REMOVAL OF FLUORIDE FROM DRINKING WATER USING GYPSUM

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Abstract

Fluorosis, which severely affects teeth and bones, is one of the common water-related diseases listed by the World Health Organization. Fluorosis is caused by ingestion of groundwater containing fluoride in excess of 1.5 mg/l and is widespread in about 25 countries. As majority of fluorosis affected regions occur in arid or semi-arid regions of the world, de-fluoridation of the limited available water resource forms the viable solution. Though several methods of de-fluoridation have been proposed, only few are implemented in field. Further, the existing field methods have various limitations such as cost, efficiency, quality of treated water and disposal of byproducts of treatment. This research therefore focuses on removing fluoride from drinking water using cost effective simple method. Gypsum which contains Ca ions is using as removing material. Precipitation is using as removing mechanism. Throughout the research various parameters were checked which are affect for the removal efficiency of fluoride in drinking water using gypsum. Effect of particle size of the gypsum, Stirring time, and retention time and gypsum dosage were checked.

Removal efficiency of fluoride can be increase by increasing the stirring time, gypsum dosage and retention time. Gypsum can be used effectively to remove fluoride from drinking water if the fluoride concentration of water is not greater than 5ppm.Fluoride removal efficiency using gypsum can increase by increasing the solubility of gypsum.