

## Incidences and Chemico-Mobility of Toxic Heavy Metals in Environmental Samples

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**Abstract :** The article reports on the occurrences, level, and mobility of selected trace metals in environmental samples. The conceptual basis was to examine the possible influence of anthropogenic activities and the impact on human and environmental health. Environmental samples (soil, plant and lower animal) were randomly collected from stratified study/sampling areas, preserved and pre-treated before analysis. Mineral acid digestion procedure was employed for the isolation of metallic contents in samples, and elemental qualitative and quantitative analysis was by ICP-OES. Analytical protocol was validated through the quality assurance process and was found acceptable with quantitative metallic recoveries in the range of 85-90%; hence considered applicable for the analyses of environmental samples. The mean concentration of analysed metals in soil samples ranged from 53.2- 2532.8 mg/kg (Cu); 59.5- 2020.1 mg/kg (Zn); 1.80 - 21.26 mg/kg (Cd) and 19.6- 140.9 mg/kg (Pb). The mean level in grass samples ranged from 9.33 - 38.63 mg/kg (Cu); 64.20-105.18 mg/kg (Zn); 0.28-0.73 mg/kg (Cd) and 0.53 -16.26 mg/kg (Pb) while the mean level in lower animal sample (beetle) varied from 9.6 - 105.3 mg/kg (Cu); 134.1-297.2 mg/kg (Zn); 0.63 - 3.78 (Cd) and 8.0 - 29.1 mg/kg (Pb) across sample collection points (SCPs) 1-4 respectively. Metallic transfer factors (TFs) were in the order Zn > Cd > Cu > Pb with metal Pollution Indices (MPIs) in the order SCP1 > SCP2 > SCP3 > SCP4. About 60-70 % of analysed metals were above the maximum allowable limits (MALs) in soil and plant samples. Results obtained revealed the general prevalence of analysed metals at all sampled sites with indication of metallic mobility across the food chain which portrayed dire consequences for environmental and human health. Systematic environmental remediation and pollution abatement strategies are recommended.

**Keywords :** trace metals, pollution, human health, Incidences, ICP-OES

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