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## Determination of heavy metals in surface soils around the brick kilns in an arid region, Iran

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### Abstract

There is an increasing demand for the development of brick kilns area in Iran, which emit a considerable amount of pollutants to environment. The present study aimed to investigate the extent of soil contamination by heavy metals around the brick kiln area in Aran-o-Bidgol city. The correlation coefficients, analysis of variance, principal component analysis, cluster analysis, soil contamination indices and interpolation technique were utilized to investigate the soil contamination and pinpoint the possible sources of contamination. The Results showed the average concentration of all heavy metals were greater than background values and soils were contaminated by heavy metals to some extent. Results also indicated that copper, nickel and zinc had simultaneously emanated from anthropogenic including agricultural activities and urban emissions while the sources of cadmium and lead could mostly be attributed to different anthropogenic activities including brick kilns and related transportation. The distribution maps revealed that the brick kilns emissions had only affected the concentrations of cadmium and lead to some degree.

**Keywords:** Brick kilns, toxic elements, multivariate analysis, topsoil, Iran

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