

**LLW Management at the Department of Energy**

*Session on Potential Changes to the U.S. LLW  
Regulatory Framework*

**U.S. Nuclear Regulatory Commission  
Regulatory Information Conference  
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**DOE's radioactive waste management priorities...**

- Continue to manage waste inventories in safe, compliant manner
- Address high risk waste in a cost-effective manner
- Maintain and optimize current disposal capability for future generations
- Develop future disposal capacity in an complex environment
- Promote the development of treatment and disposal alternatives in the commercial sector
- Review current policies and directives
- Provided needed oversight



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**DOE and NRC Waste Classification**

**DOE Order 435.1**

- High-level waste (HLW)
- Transuranic (TRU) waste
- Low-level waste (LLW)

**10 CFR Part 61**

- High-level waste (HLW)
- Low-level waste (LLW)
  - Greater than Class C
  - Class A, B, and C

*Historically, most LLW disposed of in the U.S. was generated by DOE activities; most DOE generated LLW results from decommissioning and site cleanup activities.*



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### DOE and IAEA Waste Classification

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| <b>DOE Order 435.1</b>   | <b>IAEA GSG-1</b>  |
| <ul style="list-style-type: none"><li>• High-level waste (HLW)</li><li>• Transuranic (TRU) waste</li><li>• Low-level radioactive waste (LLW)</li></ul> | <ul style="list-style-type: none"><li>• High-level waste (HLW)</li><li>• Intermediate level waste (ILW)</li><li>• Low-level radioactive waste (LLW)</li><li>• Very low level waste (VLLW)</li><li>• Very short-lived waste (VSLW)</li><li>• Exempt waste</li></ul> |

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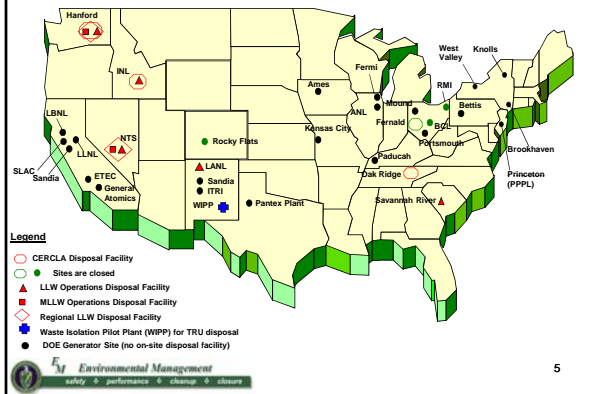
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### DOE's Waste Disposal Complex



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### DOE LLW Management Policy

- If practical, disposal on the site at which it is generated
- If on-site disposal is not available, at another DOE disposal facility
- At commercial disposal facilities if compliant, cost effective, and in the best interest of the Department

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**DOE LLW Management Regulatory Framework**

- DOE self-regulates its programs under authority of the Atomic Energy Act of 1954, as amended
  - DOE Orders, Manuals, and Guidance
  - Oversight by Office of Health, Safety, and Security
  - Low-level Radioactive Waste Federal Review Group
- Defense Nuclear Facilities Safety Board provides independent review and advice
- States and EPA have regulatory authority over hazardous waste and clean-up
- DOE operates under 37 Environmental Regulatory Agreements (CERCLA and RCRA) for cleanup with enforceable milestones



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**DOE Order 435.1, Radioactive Waste Management**

- Ensures all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment
- Implementation requirements are established in Manual 435.1-1, *Radioactive Waste Management Manual*
  - Includes general responsibilities and requirements
  - Specific requirements documented for HLW, TRU, and LLW
- The Manual is supported by Guidance and Technical Basis (G435.1-1)



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**2009 Complex-Wide Review Objectives**

- Describe the progress made within DOE/NNSA for managing radioactive waste (HLW, TRU, and LLW) over the past decade
- Provide a self-assessment tool for DOE sites and HQ
- Identify radioactive waste management best practices and areas of improvement
- Inform update of DOE Order 435.1
  - Incorporate lessons learned
  - Institutionalize informal guidance documents
  - Address changes in relevant statutes, regulations, and standards
  - Account for advances in technology
  - Address new and emerging DOE needs

*Applies to all DOE/NNSA programs that manage radioactive waste*



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### 2009 Complex-Wide Review Methodology

- Developed lines of inquiry
- Conducted pilot surveys (proof of process) in June 2009
- Revised lines of inquiry
- Surveyed sites and programs
  - DOE and site contractors provided input
  - Energy Facilities Contractor Group assistance
- Compiled and evaluated results
  - Received 14,000 responses
  - Site input evaluated for successes, best practices, lessons learned, and areas of improvement
  - Complex-wide input evaluated for best practices and areas of improvement
- Drafted report (expected to be final in March/April 2010)



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### Examples of Results – HQs Review

- Best Practices
  - Effective management, planning, and integration of the TRU program
  - Low-Level Waste Disposal Facility Federal Review Group (LFRG) success in developing and implementing a review process for disposal of LLW and TRU waste and HLW Tank closure performance assessments
- Areas of Improvement
  - Improving the effectiveness of the commercial treatment, storage, and disposal exemption process
  - Ensuring performance assessment requirements have been included in the legacy management process for sites being closed
  - Clarifying the radioactive waste management oversight responsibilities of the various DOE Program Offices
  - Ensuring the integration of DOE O435.1 and CERCLA closure requirements



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### Examples of Results – LLW Review

- Best practices
  - “One touch” philosophy - waste will be packaged, classified, and characterized at the point of generation in full compliance with its disposition pathway to minimize overall risk and to promote consistency
  - Unreviewed Disposal Question Evaluation procedure at Savannah River Site is the standard for determining the impact to the performance assessment/composite analysis when proposed actions or new information is discovered
  - LLW Corporate Board provides an effective forum for sharing information across DOE sites
- Areas of improvement
  - Clearly establishing DOE authority to take ownership of radioactive material that is in the National interest
  - Ensuring work-for-others contracts or customer service agreements include radioactive waste management requirements and costs
  - Clarify the appropriate use of concentration averaging
  - Recognize the use of probabilistic modeling and analysis



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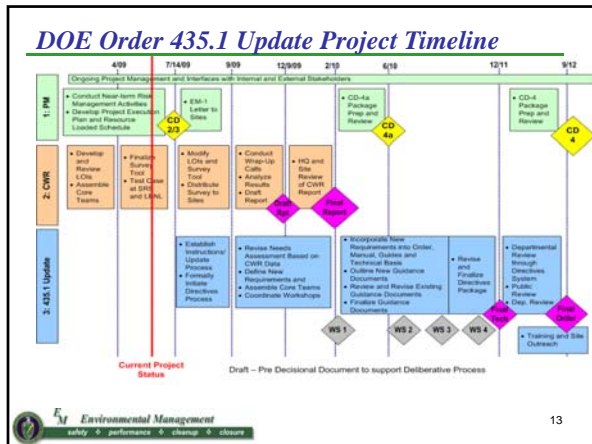
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**Summary**

- DOE manages LLW under its own regulatory framework
- DOE is completing a complex-wide review to inform an update of its waste management order, DOE Order 435.1 in FY-10 through FY-12
- The Order 435.1 update is proceeding in parallel with NRC's update of 10 CFR 61, providing an excellent opportunity for coordination

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