

Hydrogen Release Compound *HRC*[®]

Aquifer Simulation Vessel (ASV) Studies

The Aquifer Simulation Vessel (ASV) is used to establish the influence of important field-scale parameters on the efficacy of HRC. The ASV, shown in Figure 1, consists of a horizontal six-inch diameter/six-foot length pipe. The ASVs are designed to allow measurement at six inch intervals along the pipe. Each pipe is packed with actual contaminated soil from the field. HRC is placed in the system at the "CAH-water" inlet side, such that the flowing water will pass through the HRC and then move through the length of the pipe. The water can be added with various levels of CAHs and remediation rates can be measured. It is also possible to measure the distribution of lactic acid and its breakdown products (see HRC technical bulletin #1.3.2).

In the initial studies, the ability of HRC to facilitate the reductive dechlorination of TCE was measured. In the experiments, an ASV was filled with soil. Then TCE was added to the soil at the CAH-water inlet side at a concentration of approximately 6 mg/L. The ASV was allowed to acclimate over a period of 6 days during which time baseline TCE concentration profiles were developed. Finally, a "slug" of HRC was added to the inlet side and the system was run at a flow rate of 0.5 ft/day for a period of 9 days. Results from one experiment in which TCE levels were measured at days 1, 6, and 9 at each six inch interval along the ASV are presented in Figures 2, 3, and 4, respectively.



Figure 1

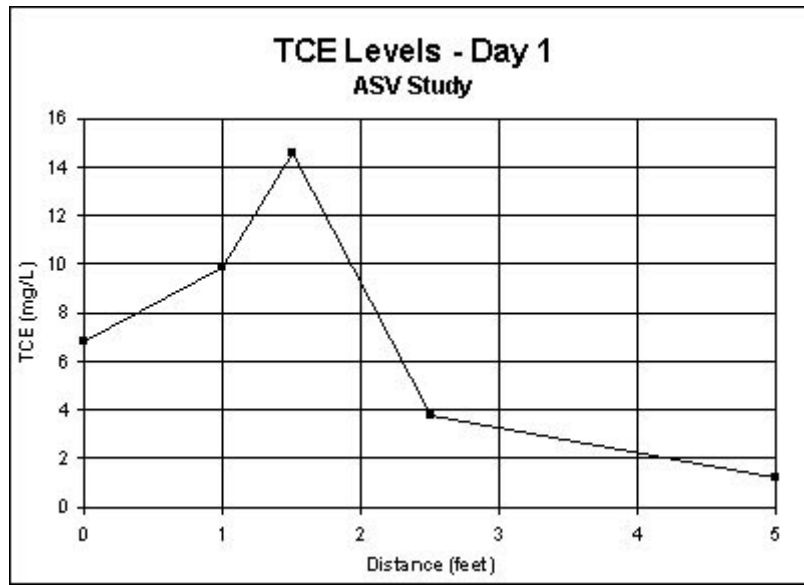


Figure 2

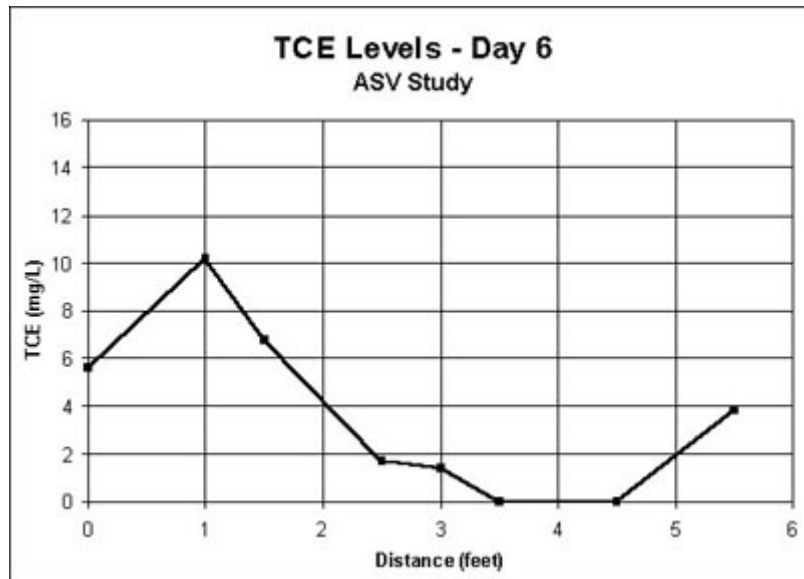


Figure 3

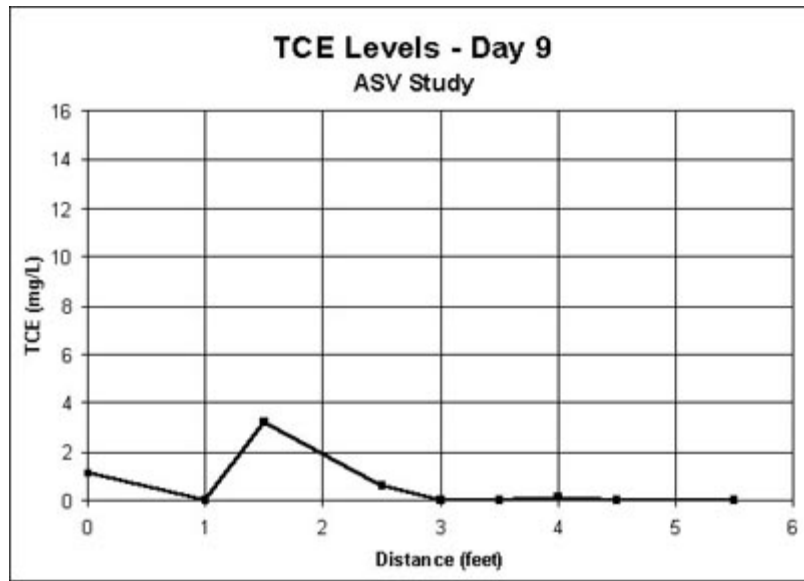


Figure 4

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