Fluoride Mobilization in Groundwater – a Case Study from Southern Peninsular India

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We attempted to find out the possible fluoride (F) enrichment along the groundwater flow direction in a rural area of Anantapur District of Andhra Pradesh, India though monitoring of wells. The study shows that the groundwater of the area has high concentration of F in the range of 2.7 to 7.9 mg/l over different time interval of observations. Both open shallow dug wells and bore wells were monitored periodically throughout the monsoon year. The periodical observation indicates higher fluoride concentration both in shallow wells and bore wells in the pre-monsoon period. The continuous monitoring of water levels of three observation boreholes developed in the upstream, middle and downstream areas of the watershed indicates that the increasing trend of conductivity and fluoride from the catchment to the downstream coincides with the general groundwater flow direction from upstream to downstream.

The study leads to understand the prevailing hydro-geological conditions and suggests that the drinking water sources need to be located on upstream part of the watershed area to have minimum concentration of fluoride in groundwater. Further, it is preferable to have number of rainwater harvesting structures as these areas are highly permeable to activate the in-situ fluoride dilution through recharge processes.

Key words: Fluoride, mobilization, Groundwater, Anantapur district, Andhra Pradesh.

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