



***SPECTRUM ANALYTICAL, INC.***

*Featuring*

***HANIBAL TECHNOLOGY***

## ***TREATABILITY STUDIES***

Treatability studies are used to evaluate existing or innovative remediation technologies and develop site-specific design parameters for field application of the chosen technologies. Treatability studies are conducted at the bench-scale level and are used for the design of pilot or full-scale applications.

Bench-scale testing is a time and cost-effective way to evaluate site-specific remediation options. The testing can determine the feasibility of a range of technologies without resorting to expensive pilot tests. Design parameters that are obtained from bench tests can result in significant cost savings during full-scale application.

At the request of a client, the lab designs the treatability tests based on field information and the client's recommendations. The lab works closely with the client and other stakeholders (if necessary) to design a study that addresses the client's needs. The results of the bench-scale studies include method description, observations, data interpretation, conclusions and recommendations.

Other types of studies that can be conducted in treatability labs include leachability studies of various contaminants. Tests such as TCLP and SPLP do not represent the true leachability of contaminants in real-life conditions and tend to overestimate leaching. Column studies can be conducted to mimic site-specific conditions that are more representative of actual leaching behavior. This can be critical in terms of determining whether or not a site needs to be remediated.

The services that are provided by the Treatability Laboratory are as follows:

### 1. Remediation Technology Evaluations

- Oxidation technologies: Permanganate, hydrogen peroxide, Fenton's reagent, persulfate, catalyzed persulfate, ozone, solid-peroxides.
- Reductive technologies such as zero-valent iron (ZVI), bi-metallic mixtures for Permeable Reactive Barrier (PRB) applications.
- Precipitation inducing technologies such as limestone (lead and cadmium treatment) and sorption inducing technologies such as mineral ores (arsenic and mercury treatment) and other innovative technologies for PRB applications.
- Reactive Nanoscale Iron Particles (RNIP) technology.

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- Biostimulation and bioaugmentation for the treatment of organic and inorganic compounds.
  - Thermal remediation technologies.
  - Surfactant-Enhanced Aquifer Remediation (SEAR) technologies.
  - Other remediation technologies and technologies developed in-house at Spectrum.
2. Optimization of Water/Wastewater Treatment Processes
    - Softening, disinfection, chemical oxidation and reduction, filtration, ion exchange.
  3. Mobility/Leachability Studies
    - Site-specific mobility studies (batch and column) for various contaminants of concern.