

## **Risk Assessment of Heavy Metals in Soils at Electronic Waste Activity Sites within the Vicinity of Alaba International Market, Nigeria**

**Authors :** A. A. Adebayo, A. O. Ogunkeyede, A. O. Adeigbe

**Abstract :** Digital globalisation and yarn of Nigeria society to overcome the digital divide have resulted in contamination of soil by heavy metals (HMs) from e-waste activities at Alaba international market, Lagos, Nigeria. The aim of this research was to determine the concentration of various metals {Cadmium (Cd), Chromium (Cr), Copper (Cu), and Lead (Pb)} and identify their ecological and health risks for the people within the study area. A total of 60 soil samples were collected at Alaba market study area. Two types of samples were collected from each sampling points: topsoil (0-15 cm), subsoil (15 -30 cm). The metal concentration results showed that the soils were heavily contaminated by HMs at topsoil and subsoil. The geoaccumulation and ecological risk indices revealed high pollution level from all studied site. The health risk assessment results suggested that there is high possibility of carcinogenic risk to humans because the carcinogenic risk via corresponding exposure pathways exceeded the safety limit of  $10^{-6}$  (the acceptable level of carcinogenic risk for human). Furthermore, inhalation of soil particles is the main exposure pathway for Cr to enter the human body for all ages. Children in the vicinity are exposed more to ingestion of Pb since they tend to eat earth (pica) and repeatedly suck their fingers. This study provides basic information to create awareness for a need to introduce pollution control measures and the need to protect the ecosystem and human health within the study area at Alaba international market.

**Keywords :** contaminated soil, ecological risk, hazard index, risk factor, exposure pathways, heavy metals

**Conference Title :** ICHMEE 2017 : International Conference on Heavy Metals in the Environment and Ecosystems

**Conference Location :** Barcelona, Spain

**Conference Dates :** July 27-28, 2017