

Title

Effect of Sulfate on Lead Desorption from Goethite.

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abstract

In the soil solution, many different ions are present that can either inhibit or enhance the sorption of heavy metals such as lead. It has been shown that lead adsorption is enhanced on goethite in the presence of sulfate between pH 4 and 6, and both ATR-FTIR and EXAFS spectroscopy suggests that the mechanism for this increased adsorption is the formation of a ternary complex on the goethite surface. While mechanistic information is invaluable, it is also important to understand the stability of lead bound in ternary complexes with sulfate compared to lead adsorbed in binary systems. To accomplish this, desorption rates were determined by utilizing a miscible displacement technique to measure release kinetics for lead adsorbed with and without sulfate. Comparisons were then made to estimate the stability of lead-sulfate ternary complexes relative to lead only.

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