

Defining the Target Treatment Area for Thermal Remediation

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Background/Objectives. Defining the area to be treated by thermal remediation is critical to the success of a thermal remediation project. Generally the focus of an in situ thermal remediation is the source zone, defined as the area containing nonaqueous phase liquids (NAPL). The cost of thermal remediations are directly proportional to the area or volume to be treated, thus it is desirable to keep the treatment area and volume to a minimum to control costs. On the other hand, leaving NAPL-contaminated areas outside of the treatment zone reduces the effectiveness of the remediation by leaving behind a continuing source of groundwater contamination. Also, NAPLs adjacent to but outside of the treatment area will continuously recontaminate the treated area. Thus, defining the NAPL contaminated area is critical.

Approach/Activities. Different criteria and different characterization approaches have been used to define the source zone for thermal treatment at different sites. It is well known that the delineation of many different NAPLs in the subsurface is difficult, and 'multiple lines of evidence' are generally used, including observation of soil cores and soil sample analytical results, as well as groundwater concentrations.

Results/Lessons Learned. Long-term benefits in terms of being able to reduce plume containment efforts and treatment have been realized at sites where in situ thermal remediation has been used to effectively remediate NAPL source zones. In order to realize these benefits, essentially all of the source zone must be treated, which makes characterization to determine the source zone critical. NAPL zone characterization at different sites have shown that in addition to the well-known difficulties of detecting NAPL, continued NAPL migration may make the extent of NAPL even more difficult to determine. This presentation will discuss NAPL characterization efforts, as well as cases where NAPL migration was documented to continue long after the discharge of the NAPL to the subsurface was terminated.

This is an abstract for a presentation and does not reflect EPA policy.