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Influence of Raw and Modified Bentonite and Zeolite on The Mobility of Arsenic and Phosphate in A Soil Contaminated With Arsenic

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Abstract

In this work, the effect of raw and modified bentonite and zeolite with trivalent iron on the stabilization of water-soluble and adsorbed arsenic in a calcareous soil was studied. Raw and modified bentonite and zeolite were added to the soil in different weights in a completely randomized block design with three replications and kept to field capacity soil moisture content of 80% for 8 weeks. The concentrations of water-soluble and adsorbed arsenic, water-soluble and absorbed phosphorus in soil and soil pH were measured. Treatments significantly affected the mobility of arsenic and phosphorus in soil. Raw zeolite and bentonite in different levels increased arsenic mobility (about 107 to 325 % and 259 to 350% respectively). Despite the change in surface properties of zeolites modified with iron, this treatment at different levels increased arsenic mobility in soils by about 124 to 246%. Bentonite modified with iron had the greatest effect on reducing arsenic mobility in soil (about 91%). Phosphate mobility was similar to arsenic in different treatments.

Keyword: Mobility, Arsenic, Zeolite, Bentonite, Iron.

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