GEOCHEMICAL ASSOCIATION OF Cr, Cu, Ni, AND Pb IN THE SEDIMENTS OF ILOILO RIVER ESTUARY

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ABSTRACT

The geochemical association of Cr, Cu, Ni, and Pb in the sediments of Iloilo River Estuary has been studied using a modified Tessier's sequential extraction procedure. The results obtained show that most of the metals studied are mostly associated in the residual and organic matter fractions of the sediment samples (Cr: 66.26% - 74.36% in the residual,15.43% - 24.08% in the Fe-Mn oxide fraction, 8.14% - 12.71% in organic matter fraction, and 0.000% – 2.996% in the exchangeable/carbonate fraction; Cu: 39.30% - 46.73% in the residual, 12.00% - 52.18% in the organic fraction, 3.227% - 11.41% in the Fe-Mn fraction, and 0.000% - 17.43% in the exchangeable/carbonate fractions; Ni: 42.75% - 57.02% in the organic matter fraction, 24.93% - 39.33% in the residual, 5.814% - 14.15% in the Fe-Mn fraction, and 5.504% - 13.12% exchangeable/carbonate fraction; and Pb in sample AAA-21: 48.02% in the residual, 38.55% in the organic matter fraction, and 7.33% in the Fe-Mn fraction, and 6.078% in the exchangeable/carbonate fraction).

The analysis of the total metal concentrations of the sediment samples taken from Iloilo River are found to be above the reported concentration of uncontaminated sediment except for Pb in sediment sample AAA-21 (Chromium: 102.1μg/g - 150.5 μg/g; Copper: 62.56 μg/g – 111.7 μg/g; Nickel: 53.40 μg/g – 75.44 μg/g; and Lead in sample AAA-21: 22.21 μg/g).

The study shows that about 50% of the total metal concentration in the sediment samples are bioavailable to the aquatic organisms.