



## Antibiotics and endocrine disruptors in sewage sludge samples in terms of its agriculture use

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Received 29 March 2021; Accepted 1 June 2021

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### ABSTRACT

The formation of sewage sludge in the wastewater treatment process is an inevitable component of this process. To manage this waste in an ecological manner, the qualitative and quantitative composition of the sludge should be considered. Studies of sewage sludge clearly indicate the presence of micropollutants in raw sewage, such as residues of pharmaceuticals. This broad group of compounds differs in terms of physicochemical properties and the ability to adsorb to sludge. Some of them are significantly reduced in the treatment process. There is a large group of hydrophilic compounds that are only slightly reduced and thus leave the treatment plant together with the treated sewage. Substances characterized by high adsorption to sewage sludge, such as endocrine compounds, may affect the possibility of its safe use. This paper focuses on the review of the methods of determination of antibiotics and endocrine disruptors in sewage sludge. Issues related to the selection of the sample type, the method of its preparation and the selection of the appropriate chromatographic analysis were discussed. The obtained data will make it possible to assess the safe use of sewage sludge in agriculture, which is important for the implementation of the circular economy in sewage sludge management.

**Keywords:** Sewage sludge; Micropollutants; Pharmaceuticals; Sewage sludge management

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Presented at the 1st International Conference Strategies toward Green Deal Implementation – Water and Raw Materials (ICGreenDeal2020), 14–16 December 2020, held online by the Mineral and Energy Economy Research Institute, Polish Academy of Sciences

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