

## **An Investigation of Ground Water Quality in Ja-Ela Area in Sri Lanka**

W.M.P. Thamel<sup>1</sup>, W.A.P.J. Premaratne<sup>2</sup>

Ground water plays major role in human life. It is the most important source of water supply for drinking, agricultural and industrial purposes. Groundwater quality has become crucial for water resources issues due to rapid increase of population, rapid industrialization, heavy use of fertilizers and pesticides in agriculture. Hydrochemical parameters of groundwater play a significant role in classifying and evaluating water quality.

An investigation was carried out to analyze the ground water quality in Ja-Ela area in Sri Lanka for 10 drinking water well samples between 7° 07' 99" to 7° 09' 13" North latitude and 79° 89' 30" to 79° 90' 61" East longitude for a period of six months from December 2018 to May 2019. The physicochemical parameters studied were pH, conductivity, COD, hardness, and metals including Fe, Mn, Cd and Zn. The observed physicochemical parameters of ground water were compared with World Health Organization (WHO) standards. According to the observations, some ground water samples from Ja-Ela area were appeared brownish color with odor. The observed pH values of all fresh water samples ranged within the acceptable pH range (6.5-8.5) of WHO for drinking water, while pH values after boiling of those well water samples ranged from 8.5 to 9.0. According to the experimental results highest conductivity observed for fresh well water samples is 308.8  $\mu\text{S cm}^{-1}$  which is lower than recommended value (750-3500  $\mu\text{S cm}^{-1}$ ). All the well water samples in studied area have high COD values and high total magnesium and calcium content above the recommended values of WHO. Total magnesium and calcium contents were ranged from 184 to 329 as  $\text{CaCO}_3 \text{ mg L}^{-1}$ . The cadmium content of the well water samples was not in the detection limits ( $< 0.003 \text{ mg L}^{-1}$ ). The maximum iron content observed was 5.07  $\text{mg L}^{-1}$ . The maximum manganese content and zinc content were 0.06  $\text{mg L}^{-1}$  and 0.14  $\text{mg L}^{-1}$  which are lower than the recommended values of WHO standards. Experimental data revealed that groundwater in the studied area is not in the limit of COD, total magnesium and calcium content and iron content of WHO guidelines for drinking water.

Keywords: Groundwater; physicochemical paramerts; Ja–Ela area; World Health Organization (WHO)

<sup>1</sup> Department of Chemistry, University of Kelaniya, Kelaniya, Sri Lanka

<sup>2</sup> Department of Chemistry, University of Kelaniya, Kelaniya, Sri Lanka, [jeewa@kln.ac.lk](mailto:jeewa@kln.ac.lk)