

The Burden and the Consequences of Waste Management in Nigeria: Geophysical Approach

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Abstract : The wobbly state of waste management and the high level of environmental irresponsibility is a threat to environmental security, which invariably endangered public health, regional groundwater systems and atmospheric condition. The dumping of waste materials in water bodies and gutters and the frequent burning of waste materials heaped at dumpsites as well depict the highest level of environmental indiscipline. These unruly human factors have compelled this study to apply four different techniques for environmental impact assessment and the possible public health risks of poor waste management in Nigeria. The techniques include a geophysical survey (resistivity data acquisition), dispatched questionnaire surveys, physiochemical water analysis and a physical survey of several dumpsites. While the resistivity data indicates high-level dumpsite leachate invading the ground soil down to the water table, the physiochemical water analysis depicts high content of BOD (401 - 711) mg/l, COD (731 - 1312) mg/l, TDS (419 - 1871) mg/l and heavy metals (0.014 - 1.971) mg/l present in the regional groundwater systems, which have altered the chemistry of the regional groundwater. The resistivity data shows that the overburdened soil layer overlaying the regional groundwater systems was very low (4.5 Ω m - 151 Ω m) as against the existing data (180 Ω m - 3500 Ω m). However, the physical surveys and the dispatched questionnaire surveys explore the depth of environmental irresponsibility among the citizen. While the imprints of gross environmental indiscipline may be absolutely irreversible, adequate knowledge of the environmental implications of careless waste disposal. After a critical examination of the current waste management strategies in Nigeria, the study suggests a future direction for environmental security and sustainability. Several influential regional factors, such as geology, climatic conditions, and hydrology, were also discussed.

Keywords : groundwater, environmental indiscipline, waste management, water analysis, leachate plumes, public health

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