Kinetics of Hg(II) Adsorption and Desorption on Soil. Y. YIN, H.E. ALLEN*, C.P. HUANG, and D.L. SPARKS, Univ. of Delaware. P.F. SANDERS, NJDEP-DSR.

Adsorption and desorption kinetics of Hg(II) on soils were investigated using a stirred-flow method to discern the mechanisms controlling the retention and release reaction rates of Hg on soil. Both adsorption and desorption were characterized by a fast phase followed by a slow phase. Higher soil organic matter and silt and clay contents resulted in more adsorption and longer time for reactions to attain equilibrium. Not all adsorbed Hg was readily released. Organic matter was found to be the major component responsible for Hg persistence in soil. Lower initial Hg concentrations in soil resulted in higher fractions that were resistant to desorption, implying that Hg preferentially bound to high energy sites. Simplified multi-sites models were developed to describe adsorption and desorption kinetics. Both apparent adsorption and desorption rate coefficients were found to inversely relate to the soil organic C content and Hg partition coefficient.

H. E. Allen, (302) 831-8499