Investigation of heavy metal contamination in soils of Fereydoon city, Isfahan Province

R. Sarikhani[1], A. Jamshidi[2]*, Sh. Bahrami[3] and A. Ghasemi Dehnavi[4]

1, 2, 4-Assist. Prof., Dept., of Geology, Faculty of sciences, Lorestan University, Khorramabad
3- M. Sc., student. Dept. of Geology, Faculty of Sciences, Lorestan University, Khorramabad

* jamshidi.am@lu.ac.ir

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Abstract

In the present study, the concentration and spatial distribution of contaminants caused by heavy elements in the northern soils of Fereydunshahr city (Isfahan province) has been investigated. For this, 220 soil samples were collected and after analysis by induced plasma coupled mass spectrometry (ICP-MS) technology, evaluation of heavy metal pollution heavy metal pollution using environmental indicators including Geoaccumulation Index (I_{geo}), Pollution Load Index (PLI), Enrichment Factor (E_f) and Contamination Factor (C_f) were examined. The results of the accumulation index indicate that the region soil is contaminated with Cr and Sc elements. Pollution load index shows high values in all elements except Mn, however, the enrichment coefficient of Cr, Mn, Sr, Pb elements indicates that the region soil is contaminated. The contamination factor reveals a very high contamination for the Cr element. The minimum and maximum concentrations of heavy metals correspond to the Mn and Ba elements, respectively. Scattering all elements, except B and Co elements, have an asymmetric distribution.

Keywords: Soil, Pollutants, Geoaccumulation index, Enrichment factor, Pollution load index