

## MICROBIOLOGICAL CHARACTERISTIC OF COMPOSTS PREPARED ON THE BASIS OF SEWAGE SLUDGE SUPPLEMENTED WITH REFINED GLYCEROL

AGNIESZKA WOLNA-MARUWKA, KRZYSZTOF PILARSKI

**Abstract:** The paper presents microbiological characteristic of sewage sludge composted in controlled conditions together with biowastes (wheat, maize and rapeseed straw, sawdust and refined glycerol). An experiment was carried out in which the material was mixed at appropriate weight proportions and then placed in bioreactor chambers of constant air flow (4 l·min<sup>-1</sup>). The performed composting process aimed at determining the developmental dynamics of heterotrophic bacteria, molds, actinomycetes as well as bacteria from *Salmonella* genus and *Enterobacteriaceae* family. Microbiological analyses were performed on selective substrates using Koch's plate method. Moreover, using the floatation method, the presence of live eggs of ATT (*Ascaris* spp., *Trichuris* spp., *Toxocara* spp.) intestinal parasites was assessed and levels of dehydrogenase activity were determined using 1% triphenylotetrazole chloride as a substrate. It was concluded, on the basis of the obtained research results, that the composting process reduced bacterial counts of heterotrophic bacteria, molds and the activity of dehydrogenases activity in all experimental treatments. On the other hand, no reduction was observed in quantities of actinomycetes in the composted materials whose changes in numbers were found to correlate positively most strongly with levels of dehydrogenases activity. In addition, it was found that changes in numbers of the analysed groups of microorganisms depended, primarily, on the pH value and concentrations of ammonia released from the composted materials. Furthermore, the obtained research results also revealed that the sewage sludge used in the experiment did not contain *Salmonella* spp. bacteria and live eggs of ATT intestinal parasites, and that the composting process reduced completely numbers of bacteria from the *Enterobacteriaceae* family in all compost treatments. The obtained composts fulfilled all sanitary standards complying with the requirements issued by the Minister of Agriculture and Rural Development (2008) as well as with the EU regulation (EC) No. 185/2007 from February 2007 changing EEC regulations No. 809/2003 and No. 810/2003 connected with the extension of the period of transitional requirements for composting and biogas plants as provided by the EU regulation No. 1774/2002 of the European Parliament and Council.