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Remediation of Soil and Groundwater Impacted by Chlorinated Solvents – State of the Practice

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Chlorinated solvents are found at numerous sites world-wide. These chemicals have a wide variety of uses in industry such as degreasing agents, chemical intermediates, heat transfer fluids and dry cleaning. Because of their relatively stable nature, desirable chemical properties and low cost to produce, chlorinated solvents have been employed by a wide variety of industries on a frequent basis, particularly since the 1950s coincident with the rise in population and associated industrial activity in many countries. Remediating chlorinated solvent source zones remains technically challenging, costly and contentious in terms of the expectations of various stakeholders associated with any given site.

This talk will discuss key issues regarding remediation of chlorinated solvent source zones. Specific topics addressed include source zone characterization and the need to determine at which life-cycle stage the source zone exists, plume response to mass removal in various geological settings, mass flux and mass discharge, the need for long term monitoring to properly assess the benefits of mass removal, and research needs.

Experience has shown that making progress often requires stakeholders to develop realistic expectations regarding the ability to remediate chlorinated solvent source zones. Experience also has shown that an adaptive management strategy often leads to the most efficient treatment. These lessons will be valuable as the focus increasingly shifts to remediation of the most complex sites, which include source zones in fractured bedrock and contaminants stored in low permeability media. Remediation technology application and assessment has not progressed from simple sites to complicated sites. Rather, remediation technologies have been applied at a wide range of sites exhibiting various levels of complexity, resulting in ambiguous interpretations of technology performance.