

Innovative DNAPL Source Remediation Technologies

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The most common contaminants at DoD sites are chlorinated solvents, and many sites have subsurface sources of solvents as DNAPLs that serve as long-term sources of dissolved-phase contamination. Because complete cleanup of these sites has generally been considered technically impracticable, the typical response has been containment by pump-and-treat systems, reactive barriers, or by monitored natural attenuation where appropriate. However, containment systems may operate for decades at sites with residual DNAPL sources, because the DNAPL sources are depleted very slowly. As a result, the O&M of engineered containment systems has become a large proportion of DoD environmental budgets, and these costs may continue long into the future. Several approaches have been developed and tested for DNAPL remediation, including thermal treatment, chemical oxidation, bioremediation, and enhanced physical removal. Under appropriate conditions, these technologies can remove a large fraction of the total mass. However, there is controversy regarding the benefits of using such technologies. Current research at SERDP is focusing on the benefits of partial DNAPL source removal, as well as the effects of source treatment on the timing and extent of future plume contraction. This presentation will include a review of the high priority research needs and current research findings by SERDP and ESTCP, as well as the status of current technologies and the results of a recent expert panel's assessment of DNAPL source remediation. In particular, a discussion of lessons learned to date will be presented that may help project managers with DNAPL sites.