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A microbiological study of some well water quality parameters with reference to the garbage dumping site at Navinna area

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Navinna dumping site is one of the well known waste dumping areas situated in suburbs of Colombo. Huge amounts of garbage increases day by day threatening the water sources in the area. Therefore the present study was carried out to determine the microbiological, physical and chemical parameters of well water around the Navinna waste dumping area. Fifty seven locations including fifty ground

water wells and seven permanent water pools were sampled at distance between 0-30m, 31-60m, 61-90m, 91-120m, 121-150m and <150m from the dumping site twice a month for a period of seven months from July 2006 to January 2007.

A pH range of (6.5-7.5); conductivity ($144-161\mu\text{scm}^{-1}$); BOD₅ ($1.44 - 3.82 \text{ Omg l}^{-1}\text{day}^{-1}$); nitrate ($0.06 - 1.47\mu\text{g l}^{-1}$); phosphate ($122 - 372 \mu\text{g l}^{-1}$) were detected within the drinking water standards given by Board of Investment, Sri Lanka. Reducing trend of the number of total coliform, *Escherichia coli* and viable bacteria were recorded with increasing distance from the dumping site. Total coliform ranged between $4-2400 \text{ MPN } 100\text{ml}^{-1}$ and high density was recorded $2400 \text{ MPN } 100\text{ml}^{-1}$ at the distance between 0-30m. A significant correlation ($p < 0.04$) was found between total coliform counts with distance. Hundred percent of wells within the distance between 0-30m from the dumping site were contaminated with fecal coliform (*E. coli*) bacteria and the contamination % decreased with increasing distance. *E. coli* was not detected when the distance exceeds more than 150m from the dumping site. According to the water quality standards given by BOI, all the wells monitored were contaminated with coliform bacteria ($\text{MPN} \geq 4 \text{ } 100\text{ml}^{-1}$; BOI standards for coliform is 0 per 100ml) and of 49 out of 57 wells within 150m from the dumping site were contaminated with fecal coliform (87%) and undetectable when the distance exceeds more than 150m. Thus, the results of the present study revealed that the wells within 150m distance from dumping site were contaminated with fecal coliform and this may cause serious health problems. Therefore the responsible authorities should take immediate action to provide safe drinking water for the community of the study area.