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ARSENIC IN GROUNDWATER OF YOUNG BENGAL DELTA PLAIN OF INDIA: ITS DISTRIBUTION AND GEOCHEMISTRY

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Abstract

High-arsenic groundwater occurs in the Holocene deltaic sediments (Holocene) of West Bengal.. The arsenic content of the aquifer material is generally 3 to 18 $mgKg^{-1}$, but the arsenic content in groundwater is often exceptionally high (upto 3200 μgL^{-1}). While the chemical compositions of the aquifer waters vary both regionally and locally, they also vary between the aquifers. The most notable feature is their predominantly reducing conditions at near-neutral pH values (6.5-7.5) with high redox sensitive species, which trigger As release to groundwater by desorption from Fe-oxyhydroxide and Fe-bearing minerals (mostly mica). Heterogeneous As distributions (both spatial variability and depth distribution) could be explained by the pattern of accumulation of Arsenic rich oxy-hydroxides/ Fe-bearing minerals in the aquifer sediments and groundwater flow. Deeper aquifers free from As pollution constitute the most reliable source of water from public health point of view. The paper discusses several models as visualized by several workers to explain As enrichment in groundwater.

Keywords: Groundwater, Arsenic (As), Distribution, Deltaic plain.

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