



40 CFR Part 191

Standards for Management and Disposal of Spent Nuclear
Fuel, High-Level and Transuranic Radioactive Wastes

Background

Issued in 1985 pursuant to the Nuclear Waste
Policy Act of 1982

Amended in 1993 pursuant to the WIPP Land
Withdrawal Act of 1992

Currently applies to the Waste Isolation Pilot
Plant (WIPP) and Greater Confinement Disposal
facility (Nevada Test Site)



Contents of 40 CFR Part 191

Subpart A – Management and Storage Standards

- Applicable to NRC-regulated facilities and DOE-operated disposal facilities not regulated by NRC

Subpart B – Disposal Standards

- Containment requirements
- Individual-protection standard
- Assurance requirements

Subpart C – Ground-Water Protection Standards

Subparts B and C apply to any disposal facility



Standards for Management and Storage

Annual dose equivalent to any member of the public outside the facility cannot exceed:

- For NRC-regulated facilities: 25 millirem (mrem) to the whole body, 75 mrem to the thyroid, and 25 mrem to any other critical organ
- For DOE-operated facilities not regulated by NRC: 25 mrem to the whole body and 75 mrem to any critical organ
 - Alternate standards may be approved for facilities not regulated by NRC
- To be demonstrated with reasonable assurance



Standards for Disposal (1 of 3)

Limits on cumulative releases of specified radionuclides to the accessible environment for 10,000 years after disposal

- Must calculate probability of exceeding limits
- Based on probabilistic analysis
- To be demonstrated with reasonable expectation
 - Recognizes significant uncertainties in the level of proof that can be achieved for long-term performance projections

“Accessible environment” is area outside “controlled area,” where standards do not apply

- No more than 100 km² in area and 5 km in any direction



Standards for Disposal (2 of 3)

Annual committed effective dose to any member of the public in the accessible environment cannot exceed 15 mrem

- Applies for 10,000 years after disposal
- All exposure pathways considered
- Undisturbed performance of the disposal system
- To be demonstrated with reasonable expectation
- Alternate standards may be approved

Dose format is newer than the management and storage standard, but represents a comparable level of risk to the 25/75 standard for DOE facilities



Standards for Disposal (3 of 3)

Assurance requirements provide confidence in the long-term compliance with standards:

- Active institutional controls for as long as practicable
- Monitoring after disposal to detect deviations
- Designation of sites with markers and records
- Use of both natural and engineered barriers to release
- Avoidance of sites with natural resources
- Removal of waste after disposal is not precluded for a reasonable period of time
- Requirements do not apply to NRC-regulated facilities



Standards for Ground-Water Protection

Levels of radioactivity in underground sources of drinking water shall not exceed limits specified in 40 CFR part 141 (as of January 19, 1994)

- EPA standards for drinking water
- Applies for 10,000 years after disposal
- Undisturbed performance of disposal system
- To be demonstrated with reasonable expectation
- Alternate standards may be approved

