

#### **BII 04 Impacts of Galle municipal council dumpsite on ground and surface water**

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Solid waste generated in the Galle Municipal Council (GMC) area is collected by the GMC, and a small portion of biodegradable waste is used to produce compost. Rest of the waste is disposed on a semi-controlled dumpsite. Gin river is flowing by the side of the dumpsite. Therefore controls and precautionary measures are needed at this dumpsite because it is likely to generate highly contaminated leachate which may be a threat to Gin river and surrounding groundwater. The aim of this study was to investigate the potential impacts caused by the GMC dumpsite - leachate on Gin river water and surrounding groundwater. There was about 72 % of volatile solids reduction in the solid waste dumped for 8 years at the dumpsite as compared with the fresh solids wastes. This indicates the biodegradation of dumped solid waste. Therefore it is highly possible that leachate from this site is rich in organic matter. The reduction in electrical conductivity shows that the possible dissolution of ionized solids which were initially present with solid waste, into soil water. The leachate was found to have exceeded effluent discharge standards for the parameters such as biochemical oxygen demand (BOD<sub>5</sub>), chemical oxygen demand (COD), turbidity, total suspended solids (TSS), ammonium-nitrogen (NH<sub>4</sub><sup>+</sup> - N), orthophosphate, selenium (Se), arsenic (As), chromium (Cr) and ferrous (Fe). Chloride (Cl<sup>-</sup>), COD and turbidity values of the ground water sample were higher than the highest desirable standard levels for drinking purpose. Arsenic (As) and selenium (Se) exceeded the maximum permissible levels of drinking water standards. 'Se' concentration in leachate, Gin river water and groundwater was extremely high. The mean concentrations of BOD<sub>5</sub>, COD, turbidity, Cl<sup>-</sup>, conductivity, 'Se' and 'Cr' of the portion of Gin river which is in the immediate vicinity to the dumpsite exceeded the ambient water quality standards.

**Keywords:** Galle municipal council dumpsite, Gin river, groundwater, leachate, water quality parameters.