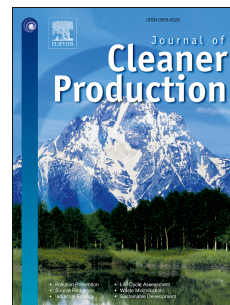


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Arsenic removal from aqueous solutions and the impact of humic and fulvic acids

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Abstract

This work studied the impact of humic and fulvic acids on the removal kinetics of arsenic (V) by granular ferric hydroxide (GFH) and the adsorption capacity of arsenic (V) onto GFH at equilibrium. The Freundlich and DubininRadushkevich models describe the arsenic (V) adsorption behavior onto GFH reasonably well ($r^2 > 0.905$). The removal kinetics were studied by fitting the experimental data to both first-order and second-order models. The lowest adsorption capacity was observed in the presence of fulvic acids (FA), and conversely, the adsorption capacity in the presence of humic acids (HA) was lower than that without humic substances (WHS). The removal kinetics of arsenic (V) were well defined for the second-order model, with correlation coefficients ranging from 0.951 to 0.977. This study suggests that the presence of humic substances negatively impacts the removal of arsenic from water.

Keywords: arsenic, GEH, fulvic acid, humic acid

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