

Differentiation of zinc and copper concentrations in selected agricultural lands of Lower Silesia

Zróźnicowanie zawartości cynku i miedzi w wybranych gruntach rolnych
Dolnego Śląska

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The study on the content of heavy metals in soils included 1369 samples which were taken on agricultural lands in the area of 11 districts of Lower Silesia. The location of sampling sites was done by GPS technology using a coordinate system "Kronstadt 1992". Experimental sites were chosen by their representativeness with regard to agricultural lands in the area, due to the granulometric composition, the typology of the soils and the kind of agricultural use. Indications of Zn and Cu total forms was performed according to ISO 11047: 2001 standards. Exceeding the standard of Zn content in the sozological area B was found in only 6 samples of all the tested samples. These samples were taken at points located in the area of Jawor district, Lwówek Śląski district, Jelenia Góra district (within Miedzianka, where for centuries was conducted ore mining non-ferrous metals) and Kamienna Góra district. Points in which were found exceeding the standard account for only 0.4% of the total number of research points. It should be noted that in the researches of the other authors obtained exactly the same participation (0.4%) of points with exceeding the standard. Concentrations of Zn examined in those points are extreme, and therefore are significantly different from the other values observed in the district. In the test material exceeding the standard of the Cu content in the sozological area B (150 mg·kg⁻¹) was found in only 8 samples located in the area of the 11 analyzed districts. These samples were taken at points located in Bolesławiec district, Jawor district and Jelenia Góra district. In Bolesławiec district exceeding the standard was found in samples from the community Warta Bolesławiecka in the region of the landfills flotation of copper ore "Old Copper Basin." In Jawor district exceeding the standard occurred in a community Bolków within a village Lipa, which in the first period of its history (XIV c.) was associated with the mining of copper ores. In Jelenia Góra district 3 points were located in a community Janowice Wielkie within Miedzianka, where since the XV c. was conducted ore mining non-ferrous metals. Results exceeding the standard of the Cu content in soils of group B accounted for only 0.58% of the total analyzed number. In the all cases, they characterized only small, isolated areas contaminated by the result of the industrial activities in the past.