

Title of Article in Conference Proceedings: Geochemical Speciation and Risk Assessment of Trace Metals in Sediments from Coastal Ecosystems off Equatorial Atlantic Ocean

Authors: Nsikak U. Benson, Essien D. Udosen, Winifred U. Anake, Akan B. Williams, Oyeronke A. Akintokun, Adebunayo E. Adedapo and Abaas A. Olajire (2016).

Outlet: Proceedings of the 8th International Conference on Environmental Science and Technology. In: Sorial, G. and Hong, J.: *Environmental Science and Technology 2016* Vol. 2, pp. 175, American Science Press, Houston, USA, ISBN 978-1-5323-2260-0, June 6-10, 2016, Houston, Texas, USA.

Abstract: The concentrations of Cd, Cr, Cu, Ni and Pb in estuarine benthic sediments were determined through multistep speciation scheme to evaluate their spatio-temporal distributions, selective fraction magnitude, degree of contamination and potential ecological risks. The results indicated that the metal fractionation percentages in the residual, oxidizable and reducible fractions are the most significant, while the exchangeable and carbonates bound trace metals are relatively low. High mobility and bioavailability was indicated for Cu, Cr and Ni, while Cd and Pb in sediments present low bioavailability for biota. Contamination factor (*CF_m*), degree of contamination (DC), modified degree of contamination (*mCd*), geoaccumulation index (*I_{geo}*), risk assessment code (RAC), and potential ecological risk index (PERI) were used to assess trace metals sedimentary pollution. The results indicate a prevalent moderate to high contamination of most trace metals analyzed. The contamination ranking of trace metals based on percent contribution to DC was Cd>Pb>Cu>Cr>Ni. RAC values indicate medium risk for Cd and Ni at all studied sites during the wet and dry seasons. Cd and Pb show moderate and very high individual metal potential ecological risk, respectively, while multi-elemental potential ecological risk indices (*RI_s*) indicate very high ecological risk in all the ecosystems.