



Hydrochemical Analysis of Groundwater Quality in Virudhunagar district, Tamil Nadu, India

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Abstract: Groundwater quality varies with time and hence it is necessary to continuously monitor the groundwater quality. This study was aimed to identify the groundwater quality for various uses in Virudhunagar district, Tamil Nadu, India. Groundwater samples were collected from fifty-three locations in two seasons, pre-monsoon and post monsoon. Thickness of weathered zone ranges from 4 to 15 m. Depth of dug wells range from 10 to 15 m bgl and bore wells extend from 60 to 90 m bgl. Groundwater level ranges from 5.6 to 41.2 m bgl in pre-monsoon and from 1.2 to 28.4 in post-monsoon. Dominant groundwater types were Ca-Mg-Cl and Na-Cl. Dominance of major cations in pre-monsoon was sodium > magnesium > calcium > potassium and post-monsoon was sodium > calcium > magnesium > potassium. The order of dominance of major anions was same for both seasons-chloride > bicarbonate > sulphate > carbonate. Groundwater is fresh in 55% of samples in both seasons and brackish in 45% of the samples based on total dissolved solids. Based on total dissolved solids, it was permissible in 13% of the samples in pre-monsoon and 8% of the samples in post-monsoon. Water was hard based on total hardness. For irrigation use, groundwater was unsuitable mainly based on magnesium hazard. Nearly 70% of groundwater samples were unsuitable for industrial use. Groundwater quality have to be assessed in this area before using it for any intended purpose.

Keywords: Groundwater quality, Fluoride, Spatial interpolation, Geostatistics
