

## Combined Chemical and Biological Oxidation

Application of in situ chemical oxidation (ISCO) is a robust and cost-effective remedial strategy for organic contaminants in soil and groundwater. ISCO is associated with immediate results with rebound after the reagent as been exhausted. Redox Tech has developed a mixture of sodium persulfate and calcium peroxide that supports a two-fold mechanism of strong chemical oxidation and electron acceptors for long-term biological oxidation. Oxygen BioChem (OBC)™ has advantages over traditional oxygen compounds or ISCO reagents applied separately and works on a broader range of contaminants including BTEX, MTBE, 1,4-Dioxane, PAHs, Pentachlorophenol, Chlorobenzenes, some Chlorinated Solvents.

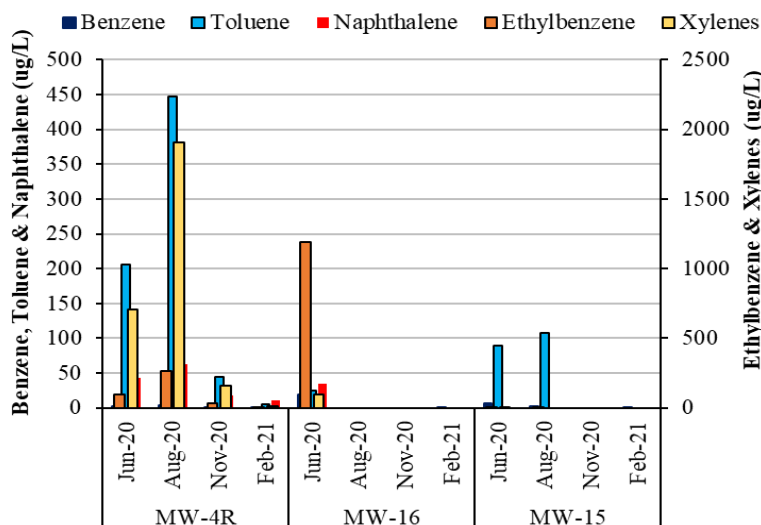
### 3-Part Product Formula

**Sodium Persulfate:** A well-established oxidant with oxidation potential of 2.12 volts, however rapid destruction of contaminants requires persulfate to be activated to release sulfate radicals. Sulfate radicals are powerful oxidizing agents with an oxidation potential of 2.6 volts.

**Calcium Peroxide:** Provides two benefits; 1) introduces alkalinity and peroxide needed to activate the persulfate and 2) reacts with water to slowly release hydrogen peroxide which decomposes to oxygen which can be used for biological aerobic degradation.

**Sulfate:** Gypsum is formed in situ from the calcium and sulfate produced from the consumption and side reactions of the calcium peroxide and persulfate. This formation aids in reducing dissolved sulfate concentrations while also providing a long-term source of sulfate for anaerobic biodegradation.

### Performance: Active Gas Station



Well location and Date; Injections completed in July 2020

### Advantages

- ✓ Combined degradation pathway; Oxidation and Bioremediation (aerobic and anaerobic)
- ✓ High oxygen production up to 46% by weight.
- ✓ Fast acting with long-term treatment
- ✓ Lower cost compared to the competition