



Consulting Group, Inc.

ISCO CASE STUDY: USE OF HIGH pH ACTIVATED SODIUM PERSULFATE, ELECTRONIC MANUFACTURING SITE, NEWPORT BEACH, CA

INTRODUCTION

JAG Consulting Group recently performed a high pH activated sodium persulfate treatment at an electronic manufacturing site in Newport Beach, CA. Sodium hydroxide (25%) was used to induce the required high pH conditions. This ISCO technology was selected based on the results of Treatability Testing that demonstrated up to 95% destruction of VOCs at the site could be attained.



PROJECT BACKGROUND

Extremely elevated levels (DNAPL levels) of TCE, 1,2-DCE, vinyl chloride, 1,2-DCB, acetone, xylenes, and 1,4-dioxane were present at the site. The treatment area consisted of a source area which measured approximately 4,300 square feet in size. The soils at the Site consisted primarily of sands and silty sands. The depth to groundwater was approximately 30 feet below ground surface (bgs).

ISCO DESIGN

Six injection wells within the source area were used for injections of chemicals for this treatment project. The wells were screened from 30 feet to 42 feet in depth. Each well was estimated to have a radius of influence of approximately 15 feet.

Over the course of five days, a total of 5,600 gallons of sodium hydroxide and 3,100 gallons of sodium persulfate were injected into the subsurface. Low injection flow rates of 1-3 gpm and injection pressures (less than 20 psi) were applied, so that no chemical daylighting issues occurred. The injections were performed simultaneously into all six injection wells using dedicated flow meters to record the individual flow rates.



ISCO EFFECTIVENESS

After 6 months, one monitoring well in the source zone showed a 99% destruction of TCE, a 96% destruction of 1,1-DCE, 78% reduction of cis-1,2-DCE, 83% reduction of toluene, and 68% reduction of 1,4-dioxane. However, another monitoring well in the source area showed nearly no change after 6 months.

Due to the elevated VOC levels and the matrix diffusion issues from the underlying clay, it is expected that another injection will be required to obtain significant reductions in all areas of the treatment zone.

CONTACT INFORMATION

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