Determining of the heavy metals cobalt, chromium, manganese, selenium and molybdenum in sediments of Hooralazim wetland in Khuzestan province using pollution indices

Khoshnaz Payandeh[1*]
Mohammad Velayatzadeh[2]

1. Department of Soil Science, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran
2. Young Researchers and Elite Club, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran

***Corresponding author:**
Payandeh426@gmail.com

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Abstract

Sediments are one of the biological indicators of the accumulation of heavy metals in aquatic ecosystems, which, due to the stability of a region, can well measure pollution. This research was conducted in 2018 with the aim of investigating heavy metals of Cobalt, Chromium, Manganese, Selenium and Molybdenum in sediments of Hooralazim wetland in Khuzestan province. A total of 27 sediment samples from 3 stations with 9 replications were prepared according to the ASTM D2488 standard. To measure heavy metals the ICP-OES Varian 710-ES model was used. The highest amount of Cobalt, Chromium and Selenium in the deposits of Hooralazim Wetland was obtained respectively 0.019, 93.39 and 29.45 mg/Kg at the third station and Manganese and Molybdenum were 451.12 and 0.88 respectively at the second station. The lowest values of heavy metals were Cobalt, Manganese and Selenium in the sediments at the first station, but the lowest Chromium concentration at the second station and Molybdenum was observed at the third station. The contamination of Cobalt, Chromium, Manganese and Molybdenum was less than 1, indicating a low contamination of these metals. Regarding Selenium metal, the contamination factor higher than 6 was found to indicate the severe contamination of the metal in sediments. Therefore, according to the results, it can be stated that Selenium is the most important metal contaminant than Cobalt, Chromium, Manganese and Molybdenum. Cobalt metal enrichment factor showed the low pollution level and Chromium, Selenium, Molybdenum and Manganese metals showed high level of contamination, which can be said these metals had origin of human. According to the ecological risk assessment of Cobalt, Chromium, and Molybdenum metals in Hooralazim wetland sediments and ecological risk factors they were classified into low ecological risk potential.

Keywords: Hooralazim Wetland, Sediments, Heavy Metals, Ecological Risk, Enrichment factor.

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