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**FIELD APPLICATION OF A REAGENT FOR IN SITU CHEMICAL
REDUCTION AND ENHANCED REDUCTIVE DICHLORINATION
TREATMENT OF AN AQUIFER CONTAMINATED WITH
TETRACHLOROETHYLENE (PCE), TRICHLOROETHYLENE,
1,1-DICHLOROETHYLENE, DICHLOROPROPANE
AND 1,1,2,2-TETRACHLOROETHANE (R-130)**

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Abstract

Groundwater at an abandoned industrial area near Bergamo, Italy, was historically contaminated by tetrachloroethylene (PCE) (>100 µg/L) and, to a lesser extent, by trichloroethylene (TCE), dichloropropane (DP) and 1,1,2,2-tetrachloroethane (R-130). A liquid reagent (EHC[®] Liquid) was selected for remediation of groundwater at the site. The reagent is provided in two parts: EHC[®] Liquid Mix (a soluble organo-iron salt), and ELS[®] Microemulsion (a lecithin-based carbon substrate), and is designed to promote both *in situ* chemical reduction (ISCR) and enhanced reductive dechlorination (ERD) to destroy chlorinated organic compounds. The two components are mixed with water and injected into the subsurface. Once in groundwater, EHC[®] Liquid rapidly generates highly reduced conditions, favouring both biotic and abiotic dechlorination reactions. Less than 6 months after the injection of EHC[®] Liquid in the main source area, concentrations of the target contaminants had reached the site-specific remediation target values (CSC Legislative Decree 152/06) in the main monitoring piezometers present in the area, thus demonstrating the effective establishment of enhanced biotic and abiotic reducing conditions and degradation of the target compounds.

Keywords: aquifer, chlorinated solvents, enhanced reductive dichlorination, lecithin microemulsion, treatment

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