

Combined Technologies Replace Pump and Treat System

Manufacturing Facility Remediated Using Bioremediation, Bioaugmentation and ISCR

Project Highlights

- Combined technologies of bioremediation and ISCR were used to treat the PCE
- The remediation design replaced a costly legacy pump and treat system
- More than \$200,000 per year saved by shutting down pump and treat system
- RRS' injection strategy allows for the coapplication of BDI Plus, 3D-Microemulsion and CRS during the same mobilization event



RRS applies combined remedies in freezing temperatures.

Project Summary

Historic activities at an active manufacturing facility contaminated a sand aquifer with chlorinated solvents (primarily perchloroethene, PCE). Previous remediation activities included an extensive pump and treat system as well as other in situ activities. The cost of operating the pump and treat system was such that the client looked for a more cost-effective remediation approach. RegenesiS Remediation Services (RRS) combined bioremediation/in situ chemical reduction (ISCR) approach proved to be cost-effective as a replacement technology for the pump and treat system, saving the client more than \$200,000 per year. This remediation solution was installed both inside and outside of the manufacturing facility during winter in sub-zero temperatures.

Remediation Approach

Four treatment rows of a total 48 injection points were used to apply the product with a treatment area of 5-30 feet below ground surface.

The following in situ remediation technologies were used:

- 19,300 pounds of 3-D Microemulsion FE®
- 48 liters of Bio-Dechlor INOCULUM Plus®
- 2,400 pounds of Chemical Reducing Solution (CRS®)

Technology Description

3-D Microemulsion FE is an engineered electron donor material that offers a novel 3-stage electron donor release profile, pH neutral chemistry and is delivered on-site as a factory-emulsified product. When injected into the subsurface, this stimulates bioremediation of the pollutant by the process of biologically enhanced reductive dechlorination.

Bio-Dechlor INOCULUM Plus is an enriched natural microbial consortium containing a high density of Dehalococcoides sp. (DHC). This microbial consortium, when added to the subsurface augments the naturally occurring population of microbes that carry out the desired reductive dechlorination process.

CRS (Chemical Reducing Solution) is a soluble iron substrate designed to easily distribute to an aquifer and stimulate that serves to stimulate the abiotic in situ chemical reduction (ISCR) of halogenated hydrocarbon contaminants.

Site Type: Manufacturing

Contaminant of Concern: PCE

Concentration: 7,000 ppb

Remediation Approach:
Enhanced Anaerobic Biodegradation, Bioaugmentation and In Situ Chemical Reduction (ISCR)

Soil Type: Sand

Treatment Area: 35,000 sq. ft.

Technology Used:
3-D Microemulsion FE,
Bio-dechlor INOCULUM Plus,
Chemical Reducing Solution