

## **Assessment of groundwater quality in the municipal area of Jaffna peninsula**

Rajakpaksha H.G.N.<sup>1</sup>, Prabagar S.<sup>2</sup>, Navaranjan S.<sup>1</sup> and Prabagar J.<sup>1\*</sup>

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

<sup>2</sup>*Industrial Technology Institute, 363, BauddhalokaMawatha, Colombo-7, Sri Lanka*

The Jaffna peninsula mainly depends on groundwater for drinking and other purposes due to lack of fresh water resources. The objective of this study was to evaluate the groundwater quality for its suitability for drinking purpose. Water quality parameters such as total hardness, K<sup>+</sup>, NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>2-</sup> contents were determined for 32 wells, randomly selected in the Jaffna municipal area, during December 2017 to March 2018. The water quality parameters were analyzed based on Sri Lankan standards for potable water-SLS 614:2013. The sulfate, fluoride and nitrate contents were measured by using COD-Multiparameter-photometer. pH of the water samples was measured by a portable pH meter. Flame photometer was used to measure the potassium level. Measured nitrate content varied from 15-170.5 ppm, and this is about twelve-fold increase compared to previous values of 30 years ago. Other water quality parameters pH, hardness, TDS, sulfate and potassium varied as 6.5-8.5, 168-1232, 189-5440, 5-700 and 1.2-144 ppm, respectively. It is evident from the results that 94% of wells has higher hardness and TDS compared to Sri Lankan standard. 28% of wells and 31% of wells showed higher nitrate and sulfate contents, respectively. Higher potassium content was found in 85% of wells. Because of the inadequate sewage disposal facilities, highly polluted areas near the wells and most of the wells are situated close to soakage pits of the toilets, the water quality is not suitable for drinking purpose in Jaffna municipal area. The excessive ions from the water should be removed before the water is consumed for drinking.

**Keywords:** Nitrate, pH, Jaffna municipal area, water quality parameters

\*Corresponding Author: [j\\_prabagar@yahoo.co.uk](mailto:j_prabagar@yahoo.co.uk)