

Abstract

The transport behaviour of chlorinated solvents, both in the aqueous phase and as a dense non-aqueous phase liquid (DNAPL), in fissured microporous aquifers is reviewed. The presence of DNAPL in aquifers is especially serious as it is likely to be the main subsurface source of contamination and, given the slow rates of dissolution in groundwater, may persist for decades. However, the identification and quantification of DNAPLs in fractured aquifers present many practical problems and are often not achievable.

A case study of a Chalk site which had been contaminated by chlorinated solvents demonstrated that the use of a range of techniques, including depth profiling of solvent porewater concentrations in cored boreholes, can provide clear evidence for the presence of DNAPL at depth, although DNAPL was not itself observed. Theoretical considerations and field observations confirmed that DNAPL movement is via fractures rather than through the microporous matrix.