

## **Comparative Effects of HRC Barrier Applications at Three Project Locations**

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Three sites were the venues for pilot testing of an injectable, semi-solid bioremediation product (HRC™) to enhance the reductive dechlorination of chlorinated solvents. Each site exhibited bioattenuation of parent compounds such as PCE, TCE, or chlorofluorocarbons, but at very slow rates. Enhanced bioattenuation was desired so an injection of HRC™, a food grade, polylactate ester was made in a barrier array using direct push technology. When injected, the HRC™ product remains in place, forming lactic acid and hydrogen plumes as a result of microbial activity upon the product, thus creating a reactive barrier around the injection area. Groundwater samples were collected from a monitoring array at each site and analyzed for selected MNA parameters, parent/daughter compounds, and field parameters. Microbial acclimation periods occurred over 1-2 months. The emergence of lactic and other acids were observed in specific monitoring wells within 1-3 months. Analytical results indicated that lactic acid often travels along preferential flow paths, but the areas impacted showed mass reduction of chlorinated compounds between 40 and 80% within 4 months. Observations have been made on the persistence of HRC™ effects depending upon the soil type present, the groundwater flow velocity, and the configuration of the injection locations.