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(57) Abstract :

Abstract Employing batch equilibrium studies, sodium bentonite clay had its de-fluoridation capability in an aqueous medium examined. The purpose of this research was to determine whether or not organic sodium bentonite clay could be used to remove fluoride with an aqueous medium. Organic sodium bentonite clay's chemistry, structure, and texture are precisely characterized owing to meticulous physicochemical and geochemical analysis. Through the use of a potentiometric technique as well as a digital ion detector coupled to a fluoride-specific ion electrode, the concentration of fluoride anions and cations can be calculated. Period of contact, starting fluoride percentage, catalyst dosage, and beginning pH solution are just some of the process variables studied and improved via batch adsorption studies performed at ambient temperature. Outcomes from the trials indicated that 30 minutes of preparation time proved adequate to achieve homeostasis between both the presence of electrolytes and with concentration of fluoride of 5 mg L-1 and a concentration of catalyst of 2 g L-1, the highest amount of fluoride taken out of an aqueous solution was 51.1% when the conditions were acidic. The experimental evidence for order kinetics fits well into the framework of the Freundlich model. This suggests that there is monolayer adsorption with a non-uniform distribution of energy states over the surface.

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