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Article

Desalination and Water Treatment
www.deswater.com
doi: 10.5004/dwt.2019.24600

168 (2019) 165–174
November

Assessment of heavy metal pollution in the Great Al-Mussaib irrigation channel

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Received 27 January 2019; Accepted 19 June 2019

ABSTRACT

The Great Al-Mussaib channel (GMC), in Babylon province, Iraq, has been selected as a case study to measure the concentration of nine heavy metals (Pb, Ni, Zn, Fe, Cd, Cr, Cu, Mn and Co) in both water and sediments of the GMC. The channel is used as a raw water source for two cities, which reveals the importance of the current study. Where, any heavy metals pollution could cause significant health problems for the population of these cities. The obtained results revealed that the concentrations of the studied heavy metals in the water of the GMC were less than the pollution levels and followed the order: Pb < Ni < Cu < Cr < Mn < Zn < Fe. It is noteworthy to highlight that the concentrations of Co and Cd were below the detectable limits. Additionally, the results obtained from the analyses of the studied sediment samples showed, according to the values of pollution load index and geo-accumulation index (I_{geo}), that the concentrations of studied metals were less than the pollution levels (except for a few cases) and followed the order: Cd < Co < Cu < Pb < Ni < Cr < Zn < Mn < Fe.

Keywords: Great Al-Mussaib irrigation channel; Heavy metals; Sediments; Pollution load index; Geo-accumulation index

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