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A STUDY OF POLLUTION IN ANZALI WETLAND SEDIMENTS ON THE INDEX OF GEO-ACCUMULATION AND AN ECOLOGICAL RISK ASSESSMENT, IRAN

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Abstract

The Anzali Wetland, lying south west of the Caspian Sea, is one of the most important aquatic ecosystems in Iran. In recent decades much domestic and industrial untreated wastewater has been deposited in the wetland. This study was done to obtain a preliminary assessment of heavy metals contamination in the wetland sediment. Tests were done to determine levels and distribution of the heavy metals Cd, Cr, Cu, Pb, and Zn in surface sediment of the wetland. Results showed that averages of metal concentrations (in µg/g) were: Cd: 1.46±0.66; Cr: 6.12 ±0.27; Cu 18.12±4.11; Pb: 17.97± 1.69 and Zn: 78.08 ± 7.08. Contamination status was evaluated on the Geo-accumulation Index for each of these metals and ecological risk assessment was determined accordingly. The Geo-accumulation Index determined that levels of metals were not in the range indicating contamination (except for Cd that showed a level of moderate contamination), and in terms regional variation, levels of contamination were evaluated in the following order: Shyjan > Hendekhale > Siyahkeshim > Abkenar. Ecological risk assessment showed that Cd was the only metal posing a potentially high risk to the environment and contributed 77.5% of the total potential ecological risk in the Anzali Wetland.

Key words: contamination, Geo-accumulation Index, heavy metals, potential ecological risk index

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