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Treatment of Groundwater by Defluoridation

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Abstract : Fluoride is a toxin that gets collected in bones and teeth of humans. It is also a cause of cancer in young individuals; osteoporosis; reduced mental growth; and hip fractures in the old people. Fluoride occurs in mineral deposits and infects our ground water resources. Along with subsurface waters, surface water supplies are also being polluted by the fluoride. Hence since long time many techniques have been devised to remove fluoride from the drinking water such as Precipitation, Ion exchange, Adsorption etc. In all of the devised techniques, adsorption is the most effective technique used at the present time. To prevent more costly techniques and materials, many adsorbents have been prepared from the waste materials which adsorb fluoride ions onto their surface. In this study, the adsorption potential of bagasse powder has been studied in order to consider its usefulness for removal of fluoride content from the water. Laboratory examination of the effectiveness of bagasse powder to remove fluoride from aqueous solution has been investigated and also the effect of various parameters such as pH, Temperature, Adsorbent dose and Contact time on the efficiency of the fluoride removal has been studied. The equilibrium data have been analyzed by the Freundlich and Langmuir adsorption models.

Keywords : Adsorption, Bagasse powder, Batch Adsorption, Defluoridation, Fluoride.

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