

Impact of Fluoride Contamination on Soil and Water at North 24 Parganas, West Bengal, India

Authors : Rajkumar Ghosh

Abstract : Fluoride contamination is a growing concern in various regions across the globe, including North 24 Parganas in West Bengal, India. The presence of excessive fluoride in the environment can have detrimental effects on crops, soil quality, and water resources. This note aims to shed light on the implications of fluoride contamination and its impact on the agricultural sector in North 24 Parganas. The agricultural lands in North 24 Parganas have been significantly affected by fluoride contamination, leading to adverse consequences for crop production. Excessive fluoride uptake by plants can hinder their growth, reduce crop yields, and impact the quality of agricultural produce. Certain crops, such as paddy, vegetables, and fruits, are more susceptible to fluoride toxicity, resulting in stunted growth, leaf discoloration, and reduced nutritional value. Fluoride-contaminated water, often used for irrigation, contributes to the accumulation of fluoride in the soil. Over time, this can lead to soil degradation and reduced fertility. High fluoride levels can alter soil pH, disrupt the availability of essential nutrients, and impair microbial activity critical for nutrient cycling. Consequently, the overall health and productivity of the soil are compromised, making it increasingly challenging for farmers to sustain agricultural practices. Fluoride contamination in North 24 Parganas extends beyond the soil and affects water resources as well. The excess fluoride seeps into groundwater, making it unsafe for consumption. Long-term consumption of fluoride-contaminated water can lead to various health issues, including dental and skeletal fluorosis. These health concerns pose significant risks to the local population, especially those reliant on contaminated water sources for their daily needs. Addressing fluoride contamination requires concerted efforts from various stakeholders, including government authorities, researchers, and farmers. Implementing appropriate water treatment technologies, such as defluoridation units, can help reduce fluoride levels in drinking water sources. Additionally, promoting alternative irrigation methods and crop diversification strategies can aid in mitigating the impact of fluoride on agricultural productivity. Furthermore, creating awareness among farmers about the adverse effects of fluoride contamination and providing access to alternative water sources are crucial steps toward safeguarding the health of the community and sustaining agricultural activities in the region. Fluoride contamination poses significant challenges to crop production, soil health, and water resources in North 24 Parganas, West Bengal. It is imperative to prioritize efforts to address this issue effectively and implement appropriate measures to mitigate fluoride contamination. By adopting sustainable practices and promoting awareness, the community can work towards restoring the agricultural productivity, soil quality and ensuring access to safe drinking water in the region.

Keywords : fluoride contamination, drinking water, toxicity, soil health

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