

Former Taxi Maintenance Site Successfully Treated with Enhanced Anaerobic Biodegradation and Bioaugmentation

TCE/ 1,2-DCE Plume Reduced Using BDI Plus®, 3-D Microemulsion® and HRC® Allows for Development of Elementary School

Project Highlights

- Combined introduction of HRC® hydrogen release compounds and BDI Plus® bioaugmentation cultures resulted in reduction in chlorinated solvent concentrations, meeting site goals
- Successful remediation permitted redevelopment of the site into an elementary school

Project Summary

A former taxi maintenance facility located in Los Angeles County, California was used as a garage and maintenance facility containing seven underground storage tanks (USTs), four hydraulic hoists, an elevator, a clarifier, and a spray paint booth. Environmental assessment related to planned redevelopment of the garage and nearby commercial properties and residences revealed contamination of the soil and groundwater beneath the site with trichloroethene (TCE) and 1,2-dichloroethene (1,2-DCE) due to release from the former USTs and paint shop areas.

Under the jurisdiction of the California Department of Toxic Substance Control, an enhanced anaerobic biodegradation approach in conjunction with bioaugmentation was developed to remediate the chlorinated solvent contamination. This approach combined the introduction of the dechlorinating microcosm BDI Plus® with the application of supporting hydrogen release compounds 3-D Microemulsion® and HRC Primer®. Following treatment of the site, reduction in TCE and 1,2-DCE concentrations have been observed after four quarters of post-remediation monitoring. Microbial data supports the benefits of the bioaugmentation effort by showing a steep increase in dehalococcoides populations, which increased by nearly four orders of magnitude. In addition, all geochemical parameters are in range for a reductive state.

Technology Description

3-D Microemulsion is an engineered electron donor material that offers a novel three-stage electron donor release profile, pH neutral chemistry, and is delivered on-site as a factory-emulsified product.

HRC Primer is derivative of the standard Hydrogen Release Compound product and is designed to provide a controlled but fast release of hydrogen to assist in initiating anaerobic biodegradation.

Bio-Dechlor INOCULUM Plus (BDI Plus) is an enriched natural microbial consortium containing species of Dehalococcoides sp. (DHC). This microbial consortium has since been enriched to increase its ability to rapidly dechlorinate contaminants during *in situ* bioremediation processes.

Results

Reduction of TCE and 1,2-DCE concentrations by enhanced anaerobic biodegradation and bioaugmentation facilitated the redevelopment of a former taxi garage and maintenance facility. Following a reduction in contaminant concentrations, the site was redeveloped to an elementary school.



Site Details

Site Type: Former Taxi Garage

Contaminant of Concern: TCE, 1,2-DCE

Concentration: TCE: 1227 µg/L
1,2-DCE: 1100 µg/L

Remediation Approach: Enhanced Anaerobic Bioremediation, Bioaugmentation

Treatment Area: 19,000-sq-ft grid treatment onsite, 300 ft barrier on street

Soil Type: Silt

Technology Used:



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