

Neutralization and Stabilization of RCRA-Regulated Waste

Refinery Landfill in California

1. ***Live Bottom Feeder***
   Acid sludge tar (AST) is fed from a live bottom feeder onto a weigh-belt conveyor.

2. ***Impact Crusher***
   AST is combined with gravel and sized in an impact crusher. Material passing through a No. 4 mesh screen is transported on an enclosed, scrubbed conveyor to the AST Pugsealer®.

3. ***Limestone Silo***
   Ground limestone from the limestone silo is added to the AST Pugsealer® along with the AST.

4. ***AST Pugsealer®***
   The AST/gravel mixture and limestone are thoroughly mixed, producing a material with excess alkalinity.

5. ***Dredged Bay Mud Mixer Tank***
   The dredged bay mud (DBM) tank has a capacity of 8,600 gallons. Agitators continuously mix tank contents to reduce wide swings in pH and to maintain pumpability.

6. ***Stabilization Pugsealer®***
   Treated AST is combined with DBM and cement in the Stabilization Pugsealer®. The stabilized product is conveyed to a waiting dump truck and transported to an on-site landfill.

7. ***Sour Gas Scrubber***
   All process equipment is vented under negative pressure, and sour gases are removed by a sour gas scrubber.

8. ***Microprocessor Controls***
   Custom-designed microprocessor controls monitor all feed rates on weigh belts and screw feeders.

9. ***Air Board Monitor Station***
   Air monitoring results are taken around the clock from five perimeter locations and downloaded to a database each day.

10. ***Primary Wastewater Treatment***
    Process wastewater is treated and sent to a refinery wastewater separator.

11. ***600-Kilowatt Generators***
    All site power is supplied by two 600-kilowatt portable generators.

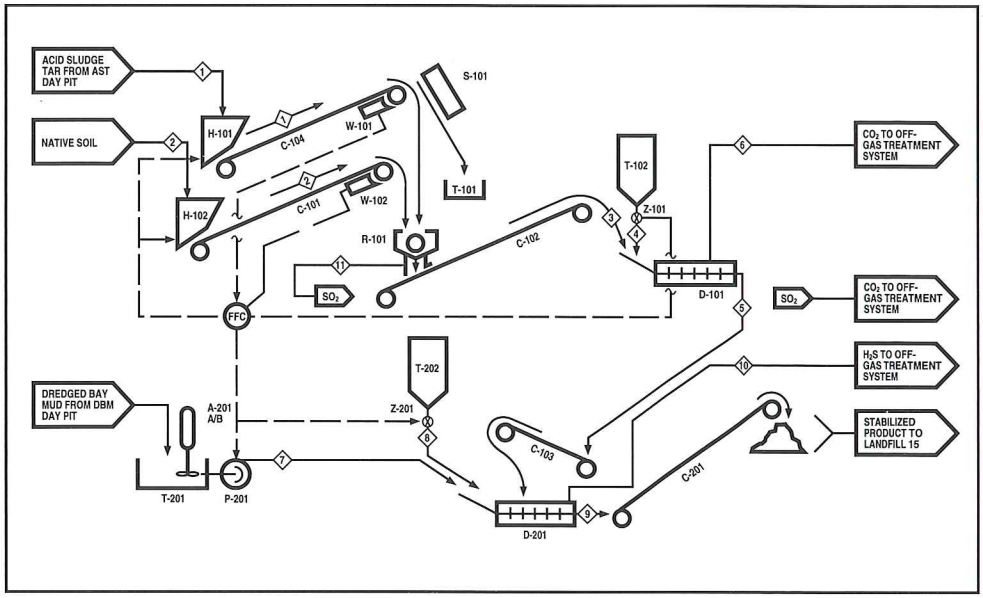
OHM Corporation

RCRA - Regulated Waste Refinery Landfill in California

Project Description

For over ten years, other environmental companies studied ways to neutralize and stabilize organic, RCRA-listed, waste by-products of lube oil manufacturing at a *Fortune* 500 company's refinery landfill. OHM Corporation produced a timely, effective, on-site solution by moving a treatment technology from the laboratory into the field. This unique solution—never before achieved—required extensive testing of variable materials and a flexible on-site treatment process completed in the time frame dictated by the Regional Water Quality Control Board.

The landfill contained approximately 20,000 cubic yards of acid sludge tar (AST), 20,000 cubic yards of dredged bay mud (DBM), and 20,000 cubic yards of mixed material. Studies showed the landfill's surface was unstable, had slow flow properties, and could not support heavy equipment.



OHM's treatment process schematic.

AST and DBM also presented unusual handling difficulties. Both were extremely corrosive and contained high sour-gas levels. Below 95 degrees Fahrenheit, AST was brittle and shattered easily; at higher temperatures, it was like taffy, capable of plugging equipment. DBM, and its interface with AST, produced substantial levels of sulfur compounds. The mixed layer of AST and DBM, however, representing one-third of the waste volume, contained the most variable chemical and physical characteristics.

Treatment Process

OHM engineers analyzed the client's historical information, results of bench-scale studies performed at OHM's treatability laboratory, and other studies.

The resulting treatment system employed crushing, neutralization, wastewater treatment, and sour-gas scrubbing to produce a non-hazardous special waste suitable for a nearby landfill.

Adhering to regulators' tight completion schedules, OHM produced the work plan, designed the treatment process, and completed construction of the system in just over two months. Local and regional permitting were completed during system construction.

The client gained cost and time savings using OHM's extensive equipment inventory, engineering services, custom fabrication of process equipment, and control wiring system design. Among the system's flexibilities was its capacity to increase or decrease the AST/DBM feed ratio by 50% without impacting strength development.

OHM's experienced project team managed the entire process, including procurement, excavation, on-site construction and assembly, plant operations, and placement of stabilized material. Approximately 25 tons of AST and 25 tons of DBM were treated each hour, eight hours a day, five days a week.

In addition to performing on-site field sampling and analytical services in OHM's mobile laboratory, technicians continually monitored plant performance for strength, creep, pH, density, particle size, and moisture resistance. Fish bioassay results confirmed material was non-hazardous.

The project's extensive health and safety plan called for excavation and processing areas to be Level B exclusion zones. All processes were contained and scrubbed, including the weigh-belt conveyor systems, so that dust and acid gases minimized the exposure risk to operators. Also, to minimize potential for further contamination, OHM built the entire system over the original footprint of the landfill.

OHM Corporation

After 23 years and 16,000 projects, OHM Corporation is a leading environmental services firm. OHM specializes in the on-site remediation of hazardous wastes and toxic substances on a planned and emergency basis.

OHM Corporation
16406 U.S. Route 224 East
Findlay, OH 45840
800-537-9540

OHM0164 GP 10M 12-92

OHM Corporation