

Investigation on Iron Enrichment in Groundwater in Ampara District

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Abstract

Ground water is the major source to drinking purpose in the world, because usually its quality is good. Public of Sri Lanka also rely on groundwater as a drinking water source and also for other purpose. Naturally occurring groundwater quality problems are typically associated with high hardness, high salinity and elevated concentrations of iron, manganese, ammonium, fluoride, and occasionally methane, hydrogen sulphide, nitrate, and arsenic. A high concentration of iron is by far the most common water quality problem associated with groundwater. Excess iron problems have been reported from two villages in Ampara district of Sri Lanka, namely, Naavithanvely and Savalakadai. As per the previous studies above locations are containing more than 0.3mg/L iron in ground water. This research intends to investigate the distribution of iron in groundwater of this particular area. First the location in Ampara district was investigated based on the information from previously published data. The groundwater quality was analyzed from different sources like lake, ponds, dug wells, tube wells and holes in the two villages. 50 water samples were collected into glass bottles in linear pattern from land to river based on groundwater flow in selected areas. The temperature and pH were also measured at the site. GPS coordinates were recorded. Standard sampling methods were followed. Iron concentrations were measured using atomic absorption spectrometric method. It is apparent that high iron concentrations are reported in groundwater samples close the river. The land use patterns in the area are paddy fields on the west, lagoon on the east and forest area on the northwest corner of the map. Highest concentrations are observed in the middle of the map, while most other concentrations are higher than the maximum permissible levels. It was observed that the total iron concentration is decreasing from land toward the river. There are two areas where high total iron concentrations are recorded. Most of these locations have iron concentrations which exceed maximum permissible levels imposed by the WHO. The actual source for these high iron concentrations is yet to be identified.