

Green Remediation Focus

Minimizing the environmental footprint of site cleanup

A Profile in Using Green Remediation Strategies

Additional profiles available at www.clu-in.org/greenremediation

Umatilla Army Depot
Hermiston, Oregon

Superfund

Cleanup Objectives: Treat 15,000 tons of soil contaminated with explosives including trinitrotoluene (TNT) and royal demolition explosives (RDX). The Umatilla Army Depot site occupies about 20,000 acres in Hermiston, Oregon, and was used as a storage depot for conventional munitions and chemical warfare agents. Between the 1950s and 1965, the Army discharged explosive-contaminated wastewater into two unlined lagoons, an accepted wastewater disposal technique at the time. Contaminants seeped into the soil and the groundwater underlying the evaporative lagoons.

Green Remediation Strategy: The strategy involved excavating the soil and composting with locally obtained feedstock to create a contaminant-free end-product containing nutrient-rich humus. The composting feedstocks used at Umatilla were 30 percent contaminated soil, 21 percent cattle manure, 18 percent sawdust, 18 percent alfalfa, 10 percent potato waste, and 3 percent chicken manure.

- Used Windrow techniques to place soil in lengthy piles. Used highly specialized mixing equipment to mix steaming soil piles three times daily to (1) ensure that the compost received sufficient oxygen; (2) release trapped heat, water vapor, and gases; and (3) to break up clumps.
- Mixed soil with feedstock inside mobile buildings to control fumes and optimize biological activity during the composting process.

Results:

- Treated each 2,700-cubic-yard batch of soil in 10-12 days.
- Destroyed contaminant byproducts or permanently bound byproducts to soil or humus, with non-detectable concentrations of explosives.
- Produced a nutrient-rich product (humus) that can be used in landscaping and agricultural applications.
- Saved an estimated \$2.6 million compared to incineration, a common alternative for explosives treatment. (\$176 per ton)

Energy Conservation

- Avoided significant fossil fuel consumed by an incinerator.
- Avoided fuel costs/consumption associated with transporting soil to an offsite incinerator or transferring ash generated by an onsite mobile incinerator.
- Allowed recycling of high-quality composted soil

Materials & Waste Management

- Avoided generating ash that must be handled and disposed of as hazardous material.

Property End Use: Privatization under base realignment and closure

Point of Contact: [Benjamin Leake](#), U.S. EPA Region 10

For more information, see FRTR profile: [Windrow Composting of Explosives Contaminated Soil at Umatilla Army Depot Activity, Hermiston](#)

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Umatilla Army Depot

<http://clu-in.org/greenremediation/profiles/umatilladepot>



United States Environmental Protection Agency
Office of Solid Waste and Emergency Response (5202P)

For more information:
www.cluin.org/greenremediation
Luci Dunnington (dunnington.lucila@epa.gov)