EFFECT OF CLAY AND GOETHITE MINERAL SYSTEMS ON LEAD REMOVAL FROM AQUEOUS SOLUTION- PAPER II

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ABSTRACT

Mineral systems have been investigated to determine their effect on lead removal. This study was in relation to pH, ionic strength, and particle concentration and residence time. These are related to simulated contaminated waters inclusive effluent discharge. Sorption isotherms indicated that sorption capacities of the different clay minerals, goethite and their mixtures were dependent on the particle size. Mixed mineral systems of kaolinite/montmorillonite and kaolinite/goethite exhibited different sorption behavior from the single mineral components, reducing lead removal over the range of pH investigated. Increased ionic strength and solid concentration, showed a complex response leading to lower lead sorption. Enhanced lead sorption on some of the mixed mineral systems as ageing increased may be linked to increased hydroxylation of the mineral surface resulting in the formation of new reactive sites.

Keywords: Particle size, Lead, Mineral systems, Adsorption, pH; ionic strength.