

Comparative Study of Various Methods for Removal of Fluoride Ion from Ground Water

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Abstract—Fluoride is an important anion present in various environmental, clinical and food sample. Small amount of fluoride are vital for the human beings, but it is toxic if larger amounts. For adults the lethal dose is 0.20-0.35g F⁻ per kg body weight. Excessive amounts fluoride in the form of different compound can enter the human body by the means of polluted air, water and the food chain. Fluoride is widely used in various branches of industries like toothpaste, tea, juices, food stuff, bottled water etc. A small amount of fluoride is beneficial in the prevention of dental caries. Fluoride has also been used to treat osteoporosis. But if excess of fluoride ion is taken for a long time it may cause skeletal fluorosis and dental fluorosis . In dental fluorosis the structural integrity of enamel is affected and small pits are left in teeth as it break away. Sketetal fluorosis is the accumulation of F⁻ in skeletal tissues associated with pathological bone formation.

Water is an essential element for life. F⁻ Occur naturally in all types of water, its concentration is higher in ground water. In many places of India the ground water is used as a source of drinking water and it cause health issue. According to WHO standards the maximum permissible limit of fluoride in drinking water is 105mg/l .So it is of great concern to remove excess of fluoride ion from water .There are various methods available for removal of fluoride ion .comparative study of various methods is reviewed in the present work.