

174. THE EFFECTS OF RESIDENCE TIME ON THE RETENTION OF ARSENATE BY GOETHITE. S.E. O'Reilly and D.L. Sparks, Department of Plant and Soil Sciences, University of Delaware, Newark, Delaware 19717-1303

Research has shown that sorption of metals on natural materials can proceed for a long time, however the mechanisms for this slow sorption are not well understood. Accordingly, the goal of this study was to determine the effects of "aging" or residence time on the kinetics of arsenate sorption and desorption on goethite. Batch sorption and desorption studies were conducted at pH 6 for periods up to 2 months. The desorption experiments were conducted for a period up to one month on different "aged" samples using sulfate and phosphate desorptives. Initial sorption was rapid with over 90% of the arsenate sorbed within 24 hours. Arsenate sorption increased slowly with time. As residence time between arsenate and goethite increased, the amount of desorbed arsenate decreased, and desorption increased with increasing desorption equilibrium time. Phosphate was more effective in desorbing arsenate than sulfate, but, in general, As seems to be tightly bound to goethite.