Characteristics of selected fractions of heavy metals in biologically and thermally transformed sewage sludge

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ABSTRACT

Transformation of sewage sludge is basically a multistage and technologically complex process. Obtaining effective and cost-effective results of sewage sludge processing for environmental applications is an important issue in this waste management. Additional enrichment of sewage sludge during its process of treatment into biowaste, such as bark, straw, or sawdust, gives the sludge appropriate physical properties which facilitate their later transformation or immediate application. On the basis of conducted investigations, it was stated that total heavy metal content in the tested mixtures of sewage sludge with straw, sawdust, and bark transformed thermally and biologically does not exclude their use for agricultural or reclamation purposes, whereas a supplement of the above-mentioned components causes an effect of diluting the content of all determined heavy metals. On the other hand, the process of thermal transformation of the mixtures contributed to increasing Cd, Pb, Cu, and Zn content. No such marked content of total forms of investigated elements was registered in the mixtures transformed biologically. Cadmium was an exception. Sequential analysis of the studied heavy metals confirmed changes in mobile forms that share in the content of analyzed elements.

Keywords: Sewage sludge; Mobile forms; Transformation; Heavy metal

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