

CASE SUMMARY: IN SITU CHEMICAL OXIDATION OF CHLORINATED SOLVENTS USING PERSULFOX™ AT AN INDUSTRIAL SITE

Overview: Chlorinated compounds were discovered in shallow groundwater at a former industrial site in Attleboro, Massachusetts. With total VOC concentrations as high as 85,000 ug/L in groundwater, a rapid and aggressive remediation approach was required. In situ chemical oxidation (ISCO) using PersulfOx™ - catalyzed persulfate was selected to treat a portion of the impacted area which was approximately 35' long x 35' wide x 15' deep and primarily comprised of sand. Three prescribed injections of ISCO using PersulfOx were performed over a 7- month period.

A 10% solution of PersulfOx in water was mixed and injected into a 10-foot treatment thickness using 3 injection wells within the vicinity of monitoring wells MW-16D, MW-16S and MW-8 (Fig.1).

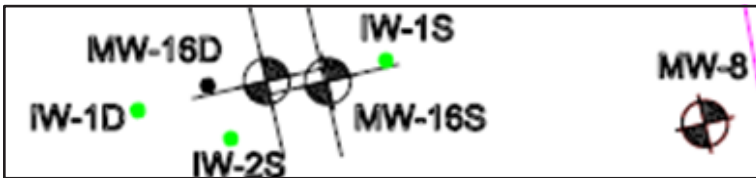
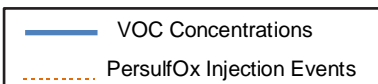
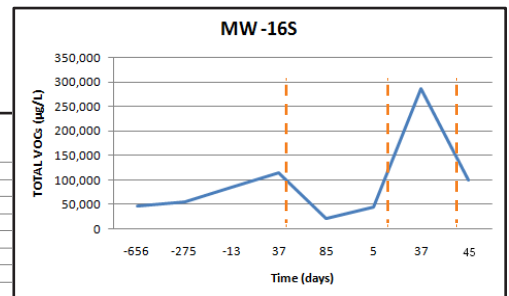
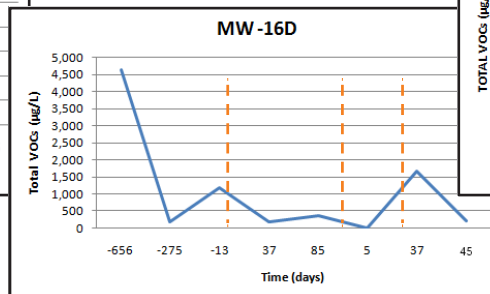
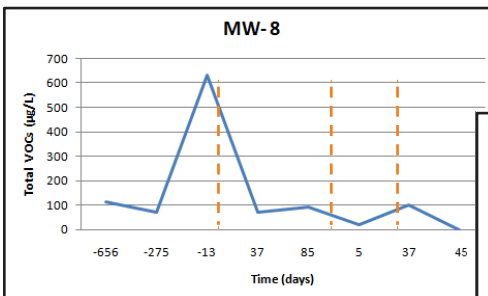


Figure 1. Injection wells and monitoring wells

Results: After each PersulfOx application, an anticipated increase and subsequent decrease in VOCs (resulting from subsurface disturbance and contaminant desorption) was observed. After the 3 prescribed applications of PersulfOx, 2 of the treatment zone wells, MW-16D and MW-8, measured significant VOC removal, 81% and 99% respectively. Treatment zone well MW-16S (the most highly impacted—starting at 85,000 ug/L) showed a significant increase in VOCs after the first 2 injections (indicative of the liberation of soil bound mass). After the third application of PersulfOx, VOC concentrations in MW-16S were clearly decreasing (see figures below).

PersulfOx™ CATALYZED PERSULFATE

- PersulfOx is a persulfate based ISCO reagent that promotes rapid and sustained in situ oxidation of a wide-range of organic contaminants.
- This patented technology utilizes a unique catalytic surface on which oxidants and contaminants react in a process known as “surface mediated oxidation.”
- PersulfOx also contains built-in activation which eliminates complex and potentially hazardous chemical addition required to achieve traditional persulfate activation.
- From a health and safety aspect, the use of PersulfOx alone is safer than traditional activation methods such as heat, chelated metals, hydrogen peroxide or base.
- If warranted, PersulfOx can also be activated through traditional means to achieve site remediation goals.



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