



## **Effects of Wastes Disposal System on Metal Composition of Hospital Dumpsite Soil in Ilesa, Southwestern Nigeria**

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**Abstracts:** Soils were randomly sampled at two different depths (0 - 15cm) and (15 - 30cm) on the hospital open dumpsite and the average pH of the soil at depth 0-15cm were  $5.8 \pm 0.62$  and  $4.35 \pm 0.05$  for dry and wet seasons respectively while at depth 15-30 cm the average soil pH were  $5.60 \pm 0.00$  and  $4.52 \pm 0.36$  during dry and wet seasons. Energy Dispersive X-ray fluorescence (EDXRF) analysis was used to quantify the total concentration of nine elements (Fe, Cu, Zn, Mn, Ni, As, V, Zr, Sr) in the soil. The results of the one way analysis of variance, showed that there was no significant difference at ( $P = 0.05$  and  $0.01$ ) in the mean value of elements obtained at 0-15cm at different sampling points; meaning that the wastes were evenly distributed in the top soil. At 15-30cm depth, some elements such as (Fe, Ni, As, Zr and V) showed significant differences by sampling points. Comparing the elemental concentrations at each sampling sites to seasonal variation showed that; at 0-15cm there were significant differences in the elemental concentration of Mn, Fe, Zr and V at both seasons while at 15-30cm depth, Mn, Fe, Ni, As, and V showed significant differences by season. Statistical analysis revealed that, within the same season at different depth, no significant difference was observed, meaning that there was soil - metal interactions that prevented the movement of metals downward soil profile, which results in no significant changes, when the soil surface was polluted. Linear correlation of reduction of metals with depth through the soil layer was observed. High concentrations of Ni and As in both seasons above the permissible limit in soil imply their probable availability to shallow rooted plants.

**Keywords:** *Hospital Wastes, Disposal System, Dumpsite Soil, Elements, Composition*

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