

Arsenic contamination in parts of Middle Ganga Basin, India

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Increasing groundwater extraction from Ganga basin has resulted in facing of aquifer -stress conditions viz., declining water table and deterioration in groundwater quality. The objective of the present study is to delineate the high arsenic zones in the study area. The study area lies between the Ganga and Son River, geologically it's all covered by alluvium and southern portion by Precambrian rocks. The water level in the basin varies from 20-30 ft covering multilayered aquifer system. The principal occupation of the people is agriculture.

In general, the groundwater is of bicarbonate type that suggests its suitability for domestic and agricultural usage. However, the presence of arsenic contamination in groundwater has shown its adverse effect on human health. In this regards an integrated studies consists of water quality, geophysical surveys were carried in middle Ganga plain. More than 200 samples were collected from a study area of 1200 km². These were collected with utmost precaution with various details viz., depth of the well, age. In field measurements of pH, conductivity, Eh, using electrode method and arsenic analysis has been carried out. The level of concentration varies from 0 to 1000 ppb. The arsenic results clearly indicate that high arsenic zones are associated with the meandering zones of Ganga. Moreover the arsenic spread is found in patches confined to the first aquifer. Several interesting results and its correlation with other chemical ions will be discussed in the paper. This study will be useful to delineate the arsenic free groundwater reserve and managing for fulfilling social needs.

Keywords: Groundwater chemistry, Arsenic contamination, Middle Ganga Basin, Bihar alluvium.

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