AIR STRIPPING OF HEXACHLOROBIPHENYL FROM THE AQUEOUS PHASE

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Abstract

The distribution and fate of polychlorinated biphenyls (PCBs) in the aqueous environment is of great importance in evaluating the remediation of heavily contaminated sites. Due to the low solubility and very low vapor pressure of these pollutants, they exist primarily as species sorbed to particulate matter. Therefore, contaminant fate can be governed by particle transport and mass transfer kinetics between the particle, the water and the air. Important particle characteristics include porosity, particle size, surface area, organic carbon content and surface charge. Desorption of hexachlorobiphenyl from sand. activated carbon and bentonite clay has been studied using a purge-and-trap apparatus. Removal from the aqueous phase, 95.6%, as well as from the sand and bentonite, 94% and 56%, respectively, has been achieved; however, there was no release from the activated carbon. In all cases, mass balance closed within 10%.

Governing equations have been developed to model the mass transfer rate under controlled conditions in a purge-and-trap reactor. Assuming that the test chamber is a completely mixed reactor, we are left to solve a set of coupled ordinary differential equations. They will be incorporated into a numerical estimation algorithm, so that model coefficients can be determined and sensitivity analysis conducted.

Future work will involve toluene, phenol and pentachlorophenol. The solids effect, air flow rate, and desorption from sludge and sediments will also be investigated. Efforts will be made to determine the mechanisms controlling the association between the solids and pollutants.

IN SITU SOIL RECLAMATION BY AIR STRIPPING AND SLUDGE UPTAKE

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Abstract

A laboratory-scale study was conducted to evaluate the feasibility of an *in situ* reclamation technique for contaminated soils by combining soil stripping