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Adsorptio-Remediation Of Fluoride By Municipal Solid Waste Ashes

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ABSTRACT

The results of utilization of municipal solid wastes as adsorbents for the remediation of fluoride ions in water are presented. It concerns with the removal of fluoride ions by adsorption by water insoluble solid waste-ashes. The pH was maintained at 5.328 in order to prevent the masking of fluorides by other species. The adsorption abilities as a function of contact time, pH, sorbent concentration and temperature was investigated. They obey the Freundlich, Langmuir and Lagergren adsorption isotherms. To evaluate the kinetics data of the adsorption process, a series of time-dependent, and pH dependent adsorption studies were used. The adsorption processes follow simple first order kinetics in the sorbate concentration for a given amount of residential and market solid waste ashes. As pH increases from acidic range, the adsorptivity increases, reaches a maximum at neutral pH and then again decreases. This is attributed to the pH-dependent surface characteristics of the solid waste powder-ashes and to the pH-dependent speciation details of the adsorbent system.

Keywords: Contents of fluoride, Adsorption, Isotherm, Solid waste ashes, Rate constant.