

## GEOCHEMISTRY AND EVALUATION OF GROUNDWATER POLLUTION IN CHIKALTHANA AREA OF AURANGABAD DISTRICT, MAHARASHTRA, INDIA

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### Abstract

Aurangabad located in the heart of drought-prone interior of Maharashtra State, India is one of the major urban centers in the Deccan sub-region. The Chikalthana area of Aurangabad is selected to assess the effect of seasonal variation in groundwater quality on irrigation and human health. The entire study area is covered by the Deccan Trap lava flows of upper Cretaceous to Eocene age. Groundwater samples were collected from forty five locations during pre-monsoon and post-monsoon seasons and were analysed for pH, EC, TDS, TH, Ca<sup>++</sup>, Mg<sup>++</sup>, Na<sup>+</sup>, K<sup>+</sup>, CO<sub>3</sub>, HCO<sub>3</sub>, Cl, and SO<sub>4</sub>. Suitability of groundwater for irrigation was evaluated based on sodium adsorption ratio (SAR), soluble sodium percentage (SSP), residual sodium carbonate (RSC), US salinity Laboratory's and Wilcox's diagram which suggests that 16% of groundwater samples from the study area is not fit for irrigation purposes both in pre- and post-monsoon seasons indicating that the area is affected by a salinity hazard zone. Comparison of groundwater quality in relation to drinking water quality standards with BIS (2005) proves that most of the groundwater samples are not suitable for drinking purposes and that there is an urgent need to reduce pollution levels before it becomes unmanageable.

*Keywords:* Sodium adsorption ratio (SAR), Residual sodium carbonate (RSC), Soluble sodium percentage (SSP), Chikalthana, Aurangabad, Maharashtra.