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LEVELS OF HEAVY METALS IN LEAFY VEGETABLES GROWN AROUND WASTE DUMPSITES IN AKURE, SOUTHWESTERN NIGERIA

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ABSTRACT
Soils from three dumpsite areas within Akure metropolis were investigated for heavy metal contamination and possible accumulation of the metals in two common edible leafy vegetables, *Amaranthus spinosus* and *Talinum triangulae* grown around the dumpsites. Metals detected in the dumpsite soils at concentrations far above their estimated target values include Cd, Co, Cu, Ni, Pb and Zn. Concentrations of the heavy metals in the three dumpsite soils were of the order: Cu>Ni > Pb> Zn> Cr> Cd> Co. Correspondingly, high concentrations of the metals were also found in the two vegetable plants with Cd and Pb more bioaccumulated in *A. spinosus*. The concentrations of the heavy metals found in the shoot of the vegetable grown around the dumpsites were much higher than the optimum allowed by FAO/WHO. Notwithstanding that the consumption of these vegetables could constitute health hazard to human and other animals, *A. spinossus* with high Cd and Pb enrichment coefficient could be a useful phytoremediator for soils polluted with Cd and Pb.
Keywords: Dumpsite soil, heavy metal, bioaccumulation, leafy vegetables, phytoremediation.

INTRODUCTION

Despite the best attempt at waste avoidance and reduction, landfill and waste disposal sites still remain the principal focus for ultimate disposal of residual waste and incineration residue worldwide (Chalotte, 1998; Waite, 1995). In Nigeria, like most other West African nations, the common means of waste disposal are by discharging directly and indirectly into water ways, burying inside the ground, and dumping on pieces of land, which eventually forms dumpsites. One of the most obvious risks posed by solid wastes is the unaesthetic conditions that ensue when they are indiscriminately dumped or allowed to heap up. Such heaps of solid wastes are obvious within or in the outskirts of our major cities with obnoxious odour emanating from them (Aina, 1990; Aiyesanmi 2001). Dumpsites contain trace metals in different forms depending on the type and content of the waste due to human habitation and activities, chemical processing and biological activities (Soon and Bates, 1982). The high rate of population increase, the trend of the Nigerian society towards the western culture and lifestyle, and advancement in science and technology have brought about the use of so many metallic and electronic devices which have the potential of introducing diverse types of heavy metals into the dumpsites when they are eventually dumped as wastes after use