



Comparative Evaluation of Ecotoxicity of Different Chemical Compounds of Bismuth by Dehydrogenases Activity of Soils

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Abstract: The effect of bismuth oxide, carbonate and nitrate 1.5, 3, 15, 30, 150 and 300 mg kg⁻¹ on the activity of soil dehydrogenases was studied. The results of a comparative assessment of the ecotoxicity of different chemical forms of bismuth by the activity of dehydrogenases under contamination with chernozem ordinary (Haplic Chernozems Calcic), brown forest soil (Haplic Cambisols Eutric) and sierosands (Haplic Arenosols Eutric) are presented. It has been established that, regardless of the chemical form of the compound, contamination of soils with bismuth leads to a decrease in the activity of soil dehydrogenases. Based on the form of the chemical compound of bismuth, the averaged series of toxicity of bismuth for soils according to the activity of dehydrogenases is: bismuth nitrate (67) > bismuth carbonate (77) ≥ bismuth oxide (78). When comparing the resistance of soils by the activity of dehydrogenases to bismuth pollution, the following series was obtained: ordinary chernozem (83) > sierosands (73) > brown forest soil (66). The established sequence is determined by the genetic properties of the studied soils: particle size composition, the reaction of the soil environment, the content of organic matter, and the biological activity of the soils.

Keywords: Bismuth, Enzymatic activity, Pollution, Ordinary chernozem, Sierosands, Brown forest soil
