

TREATABILITY TESTING

Bench-scale treatability testing for soil and groundwater remediation projects is a useful tool for assessing the ability of a particular technology to degrade or remove contaminants of concern within a given site matrix under controlled laboratory conditions. Ultimately, many factors contribute to the success of a remediation project implemented in the field, and these bench tests provide early insight into the suitability of a technology for the site. REGENESIS offers treatability testing performed by R&D staff at their Southern California lab for select product lines. Experiments for these tests are designed and performed in house, and contaminant analyses are conducted by a certified third-party analytical lab.

Our standard bench test is priced at \$4,000 and includes the following:

Test conditions

- Baseline analysis of samples to confirm initial contaminant concentrations upon receipt
- One treatment dose analyzed at one timepoint (performed in duplicate)
- Control samples (performed in duplicate)

Analysis

- One analysis per sample (for groundwater OR soil) by a single analytical method
- Typical analyses are chosen from one of the following analytical methods:
 - VOCs by EPA 8260 (BTEX, cVOCs, MTBE, TPH-GRO)
 - Non-halogenated organics by EPA 8015 (TPH)
 - Semivolatile Organics by EPA 8270

Report

- A final written report including experimental design, tabulation of results, and data interpretation will be presented at the end of testing.

Additional information for specific product tests, including soil and groundwater sample volume requirements, can be found on the pages below. Requests for an expanded scope to the standard bench test (e.g., analysis by more than one analytical method, analysis of both soil and groundwater, analysis of more than one treatment condition, or analysis of multiple sampling timepoints) will be considered and priced on a case-by-case basis.

Samples are to be shipped overnight in a cooler packed with wet ice or ice packs. All samples for treatability studies must be sent with a REGENESIS COC (chain of custody) form to the address below. Sampling containers and coolers will be provided by REGENESIS upon request.

Shipping/Contact Information

REGENESIS Lab
1011 Calle Sombra
San Clemente, CA 92673
949.366.8000
lab@regenesisis.com

**For further information or to request a proposal,
please contact your area sales representative.**

ISCO Treatability Study

In *situ* chemical oxidation (ISCO) is a cost-effective remedial approach that utilizes chemical oxidants to quickly destroy organic contaminants such as petroleum hydrocarbons and chlorinated solvents. The effectiveness of an ISCO reagent will depend on the target contaminant(s), contaminant concentrations, type of oxidant, soil conditions, presence of potential oxidant sinks, and remedial goals. To evaluate the effectiveness of their ISCO reagents for target contaminants within a site matrix, REGENESIS offers treatability testing for their two ISCO reagents, PersulfOx[®], a persulfate-based oxidant, and RegenOx[®], a percarbonate-based oxidant.

Depending on the application, the ISCO treatability batch study can be conducted in one of two ways:

Using groundwater and soil (soil is optional but recommended to best represent the site conditions)

- This represents an injection application into the saturated zone of an aquifer.
- Groundwater contaminant concentrations are measured.
 - Soil concentrations can also be measured for an additional fee.
- Treatment period is typically 4 weeks.
- Volume requirements*: 16 L groundwater, 6 kg soil (optional)
- Standard TAT: 8 weeks

Using soil only

- This represents a soil mixing application.
- Soil contaminant concentrations are measured.
- Treatment period is typically 2 weeks at room temperature.
- Volume requirements*: 6 kg soil
- Standard TAT: 6 weeks

REGENESIS also offers soil oxidant demand (SOD) testing for the ISCO reagents. For information on oxidant demand testing, please see “REGENESIS Oxidant Demand Testing” on our website.

Sorption Treatability Study

The use of an activated carbon-based injectate like PlumeStop provides remediation practitioners with a tool that can provide extremely fast reductions in groundwater concentrations and prevents migration of a contaminant plume. While PlumeStop[®] has been demonstrated to effectively adsorb many contaminants under a wide range of conditions (see range of treatable contaminants), it is possible that groundwater at the subject site contains other organic molecules that could impact the performance of PlumeStop for the target contaminant due to competitive sorption.

**Exact quantities will depend on the analytes of interest and if any additional testing is requested.*

To verify the contaminant sorption capability of PlumeStop in a given site matrix, a sorption treatability study may be performed. These studies are conducted to confirm the contaminant sorption capacity of PlumeStop and expose any materials present in the matrix that may interfere with the performance of PlumeStop.

Overview of the PlumeStop Sorption Batch Study

- Reaction vessels are set-up with groundwater and soil (soil is optional but recommended to best represent the site conditions)
- Treatment period is typically 7 days
- Volume requirements*: 10 L groundwater, 1 kg soil (optional)
- Standard TAT: 5 weeks
- Note: PFAS-specific Sorption Treatability Studies
 - Standard TAT: 8 weeks.
 - Volume requirements: 20 L of groundwater, 2 kg soil (optional)
 - Standard price: \$6,000

Enhanced Reductive Dechlorination (ERD) Treatability Study

Enhanced anaerobic biodegradation is a widely used approach to address chlorinated solvents such as PCE and TCE. This approach involves the addition of an electron donor like 3D Microemulsion, and often includes bioaugmentation with a *Dehalococcoides*-containing consortium like BDI Plus. Additional amendments can also be included to enhance the process, such as CRS, a source of soluble, divalent iron, or S-MicroZVI, a sulfidated zero-valent iron.

It can be useful to perform a treatability study to confirm that the site matrix is able to support reductive dechlorination and does not have any interfering species that preclude the contaminant degradation.

Overview of the ERD Batch Study

- Reaction vessels are set-up with groundwater and soil (soil is required for this study)
- Treatment includes 3DME, BDI Plus (HIGHLY recommended), CRS or S-MicroZVI (optional)
- Treatment period is typically 10 weeks
- Standard TAT: 14 weeks
- Target contaminants: PCE, TCE, cDCE, VC only
- Optional analysis: The *Dehalococcoides* population can be measured at the end of the study in the control and treated samples for an extra fee
- Volume Requirements*: 16 L groundwater, 6 kg soil

**Exact quantities will depend on the analytes of interest and if any additional testing is requested.*