

IMPACT OF MUNICIPAL SOLID WASTE DUMPING SITE ON GROUND WATER QUALITY AT THIRUPPERUNTHURAI, BATTICALOA

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Groundwater pollution has become a major concern as it reduces the amount of clean water for domestic and industrial uses. There are various causes of groundwater pollution of which leachate generated from landfill sites is the major source of groundwater contamination in the vicinity of dumping sites. An efficient solid waste management system therefore is vital at the dumping sites to reduce groundwater deterioration. However, the management strategies differ from one place to another. In this context, this study was done at Thirupperunthurai in Batticaloa district to assess the impact of existing municipal solid waste dumping site on groundwater quality under present management system. The water was sampled from 30 wells in and around the dumping site during dry season in the year 2013 to examine the physico-chemical properties of groundwater. The pH, TD, EC total hardness, COD, NO₃⁻, PO₄³⁻, Copper and Lead were determined. The results revealed that pH of groundwater varied from 6.5 – 7.5 which falls under acceptable limit. However, other parameters such as EC (263 – 1518 μS/cm), total hardness (217– 432 mg/L), TDS (213- 764 mg/L), COD (16– 67 mg/L), NO₃⁻ (112– 158 mg/L), PO₄³⁻ (1.03– 1.42 mg/L), Copper (0.17- 2.2 mg/L) and Lead (0.07- 0.13 mg/L) were in higher range and exceeded the permissible limits of drinking water. It was also found that, ground water closer to the dumping site showed higher values of the analysed parameters than further away. Therefore, it is concluded that groundwater nearby the dump-site at Thirupperunthurai is polluted heavily due to contamination of leachate. Hence, immediate measures should be taken by the relevant officials to prevent further deterioration of groundwater and the surrounding environment by an efficient and proper management of landfill dumping site.

Keywords: Groundwater, Leachate, Solid waste, Water quality