 - 2.4 Automatic Fault Shut Down
 - 2.5 Loading the Unit
 - 2.6 Unloading the Unit
 - 2.7 Records

3. Maintenance
 - 3.1 General
 - Internal Conveyors
 - Pool Water Level Control
 - Pool Skim
 - Source Hoist
 - Instrument Calibration

 - 3.2 Weekly
 - Water Treatment
 - Product Conveyors

 - 3.3 Monthly
 - Radiation Levels
 - Machine STOP Controls
 - Automatic Shut Down Devices
 - Source Hoist
 - Monitor and Maze Door Interlock
 - Ventilation System

 - 3.4 Quarterly

 - 3.5 Annually

 - 3.6 Records

4. Routine Tests for Contamination
 - 4.1 Source Elements and Associated Components
 - 4.2 Radiation Survey of Water Treatment
 - 4.3 Radiation Survey of Air Filter
 - 4.4 Notification of Incidents
 - 4.5 Emergency Action

5. Miscellaneous
 - Fixed Radiation Monitors
 - Seismic Trigger
 - Pool Cooler

It is presumed that the foregoing entirely describes the facility as built and completes the set of administrative, radiation safety, operating and emergency procedures covering use of the irradiator.