U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Building the Community of Practice for Performance and Risk Assessment in Support of Risk-Informed Environmental Management Decisions - 14575

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Office of Environmental Management

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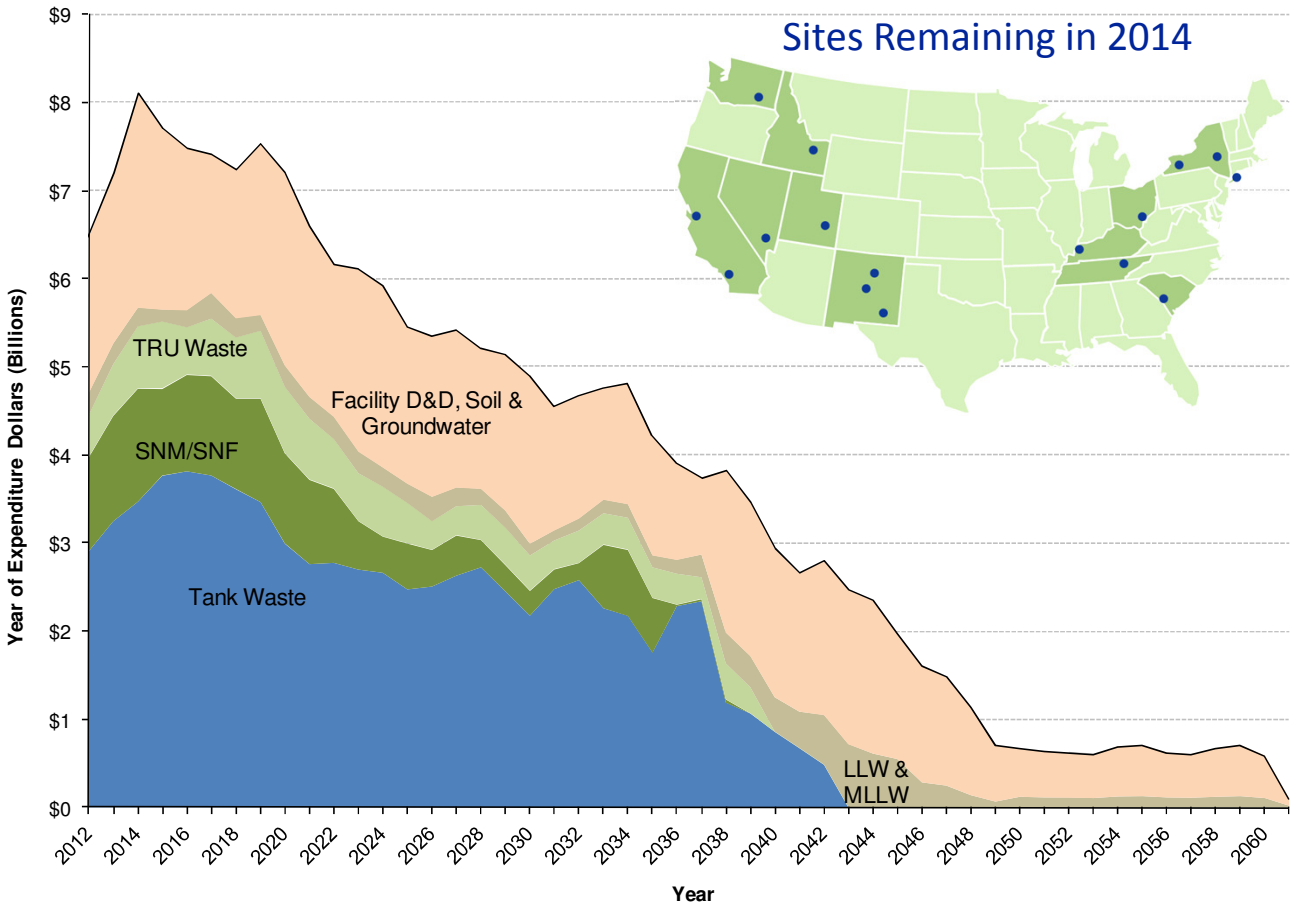
EM Mission, Priorities & Work to Go

- Safeguards and security
- Tank waste stabilization, treatment, and disposal
- SNF & SNM disposition
- TRU and MLLW disposition
- Soil and groundwater remediation
- Facility D&D



Current Regulatory Framework

- DOE negotiates and executes environmental compliance and cleanup agreements with the U.S. Environmental Protection Agency and state regulatory agencies, as appropriate
- These agreements include the Federal Facility Agreements (FFA)
- The FFAs are augmented by numerous other local agreements with their own set of actions, requirements, milestones, and due dates
- Key parameters such as required cleanup levels and milestones are negotiated with the appropriate regulators and stakeholders for each site
- Compliance with environmental laws and agreements continues to be a major cost driver for the EM program

Hanford Federal Facility Agreement and Consent Order

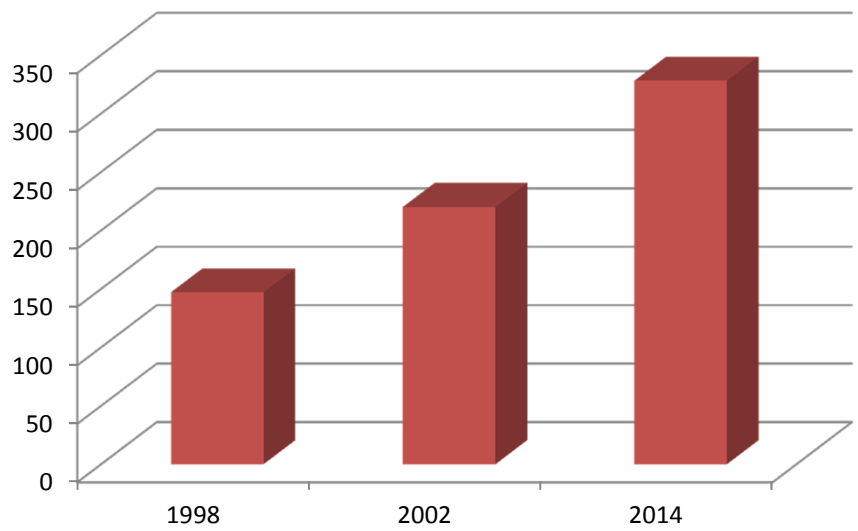
Tri-Party Agreement

The State of Idaho, through the Attorney General, and Governor Philip E. Batt in his official capacity; the Department of Energy, through the General Counsel and Assistant Secretary for Environmental Management; and the Department of the Navy, through the General Counsel and Director, Naval Nuclear Propulsion Program, hereby agree on this 16th day of October, 1995, to the following terms and conditions to fully resolve all issues in the actions Public Service Co. of Colorado v. Batt, No. CV 91-0035-S-EJL (D. Id.) and United States v. Batt, No. CV-91-0065-S-EJL (D. Id.):

Regulatory Compliance

- Regulatory framework is governed by environmental statutes, regulations (RCRA, CERCLA, NEPA), and corresponding state regulations
- External regulators include U.S. EPA; State environmental and health regulatory agencies; and Department of Transportation.
- EM self regulates radioactive waste management under DOE Order 435.1 which includes disposal of radioactive waste
- U.S. Nuclear Regulatory Commission has a consultative and monitoring role in determining when waste is no longer high-level waste.

Life-Cycle Cost & Environmental Liability



- The life-cycle cost for the DOE cleanup program was estimated to be $147 billion in 1998.
- In 2002, the life-cycle cost estimate increased to $220 billion.
- Current life-cycle cost estimate ranges from $290 billion to $328 billion.

- A major portion of the EM's environmental liability is associated with legacy management at two large sites: the Hanford site at Richland, WA and the Savannah River Site at Aiken, SC

Risk-Informed, Cost-Effective Decision Making

- Manage environmental contamination and waste in a manner that balances protection of human health and the environment and cost effectiveness for current and future generations

- Will be necessary to leave residual waste in place
  - Allows for natural attenuation
  - Integrates stewardship into holistic, life-cycle management options
  - Requires further development of predictive modeling and visualization, and monitoring and sensor technologies
  - Recognizes U.S. Government's long term commitment to monitoring and other institutional controls

Savannah River Tank 5 Heel Removal (Tank Interior)

Natural attenuation of uranium contamination at the Hanford Site 300 Area

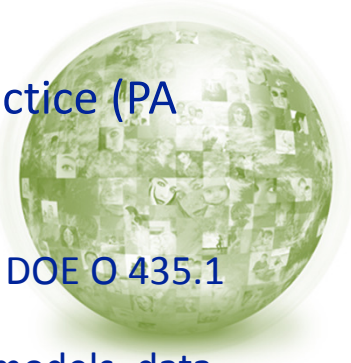
Performance and Risk Assessments

- Site-specific performance and risk assessments (also called safety assessments) are used to inform and support management decisions and to demonstrate compliance with the performance objectives under CERCLA, RCRA, and NEPA, as well as DOE O 435.1
- Performance or Risk Assessments (PAs or RAs) provide a demonstration of compliance and important technical inputs to meet regulatory requirements for:
  - waste form development and implementation;
  - tank closure activities;
  - waste site closure activities;
  - in-situ decontamination and decommissioning;
  - soil and groundwater remediation; and
  - management of disposal facilities
- Impact of proposed actions on human health and the environment

Need for Robust P&RAs in Decision Making

- The PAs and RAs or P&RAs become public documents upon completion
- DOE needs to ensure that P&RAs continue to be performed and documented consistently and to high standards
- Robust risk assessments are critically needed for risk-informed, performance-based environmental management decisions.
- Continued improvements in the consistency of P&RAs and reductions in their underlying uncertainty will provide a sound foundation for future.
- To address these needs, the Low-Level Waste Disposal Facility Federal Review Group (LFRG) was chartered to provide reviews of the performance assessment completed to demonstrate compliance with DOE Order 435.1 requirements on DOE self-regulated radioactive waste disposal activities
- In addition, the Performance Assessment Community of Practice (PA CoP) was established and envisioned as means to foster improved consistency at individual sites and across the DOE Complex.

Performance and Risk Assessment Community of Practice (P&RA CoP)



- DOE EM sponsored the Performance Assessment Community of Practice (PA CoP) in 2009, to:

  a) provide means to address consistency early and throughout PA process;

  b) foster early and sustained communication among CERCLA, NEPA, RCRA, and DOE O 435.1 activities involving LLW, tank closure, and D&D;

  c) provide a forum to share information regarding state of the art and specific models, data and approaches; and

  d) serve as an enduring data and modeling resource to minimize duplication of effort across DOE and train future generation of PA professionals

- PA CoP held 3 technical exchange meetings between 2009 and 2011:
  - July 13-14, 2009: Salt Lake City (http://www.cresp.org/education/workshops/pacop/)
  - April 13-14, 2010: Richland, WA (http://srnl.doe.gov/copexchange/links.htm)
  - May 25-26, 2011: Atlanta. GA (http://srnl.doe.gov/copexchange/2011/links.htm)

- In late 2013, the group was broadened as P&RA CoP to emphasize:

  a) the need for an integrated regulatory framework when cleanup work at a given site is subject to overlapping environmental regulations (CERCLA, RCRA, NEPA, and DOE Order 435.1); and

  b) the importance of risk assessments in non-DOE self-regulated cleanup activities

Interagency Steering Committee for P&RA CoP

- The P&RA CoP activities will be governed by a steering committee through a charter; otherwise, the P&RA CoP is self-directing.
- The steering committee consists of members from a variety of organizations, including:
  - Department of Energy
  - Nuclear Regulatory Commission;
  - Environmental Protection Agency;
  - State regulators;
  - DOE national labs;
  - Universities; and
  - Engineering/environmental firms.

Main Objectives of P&RA CoP

- Consolidate and expand the body of knowledge relating to the preparation and application of P&RAs that incorporates the concept of model and data reuse applicability and builds on lessons learned across the DOE complex;
- Draft appropriate additional guidance, based upon this agreed-upon body of knowledge (and any desired improvements), in a clear and easy to understand manner with particular emphasis on continuing improvements to the consistency of approaches for P&RA implementation;
- Provide support to DOE sites in the initial stages of developing and planning P&RA activities;
- Formalize the conduct of technical exchanges, education, and training sessions as appropriate to accomplish the goals of the charter;
- Develop a repository of P&RAs and risk-based modeling tools, data, and supporting technical information; and
- Continue to develop the community of P&RA practitioners and technical expertise to support waste management and closure needs.

Recent Activities

- Conduct periodic Steering Committee Meetings:
  - August 2013
- Sponsor public Webinars, nominally on a quarterly basis:
  - Dec. 12, 2013:

    Alaa Aly (INTERA) & Dib Goswami (Washington State Ecology),

    The Use of Graded Approach in Hanford Vadose Zone Modeling
  - Feb. 5, 2014:

    David Kosson (Vanderbilt University/CRESP) et al.,

    The Cementitious Barriers Partnership Toolbox Version 2
  - Feb. 20, 2014:

    Craig Benson (University of Wisconsin/CRESP),

    Performance of Engineered Barriers: Lessons Learned
- More than 180 on distribution list for P&RA CoP information

Near-Term Plans

- Potential topics for future Webinars in FY2014 include:
  - Features, events, and processes (May 2014)
  - Decisional analyses (August 2014)
- An annual Technical Exchange meeting is being planned :
  - Tentatively planned for the Fall. Theme and speakers TBD.
  - Join us to discuss the plans in a sideline meeting in Room 211B (2nd Level of the Convention Center) on March 5, 2014, 10 – 11:30 am
- Website hosted by DOE EM is under development
  - Charter; Steering Committee members
  - Webinar presentations, meeting notes, white papers
  - References
  - Links to other resources

Food for Thought

- White papers that summarize CoP discussions and consensus:
  - Meeting notes
  - CoP member reviews
  - White Papers
- Website:
  - Forum for discussion

- For questions or comments, please contact:

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BACK UP

OFFICE OF ENVIRONMENTAL MANAGEMENT

Current Interagency P&RA CoP Steering Committee

• Ming Zhu, Chair	DOE EM
• Alaa Aly	CHPRC
• George Alexander	NRC
• Bob Andrews/Matt Kozak	INTERA
• Craig Benson	University of Wisconsin at Madison/CRESP
• Jim Clarke	Vanderbilt University/CRESP
• Chris McKenney	NRC
• John Morse/Doug Hildebrand	DOE RL
• Rob Pope/Martha Berry	EPA, Region IV
• Roger Seitz	Savannah River National Laboratory
• David Sevougian	Sandia National Laboratories
• Steve Thomas/Kent Rosenberger	Savannah River Remediation
• Stewart Walker	EPA, HQ
• Cheryl Whalen/Dib Goswami	State of Washington, Department of Ecology
• Ed Winner	Commonwealth of Kentucky