SORPTION KINETICS OF PHTHALATE ON MANGANESE OXIDES. C. J. Matocha and D. L. Sparks, Department of Plant & 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 the sorption kinetics of phthalate on synthesized manganese oxides. Two different manganese oxide mineral phases, birnessite and cryptomelane, were synthesized and characterized by x-ray diffraction for diagnostic peaks and d-spacings. Phthalate was selected because of its simple structure and similarity to functional groups present in soil organic matter, and was analyzed by ultraviolet-visible (UV-vis) spectroscopy. Reactivity of phthalate with birnessite was more pronounced at the initial pH (4.0) than at pH 6.5 as indicated by the rapid consumption of H^+. There was a concomitant increase in total solution Mn with time based on preliminary batch experiments. 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.