



## **Industrial Site Central, Indiana**

### **Site Description**

Chlorinated solvents were found in soil and ground water beneath a drum storage area at a manufacturing facility in central Indiana. The contamination was mainly found in the uppermost occurrence of ground water in an intratill silty sand formation. Within this zone the contamination had spread to cover an area of approximately 3,500 square feet.

### **Site Characteristics**

#### **Geology**

The geology of the property was underlain by typical till plan deposits. The impacted silty sand formation was sandwiched between dense tills with limited permeability. The impacted silty zone had irregular upper and lower contact surfaces with a thickness varying from less than six inches to as much as six feet. The overlying mantle was six to nine feet thick.

#### **Hydrogeology**

The ground water within the silty sand was confined. The hydraulic conductivity was not known, but was expected to be relatively low. Ground water velocity was also not known.

### **Ground Water Contamination**

The contaminants found at the site were mainly 1,1,1-trichloroethane (1,1,1 TCA) and trichloroethene (TCE). The pretreatment TCE concentration was up to 16,000 ug/l and the highest pretreatment 1,1,1 TCA concentration was 45,000 ug/l. Trace levels of other chlorinated solvents were detected in lower concentrations. Vinyl chloride, however, was not detected.

### **Remediation Design**

BioLogix CL was introduced through one-inch diameter pvc injection points that were installed using direct push sampler. Twenty two injection points were installed on a grid covering the impacted area.

BioLogix CL was injected into the ground water in monthly applications of seven drums each. Depending on the formation thickness the injection volume ranged from 5 to 65 gallons per injection point.



## Results

After three BioLogix CL injections, ground water samples were taken for laboratory analysis. The laboratory analysis showed a significant reduction in the contaminant concentrations and no generation of vinyl chloride. The following table shows the concentration reduction for selected chemicals of concern at the locations of their maximum pre-treatment concentrations.

<b>Date</b>	<b>1,1,1-TCA (ug/l)</b>	<b>TCE (ug/l)</b>	<b>1,1-DCE (ug/l)</b>	<b>1,1-DCA (ug/l)</b>
<b>Pretreatment</b>	<b>45,000</b>	<b>16,000</b>	<b>1,400</b>	<b>4,000</b>
<b>Post-treatment</b>	<b>530</b>	<b>2,300</b>	<b>18</b>	<b>180</b>

## Contacts

If you have questions or would like more information, please call Delta Remediation at 780 962 7991