Lead-Contaminated Soil Fixation Project

Lee Farm Superfund Site, Woodville, Wisconsin

1. ***Lead-Contaminated Soil and Debris***
   The site contained soil, battery casings, wood, circuit boards, rocks, elemental lead, and other lead and heavy metal contaminated debris at levels ranging from 500 ppm to 25 percent.

2. ***Grizzly Bar Screen***
   A tracked loader and trackhoe delivered waste material to the screen. Material smaller than 6 inches proceeded to the Magnetic Separator, while that larger than 6 inches was fed to the Hammer Mill Crusher.

3. ***Hammer Mill Crusher***
   Material larger than 6 inches was reduced to less than 2 inches.

4. ***Magnetic Separator***
   Ferrous metal debris was extracted from the waste feed and removed to the Rejected Waste Pile. Non-metal material entered a shaker screen where material greater than 2 inches was also rejected from the fixation process. Acceptable material proceeded to the Pugmill.

5. ***Rejected Waste Pile***
   Ferrous metal material and oversized pieces were collected here for decontamination (through high-pressure washing) and eventual disposal.

6. ***Fixation Process***
   Portland Cement and water were mixed with waste feed in the Pugmill to achieve fixation, a chemical process that limits the solubility of lead to within regulatory limits. The weight of discharged material was monitored and fixant addition adjusted accordingly to maintain the appropriate mixture.

7. ***Treated Soil***
   After analytical results indicated treatment effectiveness, treated material could be classified as nonhazardous special waste and permanently stored on site.

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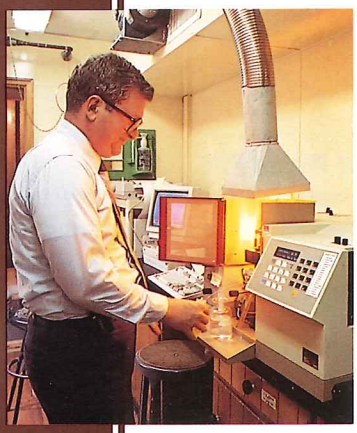
Water was treated in two 50,000-gallon pools and discharged following analysis to ensure compliance with permit criteria. Treated water was also recirculated through the pugmill mixing system.



Samples of fixated material were analyzed in an on-site laboratory to ensure compliance with the TCLP standard of 5 ppm for lead. Samples also had to pass the EPA 1312 leaching procedure to meet WDNR drinking water standards.

Project Description

The Lee Farm Site is an abandoned sand and gravel pit, located in Wisconsin farm country near Eau Claire, where battery casings had been disposed. In addition, from the early 1960s until 1983, battery terminals were burned at six other sites in Wisconsin to recover lead. The result was approximately 27,000 tons of lead-contaminated soil, debris, and casings among the seven sites.

The USEPA determined that the site posed a threat to human health and the environment because of its proximity to a residential area, evidence of contamination in corn fields, wildlife around the site, and the threat of contaminated rainwater runoff into waterways.

In May 1991, OHM Corporation began work at the Lee Farm Site under an Emergency Response Cleanup Services (ERCS) contract with the USEPA. OHM performed the following tasks:

- Design, fabrication, installation, and operation of a system that processed and treated approximately 22,000 tons of material from the Lee Farm disposal area and six other sites
- Air monitoring to measure lead levels near workers and nuisance dust around the site to meet rigorous health and safety standards
- On-site analysis of treated material to ensure compliance with treatment standards
- Placement of treated material, construction of clay cap, site grading, and revegetation at project conclusion
- Design and construction of runoff sumps and leachate collection systems

Technology

Fixation was deemed the best technology, since it achieves treatment standards that enable the material to be classified as nonhazardous special waste and to remain on site. OHM achieved average processing rates of 650 tons per day. Analytical results showed consistent reductions of lead to below the TCLP level of 5 ppm.

Support facilities and equipment for the 4-month-long project to facilitate health and safety and project efficiency were:

- On-site laboratory equipped with an atomic absorption spectrometer, digital pH meter, ventilation hood for acid digestion, and analytical balances
- Personal air sampling pumps
- Two 50,000-gallon pools for water treatment prior to off-site discharge
- Fully equipped maintenance trucks to minimize downtime and perform repairs
- Electrical control center to direct power to OHM's processing equipment

OHM Corporation

OHM Corporation is a leading environmental services firm specializing in on-site remediation of hazardous wastes and toxic substances on a planned and emergency basis. Since 1969, OHM has successfully completed more than 12,000 projects and is a leader in the application of on-site treatment technologies.

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