

SUMMARY

The change in the way of sewage sludge management towards agricultural use observed in recent years is the result of the implementation of the circular economy strategy in the European Union, assuming the transition of the economy from a linear to a circular model, in which resources are used in a more sustainable way and waste becomes a raw material. Wastewater treatment plants will become an important link in the circular economy. Rational processing of the resulting sewage sludge in the wastewater treatment process, it will create the possibility of using sludge as a valuable raw material and will improve the energy balance of the entire treatment plant. One of the methods of neutralizing sewage sludge is composting, consisting in biological processing under aerobic conditions.

The aim of this dissertation was to determine the relationship between the amount of supplement added and the intensity of the composting process, expressed as a change in the values of certain physicochemical parameters. The main component modifying the composition of the mixture of individual components that make up the input for the composting process was barley straw. Straw is one of the basic materials used in the composting process. It both plays a structural role and enables adequate aeration of the interior of the pile and is a source of organic carbon necessary in intensive microbiological processes.

The research was carried out at the Goleniowskie Wodociągi i Kanalizacja company. The subject of the research was a mixture of materials of organic origin with the use of various proportions of components, such as: mechanically dehydrated sewage sludge, barley straw, wood chips and mature compost. The research results obtained during the doctoral dissertation confirmed the research hypothesis, which assumed the possibility of the composting process under conditions of increased nitrogen concentration.

Keywords: composting process, compost, sewage sludge, straw, humic substances