

عنوان مقاله:

Study of multi-stage cadmium adsorption by riverine sediments

محل انتشار:

فصلنامه پیشرفت ها در فناوری محیط زیست، دوره 6، شماره 4 (سال: 1399)

تعداد صفحات اصل مقاله: 11

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خلاصه مقاله:

Most riverine sediments have the high capability to adsorb and store heavy metal ions. In the present study, the adsorption capacity of the bed sediments collected from the Karaj River (Iran) were experimentally studied for cadmium ion adsorption. Multi-stage batch adsorption experiments were carried out for a constant sediment concentration of ۲۰ g/L and different initial cadmium concentrations of ۰.۲, ۰.۵, ۱, ۱۰, ۲۰, and ۵۰ mg/L. The cadmium solutions with known concentrations were added to the bed sediment with the mean diameter of ۰.۵۳ mm in five stages to characterize the capacity of the sediments to adsorb cadmium. The batch adsorption experiments were conducted as both kinetics and equilibrium. The results showed that by adding cadmium ions to the sediment at each stage, the adsorption capacity was less than the previous stage, and for a cadmium concentration of ۰.۲ mg/L, the adsorption percent and the amount of adsorbed cadmium was reduced from ۸۸ to ۷۰% and ۹ to ۶.۸ mg/kg, respectively. These changes decreased with increasing initial Cd concentrations. This process is useful for seasonal rivers in which a certain concentration of heavy metal pollution may occasionally flow over the bed

کلمات کلیدی:

Multi-Stage Adsorption, Riverbed Sediments, Cadmium, Kinetics

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<https://civilica.com/doc/1307878>

