Assess concentrations of heavy metals in sediments and its effects on human health (Fariman Ophiolite Region -NE Iran)

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Heavy metals can be present at low concentrations in the soil and pollute the soil. As respects in the study area (Fariman region in North East of Iran) of lithology is ophiolite, can increase the concentration of heavy metals in soil and water resources in the region. To study of concentration of heavy metals and sediment pollution in the region studied, 39 samples of sediment were taken from a depth of 30 to 20 cm. The samples were transferred to Canada ACME Laboratories to the method of induction plasma - mass spectrometry (ICP-OES) to determine the amount of heavy metals are analysed.

The study of the correlation of heavy metals by Pearson coefficient, cluster analysis, and principal components analysis showed that there are two different origin for geochemical distribution of heavy metals in sediment of the region. We control the Ophiolite set of the distribution of the elements Cobalt, Nickel and Chromium and Pyroclastic and volcanic set, the distribution of Iron elements, Molybdenum, Vanadium, Copper, Arsenic, Lead, Potassium, and Cadmium. The pH of the studied region soils based on the classification of American soil science society, placed in pretty alkaline limit. The evaluation of enrichment factor showed that Nickel has very high enrichment and the element of Arsenic and Chromium are in high enrichment region. The above enrichment is indicative of anthropogenic origin. The pollution coefficient also showed that Nickel has the highest pollution in the region. The index of accumulation (of earth) also indicate the pollution of the region sediment with Nickel.

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