Cascade **Chemistries**
COLLOIDALCHEM +BIO

WHAT IS COLLOIDALCHEM +BIO?

ColloidalChem +Bio is a special formulation of our activated carbon product, ColloidalChem, supplemented with electron acceptors to enhance anaerobic biological oxidation of petroleum contaminants.

HOW DOES IT WORK?

Petroleum contaminants are rapidly adsorbed to the ColloidalChem +Bio particles, quickly reducing groundwater contaminant concentrations. Over time, added electron acceptors (e.g. slow-release sulfate) are consumed by naturally-occurring bacteria that in turn oxidize the adsorbed petroleum compounds.

Advantages for distribution, contact & residence time

Colloidal-sized particles have the same injection performance as liquid amendments, which means they can be injected below fracture pressures to obtain the best distribution in transmissive zones and heterogeneous zones.

Benefits of activated colloidal carbon

- Rapid decrease in groundwater contaminant concentration after application (days to weeks)
- Biological treatment of contaminants
- Safe application at active gas stations
- Sustainable reductions over time without rebound
- Lower life cycle costs to cross the finish line to NFA or closure
- Regulatory acceptance

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For more information, visit
www.cascade-env.com/
cascade-chemistries

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TURNKEY SOLUTIONS

While effective chemistries are a key part of successful remediation solutions, Cascade's turnkey solution meets the overall in situ remediation objective "to make contact with contaminant mass for a long enough period of time to achieve destruction." Cascade adds significant value and higher performance to the application its Chemistries by providing:

- High resolution design optimization through our MIHPT and Waterloo^{APS} subsurface technologies to identify target zones based on mass, lithology, and hydraulic conductivity.
- Bench-scale and column testing as needed.
- Advanced automated injection and fracturing technologies for both liquids and solid slurries.
- Client design support for chemistry dosing and critical injection parameters, including spacing and injection volumes and concentrations based on geology and hydraulic conductivity.
- Water hydraulics testing and field design optimization to eliminate any full-scale unexpected conditions.

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