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## THE IMPACT OF SLUDGE STORAGE ON THE SOIL. CASE STUDY: TOMESTI DEPOSIT IN IASI COUNTY, ROMANIA

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### Abstract

The study was conducted in the sludge storage area in Tomesti, Iasi County. The sludge from the wastewater treatment process was stored in the Tomesti lagoon, which increased the pollutant concentrations in the soil. The goal of the present paper was to study the impact of sludge storage on the Tomesti soil by analyzing the contents of salts, heavy metals and microbiological loads (total coliform bacteria, enterococci, *Escherichia coli*, *Clostridium perfringens*, *Salmonella spp*). The total concentration of heavy metals in soil is a relevant indicator on the risk to human health and environment. Growing plants in polluted areas can be a remedial solution and can serve as an alternative tool in sustainable agriculture. Plants can influence the accumulation of heavy metals in soils, either by decreasing or increasing their accumulation. Following the carried analyses, we can say that some physical and chemical properties of the sludge were propagated to the soil on which the sludge is stored. Thus, the moisture of the soil located below the sludge layer increased by up to 20%, compared to the humidity of the neighboring soil, that is not influenced by the presence of sludge. It was also an adsorption medium for numerous cations and anions. From the group of tested heavy metals (Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Zn), the only element present at polluting level is zinc. In the first soil horizon on which the sludge is stored, the zinc contents exceed 10.8 times the maximum permissible limit value, and for the neighboring soil this is 1.6 times. From a bacteriological point of view, the soil beneath the sludge lagoon is loaded with *Salmonella* genus bacterial colonies.

*Keywords:* bacteria; heavy metals, nutrients, *Salmonella spp*

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