

Products and Services





Providing scientifically grounded products and services to the remediation community since 2002.

About SiREM:

Our focus is the remediation of chlorinated solvents, metals, petroleum hydrocarbon compounds and other recalcitrant contaminants in soil, sediment and groundwater. SiREM is widely recognized as a leader in bioaugmentation for chlorinated solvents and bench-scale treatability testing applied to a wide range of remediation technologies including:

- Enhanced *in situ* bioremediation (EISB)
- Chemical oxidation (ISCO)
- Chemical reduction (ISCR)
- Electrokinetics (EK)
- Monitored natural attenuation (MNA)

SiREM also offers a range of laboratory testing services for remediation site characterization monitoring, management and optimization. Collaboration with leading research organizations allows SiREM to stay at the forefront of remediation technology bringing added value to our customers in this dynamic field.

our mission

“Staying at the forefront of remediation technologies to provide the highest quality testing services and remediation products combined with unparalleled customer service and technical support to improve remediation effectiveness, verify results and reduce remediation time and costs.”

Our Culture • Your Success





Bioaugmentation simply makes bioremediation more effective, reducing site cleanup time, and operation maintenance & monitoring costs. Since 2002, the KB-1® and KB-1® Plus cultures have been used to introduce biodegradative microorganisms to hundreds of sites worldwide.

Ongoing Research & Development continues to expand the range of compounds with effective bioaugmentation options and now includes:

- Chlorinated ethenes (low pH tolerant culture available)
- Chlorinated methanes
- Chlorinated propanes
- Chlorofluorocarbons
- RDX
- Ammonia/nitrate
- BTEX compounds (Benzene, Toluene and Xylenes)

SiREM delivers its cultures in high quality vessels with all the equipment required to safely and effectively bioaugment your site. SiREM staff are available to provide technical support throughout planning, implementation and validation phases of your remediation project.



Injection of KB-1® at a TCE site

The growing number of identified biodegradation pathways makes monitoring key microorganisms and functional genes increasingly beneficial for optimization of bioremediation and other biological systems. Gene-Trac® is used to monitor these pathways in groundwater, soil, sediment, landfills, and bioreactors.



Natural Attenuation
Parameter Testing



SiREM has the advanced equipment required to perform Gene-Trac® assays

Monitored natural attenuation (MNA) can be an effective and low cost approach for cleanup of contaminated sites. SiREMNA™ is a customizable analytical package to quantify reactive minerals, key microorganisms and geochemical parameters mediating intrinsic degradation of cVOCs and other compounds.

Use SiREMNA™ to:

- Assess key abiotic and biotic degradation mechanisms
- Determine the role of reactive minerals
- Characterize site conditions for NA decision tools such as BioPIC
- Support enhanced in situ chemical reduction (ISCR) remedies

Gene-Trac® provides the value, service and deliverables to meet your project needs:

- USA and Canada sample reception options
- Comprehensive reports that include QA/QC parameters
- Technical support for planning, implementation and data analysis

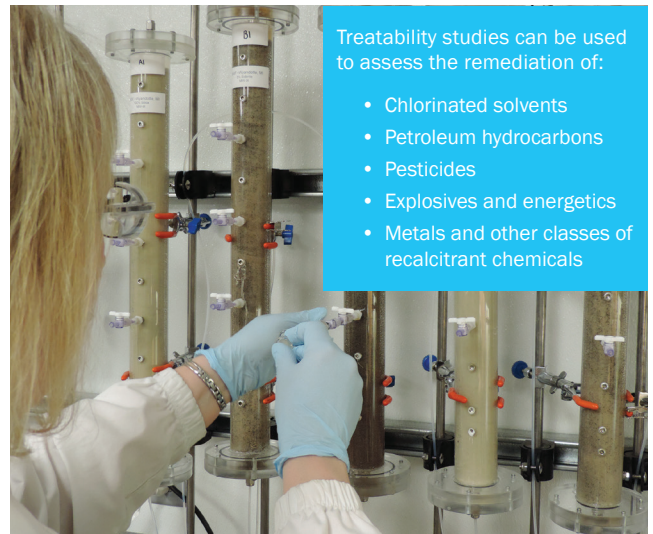
For the full line of available Gene-Trac® and SiREMNA™ tests please visit our website www.siremlab.com

Laboratory treatability studies are a cost effective tool to evaluate multiple performance variables, facilitate stakeholder buy in, and optimize performance prior to field implementation that ultimately reduce remediation costs and time frames.

SiREM's state-of-the-art laboratory has the instrumentation, equipment and technical experience to conduct microcosm and column treatability studies to evaluate:

- Aerobic and anaerobic bioremediation
- *In situ* chemical oxidation (ISCO)
- *In situ* chemical reduction (ISCR)
- Sediment remediation
- Permeable reactive barrier design parameters
- Wastewater treatment optimization
- Electrokinetics (EK)
- MNA

All SiREM treatability studies are custom designed to meet project specific needs, budgets and deadlines. Regular updates are provided throughout the study and comprehensive final reports summarize study findings for remedial planning and system design.



Treatability studies can be used to assess the remediation of:

- Chlorinated solvents
- Petroleum hydrocarbons
- Pesticides
- Explosives and energetics
- Metals and other classes of recalcitrant chemicals

Passive Samplers

Use SiREM passive sampling technologies for cost effective and high quality data options for vapors and bioavailability of hydrophobic organic compounds in sediment and other matrices.



Close up of the WMS™ diffusion membrane



The Waterloo Membrane Sampler™ (WMS™) is a passive device for *in situ* monitoring of volatile organic compound vapors in soil gas, indoor air and other environments.

- Results comparable to Summa canisters and EPA method TO-15
- Small, light-weight and unobtrusive
- Lower cost than Summa canisters
- Time-integrated samples



SP3™ more representative bioavailability data compared to grab samples.



SP3™ is a comprehensive passive sampler and interpretation service for the quantification of hydrophobic organic compounds, including PCBs and PAHs in pore water, surface water and storm water.

SP3™ provides critical data for:

- Fate and risk assessment models
- Quantitative toxicity identification
- Remediation design and monitoring
- Enhanced storm water and effluent permitting
- Dredged material characterization



"In 2013, Artemis injected SiREM's KB-1® Plus, to accelerate the ongoing biodegradation of 1,1,1-TCA and 1,1-DCE in a former source area. Within 12 months of bioaugmentation the TCA plume was reduced to less than cleanup levels in all site monitoring wells. SiREM has offered Artemis not only outstanding remediation options, but also exceptional customer service and counsel along the way."

*Michele Finn Johnson | President & Principal Engineer
Artemis Consulting Group, Inc., Tucson, AZ*



"The KB-1® appears to have addressed a very difficult source area that other remedial technologies were not able to fully remediate. Being a small site, economics has been an issue. The KB-1® appears to be a viable tool at a reasonable cost for small sites. I am hoping to see this tool used more in Vermont."

*Michael Smith | Waste Management Prevention Division
Vermont DEC, Montpelier, VT*



"The people at SiREM continuously impress us, and our clients, with their deep knowledge of the mechanics of bioremediation, their commitment to mutual success, and their responsiveness. We look forward to working with SiREM on future projects, and they are highly recommended."

*James G.D. Peale, RG | Senior Hydrogeologist
Maul Foster & Alongi Inc., Portland, OR*



For more information, visit our website at

siremlab.com

Providing first rate technical solutions is only part of the story.
Drop us a line to speak with one of our technical specialists.

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