

DISPERSION AND CONTENTS OF INDUSTRIAL DUST AND SOIL SAMPLES FROM BAI A MARE AREA, NORTH - WEST ROMANIA

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Our study shows the dispersion of several heavy metals (Cu, Pb, Zn, Cd) in industrial dust and soil samples collected from the Baia Mare area, northwest Romania. The town of Baia Mare is the site of two major plants for processing Pb and Cu ore supplied by mining companies from the nearby mountains. Consequently, the atmosphere is polluted with airborne particles, which contain mainly Pb, Cu and Zn and traces of other heavy metals, such as Cd. Samples were collected in several points appropriately established based on the location of industrial sites and meteorological factors.

In the particular case of the Baia Mare area, the polluting elements occurred in the form of oxides, carbonates, silicates, sulfides and sulfates. To accomplish specification, samples were processed by selective and successive dissolution by using specific reagents. The collected fractions were then analyzed by optical emission spectrometry (CORDOS et al., 1999; FRENTIU et al., 2000). Results indicate that sedimented dust shows a high metal content in the form of sulfates while sulfides predominate in soil samples. For a total content of 0.879% Pb, 0.892% Zn and 0.136% Cu, the proportion of sulfides in soil samples is up to 88%, 68% and 46%, respectively. The corresponding proportions of sulfates is 10%, 2% and 5%. Similarly, for a total content of 2.282% Pb, 1.411% Zn and 1.001% Cu in sedimented dust, the proportion of sulfides is 52%, 40% and 42%, respectively, while the proportion of sulfates is 31%, 34% and 21%. Along with these metals, Cd was determined in dust samples after acid digestion. The total content of Cd traces covers the range 0.0001–0.0004%.

Relationship between sedimented particles and soil was established with regard to the total level of metals and their chemical forms in accordance with depth and distance from the polluting sources.

References

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