

Combined Remedies Used to Remediate Transportation-Related Spills

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Background/Objectives. Contaminant spills associated with trucking or rail are typically addressed very quickly and as part of emergency response activities. In many cases, excavation and temporary groundwater extraction are used successfully to remediate the site. However, there are situations where a remedial design may benefit from a combined remedies approach that incorporates technologies such as in situ chemical oxidation (ISCO), bioremediation and/or sorption with standard practices to provide not only a more rapid solution but also a cost-effective option. In this presentation results from several case studies will be presented where ISCO and bioremediation were utilized as part of the remediation program.

Approach/Activities. At a spill site in rural North Carolina, excavation during an emergency response was used to remove much of the contaminant mass. However, BTEX contamination remained in soil and groundwater after the excavation was complete. A combined ISCO/bioremediation approach that involved the injection of chemical reagents was used to complete the remediation and bring the site to regulatory closure without the need for a roadside groundwater treatment system.

To further support a combined remedies approach, data from a second site will include results from the combined use of excavation, ISCO and sorption/bioremediation. Specifically, liquid activated carbon applied with oxygen releasing compound to create a barrier and cut off migration of petroleum hydrocarbons.

Results/Lessons Learned. Petroleum hydrocarbon levels were reduced to non-detect in less than three months and conditions maintained for over six months. Results will be presented from the North Carolina site as well as other spill sites where ISCO, bioremediation and/or application of liquid activated carbon were used as part of a remediation program to rapidly reduce petroleum contaminant concentrations in groundwater.