

# Arsenic Removal from Groundwater by Ferritization Technique

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## Abstract

The contamination of groundwater from arsenic and its health impact on humans have already been reported in different parts of the world. In India, the most serious arsenic contamination occurs in the West Bengal and Central Chhatisgarh region. There are several methods for the removal of arsenic from water but the stability of solid and liquid waste materials generated from the treatment may not meet the regulatory requirement for its disposal. An attempt has been made in this paper to remove arsenic from groundwater in the form of environmentally stable value added product. The process involves co-precipitation of  $As^{3+}$  and  $Fe^{2+}$  ions, pH was maintained between 8.0 to 8.5 and the solution was aerated at the optimum rate of aeration at an ambient temperature. The removal efficiency of arsenic observed was in the range of 98 – 99.9 %. X-ray diffraction studies was carried out on the recovered ferruginous material using  $CuK\alpha_1$  radiation's ( $\lambda = 1.5404$ ). The crystallographic data shows that the compound crystallizes in Orthorhombic symmetry having a non-spinel  $BaFe_2O_4$  type crystal structure, with  $a = 16.44 \text{ \AA}$ ,  $b = 4.08 \text{ \AA}$  and  $c = 6.81 \text{ \AA}$ . In the present work the sampling locations were selected as Central Chhattisgarh region of India.