

NRMRL 08303

Abstract

Tetrachloroethylene, trichloroethylene, and chlorobenzene have been identified as contaminants in groundwater and are sometimes called Dense Non-Aqueous Phase Liquids (DNAPL). Thermal methods for remediation of contaminated soils and groundwater rely on raising the temperature of the subsurface to mobilize organic contaminants so that they could be brought back to the surface. Questions often arise as to whether organic liquids that are present as a separate phase ganglion will be mobilized downward before the liquid is vaporized. To make this determination, properties of these DNAPLs as a function of temperature had to be determined. A literature search was done on density and surface and interfacial tensions were determined using a Fisher Surface Tensiometer Model 20. Using equations developed for the entrapment of liquids in soils, potential mobilization could be determined. Also, because surface and interfacial tension can be altered by contact with soil, measurements were also taken post contact. Interfacial tension did not show significant differences between pure compounds and compounds that had been contacted with soil or sand. Surface tension did show a significant difference between the two. Downward mobilization from raising the temperature would not be expected to occur.