

ASSESSMENT OF FLUORIDE AND NITRATE CONCENTRATION IN THE GROUNDWATER OF DOULATABAD AND KODANGAL MANDALS, MAHABUBNAGAR DISTRICT, TELANGANA STATE, INDIA

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Abstract

Groundwater is the most vital resource which is available in varying quantities due to the prevalent lateral and vertical variation in geological formations. Hydrogeological studies have been carried out in Doulatabad and Kodangal mandal areas. The study area is one of the drought affected areas in Mahabubnagar district, mostly covered by hard rocks comprising of sandstone, greenstone, purple shale, granite, gneisses, migmatites (with minor xenoliths of tonalite, trondhjemite, granodiorite, amphibolites and biotite-schist) and the Deccan Traps. The Deccan Trap formations are represented by vesicular-amygdoloidal and massive basalts. The average annual rainfall in the area is 633 mm. As there are no major, medium or minor surface water irrigation sources in the study area, it is totally dependent on groundwater.

Doulatabad and Kodangal Mandals were selected to carry out hydrogeological studies and assess the groundwater quality conditions. Groundwater samples were collected covering all the lithounits during the post-monsoon season. These samples were analyzed for major ions and various physico-chemical attributes, and compared with World Health Organization (WHO-2011) standards. The concentration of fluoride in the groundwater samples ranges from 0.28 to 1.93 mg/l with an average of 1.0 mg/l. The concentration of nitrate ranges from 2 mg/l to 493mg/l with an average 93.95 mg/l. The overall view of the samples reveals that out of the 43 water samples, 3 samples exceed in fluoride content and 26 samples have excessive Nitrate concentration than the permissible limits. Based on chemical analysis data the water suitable for drinking and otherwise is identified.

Keywords: Granites, Groundwater, Doulatabad, Kodangal, Fluoride and Nitrate.