



NRC Regulations for HLW Disposal

**Presentation for
National Academy of Sciences
Nuclear and Radiation and Studies Board
January 12, 2023**

**Tim McCartin
Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission**

Outline

- **Key Aspects of NWPA**
- **EPA Standards and NRC Regulations**
- **The Future for NRC Regulations?**

Nuclear Waste Policy Act (1982)

- Established a schedule for siting, construction, and operation of repositories
- Defined relationship between Federal and State governments with regard to waste disposal
- Assigned responsibilities to DOE, EPA, NRC, the President and to Congress
- Established Nuclear Waste Fund

Federal and State Roles

- Disposal of HLW is a Federal Responsibility
- NRC does not participate in site selection
- DOE makes a site recommendation
- State and public participation essential
 - DOE notifies State and shall hold public hearings in vicinity of site prior to nomination of a site
 - DOE report every 6 months to NRC and State on site characterization
 - DOE makes grants to State and local government to assist participation
 - NRC-DOE technical exchanges conducted in public

EPA Standards and NRC Regulations

- EPA sets generally applicable environmental radiation protection standards
 - Generic standards established in 1985 (40 CFR 191)
 - Yucca Mountain standards finalized in 2008 (40 CFR 197)
- NRC sets safety and security regulations for construction, operation, and closure
 - Generic regulations (technical criteria) initially promulgated in 1983 (10 CFR Part 60)
 - Yucca Mountain regulations finalized in 2009 (10 CFR Part 63)

NRC Generic Regulations

- **Evolution in technical methods since the 1980s**
 - Risk-informed, performance-based approach developed for Yucca Mountain regulations
 - Commission assumed “it would be afforded adequate time and resources in future years to amend its generic regulations” (64 FR 8643; February 22, 1999)
- **Aspects of generic rule remain appropriate**
 - Key decision points (construction authorization, license to receive and possess, amendment for permanent closure)
 - Multiple barriers, performance confirmation program, inspection, quality assurance

NRC Generic Regulations (looking ahead)

- Areas for potential revision (whether or not different waste types and forms exist)
 - Conform regulations to EPA's generic standards
 - Implement risk-informed, performance-based approach
- NRC staff is not currently aware of any issues that would require changes to its disposal safety requirements to accommodate other fuel types and waste forms
 - Potential for new guidance documents (not any time soon)

The Future?

- **NRC is prepared to support the National HLW Disposal Program**
 - Knowledge management activities
 - Follow national and international HLW disposal activities

**Thank you for your
Attention!**

Questions?

Abbreviations

DOE	U.S. Department of Energy
HLW	High level radioactive waste
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
MRS	Monitored Retrievable Storage
NAS	National Academy of Sciences
NRC	U.S. Nuclear Regulatory Commission

Key Decisions

- **Site Recommendation**
 - ~20 years of site characterization
- **Construction Authorization**
 - ~10 years for license application preparation and regulatory review
- **License Approval (emplacement of waste)**
 - ~3-5 years of data collection during construction application preparation and regulatory review
- **Permanent Closure**
 - ~95 years of performance confirmation data to support decision to permanently close repository

Transportation Provisions of NWPA

- Waste must be transported to a repository or MRS using NRC-certified packages
- DOE must abide by NRC regulations for notification of State, Local officials, and Indian Tribes
- DOE must provide technical assistance and funding to State and Local public safety officials on transport routes

Energy Policy Act (1992)

- Directs site-specific, health-based standards for evaluating potential Yucca Mountain repository
- EPA must base new standards on NAS recommendations
- NRC must revise its technical criteria to be consistent with EPA standards