ISOTEC is a full-service environmental remediation firm dedicated to providing the industry’s leading designs and operating techniques. Founded in 1995, ISOTEC implemented more than 1,000 field scale applications and over 500 laboratory bench-scale studies. ISOTEC’s team of engineers, geologists, scientists, and field service technicians have demonstrated successful applications using a full suite of in-situ remediation technologies. ISOTEC does not advocate any single technology or amendment line and can offer the optimal technologies or combination of amendments to match site setting, contaminants, objectives, and time lines.

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**ISOTEC Remediation Case Studies**

### Superfund Site, Conway, NH.
An ISCO soil mixing treatment program was implemented using Modified Fenton’s Reagent (hydrogen peroxide with chelated iron and stabilizers) for treatment of 1,1,1-TCA and 1,1-DCE. The treatment area (~10,000 ft²) was divided into 110 cells for mixing with a dual-axis blender equipped with GPS system. Treatment interval was from 7-15 ft bgs with the upper soils excavated and stockpiled. Performance samples were collected 24 hours after treatment, with 53 of 56 samples attaining criteria. Re-treatment was performed at 3 locations, and follow-up samples indicated treatment criteria was met at all locations.

### Enhanced Bioremediation Permeable Reactive Barrier, Orleans, MA.
ISCO implemented a Denitrification Permeable Reactive Barrier (PRB) demonstration test for treatment of nitrate in groundwater. Injections were performed in a middle school parking lot while school was in session. The PRB was approximately 110 feet long and consisted of 17 direct push injection points with injection interval of 36 to 68 feet bgs. This PRB utilized a custom EVO solution formulated specifically for extended longevity in a permeable aquifer with high groundwater velocity.

### VOC ISCO Treatment at Former Manufacturing Site, NJ.
Modified Fenton’s activated sodium persulfate (MASP) injection to reduce VOC concentrations within a 1.3 acre treatment area divided into 13 parcels. A total of 2,061 direct-push technology (DPT) locations were installed at various depths and 489,865 gallons of MASP injected over four events. Following injections, 12 of 13 parcels below respective criteria and individual groundwater concentrations below respective concentrations in 29 of 30 monitoring locations.

### BTEX and PAH Treatment Utilizing Sodium Permanganate, Yonkers, NY.
ISCO was retained to address impacted groundwater at an MGP site in Yonkers, NY. The injection program involved two separate target treatment areas totaling approximately 10,600 square feet (sqft). A total of 52,070 gallons of 10% sodium permanganate were injected through 75 injection wells during a single injection event lasting 14 days.

### TCE Treatment Utilizing Modified Fenton’s Reagent (MFR) in Millsboro, DE.
ISCO completed an in-situ chemical oxidation (ISCO) program at a site adjacent to active roadways. The treatment area was approximately 24,000 square feet (sqft) and encompassed a former ISCO pilot study area, former TCE storage area, and former underground storage tank (UST) area. Treatment included injecting 213,527 gallons during 3 injection events over 24 days.

### Other ISOTEC Projects
- ISCO Soil Mixing for PCE – Holyoke, MA (2014 Brownfields Project of the Year Award)
- Calcium Polysulfide for Hexavalent Chromium – New Jersey
- ISCO treatment for Pentachlorophenol – Northwest Terminal Site, Portland, OR
- ISCO treatment for VOCs – Fire training area, Active Military Base, Virginia
- Air sparging for BTEX into an excavated pit – Fuel Station, Florida
- ISCO for CVOC, BTEX, and 1,4-dioxane - Ottati and Goss Superfund Site, Kingston, NH

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