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

Remediated Nitrate Salts at Los Alamos National Laboratory Challenges and Successes

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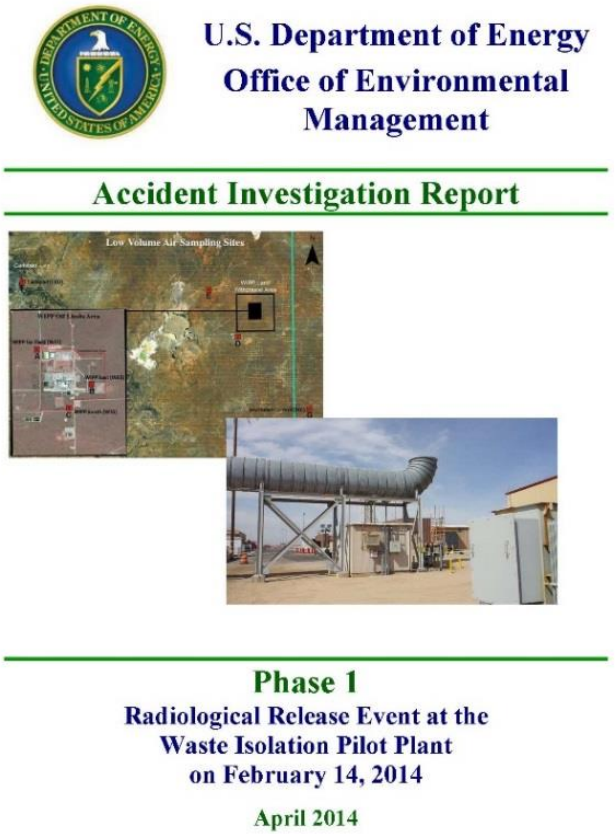
ENVIRONMENTAL MANAGEMENT
SAFETY ❖ PERFORMANCE ❖ CLEANUP ❖ CLOSURE

2014 Drum Breach at WIPP

- In February 2014, a Los Alamos National Laboratory (LANL) drum breached underground at WIPP. The drum contained nitrate salt waste that was remediated incorrectly with an organic absorbent.

Challenges

- **The Accident Investigation Board identified 40 Judgments of Need identifying areas of weaknesses:**
  - Process Engineering / Configuration Control
  - Safety
  - Quality Assurance
  - Federal Oversight
- **Major Actions:**
  - Stood up the Environmental Management Los Alamos Field Office
  - Reorganized Los Alamos National Security and brought in experienced leadership
  - Strengthened safety-conscious work environment
  - Enhanced processes and oversight
  - Improved emergency preparedness
  - Developed more robust training programs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Accident Investigation Report

Phase 1
Radiological Release Event at the
Waste Isolation Pilot Plant
on February 14, 2014

April 2014

Storing & Preparing for Treatment

- Full Scale Drum Tests
- Development of Treatment Process
- Peer Reviews
- Isolation Plan
  - Storage in Climate-Controlled PermaCon
  - Installation of Pressure Relief Devices
  - Wildfire Mitigation

Workers installed pressure relief devices onto the lids of the RNS drums

- Development of Mock-Up and Training Facilities
- Facility/Glove Box Upgrades
- Joint EM and NNSA Safety Basis and Readiness Reviews
- Site Transportation Plan

The glove box inside WCRRF underwent readiness reviews prior to the start of treatment

Treatment of the Remediated Nitrate Salts

- Treatment started May 18, 2017
- 33 of the 60 RNS drums have been treated
- While the expected completion date has been pushed back, significant progress made
- Safety of the workers, public and environment is top priority
- Challenges
  - Some debris waste has been more difficult to clean than anticipated
  - Unexpected materials such as rad smear cloth, respirator cartridges, and earmuffs
  - A batch of blended cellulosic material was too dry requiring processing changes
  - Operational equipment exhibited failures (spares available)
  - Facility upsets, including damaging of a fire suppression gauge

Workers inside WCRRF operate different phases of the treatment process

Material inside the glove box at WCRRF

Keys to Success in RNS Treatment

Workers trained in a mock-up glove box before the start of the RNS treatment.

- **Clear expectations between stakeholders**
- **Partnering: Respect and value what each organization brings**
- **“Go slow to speed up”**
- **Defendable technical basis**
- **Continuous communications**