STUDY OF WATER QUALITY IN TUBE WELLS - WELLAWATTE AND BAMBALAPITIYA AREAS

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ABSTRACT

Groundwater is one of the most useful and needed resources of the earth, it is replenished annually by meteoric precipitation. However, our water resources are subject to increasing threats. We need water for our food, energy and raw materials. The quality of groundwater poses a serious threat to human and animal health and the degradation of wetlands and rivers, this is due to decline and contamination.

The increase of urban population, commercialization and natural process in the study areas of Wellawatte and Bambalapitiya causes deterioration of groundwater quality. The research focuses on determining the water quality parameters such as Turbidity, pH, Electrical Conductivity, Chloride, Total Alkalinity, Free Ammonia, Total Phosphate, Total Hardness, Total Iron, Total Coliforms and E.Coli of tube well water and its importance to the water users in the Wellawatte and Bambalapitiya areas. For the purpose of this research twenty eight tube wells sampling locations were chosen from Wellawatte and Bambalapitiya areas and a questionnaire was given to the water users. The water samples were collected and analysed for water quality parameters during the months of January to April (2012) for dry season and July (2012) for wet season . The results were compared with Sri Lankan drinking water standards. Out of the 28 tested wells, the results revealed that most of the physical and chemical parameters were below the Sri Lankan drinking water standards. However, a greater concern might be the presence of total coliforms and E.Coli, which exceeded the Sri Lankan drinking water standards. Comparatively, bacteriological contamination in deep tube wells were less.

Further, groundwater in the study areas is generally polluted by leachates from drainage water and canal water. However, variations in water quality parameters such as physical and chemical, were observed less in analysis of dry season and wet season during the months of January to April and July respectively except in one or two cases. Moreover, bacteriological contaminants such as total coliforms and E.Coli showed variations in shallow tube wells as well as in deep tube well water during the period of dry and wet seasons. As far as the physico – chemical parameters are concerned, there were no significant variations in the parameters between the two study areas of Wellawatte and Bambalapitiya.

Although there is a pipe water supply system in the study areas, households depend on water from tube wells for washing and gardening and also 39.29 % people of the study areas use it for drinking and cooking purposes as the costs of pipe water is high. However, all wells are privately owned and managed. Bacteriological contamination was found in most of the tube well water in Wellawatte and Bambalapitiya areas. It needs to be treated before it is used for purposes of drinking and cooking.