

Spatial distribution and source identification of heavy metals in surface soils in the city of Elbasan

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Abstract

In this study we investigated the pollution degree and spatial distribution of heavy metals and determined their sources in topsoil in Elbasan a typical industrial city. We collected 15 soil surface samples in different areas of Elbasan city. The soil samples were analyzed for Zn, Cd, Cu, Pb, As, Mo, Mn, Fe, Ni, Co and Cr. Soil samples were taken around the area of the metallurgical factory and in a radius of 20 km far from it. It was taken soil samples in two diagonal directions every 1 km (0-30 cm and 30-60 cm).

The average contents of all heavy metals were lower than the Soil Quality Standard for industrial area which are describe in Legislative Decree 152/2006 "Limit values of soil and subsoil concentrated" and higher for a lot of those heavy metals than the standard for public and private areas. The reading for the elements and heavy metals and metals was done with the IPC-MS device. Based on a data analysis and outcomes, the concentration of Cr, Mn, Co, Ni, Zn, Pb, Fe, etc., are related to industrial pollution and near the industrial area, while in relation to the content of Ni, Cu, Zn, and Pb there is no regularity with increasing distance from the object. The results showed that the source contributions in soil pollution are atmospheric deposition, industrial activities, agricultural activities, erosion, car cemeteries, heavy traffic and uncontrolled garbage collection.

Keywords: Heavy metals, soil, soil distribution, source apportionment, Elbasan.

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