

## **Innovative Treatment of DNAPL using Co-Oxidation**

*K.M. Warner, R. Cowdery, R. Sillan*

Levine Fricke Recon

Tallahassee, Florida, USA

Co-Oxidation treats DNAPL using a combination of an oxidizing agent and a cosolvent. The cosolvent increases the solubility of the contaminant into the aqueous phase, where oxidation reactions break them down. With currently available *in situ* oxidation technologies, mass transfer limitations prevent rapid dissolution of DNAPL into the aqueous phase, limiting the effectiveness of the technology. Mass transfer is primarily governed by the solubility of the contaminant in water, the mass transfer coefficient, and the surface area available for transfer. For compounds such as chlorinated solvents, the rate of mass transfer to the aqueous phase is very slow, which greatly increases cleanup time and cost. The Co-Oxidation process has advantages over the use of oxidants or cosolvents alone. By adding cosolvent to the oxidant solution, transfer from the DNAPL to the aqueous phase is greatly increased, allowing rapid oxidation of the chlorinated solvent by the oxidant. The co-oxidation mixture may also allow savings in treatment costs of extracted fluids. Finally, the co-oxidant may be used in the static mode (no simultaneous extraction of groundwater). This approach minimizes oversight and operation costs, and allows operation of the project in locations with limited available space.