

Chemical and microbial analysis of municipal drinking water from various regions of greater Colombo area

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Clean drinking or potable water is a basic human need. Therefore the quality of drinking water is a powerful environmental determinant of health and the assurance of drinking water safety is a foundation for the prevention of water borne diseases.

Colombo is the largest city of Sri Lanka. Municipal drinking water made available in Greater Colombo is obtained from precious natural resources after subjecting to various water treatment processes.

According to our literature review, there has been no published report concerning the heavy metals, bacteria and other possible contaminants in municipal water for Greater Colombo area in the recent past. Hence this study was undertaken to assess important chemical and microbiological parameters from various locations of Greater Colombo area. The chemical parameters investigated were Pb, Cd, Ni, Cr, Mn (heavy metals), K, Na, Fe, and Mg and microbiological parameters were

coliform and *Escherichia coli*. In each location the municipal water was collected on three different days at regular intervals. The sampling for cation analysis and microbial analysis was carried out separately.

The parametric values were set in accordance with the World Health Organization guidelines for drinking water quality and Sri Lanka standard. The chemical analysis was performed by Atomic Absorption Spectroscopy (GBC 933AA) equipped with graphite furnace (GBC GF3000) and auto sampler (GBC PAL 3000). The microbiological analysis was performed by using the multiple-tube fermentation (MTF) technique.

Among the 49 samples which were collected for

microbiological analysis from 7 areas in Greater Colombo, 11 samples were contaminated with *coliform* with levels not exceeding the maximum amount as stipulated in SLS guidelines (specification for potable water, bacteriological requirement SLS 614: part 2, 1983) one sample was contaminated with fecal matter (*E. coli*). The concentrations, obtained for heavy metals and some other ions from the 21 samples which were collected from 7 areas from Greater Colombo, were below both the health based guideline of WHO and SLS. Considering all of these experimental results, it can be concluded that, the majority of municipal water available is suitable for drinking based on the parameters tested.