

**Groundwater pollution and soil degradation
at Bloemendhal municipal solid waste
dumping site in Colombo city**

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This paper provides groundwater pollution and soil degradation occur due to the the Municipal Solid Waste (MSW) dumping site of Colombo Municipal Council. Vulnerability of pollution of surface and groundwater is high such areas because local authorities rarely consider environmental impact in selecting MSW disposal sites. Dumping of MSW on urbanized sites or on the roadside poses environmental and economic threats on nearby properties. MSW are main sources of groundwater pollution and soil degradation due to the production of leachate. This study was conducted in order to determine the extent of groundwater pollution and soil degradation within and around the Bloemendhal solid waste dumping site located in the center of the Colombo city. The surface area of the site was around 20 acres and the waste has been deposited at the site since 1995.

The waste pile emplaced at the head of the tributary stream has caused channelling of the leachate to the creek, which is eventually washed towards the Kelani River. Physio-chemical water and soil survey has been done to investigate the leachate production surrounding the study area. Groundwater geochemistry was carried out and chemical analysis of water samples was conducted surrounding the study site. Surface water was also analyzed in order to determine its quality. Soil chemical analysis was performed on soil samples taken from different locations within and around the study site in the vadose zone (unsaturated zone). Major ions represented by Na, K, and Cl were found in anomalous concentrations in the groundwater. Electrical conductivity (EC) was also found in anomalous concentration (12000 $\mu\text{mhos/cm}$) in the top soil and it's gradually decreasing with the depth and distance from the dumping site.