Journal of Applied Geochemistry
Vol. 25, No. 4 (2023). pp. 227-245

GROUNDWATER QUALITY AND ITS SUITABILITY FOR DRINKING AND AGRICULTURAL USE IN PART OF BRAHMANAVELLAMLA WATERSHED, NALGONDA DISTRICT-A CASE STUDY

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Abstract

Accessibility of water for domestic and agricultural purposes has become lesser due to population growth and changes in climatic conditions around Nalgonda area. Deterioration of water quality is due to a lack of understanding of water quality which leads to health risks and affects agriculture and irrigation. A total of 30 water samples were collected and major ions were analyzed, to assess hydrogeochemical characteristics and suitability of water for domestic and agricultural purposes. Dominance of the major cations and anions are in the order of Na^{+}> Ca^{2+}> Mg^{2+}> K^{+} and Cl^{+}> NO_3^{+}> SO^{2+}> HCO^{-}> F^{+}, respectively. Wilcox (1955) diagram was plotted to distinguish groundwater quality for drinking and irrigational purposes. The sodium adsorption ratio, Kelly's (1940) ratio, and soluble sodium percentage have been evaluated for assessing the suitability of water for irrigation. The quality of water is moderate for domestic purpose but not suitable for agricultural usage and only a part in the area is fit for usage, as many samples exceed the limits due to anthropogenic activities.

Keywords: Sodium absorption ratio (SAR), Kelly's ratio (KR), sodium percentage (%Na), Groundwater, Major ions, Fluoride.

*Originally Presented in National Symposium - 2022