



**Joint Convention Technical Meeting on the Establishment of a  
Radioactive Waste Management Organization**

**Session 1, Status, Responsibilities, and Missions of National  
Organizations for Radioactive Waste Management**

**United States of America**

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## Approach to Radioactive Waste Management

- **Various approaches or models for national radioactive waste management comply with terms of the Joint Convention**
  - “Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management.” (Article 19.1)
  - “This legislative and regulatory framework shall provide for... a clear allocation of responsibilities of the bodies involved in the different steps of spent fuel and of radioactive waste management.” (Article 19.2.vi)
- **The U.S. has a decentralized approach consisting of:**
  - Independent Federal and State regulatory agencies
  - Implementing Federal and State agencies
  - Commercial licensees
  - Free market driven industry

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## U.S Legal Framework for Radioactive Waste Management Responsibilities

### Multiple laws define roles and responsibilities

- Atomic Energy Act of 1954
- Energy Reorganization Act of 1974
- Department of Energy Organization Act (1977)
- Uranium Mill Tailings and Radiation Control Act of 1978
- Low-Level Radioactive Waste Policy Act of 1980 and the Low-Level Radioactive Waste Policy and Amendments Act of 1985
- West Valley Demonstration Project Act of 1980
- Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act of 1987
- Waste Isolation Pilot Plant Land Withdrawal Act of 1992, as amended
- Missions are further defined in:
  - Energy Policy Act of 1992
  - Energy Policy Act of 2005

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## Regulatory Responsibilities are Shared

Waste Classification	Radioactive Waste Management Regulatory Responsibilities	Radioactive Waste Management Implementation Responsibilities
High-Level Waste	U.S. Environmental Protection Agency (EPA) and U.S. Nuclear Regulatory Commission (NRC)	U.S. Department of Energy (DOE) and licensees
Transuranic Waste	EPA and DOE	DOE
Low-Level Waste (non-DOE waste)	NRC and States (EPA and States for mixed waste)	Licensees (storage) and States (disposal), utilizing commercial facilities
Low-Level Waste (DOE waste)	DOE (EPA and States for mixed waste)	DOE, utilizing DOE and commercial facilities
Greater-than-Class C (Low-Level Waste)	NRC	Licensees (storage) and DOE (disposal)
By-product waste from nuclear fuel cycle	EPA, NRC, and States	Commercial facilities
Other residual radioactive material and legacy sites	EPA, NRC, and States	Commercial facilities; long-term care by States or DOE

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## Implementation Responsibilities are Shared

Waste Classification	Radioactive Waste Management Regulatory Responsibilities	Radioactive Waste Management Implementation Responsibilities
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Greater-than-Class C (Low-Level Waste)	NRC	Licensees (storage) and DOE (disposal)
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## Many National Radioactive Waste Management Responsibilities Fall Under the Mission of the U.S. Department of Energy (DOE)

- Radioactive waste management is a small portion of DOE's overall mission portfolio, which encompasses energy and security, scientific discovery, and innovation, and environmental activities
- DOE has various radioactive waste management responsibilities, for waste generated "internally" and "externally"
  - DOE is the largest radioactive waste generator in the U.S. with mission programs in energy research, security, and environmental activities
  - Most of the DOE radioactive waste is generated by decontamination and decommissioning and site remediation activities.
  - Various radioactive waste management responsibilities for non-DOE waste are also assigned to DOE in the legislative framework

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## DOE Responsibilities for Long-Term Disposition of HLW

"The Administration has determined that developing a repository at Yucca Mountain, Nevada is not a workable option and has decided to terminate the Office of Civilian Radioactive Waste Management. The Nation needs a different solution for nuclear waste disposal." - FY 2011 Budget Request

- DOE asked to discontinue its application to the NRC for a license to construct a HLW/SNF geologic repository at Yucca Mountain
- DOE established a Blue Ribbon Commission to inform the Administration as it develops a new strategy for nuclear waste management and disposal
- DOE will develop and execute a research and development program that will address critical scientific and technical issues associated with the long-term management and disposal of "used nuclear fuel"
- DOE will prepare the Yucca Mountain site for stewardship and remediation
- The Administration remains committed to fulfilling its obligations under the Nuclear Waste Policy Act

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## U.S. Nuclear Regulatory Commission HLW Actions

- NRC Responsibilities under the Nuclear Waste Policy Act
  - Hearing Board decision on DOE motion to withdraw by June 30, 2010
  - Review of Yucca Mountain license application
- In response to the evolving national debate on managing the back-end of the fuel cycle, NRC initiated a number of actions:
  - Evaluating technical and regulatory requirements to support very long-term dry storage of spent fuel and high-level waste
  - Identifying and assessing regulatory gaps and initiated development of a regulatory framework for reprocessing
  - Commencing preparations for assessing alternative disposal options
  - Considering a revised Waste Confidence rulemaking
- NRC is pursuing an integrated approach to regulating the back-end of the fuel cycle
  - Maintains safety and security as changes occur in the national strategy
  - Anticipates needs for new and efficient regulations
  - Leverages limited resources and preserve assets

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## DOE Responsibilities for Transuranic (TRU) Waste Management

- DOE operates the WIPP repository whose programs provide characterization, confirmation, and disposal for defense TRU waste
- Over 11 years of safe operations at the Waste Isolation Pilot Plant that disposed defense-related TRU waste
  - Over 10 million loaded miles traveled safely
  - Over 67,000 m<sup>3</sup> of defense TRU waste disposed in over 8,500 shipments (through May 2010)



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## Licensees, States, and Compacts LLW Management Responsibilities

- Licensees are responsible for storage and treatment, and may use commercial facilities
- Low-Level Radioactive Waste Policy Amendments Act defines Federal and State responsibilities for LLW management
- States and regional disposal compacts have the responsibility for siting and operating Class A, B, and C LLW disposal facilities (for LLW generated outside of DOE and naval reactor decommissioning)



Waste Control Specialist's disposal of DOE byproduct waste from Fernald

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## Private Industry Provides LLW Management Services

- LLW management is performed without centralized planning or implementation
- Many commercial firms serve as brokers and processors for waste generators
- 3 operating commercial LLW disposal facilities, and a 4<sup>th</sup> planned:
  - **EnergySolutions Clive, Utah, Facility** – nationally accessible
    - In operation for Class A LLW
  - **EnergySolutions Barnwell, South Carolina, Facility** – Serves generators in 3 states within the Atlantic Compact
    - In operation for Class A, B and C LLW
  - **US Ecology Richland, Washington, Facility** – Serves generators in 11 states within the Northwest Compact and Rocky Mountain Compact
    - In operation for Class A, B, and C LLW
  - **Waste Control Specialist Andrews, Texas, Facility** – Will serve generators in 2 states as the Texas Compact facility and DOE in separate facilities
    - Licensed by Texas and under construction for Class A, B, and C LLW
    - Texas Compact commission currently considering waste import
    - License includes a new disposal facility for DOE waste (must compete for DOE business)
    - Expect construction to begin in 2010 and operations in 2011

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## DOE Responsibilities for DOE LLW Management

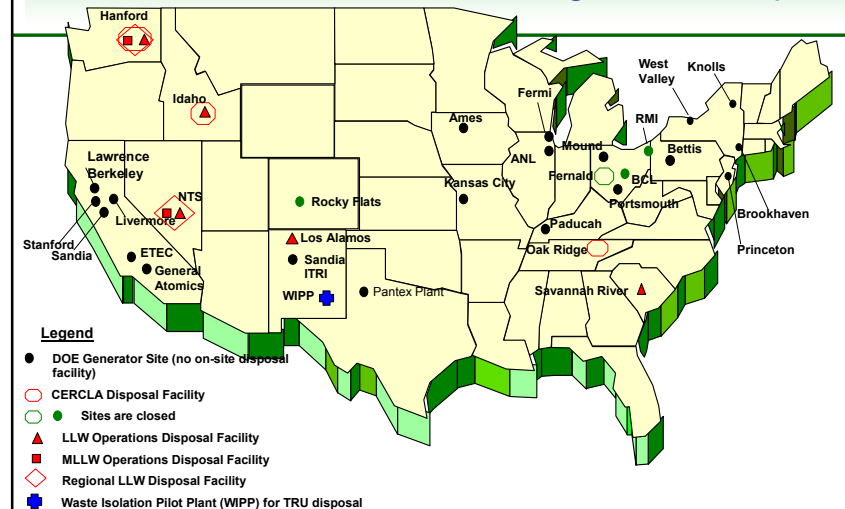
- DOE uses both DOE "Federal" and commercial facilities
- DOE has disposal facilities at Idaho Site, Hanford Site, Los Alamos National Laboratory, Nevada Test Site, Oak Ridge Reservation, and Savannah River Site
- Multiple onsite disposal facilities exist; some are specifically designed for decontamination and decommissioning and remediation wastes
- DOE works with NRC to disposition waste incidental to reprocessing, such as tank farm residuals, equipment, and low-activity waste
- Most treatment and conditioning is provided at commercial facilities



Environmental Restoration Disposal Facility at Hanford

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## Overview of DOE's Waste Management Complex



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## Licensee and DOE Responsibilities for Management of GTCC LLW

- GTCC LLW includes sealed sources, activated metals, and other waste that currently do not have a disposal path (intermediate level waste)
- Licensees are responsible for storage of GTCC LLW and may use commercial facilities
- DOE has statutory responsibility to provide disposal capability for GTCC LLW generated by NRC or Agreement State licensees
- DOE is preparing an Environmental Impact Statement for disposal of commercial GTCC LLW
  - Draft EIS will be issued early Summer 2010
  - EIS scope includes stored and projected waste including activated metals, sealed sources, and other waste (e.g., contaminated debris)
  - DOE is considering several of its sites as well as generic commercial sites for the GTCC LLW disposal facility
- A Report to the U.S. Congress on disposal alternatives and action by Congress is required before a Record of Decision (ROD) can be issued

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## Commercial Licensee Responsibilities for Nuclear Fuel Cycle By-Product Waste

- There are 5 uranium recovery facilities licensed by NRC
  - 9 new applications have been received for licensing or renewal by NRC.
  - 11 undergoing decommissioning
- Agreement States
  - 8 in situ leach facilities
  - 3 conventional uranium mills
  - 11 uranium recovery facilities are undergoing decommissioning
  - 2 active byproduct disposal sites
- When sites are closed and licenses are terminated, DOE is responsible for long-term stewardship

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## Responsibilities for Radioactive Waste Management of Other Residual Radioactive Material And Legacy Sites

- Cleanup of legacy radioactive sites is performed by several governmental organizations
  - NRC (formerly NRC licensed sites)
  - States (formerly state licensed sites)
  - U.S. Environmental Protection Agency (superfund sites)
  - U.S. Army Corps of Engineers (formerly utilized sites)
- DOE has responsibility for legacy sites remediated by DOE and those transferred back to DOE for long-term (perpetual) stewardship surveillance and monitoring
  - Closed byproduct (uranium mill tailing) disposal facilities
  - Remediated DOE sites and facilities
  - Closed DOE LLW disposal facilities
- States also have responsibility for long-term stewardship of closed commercial LLW disposal facilities

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## Joint Convention Lessons Learned

- Establish a successful regulatory framework and robust civilian nuclear infrastructure essential to successful radioactive waste management
- Early planning is essential to support the process of Joint Convention ratification and meeting the deadlines for active participation
- Reflect input from affected parties in your country in the process; e.g., other national entities, stakeholders, and the public
- Safe waste management is demonstrated in the implementation of safety, not just laws and regulations
- Factor decommissioning and waste disposition into the siting, design, and construction of nuclear facilities

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## Conclusions

- It is very important to have a robust, sustainable civilian nuclear infrastructure and a legal framework delineating regulatory authorities and implementation responsibilities
- In the U.S. radioactive waste is managed without a centralized management organization
  - The responsibilities are shared among the Federal government, the 50 U.S. State governments, and licensees
  - Waste generators may self-perform radioactive waste management, or purchase support and services from other licensed firms to condition, treat, store, and dispose of waste, when available