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STUDY OF HEAVY METAL DYNAMICS IN SOIL

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Abstract

The paper covers the results of a study, carried out during 2005 and 2018, regarding the impact of sludge dump of a wastewater treatment plant from Iasi city, Romania, on the soil characteristics. Experimental research was conducted to highlight the evolution of the heavy metal content of both the material in the storage site and the soil in its proximity. The following heavy metal concentrations were analyzed with atomic adsorption spectrometry method: Zn, Ni, Cr, Pb, Co, Cu and Cd. Research has also addressed other physical (particle size composition and soil moisture) and chemical (pH, sludge and soil reaction, organic carbon content, nitric nitrogen concentration, total nitrogen, mobile phosphorus and potassium content) properties that influence the mobility and retention of chemical compounds in the soil.

The results of this study showed that the material consisting of sludge, on the depth of 0-20 cm, shows well-developed structural aggregates, with a structure between granules and subangular polyhedra, with a medium level of development. The analyzed material has good hydrophysical properties that give it mechanical and hydronic stability. Following the analyzes carried out during 2005 to 2018, we can say that there has been an increase in the humidity and the zinc content in the soil due to the sludge dump from the wastewater treatment plant in Iasi.

Research results can be used as a scientific basis for developing an appropriate soil management system in the study area.

Key words: concentration, effects, evolution, heavy metals, soil

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