

## Microbial Contamination in Shallow Wells in Limestone Aquifer of Jaffna Peninsula

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Pollution of waterways is a serious environmental problem faced by the world today. Water has been estimated globally that 3 to 4 million people, mostly children, die annually from water related diseases such as cholera, typhoid and bowel diseases and faecal contamination of drinking water is responsible for hepatitis and amoebic dysentery. The Jaffna limestone is the main aquifer of the Peninsula. Soils are commonly thin, and water movement from the soil to the water table via fractures is often so rapid that filtration and removal of micro-organisms within the unsaturated zone is not effective. Pollutants reaching the groundwater are therefore able to spread far and wide. Microbiological indicators can be used to detect the faecal pollution of water bodies. *Escherichia coli* and total coli form were selected as indicator organisms to identify the pollution. Therefore the objective of the study was selected as assessment of drinking water in Jaffna Peninsula. Altogether 205 water samples were randomly selected from private and public dug wells (158), water supply wells (16) and tap water (31) in the Jaffna Peninsula. Membrane filtration method was used to enumerate the total coli form and *E. coli* levels. All the data were compared with Sri Lankan Standard. Most randomly selected water samples from dug wells had high amount of total coli forms (25 %) and *E. coli* (22 %). The reason could be probably due to the shallow water table during the wet season which intercept the nearby septic tanks and help total coli form and *E. coli* to freely move into the aquifer contaminating the well water. The total coli form and *E. coli* were not found in all supply wells because; the supply wells are continuously chlorinated to maintain minimum 1.0 ppm residual chlorine. In the case of tap water 3 % of water samples were contaminated with only total coli forms. This indicated that the sources of pollution were in the supply network and storage tanks. The dug wells were highly polluted compared to other sources. Substantial investment in water supply and improvement in sewerage schemes for the Peninsula is imperative.

**Keywords:** Total coli form, *E. coli*, drinking water, dug wells, Jaffna Peninsula.