# Contaminant Degradation within Colloidal Activated Carbon Treatment Zones: A Multi-Site Review to Demonstrate Complete Destruction and Reduction of CVOCs Contaminants Using Multiple Lines of Evidence

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**Background/Objectives.** Although a well-documented (through research papers) and understood process, contaminant destruction within in situ activated carbon application areas is occasionally questioned in the industry. A common question still being asked is what happens to contaminants after several years of being adsorbed onto the colloidal activated carbon. Some believe that once contaminants adhere to carbon, they are not accessible to biodegrading microbes. The information presented will provide multiple lines of evidence of how bacterial (*dehalococcoides* and others) populations respond and transform CVOCs, resulting in decreasing contaminant concentrations and generation of non-toxic byproducts.

**Approach/Activities.** The study will present information from a pilot study application after the proof of concept had been initially established in the laboratory. It will also present information from a tank study conducted during an academic (University) research study. Lastly, information from a colloidal activated carbon field application and the results of over two years of both microbial and contaminant concentration data will be included in the study. Through the effort to demonstrate complete biodegradation and how bacteria population responds using sorption-ERD approach, the impacted groundwater was fully treated, and contaminants completely transformed into non-toxic species.

**Results/Lessons Learned.** This study will discuss the correlation between the contaminant concentrations and the dechlorinating bacteria population. As contaminants are degraded and concentrations decrease, we will show evidence of how the microbial population responds. This study will provide strong evidence that contaminants biodegrade into non-toxic species after an in situ application of colloidal activated carbon and electron donor.