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

Risk-Informed Decision Making at Department of Energy Sites

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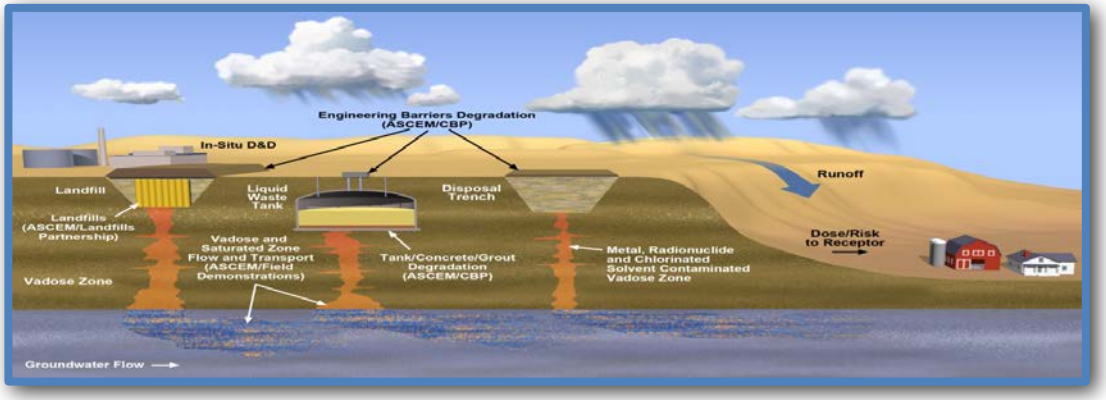
Challenge

- How do we take a more comprehensive and integrated approach to balancing impacts of addressing environmental contamination risk?
  - Short-term and long term impacts?
  - Worker and community impacts?
  - Local and global impacts?
  - Cost and risk mitigation?
  - End states and future use?

- How do we (or should we) change the basic question of "How clean is clean?" to "How much residual waste can remain and still ensure protectiveness?"?

- How do we expand our thinking about risk and sustainability to best manage existing risks and execute our mission?



Risk-informed 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

- Tasked the National Academy of Sciences to look into Best Practices for Risk-Informed Remedy Selection, Closure, and Post-closure Control for DOE's Contaminated Sites

Savannah River Tank 5 Heel Removal (Tank Interior)

Natural attenuation of uranium contamination at the 300 area , Hanford site

Compliance, Risk, and Priority Setting

- Environmental Compliance: One of EM's top program drivers
  - Different environmental statutes drive different removal end points
  - Location of points of compliance (risk envelope)

- Risk prioritization: Existing processes provide the framework
  - Sequence and schedule – Federal Facility Agreements and Consent Orders
  - Remedy Selection – CERCLA Nine Criteria and Waste Determinations/Disposal Authorization Statements

- Decisions regarding cleanup priorities need to be risk-informed to provide a balanced approach
  - Protection of human health and the environment
  - Consideration of future use and sustainability – environmental, social, and economic

Reflections from the October Workshop

- It is important to understand the difference between unrestricted and restricted release, i.e., the importance of end states, adjusting risks to use, managing remediation versus managing exposure, and short term and long term potential end uses for the site.
- At the large DOE sites, time and space for contaminant transport should be considered with the assumption that the Unites States government is “not going away” and the site will remain under federal jurisdiction.
- Remediation goals can be accomplished using flexibility of process over a long time period (one bite at a time) rather than relaxing standards.
- Cleanup decisions need to consider the intrinsic value of groundwater and other site specific resources.

Reflections from the October Workshop (Continued)

- Adaptive management is important to the remediation effort so that there is a process to incorporate new technologies or approaches to meet the remediation goals.
- Sustainability needs to be part of the remediation process. Everything must be on the table at the same time so that decisions are made based on all the possible risks and consequences for the from all actions or inactions with end use in mind.
- Sequencing the work within the total remediation effort is important , especially when funding is insufficient to do everything everyone wants when they want it completed.
- Risk communication efforts need to be improved so that cleanup decisions are transparent and stakeholders can see that their viewpoints are taken into account.