

ARSENIC IN GROUNDWATER ,QUATERNARY SEDIMENTS AND TURBID RIVER SEDIMENTS IN THE MIDDLE GANGA PLAIN, INDIA

Babar Ali Shah

Department of Geological Sciences, Jadavpur University, Kolkata, India

E-mail: bashahju@yahoo.com

Abstract

Groundwater arsenic (As) survey in tubewell was done in the states of UP and Bihar along Ganga River. Maximum arsenic found in groundwater is 1300 µg/l. About 66% of tubewells from Buxar to Mirzapur areas and 89% of tubewells from Patna to Ballia areas have As > 10 µg/l (WHO-1993). Most of the As-affected villages are located close to abandoned or present meander channels of the Ganga River. In contrast, tubewells located in Mirzapur, Chunar, Varanasi, Saidpur, Ghazipur, Muhammadabad, Ballia, Buxar, Ara, Chhapra, Patna, and Hazipur towns are As-safe in groundwater because of their positions on the Pleistocene Older Alluvium upland surfaces. The iron (Fe) content in tubewell water samples varies from 0.1 to 12.93 mg/l. About 77% As-contaminated tubewells are located within the depth of 21 to 40 m in the Holocene Newer Alluvium aquifers. Maximum As concentrations in the Older and Newer Alluvium sediments are 13.73 mg/kg and 30.91 mg/kg, respectively. The iron content in Quaternary sediments varies from 1.57 to 6.31 g/kg. Arsenic content in suspended river sediments of Yamuna, Ganga, Gomati, Ghaghara, Gondak, Buri Gandak, and Kosi rivers varies from 5.61 to 10.59 mg/kg. The iron content in suspended river sediments varies from 1.17 to 5.65 g/kg.

Keywords: Groundwater arsenic, Sediment arsenic, Holocene aquifer, Suspended river sediment