

091. SORPTION KINETICS OF PHTHALATE ON MANGANESE OXIDES. C. J. Matocha and D. L. Sparks, Department of Plant and Soil Sciences, University of Delaware, Newark, DE 19717-1303.

Manganese oxides have long been recognized as effective sorbents for organic compounds and trace metals in soils. The dearth of information available concerning the interactions between simple organic compounds and manganese oxide surfaces prompted the initiation of this study, which was to investigate adsorption-desorption kinetics of phthalate on synthesized manganese oxides. Two different manganese oxide mineral phases, birnessite and cryptomelane, were synthesized and characterized by x-ray diffraction. Phthalate was selected because of its simple structure and similarity to functional groups present in soil organic matter. Sorption of phthalate was rapid on birnessite and reached an apparent equilibrium after 12 hours of reaction based on preliminary batch experiments at pH 6.5. The low amount of phthalate sorbed at this apparent equilibrium (6.3%) was ascribed to the pK-pH relationship and the negative surface charges of manganese oxides near neutral pH. Additional studies will be conducted at various pHs, and eventually with the inclusion of metals into the system to investigate competition between simple organic compounds and metals.