

Development Journal of Science and Technology Research (DJOSTER), Volume 8, Number 1, 2019

Development Journal of Science and Technology Research (DJOSTER)

Volume 8, Number 1, 2019 ISSN: 2143-3275

A Publication of the
Centre for Applied Sciences and Technology Research
Jointly with the
Faculty of Applied Sciences and Technology ..
Ibrahim Badamasi Babangida University.
Lapai, Niger State, Nigeria

February 2019

Development Journal of Science and Technology Research (DJOSTER), Volume 8, Number 1, 2019

ASSESSMENT OF POTENTIALLY TOXIC ELEMENTS (PTES) IN SOILS WITHIN ELECTED MECHANIC WORKSHOPS IN LAGOS, SOUTH WEST NIGERIA

A. M. Odukoya*, B. O. Uruowhe and A. Dada

Department of Geosciences, University of Lagos, Nigeria.

*Corresponding author: buruowhe@unilag.edu.ng

Abstract

This study has evaluated the levels of selected Potentially Toxic Elements (PTES) in some mechanic workshops in Lagos Southwest Nigeria. Twenty-five top soil samples were collected and analysed for six PTEs using ICP-MS. The mean values of the PTEs decrease in the order of Zn > Pb > Cu > Ni > As > Cd and the ranges were as follows: Zn (178 - 1273 mg/kg); Pb (52.3 -

52.3 mg/kg); Cu (30.6 - 102 mg/kg); Ni (12.5 - 51 mg/kg); As (1.73 - 22.3 mg/kg) and Cd (0.45 - 0.45 mg/kg). The following indices of pollution and health risks were calculated: the pollution index (PI), pollution load index (PU), potential ecological risk index (PERI), hazard index (HI), non-carcinogenic risk and carcinogenic risk index. All the toxic elements were higher than crustal average values except for Ni. Based on PU and PERI, the soil samples can be classified as moderately polluted with Ni and highly polluted with Cu, Zn, As, Cd, and Pb. The potential ecological risk index (PERI) ranged between 171.55 - 1084.88 and indicated moderate to very high risk in the study area. The calculated Hazard Index (HI) for only ingestion and dermal pathways were >1 and posed non carcinogenic health risks to both children and adults. The cancer risk values for Ni, As and Cd were within the acceptable benchmark of 1 in 10,000 (10⁻⁴) - 1,000,000 (10⁻⁶) therefore posed no carcinogenic health risks in the study area. Some PTEs assessed constituted high non carcinogenic risk in the study area with children at higher risk than . and Co, Pb and As from both the ingestion and dermal pathways are the major contributors to health risk.