

ASSESSMENT OF POLLUTING ELEMENTS IN SOIL SAMPLES FROM THE AREA OF ZLATNA TOWN, ROMANIA

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Metal contamination from the mineral processing plant of the town of Zlatna (Romania) lead to environmental degradation in a wide area around the smelter emission. The plant processes a variety of complex, mainly sulphide ores for Cu, with Au, Ag, Pb, Zn, Bi, Cd, and Mo as major by-products.

The degree of soil contamination depends on the type of the present metals, their concentration and their bioavailability. The bioavailability of different metals is dependent on the type of organisms that are present as well as on a wide range of environmental variables.

Different metals polluted sites of soil (7 points) were sampled in order to perform chemical analyses. Cu, Pb, Zn, Cd, Fe and Ni were identified and analysed with ICP using a widely accepted extractant DTPA. The location of the studied soil sites is to the west and east (200–300 m) from the Zlatna plant's chimneys and 25 km down in the Ampoi Valley (Fig. 1). The concentration of polluting elements is controlled by the pH of the soil, which has always acidic values (pH = 3.20 – 4.42).

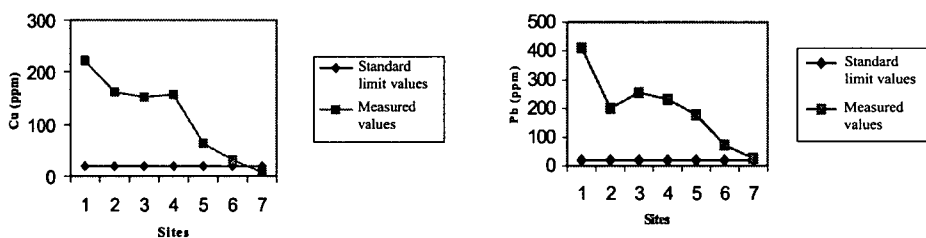


Fig. 1. Cu and Pb distribution profiles in the sites along Ampoi Valley (Site 1 represents the emission point near the Zlatna plant)

- The study points out the following behavior of the polluting elements:
- Cu and Pb concentrations are above the standard limit values in all sampled sites.
 - Cd concentration has a variable distribution. Only some sites have Cd concentrations above the standard limit values.
 - Zn and Ni concentrations are usually below the standard limit values.
- The most heavily polluting element is Pb, even 25 km away from Zlatna.