

# INVESTIGATION ON SUITABILITY OF GROUNDWATER IN GAMPOLA TOWN FOR DOMESTIC CONSUMPTION: A POST EPIDEMIC INVESTIGATION

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Viral hepatitis outbreak was reported in May 2007 in Gampola, Sri Lanka due to faecal contamination in drinking water. The public prefer groundwater for various reasons in spite of the availability of pipe born water. This study was conducted to assess the suitability of the groundwater, specially with reference to the microbial quality and to investigate the influencing factors for contamination in the Gampola town. Out of 125 wells found within one square kilometer, 20 wells were selected for monitoring bacteriological quality, water level, pH, Electrical Conductivity (EC) and Total Dissolved Solid (TDS) for a period of 5 months covering the wet and dry periods in 2010 and 2011. A questionnaire survey was conducted using 47 well owners mainly focusing on the usage and the reasons for the use of groundwater.

All wells were found to be contaminated at least once either by Total Coliform or *E.Coli* either in the wet season or in the dry season. The depth to water level from the surface was ranging from 0.9 to 11.5 m. Average EC and TDS were 368  $\mu\text{s}/\text{cm}$  and 165 mg/L, respectively. All the samples were slightly acidic showing the pH values from 4.9 to 6.5. Out of 80 water samples tested, 50 samples were found not suitable for drinking with regard to the WHO standards. Topography of the location, distance from cesspit and water use practices were identified as important factors affecting the microbial quality of groundwater.

Wells located at lower elevation along Kandy road and Nawalapitiya road are more prone to contamination due to higher rate of seepage from surrounding areas. 75% of wells located less than 15 m from the cesspit have shown unacceptable level of *E. coli* and Total Coliform counts. Less used wells show higher contamination than the high usage wells. This could be due to difference of the depth of the wells and aquifer characteristics though these were not investigated during this study. Accordingly, wells were identified as not suitable for drinking, suitable for drinking after treatment, suitable to use for drinking only in dry season and suitable but must be used under surveillance.

Out of 47 well owners, 26 were using both tube wells and pipe born water. 17 were using only tube well water. 37 were not aware about the quality status of their shallow well water. According to well owners, there were significant reductions in electricity and water bills when using tube well water for domestic or commercial purposes. Pumping the water from the shallow well is cheaper than paying for pipe born water and hence there is a preference to use the shallow wells. Use of shallow well water without proper guidance and treatment however, could lead to a health disaster.