

**METAL ACCUMULATION IN SURFACE SEDIMENT OF THE URBAN AND INDUSTRIAL COASTAL AREA OF THE MUNICIPALITY OF MOA (CUBA): DISTRIBUTION AND POLLUTION ASSESSMENT.**

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**Abstract**

The investigation is to evaluate the accumulation of ten elements (Al, Cr, Fe, Mn, Ni, Co, As, Cu, Pb and Zn) in surface sediments from the urban and industrial coastal area of Moa. Human activity has influenced the region, which has been developing in one of the most important mining regions of Cuba since the middle of the past century. Two methods were used to assess the contamination of the sediments: the estimation of metal enrichment by calculating the index of geo-accumulation ( $I_{geo}$ ) and the interpretation of the data obtained based on quality criteria. The overall range of concentrations is 15.7 - 83.5  $mg\ g^{-1}$  for aluminum, 1.4 - 17.9  $mg\ g^{-1}$  for chromium, 22.8 - 379.5  $mg\ g^{-1}$  for iron, 1.5 - 56.2  $mg\ g^{-1}$  for manganese, 0.9 - 6.2  $mg\ g^{-1}$  for nickel, 56 - 1094  $\mu g\ g^{-1}$  for cobalt, 6 - 126  $\mu g\ g^{-1}$  for arsenic, 17 to 146  $\mu g\ g^{-1}$  for copper, 6 - 66  $\mu g\ g^{-1}$  for lead, and 64 - 576  $\mu g\ g^{-1}$  for zinc. The results obtained from the studied coastal zone show a high level of pollution in surface sediments. The spatial distribution of the elements varied according

to the analyzed elements: Al, Cr, Fe and Ni showed high levels of concentration throughout the studied zone; Mn, Co, Cu, As and Zn are in a higher proportion in Moa Bay Cay. In the case of As and Pb, higher concentrations were located at the deltas of Moa and Cayo Guam rivers and also in some areas in the west of the bay.

**Key words:** Moa Bay Cay; geoaccumulation index; contamination in marine sediments; mining impacts; geoenvironmental study.