

Single PersulfOx® Treatment Reduces MTBE Concentrations by 50 Percent

Washington DC Retail Petroleum Service Station Remediated with ISCO

Project Highlights

- Both PersulfOx and NaOH activated persulfate used on-site to test effectiveness
- Single injection event of PersulfOx resulted in 50% reduction of MTBE
- Backfilled gravel excavation used as a treatment cell for contaminant mass migrating from an inaccessible dispenser canopy toward the property boundary



Both PersulfOx and NaOH activated persulfate will be applied on-site to test the effectiveness of each product.

Project Summary

A gas station in the Washington DC metro area was contaminated with BTEX and MTBE following a release from a dispenser island. High concentrations of MTBE (160 ppm) diffused into the native silty clay and beyond the property boundary. Two persulfate chemistries utilized at the site to evaluate treatment longevity. Persulfate test kits demonstrated that PersulfOx remained active for six months. The PersulfOx® injections were performed within a downgradient former excavation which was backfilled with gravel to intercept the contaminants. The single injection event of PersulfOx resulted in 50% reduction of MTBE. Treatments in the former excavation have also reduced MTBE concentrations at the property boundary.

Site Type: Service Station

Contaminant of Concern:
Petroleum Hydrocarbons, Fuel Oxygenates

Concentration:
MTBE - 149 ppm
BTEX - 32 ppm

Remediation Approach: In Situ Chemical Oxidation

Soil Type: Gravel-Backfilled Former Excavation with Native Silty Clay

Technology Used:
PersulfOx

Remediation Approach

The PersulfOx injection was performed into three injection wells that were located in an excavation that was backfilled with gravel. This gravel backfilled excavation used as a treatment cell for contaminants originating from under the dispenser canopy (upgradient). The goal was to oxidize contaminant mass as it moves through the former excavation toward the property boundary. The native soils consisted of silty clay, which have a low hydraulic conductivity and do not accept injection volumes easily. This approach treats the petroleum bleed-off from the dispenser canopy before it moves downgradient and eventually off-site. The purpose of the project was designed to evaluate performance data where PersulfOx and NaOH activated persulfate were compared for contaminant reduction trends, longevity, and ease of application.

Technology Description

PersulfOx is a sodium persulfate-based chemical oxidation technology which destroys both hydrocarbon and chlorinated solvent-type contaminants in the subsurface. PersulfOx contains a built-in catalyst which activates the persulfate component and generates contaminant-destroying free radicals without the need for the addition of a separate activator.