THE CONTAMINATION OF ZAYANDRUD SEDIMENT WITH PHOSPHORUS AND HEAVY METALS (ZINC, COPPER AND MANGANESE)

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Introduction

This study is aimed at measuring the concentrations of heavy metals such as manganese, zinc and copper, and finding out their chemical properties in Zayande-rud river sediment.Moreover,the level of phosphorus and organic matters were determined in this research.Phosphorus concentration between the first and second stations was at the maximum level. However it is possible to reduce the sediment contamination load with the effective management of wastewater for different use.Several studies were conducted on the quality changes of sediment in Shingle Creek,Florida(Odell, 1994) and river Damodar,India(Banerjee and Gupta, 2012).They demonstrated the high level of heavy metals in the industrial and urban wastewater discharge zone in these regions.in this study we tried to find out the type and level of heavy metals and phosphorous contamination and their changes downstream.

Method and material

This study has been done in summer of 2011.Six stations were selected along Zayanderud bed, the stations are: Siosepol ,Chom,Ziar,Ajieh bridge,Varzaneh and Gavkhuni marsh.From each station, four samples were taken in the surface depth of 0-10cm. Total concentration of manganese, copper and zinc were determined(Soon and Abboud,1993).

Results and discussion

The mean of EC had no significant difference in the first three stations (3-4dS/m).The pH was between 7.3 and 7.5.From first to third station,amount of organic matter increased,and reached the maximum level in the third station.The highest level of phosphorus was between the first and the second stations.Concentrations of copper and zinc became significantly more between the first and second stations.The Mn concentration was invariable till the second station but between the second and third stations the Mn concentration augmented almost due to the discharge of sewage from the wastewater treatment plant before the second station.On the whole,the raw and incompletely treated wastewaters affect the measured parameters such as deposited heavy metals. These wastewaters have a considerable amount of organic matters.

Keywords: Heavy metals, Zayandeh Rud River, Contamination, Sediment.

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