

# Assessment of the Impact of Solid Wastes on Agricultural Soils and Plants: A Case Study of Kazaure, Jigawa State Nigeria

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**Abstract:** Increased population growth coupled with heightened industrial processes and improved lifestyles have led to more generation of solid waste which end up in indiscriminate and unregulated dumpsites. These solid wastes are well repositories for heavy metals which can impact negatively on the ecosystem causing severe ecological damage affecting biota. In this study, soils and *Chromolaena odorata* collected from ten dumpsites in Kazaure town were assayed for their heavy metal content using Flame Atomic Absorption Spectrophotometer. Physicochemical parameters of the soil were also examined using standard analytical procedures. The results revealed varying concentration of the metals in the soil and plant sample. The mean concentrations (mg/kg) of the heavy metals in the soil were:  $43.0 \pm 9.3 > 24.4 \pm 8.4 > 14.0 \pm 9.0 > 1.3 \pm 0.7$ , respectively while for *Chromolaena odorata* the mean metal concentrations (mg/kg) reveal:  $36.20 \pm 7.70$ ,  $21.10 \pm 5.30$ ,  $11.20 \pm 3.00$  and  $1.5 \pm 0.8$  for Zn, Cu, Pb and Cd, respectively. The general trend in the metal abundance in both the soil and *Chromolaena odorata* is:  $Zn > Cu > Pb > Cd$ . The metal level of metals in both the soil and plant is higher than the control sites and generally exceeded the WHO maximum permissible limits. The metal transfer factors were greater than unity in several sampling locations which suggest that the plant has high potential to translocate and bioaccumulate the metal in its tissues. This implies higher risk concerns about the use of soils of dumpsites as manures to grow crops for consumption. Therefore regular monitoring and decontamination of the soils from the dumpsite needs to be done before using it for agricultural activities. Moreso, it is imperative that stringent waste management policies be put in place to mitigate contamination risks, and ensure resilient and secure food system

**Keywords:** Dumpsites, physicochemical parameters, heavy metals, transfer factors *Chromolaena odorata*