

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM



A

PROJECT REPORT ON

“ARSENIC AND FLUORIDE REMOVAL FROM WATER USING FERRIC OXIDE COATED MATERIAL”

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ABSTRACT

Geogenic contamination refers to naturally occurring elevated concentration of certain elements in groundwater. Geogenic contaminants such as calcium , magnesium, fluoride, arsenic etc., gets into ground water natural leaching from geological deposits and its concentration increases naturally by saltwater encroachment associated with over drafting of aquifers and other human activities.

The presence of arsenic and fluoride in drinking water is of great concern in recent days. Consuming water characterized with arsenic greater than 0.05mg/L for short term (acute effects) and long term (chronic effects). Fluoride has always been double edged sword, when the concentration less than prescribed limits (1 to 1.5 mg/L) it has likely to cause dental caries and if it exceeds the limit it likely to cause spotting and discoloration of teeth.

The conventional methods applied for reducing these groundwater pollutants are chemical precipitation, adsorption and ion exchange, filtration using porous media such as char coal, activated carbon, quartz, anthracite etc. Chemical precipitation method has major disadvantages like sludge production which is highly hazardous and complex to handle. In recent days, owing to increasing eco-friendly alternatives such as silica beads or modified sand media are considered as they can be regenerated and reused.

The present work is a novel technique and aims towards development of arsenic and fluoride removal filter media. The experimental set up consisted of a glass column in which media was placed and peristaltic pump was used to convey the water. Synthetically prepared water sample was used throughout the study to evaluate the removal efficiency of arsenic and fluoride. Vertically down flow pattern at constant velocity was followed throughout the study.

Keywords: Treated sand, Geogenic contaminants & media