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TRACE ELEMENT CONCENTRATION MAPPING IN GROUNDWATER OF PARAVANAR RIVER SUB-BASIN, CUDDALORE DISTRICT, TAMILNADU USING GEOSPATIAL TECHNIQUE

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Abstract

The present study aims to study the nature, source, concentration and cause of Trace elements in Paravanar Sub- Basin. Trace elements were analyzed in Inductively Coupled Plasma Mass Spectrometry (ICP-MS) at NGRI, Hyderabad during November, 2008. The analysis was subjected to infer concentration of boron, chromium, lead, arsenic and nickel and other 22 such trace elements in groundwater. The results were compared with WHO's 1993 Standard prescribed for drinking from available literature and attempt was made to interpret their origin and to locate source of above trace elements. 35 groundwater samples collected during August, 2008 from bore wells of Paravanar River Sub-Basin to infer the traces element abundance. Boron concentration has crossed the WHO's standard 1993 limit of 0.3 ppm prescribed for drinking water. Chromium (0.05 ppm), Lead (0.01 ppm), Nickel (0.02 ppm) and Arsenic (0.01 ppm) has also crossed the WHO's limit for drinking purpose. Concentration of Lead in the basin may be attributed to the basement geochemical sources, influenced by chemical weathering. The high concentration of chromium in the aquifer may be due to anthropogenic activity probably from the effluents of closed briquetting and carbonization plant, located due west central part of the basin. The groundwater may be treated properly in order to safe guard the valuable human life. Increase in concentration has to be diluted by finding the exact point source of pollutant. Trace element contribution in Paravanar sub-basin may be from basement Pre Cambrian geochemical sources influenced by weathering (Physical and Chemical) prior to the erosion. Recent or old weathering may be a factor in leaching out the trace elements towards sedimentary basin.

Keywords: Trace elements, Paravanar, Concentration, Weathering, Geochemistry.