

EVALUATION OF SOME TRACE METALS CONCENTRATIONS IN BANK SEDIMENTS OF RIVER KADUNA, NIGERIA

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ABSTRACT

The soil along the River Kaduna bank sediments were sampled at ten different sites: Kawo, Malali, Federal Government College, Ungwa Rimi Ganji Gate Garden, Kabala Doki, Barnawa, Down Quarters, Nassarawa, and Kudende during the dry season. The soils were sequentially partitioned into five fractions comprising, exchangeable fraction, Carbonate fraction, bound to manganese and iron oxide fraction, bound to organic and residual fraction, bound to organic and residual fraction. The determination of six toxic metals of lead, Manganese, Nickel, Zinc, Cadmium and Cobalt were done using the Atomic Absorption spectroscopy and it reveals that they are present in appreciable quantities as you move from less polluted area to areas with high pollution index. The total metal determined in these soil samples ranged from Pb, 20.04 - 48.43; Mn, 7.42 – 57.09; Ni, 0.29.91; Zn, 18.43 – 58.53; Co, 0 – 29.98, mg/kg respectively which indicates that most of the sites were polluted and require remediation. In the sequential extractions, most of the metals were extracted in the exchangeable and carbonate fraction of the soil sample which are readily available. The health implication of these metals in the soil which may find their way into the food chain and finally be consumed by man is examined in line with sustainable development.

Keywords: Trace metals, Sequential extraction, Speciation, Pollution index.