

**- Case 1 -
Thermal Desorption at the Metaltec
Superfund Site**

Thermal Desorption at the Metaltec Superfund Site, Franklin Borough, New Jersey

Site Name: Metaltec Superfund Site

Location: Franklin Borough, New Jersey

Period of Operation: December 1994 - January 1995

Cleanup Type: Remedial



Technology: Thermal Desorption

- A low temperature enhanced volatilization system provided by Williams Environmental was used to treat soil at the site
- The desorber was a direct-fired, rotary dryer equipped with a gas burner and operated using countercurrent flow under negative pressure
- Soil was heated in the desorber to a temperature of 750°F for 15-20 minutes
- Emission controls included a baghouse, thermal oxidizer, quench, and scrubber

Cleanup Authority:

CERCLA- ROD issued June 30, 1986

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Contaminants: Chlorinated Volatile Organic Compounds (VOCs) and Heavy Metals

- Maximum concentrations in soil were trichloroethene (TCE)
- 7,600 mg/kg and 1,2-dichloroethene (DCE) - 6,600 mg/kg

Waste Source: Disposal in lagoon; spills

Type/Quantity of Media Treated: Soil

- 4,215 yds³ treated
- Soil was characterized as stiff sandy clays; silty, sandy clays; and sands and gravel
- Moisture content was 20%

Purpose/Significance of Application: Demonstration of composting technology for treatment of soil contaminated with chlorinated pesticides

Regulatory Requirements/Cleanup Goals:

- The ROD specified the following cleanup goals: vinyl chloride - 33 mg/kg; tetrachloroethene (PCE) - 0.05 mg/kg; trans-1,2-DCE - 33 mg/kg; TCE - 5.6 mg/kg; chloroform - 5.6 mg/kg; 1,1,1-trichloroethane - 0.41 mg/kg; and 1,1-dichloroethane - 7.2 mg/kg
- The ROD required that treated soil that failed to meet the TCLP metals requirements be shipped off-site for stabilization and disposal at an approved RCRA permitted facility.
- Air emissions standards were specified in a NJDEP air permit, including a destruction and removal efficiency (DRE) for the thermal oxidizer of 99.99%

Results:

- All soil met the cleanup goals on the first pass through the desorber and no soil was retreated. Data on the concentration of individual constituents in the treated soil were not provided
- A performance test was performed to demonstrate compliance with soil cleanup requirements and air emissions standards, and to establish operating parameters for the remainder of the project. During the performance test (three runs), all treated soil samples were below the detection limit of 0.002 mg/kg for PCE and TCE. All emission results met the test objectives with the exception of lead and sulfur oxides, which were deemed acceptable by the USACE and EPA .

Costs:

- The total cost for treatment of 4,215 cubic yards of contaminated soil at this site was \$998,238. This included costs for technology mobilization, setup, and demobilization, planning and preparation, and equipment and appurtenances.
- The calculated unit cost for this application was \$237 per cubic yard of soil (based on a total of 4,215 cubic yards of soil treated).

Description: From 1965 to the mid 1980s, the Metaltec Corporation, a subsidiary of Aerosystems Technology Corporation, operated a metal-plating facility in Franklin Borough, Sussex County, New Jersey. The facility produced assorted metal parts including metal ballpoint pen casings, paint spray guns, and lipstick cases. During that time, wastewater from the plating operations was discharged on-site to an unlined wastewater lagoon. In addition, wastes were spilled and dumped in various locations at the facility. The unlined wastewater lagoon was abandoned sometime in the 1980s and subsequently backfilled by the owners. In 1980, the New Jersey Department of Environmental Protection (NJDEP) conducted several investigations of the former wastewater lagoon and a pile of green material that was stored at the site, and found that soil and groundwater in these areas were contaminated by VOCs and heavy metals. The site was placed on the National Priorities List (NPL) in September, 1983.

A thermal desorption system was used at the site to treat soil contaminated with VOCs. This system treated 4,215 yds³ of contaminated soil to below cleanup goals in less than 2 months, with no soil requiring retreatment. According to the vendor, the thermal desorption system was operated at a 75% on-stream efficiency despite severe weather conditions. In addition,

the vendor was able to maintain the contract-required schedule despite delays in the air permitting process. The vendor indicated that developing an active relationship with the community allowed operations to be extended from 12 hours/day to 24 hours/day, which was critical to maintaining the project schedule.

