

## CHARACTERIZING WASTE DUMP EFFECTS ON GROUND WATER THROUGH ELECTRICAL RESISTIVITY SOUNDING AROUND OKHLA LANDFILL SITE, NEW DELHI, INDIA

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### Abstract

Contamination of ground water bodies in and around landfill areas, especially, in Okhla Phase- II landfill area of New Delhi, India, was studied using a Geophysical approach. The survey was carried out using Vertical Electrical Sounding (VES) method in four different locations of the study area. Interpretation of data indicates that the site has been dominated by Alluvium and Sandstone formations, which constitute the hydrogeologic unit of the area. The dumpsite and its nearby groundwater zones especially towards the northern region have been contaminated with Leachates at a depth of 8m to 9m with very low apparent resistivity values of 2Ωm to 4 Ωm along the surface gradient in the northern region, which also supports the findings. Various geochemical parameters like EC, pH, and TDS were studied and it was observed that pH was normal and Electrical conductivity in the range of 2682μS/cm to 2832.0 μS/cm. TDS was found to be in the range of 1877mg/l to 1982mg/l. This may pose a serious health risk to the inhabitants of that area as they depend largely on groundwater for their drinking water supply. Whereas, in the 4<sup>th</sup> VES (above 233 Ωm) carried out in the southern direction i.e. opposite to the surface gradient reveals no contamination in the ground water zone.

*Keywords:* Groundwater contamination, Leachate, Aquifer, Vertical electrical sounding