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# Content of exchangeable forms and mobility of Pb, Cu and Zn in reclaimed soils (Technosols) of Bulgaria

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Reclaimed soils built in three main mining areas of Bulgaria - Maritsa East, Chukurovo and Asarel were studied. These soils are characterized by low total content of Pb and Zn and high total copper content in Asarel's soils. The copper content in these soils exceed more than three times the limit concentrations regulated by the Bulgarian legislation and significantly increased joint toxicity of studied metals (pollution index ranging from 1.3 to 1.9). The maximum content of exchangeable forms of lead determined in 1 M $NH4NO_3$ and 1 M NH4Ac is 30.5 $\mu$g/g or 19% of the total lead content - 47.7 $\mu$g/g or 9.4% of the total copper content and zinc - 73.5 or 13.3%. Lead is nonspecifically adsorbed by soluble (extractable) fraction of organic matter (humic and fulvic acids, R2 = 0.995), silt fractions (particle size 0,01 - 0,005, R2 = 0.999 or 0.005 - 0.001 mm) and their complexes with organic matter - evidenced by the high correlations between the content of soluble (extractable) fraction of organic matter and content of silt fractions (R2 = 0.792). Copper in natural soils is dominantly nonspecifically adsorbed by organic matter and clay minerals, which is not typical for all studied reclaimed soils. The strong affinity of copper to the organic matter was observed only in cases when humic acids are highly condensed aromatic compounds, associated with calcium. Exchangeable zinc also shows a strong correlation with organic matter and a minor with different soil mechanical fractions.