

## **Physicochemical Analysis of Ground Water Quality and Soil in Ja-Ela Area in Sri Lanka**

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Water pollution has become a common problem with the reduction of the availability of drinking fresh water resources. Hydrochemical parameters of groundwater and soil play a significant role in classifying and assessing the water quality. The objective of the present study is to ascertain the major ion chemistry of groundwater and soil in the Ja-Ela, Indiwita area in Sri Lanka. Water and soil samples were collected from 12 drinking water wells between 7° 04' 29" to 7° 04' 39" latitude and 79° 53' 01" to 80° 53' 04" longitude in the Ja-Ela area. Each drinking water well was analysed six times within six months for pH, specific conductance, COD, hardness, and metals (using AAS method) including Al, Fe, Mn, Ca, Mg and Na. The observed physicochemical parameters of ground water were compared with World Health Organization Standards (WHO). According to the experimental results, all the ground water samples were appeared brownish colour with an odour. The observed pH values of all the water samples were ranged from 7.0 to 8.3. Aluminium content in the water samples was not in the detectable limits ( $<0.05 \text{ mg L}^{-1}$ ) and the maximum iron content observed was  $5.3 \text{ mg L}^{-1}$ . The maximum manganese content observed was  $0.3 \text{ mg L}^{-1}$ . Total magnesium and calcium contents were ranged from 42 to 581 as  $\text{CaCO}_3 \text{ mg L}^{-1}$ . The majority water type in the study area was found to be Na-bicarbonate water type. Groundwater soil samples were analysed for pH, specific conductance, cation exchange capacity organic matters, mineral phases, and metals including Al, Fe, Mn, Ca, Mg and Na. Manganese content in soil was from 1.7 to  $70.5 \text{ mg kg}^{-1}$ . Experimental data revealed that groundwater in studied area was not in the limits of WHO standards for drinking water parameters except the pH value and conductivity.

**Key words:** groundwater, water quality parameters, soil analysis, pH value, Ja-Ela area

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