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The Geochemistry of Heavy Metals in the Mudflat of Salinas de San Pedro Lagoon, California, USA

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ABSTRACT

Sediment core samples were collected from the Salinas de San Pedro to assess the pollutant deposition processes in response to extensive human activities. Analysis of the sediment samples for heavy metals and some trace elements was conducted with ICP-OES for 20 sites showing enrichment for some of trace and heavy metals. The results demonstrated that heavy metal concentrations in mud varied greatly for each metal, with concentration values (mg/g) ranging from 1.05 - 4.8 (Al); 0.003 - 0.011 (As); 0.001 - 0.005 (Cd); 0.02 to 0.82 (Cr); 0.085 - 0.47 (Cu); 5.98 - 14.22 (Fe); 0.06 - 0.19 (Mn); 0.03 - 0.67 (Ni); 0.05 - 0.38 (Pb); <0.008 - 0.069 (Se); 0.18 - 0.63 (Ti); 0.040 - 0.091 (V) and 0.149 - 0.336 (Zn). The Index of Geo-accumulation factor showed highest values for Pb, Mn, As, and Cu. Enrichment factors >1 for these elements suggest anthropogenic inputs for most metals. The bioavailability of metals in lagoon sediments has the potential to be highly dynamic with local waste and natural H₂S discharge from existing fault line.

KEYWORDS

Salinas De San Pedro; Bioavailability; Heavy Metal; Geo-Accumulation Index; Enrichment Factor; Lagoon Water Pollution

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