

Tripti Agrawal (*Editor-in-Chief*)

Microbes and Agro-Ecosystem

a AGROBIOS
RESEARCH

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6. Hydrofluorosis: An Endemic Geochemical Disease and its Prevention using Defluoridation Strategies

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ABSTRACT

In a recent scenario, "Hydrofluorosis" is being severe problem worldwide. Although, fluoride is beneficial in prescribed limits, but due to high fluoride contamination in the environment by paleoclimatic, geogenic and anthropogenic sources, fluoride is becoming a threat to living beings like plants, animals and especially humans. Fluoride rich soil, air, water, food, beverages, dentifrice, medicaments and cosmetics can cause toxicity. Consumption of chronic doses of fluoride may severely affect human health by causing dental and skeletal fluorosis, gastrointestinal disorder, endocrine effects, neurological effects, reproductive effects, genetic damage, and other biochemical and physiological developmental effects. Epidemiological studies are demonstrating that prevalence and severity of fluorosis are much higher than predicted. There are various methodologies available for the fluoride removal from water like adsorption, ion exchange, coagulation-precipitation and membrane process but they all have some benefits and limitations. Biosorption or bioremediation is most attractive alternative. Literature survey demonstrated that defluoridation techniques explored so far are successful up to 100mg/L of initial fluoride concentrations and in contrast the industrial effluents may reach 250-1000 mg/L of fluoride contamination. Hence more research for defluoridation is essential for a better understanding of sources of toxicity and prevention of next-generation from this geochemical health hazard. This review is a summarized study about the introduction and epidemiology of fluoride, sources of fluoride toxification, beneficial and undesirable or adverse aspects of fluoride on human health, dental and skeletal fluorosis and some conventional