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MIGRATION OF CONTAMINANTS IN GROUNDWATER AT A LANDFILL SITE, NIGERIA

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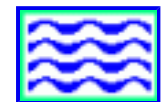
ABSTRACT

The risk of groundwater pollution is regarded as the principal impact of the disposal of waste on land. In examining this problem, geophysical and geochemical studies were carried out at a solid waste disposal site in Owerri, southeastern Nigeria. The disposal system in use is the landfill disposal method. Azimuthal electrical resistivity (ER) soundings were conducted around the site to determine the directions of contaminant transport. Surface and groundwater samples were collected and analyzed to determine some geochemical parameters usually considered to be indicators of pollution from solid waste disposal. Grain size analyses of sediment samples were found to consist of sand particles with high porosity and permeability. A collection of litho-geophysical logs of the study area gives insight about the nature of the porosity and permeability. The grain size analysis results together with the litho-geophysical logs show that contaminated leachates can migrate through the unsaturated zone into groundwater. Results indicate that the landfill and its management pose a threat to human health. Surface and groundwater samples near the landfill are acid at certain spots, while the concentration of PO_4 and NO_3 are well above the guidelines recommended by WHO.

Reference: Ibe, K.M. and J.C. Njoku; Migration of Contaminants in Groundwater at a Landfill Site, Nigeria, Journal of Environmental Hydrology, Vol. 7, Paper 8, August 1999.

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