

HYDROGEOCHEMISTRY FOR THE ASSESSMENT OF QUALITY OF GROUNDWATER IN PARTS OF CHOPAN BLOCK, UTTAR PRADESH, INDIA

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Abstract

Fifteen groundwater samples collected from parts of the Chopan block of Sonebhadra district, Uttar Pradesh have been analyzed to understand suitability of groundwater resources for different uses. The major lithounits of the area comprise of phyllites and granite-gneissic rocks which are covered mostly by red sandy soil. On the basis of hydrogeochemical studies, cationic and anionic dominance in the study area is: Ca > Na > Mg > K and HCO₃ > Cl > SO₄ > F, respectively. All ionic constituents are within the permissible limit of WHO except for fluoride which makes groundwater unsuitable for drinking in some of the villages situated in the granite-gneissic terrain. The concentration of fluoride in groundwater varies from 0.1 to 4 mg/l. Among the 15 groundwater samples analysed, 7 samples exceeded the permissible limits (1.5 mg/l) for fluoride. The source of fluoride in groundwater is from the fluoride bearing minerals apatite, hornblende and biotite mica. Groundwater in the study area is suitable for irrigational purpose.

Keywords: Fluoride, hydrogeochemistry, dental and skeletal fluorosis, Sonebhadra district