

088. EVIDENCE FOR DIFFERENT SOIL SORPTION MECHANISMS FOR THE NEUTRAL AND CHARGED FORMS OF PENTACHLOROPHENOL. J. P. DiVincenzo, Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN 37132 and D. L. Sparks, Department of Plant and Soil Sciences, University of Delaware, Newark, DE 19716.

Ionizable organic chemicals present a unique environmental concern due to the extensive physicochemical differences between the two species. Pentachlorophenol (PCP) has a pKa (4.75) within an environmentally relevant pH range. Therefore it can exist in either the charged (ionized) or neutral (protonated) form within the environment. Equilibrium and kinetic studies suggest important differences between the two species in soil. The neutral form remains relatively available to diffuse out from the soil over long periods of time. The charged species shows a much greater resistance to desorption. Differences in isotherm behavior suggest a partitioning mechanism for the neutral PCP and a more site specific reaction for the charged species. Temperature studies and thermodynamic calculations support these findings.