

PersulfOx® Treats Gasoline Tanker Truck Spill Site

Pilot Study Moved to Full-Scale Application to Remediated Benzene and TPH-G Contamination

Project Highlights

- Pilot study moves to full-scale application after large contamination concentration decrease resulting from in situ chemical oxidation (ISCO).
- High-volume, direct-injection of PersulfOx® ISCO distributes reagent beneath highway.
- ORC Advanced applied to edge of plume to prevent further migration.
- The average reductions of benzene or TPH-G were 83% and 79% respectively.

Project Summary

A gasoline tanker truck rollover occurred in Ringling, Oklahoma resulting in a benzene and TPH-G contamination. A pilot study using PersulfOx ISCO was conducted with up to 98% contamination reduction observed. Upon successful completion of the pilot study, a full-scale application was approved. A series of full-scale ISCO applications commenced to achieve significant knockdown of benzene and TPH-G concentrations at the site.

Remediation Approach

Full-scale PersulfOx injections were focused along a run-off ditch on the east side of the highway where contamination reached the groundwater during the initial spill and also downgradient on the west side of the highway where contamination had migrated.

The intent of injections on the east side of the highway were designed to address source contamination. These injections were also designed to treat the contamination beneath the highway. PersulfOx migrated through the aquifer under the influence of large direct-push injection volumes and a strong underlying groundwater gradient and natural slope of the lower confining bedrock.

Two PersulfOx injections have been completed approximately one month apart while an application of ORC Advanced also was applied in the distal part of the plume to prevent further spreading of BTEX and TPH.

The average reductions of benzene or TPH-G were 83% and 79% respectively. These are encouraging results and indicate beneficial oxidation and mass reduction of fuel hydrocarbon contamination. Ongoing monitoring will determine if additional applications are needed to reach remedial goals.

Technology Description

Advanced Formula Oxygen Release Compound (ORC Advanced®) is a proprietary formulation of food-grade, calcium oxy-hydroxide that produces a controlled-release of molecular oxygen for periods of up to 12 months upon hydration.

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.



PersulfOx was applied in large volumes to ensure maximum distribution and contact with contaminants.

Site Type:
Tanker Truck Spill Site

Contaminant of Concern:
Benzene, TPH-G

Remediation Approach:
In Situ Chemical Oxidation,
Enhanced Aerobic
Bioremediation

Soil Type: Silty Sand, Silt

Technology Used: ORC
Advanced, PersulfOx