The concentration of Lead, Cadmium, Zinc and Copper in sediments of Ganduman wetland with geochemical indices

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Received date: ۲۰۲۰,۰٥,۱۲
Reception date: ۲۰۲۰,۰٦,۲٥

Abstract

Sediments play an effective role in pollution control or water purification of the wetland ecosystem and record heavy metals contamination as an historical archive. Ganduman wetland is one of the top ۱۰ birdwatching wetlands in Iran. This study aimed to to investigate the concentration of lead, cadmium, copper and zinc in Ganduman sediments. For this purpose, sediment samples were collected manually in summer and autumn at ۱۲ stations, one sampling in middle of every season with considering the availability and distance from urban and industrial wastewater disposal sites. In total, ۷۲ sediment samples were taken from a depth of ۲۰ cm and transferred to the laboratory. The concentrations of lead, zinc, cadmium and copper in the sediments were measured by atomic absorption spectrometry. The mean concentrations of lead, zinc, cadmium and copper in the sediments was ۲٦,۳٤, ٦۱,۹۸. ۱,۲٥ and ۱۸,۷٥ mg/kg. Comparison of the mean concentrations of metals with Canadian sediment quality guidelines for freshwater sediment (ISQG) values showed that the copper and lead concentration in sediments is lower than (ISQG) standard but Zinc is close to the (ISQG) standard and cadmium is higher than (ISQG) standard. Cadmium contamination can be caused by pesticides and phosphate fertilizers utilization in vast farmland around Ganduman wetland where agricultural effluent into this wetland flows.

Keywords: Contamination Factor, contamination degree, Muller geochemical index, Pollution load index.

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