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RESEARCH ARTICLE

Removal of fluoride from aqueous solutions by precipitation

R.T. SRINIVASA RAO AND N.T. MANJUNATH

ABSTRACT : Fluoride although beneficial for the mineralization of tissues in the human body, can be toxic to human being with chronic exposure to elevated concentration. Fluoride considered beneficial in drinking water at levels of 0.5 ppm but harmful once it exceed a level of 1.2 ppm. To date various methods to remove fluoride from water and wastewater have been proposed and applied. An attempt has been made in the present paper to summarise the outcome of study carried out to evaluate the feasibility of using alum to precipitate fluoride from synthetic solution under varied experimental conditions *viz.*, pH (6.5 to 9.5), alum dosage (200 to 500 mg/l), initial concentration of fluoride (Co : 3, 4 and 5 mg/l). Inverse relationship between removal efficiency and Co as well as pH were recorded. On the other hand higher dosages of alum was found to be effective for fluoride precipitation. From aqueous solutions maximum of 78.8 per cent removal of fluoride was recorded with alum dosage of 500 mg/l, pH of 6.5, Co being 3 mg/l. However, all the dosages of alum at all the pH values and Co had successfully reduced the fluoride content from the aqueous solution to the permissible limits.

KEY WORDS : Aqueous solution, Jar test, Fluoride precipitation, Initial concentration, Alum, pH

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MEMBERS OF RESEARCH FORUM

Address for correspondence :
N.T. MANJUNATH, Center for Environmental Science, Engineering & Technology, University B.D.T. College of Engineering, DAVANGERE (KARNATAKA) INDIA
Email: manjunt@yahoo.com

Coopted Authors :
R.T. SRINIVASA RAO, J.S.W. Steel Limited, Vijayangar Works, Toranagallu, BELLARY (KARNATAKA) INDIA
Email: srinivasarao.rt@rediffmail.com