

## **Combined Remedy**

**Technology** 

### **Combined Chemical and Biological Reduction**

**ABC**+ is a proven, customizable formulation combining a liquid nutrient rich long-lasting carbon substrate and micro-scale zero valent iron (ZVI) for enhanced *in situ* reductive dechlorination. Formulated and mixed on a site-by-site basis, the ratio of carbon to ZVI can be adjusted for subsurface conditions. The dual-pathway can address a wide variety of site conditions; mixed solvent plumes, DNAPL, persistent low-concentrations and low pH aquifers. Since its original development two decades ago, over twenty million pounds of ABC+ has been injected at sites world-wide.

#### 2-Part Product Formula

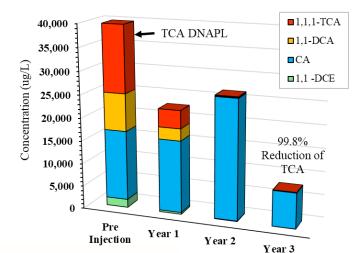
**Organic Carbon**: Utilizes the ABC® mixture of fast and slow-release organics typically emulsified vegetable oil (EVO) with a soluble quick release substrate (i.e., glycerol or sodium lactate). Supplying hydrogen and nutrients for biological reductive dechlorination.

**ZVI**: Sourced from virgin iron ore with a mean particle size less than 125 microns. ZVI promotes the rapid abiotic destruction of chlorinated compounds through reductive elimination. Hydrogen and ferrous iron are also released providing additional reducing power.

### **Advantages**

- ✓ Combined degradation pathway of both abiotic and biotic to reduce daughter product formation.
- ✓ Long-lasting  $\ge 2$  years
- ✓ Quickly lowers redox potential for faster results
- ✓ Remediate mixed chlorinated plumes (ethenes and ethanes)
- ✓ Customizable;
  - Adjustable Carbon to ZVI ratio
  - pH buffer can be added
  - EVO can be changed to other organics
  - Larger or smaller scale ZVI can be provided based on subsurface conditions

# Product Results Source Area Well



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