

Sorption-Desorption of Pentachlorophenol on Soil: Residence Time and pH Effects. J.P. DIVINCENZO\* and D.L. SPARKS, Univ. of Delaware.

Long term behavior of a pollutant can often be quite different than what would be predicted by simple extrapolation from short term studies. In addition, hydrophobic ionizable organic compounds (HIOCs) can exist in both the charged and neutral forms within the soil environment. Differences in the behavior of the two species may have practical implications for soil remediation. The long term sorption kinetics of PCP on a silt loam soil were investigated. A slow sorption stage following an initial rapid sorption was identified. An apparent equilibrium occurred at approximately 48 hr. Comparative sorption studies (pH 4.1) showed an increase in the linear partition coefficient ( $K_p$ ) with increasing residence time. The increase was as much as 1.5 times from 2 days to 16 days of sorption. Desorption studies were used to characterize hysteresis. An apparent hysteresis was manifested at 12, 16 and 21 days of sorption, and 2 days of desorption. However, when the desorption times were extended and approached the sorption times, the apparent hysteresis disappeared. In addition, when the increase in the sorption  $K_p$  was taken into account the apparent hysteresis again disappeared. Hence, all of the hysteresis within this system could be accounted for by either insufficient desorption time or the increasing sorption  $K_p$ .