

The Influence of Characteristics of Waste Water on Properties of Sewage Sludge

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Abstract : In the field of environmental protection in the EU and also in Romania, strict and clear rules are imposed that are respected. Among those, mandatory municipal wastewater treatment is included. Our study involved Municipal Wastewater Treatment Plant (MWWTP) of Galati. MWWTP began its activity by the end of 2011 and technology is one of the most modern used in the EU. Moreover, to our knowledge, it is the first technology of this kind used in the region. Until commissioning, municipal wastewater was discharged directly into the Danube without any treatment. Besides the benefits of depollution, a new problem has arisen: the accumulation of increasingly large sewage sludge. Therefore, it is extremely important to find economically feasible and environmentally friendly solutions. One of the most feasible methods of disposing of sewage sludge is their use on agricultural land. Sewage sludge can be used in agriculture if monitored in terms of physicochemical properties (pH, nutrients, heavy metals, etc.), in order not to contribute to pollution in soils and not to affect chemical and biological balances, which are relatively fragile. In this paper, 16 physico-chemical parameters were monitored. Experimental testings were realised on waste water samples, sewage sludge results and treated water samples. Testing was conducted with electrochemical methods (pH, conductivity, TDS); parameters N-total (mg/L), P-total (mg/L), N-NH₄ (mg/L), N-NO₂ (mg/L), N-NO₃ (mg/L), Fe-total (mg/L), Cr-total (mg/L), Cu (mg/L), Zn (mg/L), Cd (mg/L), Pb (mg/L), Ni (mg/L) were determined by spectrophotometric methods using a spectrophotometer NOVA 60 and specific kits. Analyzing the results, we concluded that Sewage sludges, although containing heavy metals, are in small quantities and will not affect the land on which they will be deposited. Also, the amount of nutrients contained are appreciable. These features indicate that the sludge can be safely used in agriculture, with the advantage that they represent a cheap fertilizer. Acknowledgement: This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation - UEFISCDI, PNCDI III project, 79BG/2017, Efficiency of the technological process for obtaining of sewage sludge usable in agriculture, Efficient.

Keywords : municipal wastewater, physico-chemical properties, sewage sludge, technology

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