E2Tech Presentation
How Clean Is Clean?
Former HoltraChem Site Example

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Former HoltraChem Site
The HoltraChem Site Was Comprised of an Industrial Facility, Five Landfills, and a Lagoon
Event Timeline

- 12/1967 – Beginning of operations
- 1967-1982 – Successors of Mallinckrodt
- 1982-2000 – Other entities own the facility
- 2000 – HC shuts down
- 2000-2008 – Evaluation of Clean-up Options (RCRA)
- 12/5/2008 – UHSSL Order Served
- 12/5/2008 – Federal Court Filing (Injunctive Relief)
- 12/19/2008-8/19/2010 – Appeal to BEP
How Clean is Clean?
Remedial Options

- Onsite Containment Option – $40 million [EPA/CDM]
- Onsite Consolidation (CAMU) – $65 million
- Dig and Haul – $200-250 million [MPA/DEP]

Mallinckrodt willing to do any but Dig and Haul
§1365. Designation of uncontrolled hazardous substance sites

1. Investigation. Upon finding, after investigation, that a location at which hazardous substances are or were handled or otherwise came to be located may create a danger to the public health, to the safety of any person or to the environment, the commissioner may:

B. Order any responsible party dealing with the hazardous substances to cease immediately or to prevent that activity and to take an action necessary to terminate or mitigate the danger or likelihood of danger; and [2005, c. 330, §34 (NEW).]
E2TECH FORUM
ENVIRONMENTAL REMEDIATION

FORMER HOLTRACHEM FACILITY
ORRINGTON, MAINE

GUY COTE, P.E.

NOVEMBER 20, 2014
TWO PRONG APPROACH

- Examine the groundwater conditions; and
- Review of the landfill conditions
LANDFILL 1 DESCRIPTION

- Received brine sludges for dewatering and/or temporary storage
- Storage yard for facility, anode disposal, construction debris, former ponds
- Area covered with Hypalon in 1980
- Groundwater extraction well active
LANDFILL 2 DESCRIPTION

- Period of operation: 1971 through 1973
- Stored dewatered brine sludge
- Underlain by clay
- Clay cover placed over 0.3 acre landfill in 1980
LANDFILL 3 and 4 DESCRIPTION

- Period of operation: 1972 through 1980
- Used to dispose of dewatered brine sludge
- Underlain by till
- Hypalon covers installed 1980
LANDFILL 5 DESCRIPTION

- Period of operation: 1978 through 1983
- Used to dispose of dewatered brine sludge
- Underlain by till
- Clay liner under half of landfill
- HDPE cover placed in 1983
LANDFILL COVER ASSESSMENT

- Reviewed reports
  - Drawings when available
  - Field notes
  - Photographs
- Computer model to evaluate cover system
  - EPA HELP model
January 12, 1984 - Film H - Print #3

Shows factory seam for the first 72' by 95' section of liner.

January 12, 1984 - Film H - Print #4

Standing in the northeast corner of the landfill site facing west. Picture shows six men pulling liner in place. There are three men not shown in this picture, for anchoring the liner while the other six pulled. The men are using C-clamps to attached to the liner to get a grip of the liner.
PURPOSE OF EXAMINING GROUNDWATER CONDITIONS

- The groundwater acts as a potential transport pathway
- Groundwater quality data useful to evaluate performance of landfill caps and risks to the environment
- Groundwater quality data provides information relevant to remediation decision-making and landfill removal options
Significant amount of historical and current groundwater data for this site on which to confidently address each landfill.

- Thirty years of data and site studies
- Performed thorough, independent calculations and plotting of data
- Evaluated groundwater concentration trends
- Performed statistical analysis of data and trends
- Examined total and soluble mercury
- About 80 on-site monitoring wells historically sampled and tested for mercury and other compounds
- 25 on-site monitoring wells and 2 residential wells currently sampled
- Groundwater monitoring program sufficient to assess current and future landfill risk to human health and the environment
FIGURE 1
WELL LOCATIONS
FORMER HOLTRACHEM FACILITY
ORRINGTON, MAINE
Landfill 1 - Mercury concentrations declining, but currently above groundwater Media Protection Standard (MPS)

Landfill 2 - No detectable mercury in groundwater around this landfill and landfill no longer monitored

Landfills 3 through 5 - No detectable mercury in groundwater around this landfill
CONCLUSIONS

- The Site’s groundwater data is reliable and sufficient to evaluate landfill remediation options.
- Groundwater quality has improved significantly over time.
- Landfill 1 is predicted to achieve MPS for mercury in about 10 years without further action.
- Design and construction of the existing covers of Landfills 2 through 5 are protective of human health and the environment.
- Excavation of landfills could cause mobilization of mercury to groundwater.
BEP Decision & Appeals

- 8/2010 – BEP Decision
- 10/2012 – Superior Court Decision (Business & Consumer Court)
- 4/2014 – Law Court Decision
- Implementation of BEP Order
How Clean is Clean?

**Factors:**
- Science?
- Public perception/acceptance?
- Regulator - federal versus state?
- Specific regulator?
- Politics?
- Resources?
Potential Redevelopment
Potential Redevelopment