Remediation Techniques Used for Removal of Fluoride from Groundwater: A Concise review

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**Abstract.** Due to the increase in industrialization, climate change, and urbanization, the quality of drinking water is declining day by day. Fluoride levels in drinking water have seen a remarkable increase in several places across the world in the last decade. The accumulation of fluoride in an aqueous environment is caused by both natural as well as anthropogenic sources. The main concern regarding fluoride contamination is dental and bones related issues. According to WHO guidelines, the permissible limit of fluoride in drinking water is 1.5 mg/L. Fluoride contamination causes a detrimental effect on the health of the people [1,2]. This article highlights the distribution of fluoride in India, as well as the many routes by which it enters the human body and probable fluoride metabolism inside the body. The numerous strategies used to remediate fluoride from water, like precipitation/coagulation, ion exchange, membrane separation, electro-separation, and adsorption are elaborated. Amongst these techniques, adsorption is one of the best-optimized techniques involving sustainable materials like biochars, which are cost-effective, highly efficient, and environmentally friendly adsorbents.

Keywords: Water; Fluoride; Adsorption; Biochar; Mechanism

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