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POTENTIAL TOXIC ELEMENTS IN SURFACE SOIL UNDER DISTINCT LAND USES FROM BANDAR ABBAS COUNTY, SOUTH OF IRAN: CONTAMINATION LEVEL, SOURCE APPORTIONMENT AND ECOLOGICAL RISK ASSESSMENT

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Potentially toxic elements (PTEs) contamination in soil is a potential environmental and human health threat. The distribution, contamination level, sources and ecological risk of potentially toxic elements (PTEs) in industrial and agricultural soils in Bandar Abbas County (BAC) were investigated. A total of 86 topsoil samples were collected and analysed for some potential toxic elements. Principle component analysis (PCA), geographical information system (GIS) and enrichment factor (EF) were used for the source identification and prepare distribution maps of PTEs. Also, the assessment of contamination level was determined by contamination factor (CF) and potential ecological risk index (RI). The concentrations of PTEs in soil were higher than their natural background values. Three main sources of different PTEs in soils of study area were identified based on enrichment factor and Principle component analysis results. The EF in industrial and agricultural soils increased according to the following order Cu>Cd>Pb>Zn>Mo>Mn>As>Ni>Cr>V>Co and Ni>Cr>Cd> Cu>Pb>Mo>As>Zn>Mn>V>Co, respectively. The mean modified degree of contamination values in the agricultural and industrial soils indicate a very low and moderate contamination, respectively. Contamination factors in agreement with potential ecological risk index reveal the highest values for Cu, Zn, As, Pb and Cd in the industrial soils. The results could be used for the long-term monitoring of PTEs in the study area.

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