



Construction Permit Application Review SHINE Medical Technologies

Safety Panel 2

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Panelists

- **Steven Lynch**
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Review Methodology

- **Two methodologies applied to SHINE accident analyses**
 - **Maximum hypothetical accident**
 - **Integrated safety analysis**
- **Radiological and chemical hazards evaluated against 10 CFR Parts 20 and 70, respectively**

Irradiation Facility Accident Analysis

- **Irradiation facility characteristics:**
 - **Operates at low power, pressure, and temperature**
 - **Large heat sink for passive decay heat removal**
 - **Radiological sources**

Event Identification

- **Delineation of possible accident categories**
- **Identification of limiting accident for the category**
- **Strategy to mitigate accident and limit consequences**
- **Analysis of dose consequences**

Safety Concept

- **Detection of high radiation levels**
- **Confinement of radiation source**
- **Evacuate workers**
- **Filter releases to environment**
- **Emergency planning zone could be the operational boundary**

Limiting Accident

- **Release of irradiated target solution from one TSV**
- **Consequences bounded by RPF maximum hypothetical accident**
- **Meets 10 CFR Part 20 limits**
 - **5 rem for workers**
 - **100 mrem for public**

Production Facility Accident Analysis

- **Radiological and chemical accident analysis performed**
- **Defines facility hazards and controls that support establishment of design basis**

Production Facility Accident Analysis

- **Multiple event types:**
 - **Radiological accidents**
 - **Chemical accidents**
 - **Criticality accidents**
 - **Fires**
 - **External events**