Study of heavy metal accumulation in water, surface sediment and 4 aquatic plant species of Karkheh River

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Received date: 2017/08/23
Reception date: 2017/11/07

Abstract

This study done to evaluate determine the content of heavy metal of Hg, As, Ni and Cd in Water, surface sediment and 4 aquatic plant species of Karkheh River. Sampling of water, sediment and 4 Aquatic plant species *Limna gibba*, *Vallisneria spiralis*, *Bacopa monnieri* and *Ranunculus fluitans* of 3 station in north, center and south of Karkheh River in Khuzestan Province were collected in spring season. Heavy metal in water, sediment and leaf of aquatic plant were analyzed using graphite furnace atomic absorption spectrometry (AAnalyst600-AS800, Perkin-Elmer, USA) for water samples and by flame atomic absorption spectrometer (Perkin-Elmer 4100, USA) for sediment and macrophyte samples. Heavy metal in water, sediment and leaf of aquatic plants were analyzed with 30 replicates. In water, the highest content of Hg, Cd, Ni and as 10.55±0.59, 3.21±0.27, 2.68±0.22 and 2.88±0.26 µg/ L, respectively, and in sediment the highest content of Hg, Cd, Ni and As 20.22±0.96, 5.03±0.26, 6.57±0.76 and 3.31±0.38 µg/ kg were recorded. The highest and the lowest of Hg content in two aquatic plants *R. fluitans* and *V. spiralis* were 9.71±0.96 and 4.79±0.85 µg/ kg. Cd, Ni and as were higher than the other aquatic plants in *B.monnieri*: 0.22±0.29 1.33±0.46 and 0.34± 0.18 µg/ kg. The lowest of content Ni and as were showed in *L.gibba*: 0.16±0.76 and 0.01±0.19 µg/ kg. Results show that aquatic plant of *B.monnieri* have potential for absorption Hg and Ni. The Hg level were higher than the limit of INSO and WHO but Cd, Ni and as were lower than the INSO, USEPA and WHO.

Keywords: Heavy metals, Water, Sediment, Aquatic plants, Karkheh River.