

Soil Degradation Resulting from Migration of Ion Leachate in Gosa Dumpsite, Abuja

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Abstract : The effect of soil degradation due to ion leachate migration using dumpsite located at Idu industrial area of Abuja was investigated. It was done to assess the health and environmental pollution consequences caused by heavy metals' concentration in the soil on inhabitants around the settlement. Soil samples collected from four cardinal points and at the center during the dry and wet season were pretreated, digested and heavy metal concentrations present were analyzed using Atomic Absorption Spectrophotometer. The concentrations of Pb, Cu, Mn, Ni, and Cr, were determined and also for control sample obtained 300 m away from the dumpsite. Water samples were collected from three wells to test for physiochemical properties of pH, COD, BOD, DO, hardness, conductivity, and alkalinity. The result showed a significant difference in concentration of toxic heavy metals in the dumpsite as compared to the control sample. A mathematical model was developed to predict the heavy metal concentrations beyond the sampling point. The results indicate that metal concentrations in both dry and wet season were above the WHO, and SON set standards. The trend, if unrestrained, portends danger to human life, reduces agricultural productivity and sustainability.

Keywords : soil degradation, ion leachate, productivity, environment, sustainability

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