

عنوان مقاله:

Use of bauxite from active Iranian mines for the removal of fluoride from drinking water

محل انتشار:

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نویسندگان:

Mohammad Malakootian - *Environmental Health Engineering Research Center, Kerman University of Medical Sciences, Kerman, Iran*

Marzie Javdan - *Department of Environmental Health, School of Public Health, Kerman University of Medical Sciences, Kerman, Iran*

Farnaz Iranmanesh - *Environmental Health Engineering Research Center, Kerman University of Medical Sciences, Kerman, Iran*

خلاصه مقاله:

Background: Fluoride plays an important role in bone and dentin mineralization; however, excess fluoride intake is harmful to mankind. Methods: This study evaluated the performance of bauxite from active Iranian mines in removing fluoride from drinking water. The effects of pH, contact time, adsorbent dose, and fluoride concentration on defluoridation and removal efficiency were determined. Kinetics and adsorption isotherms were studied. Fluoride levels were measured using SPADNS. Data analysis was performed using SPSS16. Results: Bauxite from the Jajarm mine had the lowest adsorbency (20 g/L) and required the shortest contact time (90 minutes) to reach equilibrium compared with the ore from bauxite mines evaluated in another study which had greater efficiency rates in removing fluoride from drinking water (58.15%). The fluoride removal efficiency rates of the other bauxite mines were as follows: Mendon > Sadrabad > Khidabas > Khezri > Shahbalaghi > Tash > Biglar. Bauxite from Shomal-e Yazd, Hasanabad, and Shahid Nilchian mines could not achieve the required efficiency to remove fluoride from drinking water without initial preparation and modification. The removal efficiency rates of actual samples were much lower than the synthetic samples because of confounding factors. Conclusion: As a result of the low cost and abundant availability of bauxite and the fact that its use does not require a particular expertise or sophisticated technology, the removal efficiency of this adsorbent can be increased to desirable levels through the use of corrective methods such as .heating, acidifying, particle crushing, or the mixing of two or more removal systems

کلمات کلیدی:

Fluoride, Iran, drinking water, kinetics

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