Assessment of Fluoride Variation in Groundwater: A Case Study from Nalgonda District, A.P. (India).

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The present study aims at identifying the groundwater quality problems in Kurmapalli watershed, Nalgonda district, Andhra Pradesh, India. It is located about 60 km SE of Hyderabad city. The groundwater in this region is affected by fluoride contamination as a result; the term life saving water has turn in to life killing water.

To bring the awareness among the people and to find the source of fluoride, 32 groundwater samples were collected from different wells in both shallow and deeper aquifers during October 2004. The chemical analysis of groundwater has been done. Fluoride values vary from 0.7 to 19.0 mg/l. It is noted that the maximum value (19.0 mg/l) is one of the highest values found in groundwater in India and 78% of the total samples show F concentrations that exceeds the permissible limit value (1.5 mg/l). The highest value of F is found at Madanapur bore well, which is located at central part of the watershed. The F value of this bore well was monitored from October 2004 to October 2006. During this period, the F concentration varies from 17.8 to 21.0 mg/l with mean 19.3 mg/l. There is no correlation of F with chemical parameters except calcium. The Ca has shown inverse proportional with F. Water–rock interaction studies were also carried out to understand the behavior of F in groundwater at prominent F affected areas. Rock samples were collected and analyzed, and found their enrichment of F. The rocks of this area are enriched in F from 460 to 1,706 mg/kg.

Finally, the anthropogenic possibility is found to be almost negligible and the geogenic activity is the main reason for their presence. The chemical kinetic behavior of fluoride bearing rock with the groundwater indicates main source of fluoride in the area.

Keywords**;** Fluoride, Granite rocks, Water–rock interaction, Nalgonda district, India