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Application of pollution indexes, cluster analysis and isocontent chart to the study of soil pollution

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ABSTRACT.

Statistical methods were applied to the assessment of the multi-elements pollution degree of the soil with heavy metals and arsenic (microelements) in Baia Mare area, NW Romania. The content of several microelements were analyzed in soil samples from four zones in the studied area. Pollution indices were used to define the pollution degree compared to the Romanian regulation. Cluster analysis was used to classify the analyzed microelements (Cu, Zn, Pb, Cd, As, Co, Ni, Cr, Sn, Sb). Based on iso-contents maps for Pb and As, their contents in soil in whole Baia Mare area are assessed. The sampling point coordinates (latitude and longitude) were registered with a GPS (Global Positioning System) instrument. Considering the coordinates of each sampling point and the corresponding concentration of the considered microelement in the sampling point, a matrix XYZ was obtained where X was the longitude; Y was the latitude and Z the concentration of the microelements. A continuous surface was generated beginning with each sampling point. The spatial distribution charts drawn for the most hazardous microelements Pb and As indicated some area high polluted around the pollution source (a lead smelter).

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