CASE STUDY

CARBON TETRACHLORIDE SOURCE REMEDIATION IN BEDROCK AND OVERBURDEN

RPI GROUP

ABSTRACT

Carbon Tetrachloride source in bedrock and collateral contamination in overburden were successfully remediated at a decommissioned U.S. Air Force base.

CHALLENGES

The combination of bedrock and overburden Carbon Tetrachloride (CT) contamination posed a unique set of challenges including the selection of an adequate drilling program, gathering critical pre-injection soil and groundwater sample data in difficult lithology, and choosing the most efficient injection technique for installing a Trap & Treat® BOS 100® slurry. Our goal was to destroy CT without daughter product generation of Methylene Chloride.

APPROACH

Various drill and direct push rigs were tested to ensure that sampling and injection depths of 39 feet bgs could be achieved. Also, a number of injection rod sizes and injection tips were evaluated to facilitate optimum performance. Once a combination of rig and tooling was chosen, a bench test was conducted at the RPI Group Project Support Laboratory to determine the effectiveness of Trap & Treat® BOS 100® slurry for the destruction of CT. Concentrations of CT dropped below detection limits within 2 days without generation of daughter products such as Methylene Chloride.

SOLUTION | BOS 100®

A BOS 100® injection program was conducted in two phases in the 8,000 square foot treatment area. The first phase was completed to evaluate injection equipment with regard to feasibility. Phase two consisted of precise depth and dose injections of 15,000 pounds of BOS 100® at 83 injection locations in the overburden and 81 locations in the bedrock.

RESULTS

After four rounds of post-injection monitoring, CT and daughter product concentrations were reduced dramatically and continued to trend downward. Of note, initial concentrations of CT were as high as 5.8 ppm in groundwater and were reduced to a range of 8.6 ppb to 25 ppb CT in all of the monitoring wells without any detection of Methylene Chloride. It was determined that no further treatment would be required at the site. The property has since been redeveloped.

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