

Feasibility Studies on the Removal of Fluoride from Aqueous Solution by Adsorption Using Agro-Based Waste Materials

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Abstract : In recent years, the problem of water contaminant is drastically increasing due to the disposal of industrial wastewater containing iron, fluoride, mercury, lead, cadmium, phosphorus, silver etc. into water bodies. The non-biodegradable heavy metals could accumulate in the human system through food chain and cause various dreadful diseases and permanent disabilities and in worst cases it leads to casual losses. Further, the presence of the excess quantity of such heavy metals viz. Lead, Cadmium, Chromium, Nickel, Zinc, Copper, Iron etc. seriously affect the natural quality of potable water and necessitates the treatment process for removal. Though there are dozens of standard procedures available for the removal of heavy metals, their cost keeps the industrialists away from adopting such technologies. In the present work, an attempt has been made to remove such contaminants particularly fluoride and to study the efficiency of the removal of fluoride by adsorption using a new agro-based materials namely *Limonia acidissima* and *Emblica officinalis* which is commonly referred as wood apple and gooseberry respectively. Accordingly a set of experiments has been conducted using batch and column processes, with the help of activated carbon prepared from the shell of wood apple and seeds of gooseberries. Experiments reveal that the adsorption capacity of the shell of wood apple is significant to yield promising solutions.

Keywords : adsorption, fluoride, agro-based waste materials, *Limonia acidissima*, *Emblica officinalis*

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