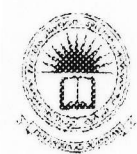



**ASSESSMENT OF GROUNDWATER QUALITY IN
MEDAWACHCHIYA DS DIVISION IN
ANURADHAPURA DISTRICT, SRI LANKA**



BY

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ABSTRACT

Groundwater plays a vital role in the hydrologic cycle, plant growth, soil formation and provides water for human activities, irrigation, and industrial purposes. During the last few decades, the demand for groundwater has been increasing due to the rapid development of urbanization and the rapid growth of the population. In many regions, the groundwater quality has been deteriorated due to anthropogenic activities. The effect of groundwater pollution on human health can be devastating. It could cause severe sickness, which may lead to death in some cases. Medawachchiya DS division in Anuradhapura district is a major agricultural area. The majority of people depend on groundwater for their domestic consumption and agricultural activities. Farmers apply an excess amount of chemical fertilizers and pesticides in crop production. Further, a number of CKDu patients are identified in this division. The groundwater quality is suspected to be the cause of CKDu in this region. In the above context, the present study aimed to assess groundwater quality in Medawachchiya DS division. Groundwater samples at 25 locations were collected and analysed for major physiochemical parameters. In addition, Water Quality Index (WQI) was estimated to assess the suitability of groundwater for drinking purposes.

Results revealed that the quality of groundwater varies spatially in the study area. Groundwater was acidic in some places which are near industrial and dumping sites. The Color and Turbidity of groundwater exceeded the permissible limit in some places. Groundwater at more than 50% of the sampling locations was very hard. The TDS, Alkalinity and Fluoride levels in groundwater exceeded the maximum permissible limit at many locations. Elevated level of Nitrate and Phosphate were observed in the agricultural regions. However, the Chloride level in groundwater was within the acceptable level. According to the estimated WQI, the quality of

groundwater is good at many sampling locations. However, groundwater at Abayapura, Helabagaswewa, Lolugaswewa, Mahakubukgollewa, Walpola, and Wiralmurippuwa is not safe for drinking purposes. Promoting the usage of organic manure in agriculture, monitoring the industrial wastewater discharge, and converting the open dumpsite to sanitary landfill would be viable options to reduce groundwater pollution in these areas.

Keywords: Groundwater, Groundwater pollution, WQI, Water quality parameters

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