



## Content of some metals in soils at different distances from the Karabash Copper Smelter

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Degradation of natural landscapes caused polluting; in some regions of Russia is a serious environmental problem. Among the companies that do the most damage to the environment include smelting plants, among which the Pechenga, Severonickel, and located in the South Urals Plant Karabashmed. The scale and nature of pollution Copper Mill related to the type of production (technology of copper smelting, the composition and amount of emissions), atmospheric conditions scattering airborne industrial contaminants, landscape-geochemical conditions of transformation and migration of contaminants.

Soil sampling was carried out on the cross-section, which takes place approximately 2 km south of the tube, the length of the cross-section 6 km, it is directed from east to west. The points on the cross-section located at a distance of 1-1.5 km to 5 km from the plant. The analysis was performed for the surface layer of soil (0-5 cm), separately analyzed litter.

During the analysis were identified total concentrations of ions, Pb, Cu, Zn, Cd, Ni, Co in the humus extracts and in the soil by spectral methods (detection limits of 0.03-0.2 mg / kg). Soil sample preparation was carried out according to the procedure PND F 16.1:2.2:2.3:3.36-02, separation of humic fractions of soils was carried out by leaching.

According to the results of chemical analysis by atomic absorption spectroscopy, the metal content in soils and humic substances Karabash exceeds the maximum permissible concentration (MPC) in the 100 and 1000 mg/kg. Concentration of nickel and cobalt are in the range of 100 to 500 mg/kg in soil and 50-100 mg/kg in humic extracts depending on the distance from the plant. The content of cadmium ions varies from 15 to 7.5 mg/kg in soil and from 7 to 3 mg/kg of humic extracts. The content of copper ions in the range of 100 mg/kg in soil and humus extracts of all the samples, regardless of the distance from the source of contamination. The content of lead ions and zinc ions varies considerably from 10 to 1000 mg/kg - showed a reduction in concentrations of more than 60%, and also depends on the distance from the plant, which may be due to changes in the structural features of humic substances and the differences in the complexation of metals with a high affinity for humic substances.

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3. PND F 16.1:2.2:2.3:3.36-02. Method for measuring the total contents of copper, cadmium, zinc, lead, nickel, manganese, cobalt and chromium and in the soil, sediments and sewage sludge and waste by flame atomic absorption spectrometry.