

Adsorption of As, B, Cr, Mo and Se from coal fly ash leachate by Fe³⁺ modified bentonite clay

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Abstract:

Fly ash contains the potentially toxic elements As, B, Cr, Mo and Se which upon contact with water may be leached to contaminate surface and subsurface water bodies. This study aims to evaluate the adsorption of these elements from coal fly ash leachates on Fe³⁺-modified bentonite (Fe-Bent); such modification improved the physicochemical properties of bentonite clay. For optimization of adsorption of the five elements, the effects of time, adsorbent dosage, adsorbate concentration, and pH were optimized. Adsorption affinity of oxyanions followed in the order B > Se > Mo > Cr > As. Experimental data fitted well to Langmuir and Freundlich adsorption isotherms.