

**The Leachate Influence on Nutrients and Organics Removal Efficiency, Structure and Composition of the Microfauna in Activated Sludge Treating Municipal Wastewater** – Dorota Kulikowska, Ewa Klimiuk, Adam Drzewicki

Summary

In present study the effect of leachate on wastewater treatment efficiency and the microfauna of activated sludge were investigated. Experiments were carried out in four SBR reactors. The reactors were supplied with wastewater (control sample) and wastewater with 10, 20 and 40% of the landfill leachate portion. The leachate composition was the following: BOD<sub>5</sub> – 248 mg O<sub>2</sub>/dm<sup>3</sup>, COD – 685 mg O<sub>2</sub>/dm<sup>3</sup>, total nitrogen – 308 mg N/dm<sup>3</sup> and total phosphorus – 1.4 mg P/dm<sup>3</sup>. The addition of leachate slightly influenced BOD<sub>5</sub> and COD values in the influent and caused significant increase in the ammonium concentration. Correspondingly with the increase in leachate portion the increase in organic substances (COD) and the nitrate concentrations in the effluent were observed. The ammonium concentration did not exceed 0.1 mg N-NH<sub>4</sub>/dm<sup>3</sup>. The increase of leachate percentage in wastewater caused decrease of the taxons number, the microfauna abundance and the domination of the microfauna keygroups in activated sludge. Correspondingly with the increase of the leachate in wastewater, ciliates such as *Opercularia* spp. were dominating in activated sludge, however the number of attached ciliates, crawling ciliates and shelled amoebae dropped. Correlation between the number of shelled amoebae, crawling ciliates, attached ciliates, *Opercularia* spp. and rotifers in activated sludge and COD concentration in the effluent was observed. It indicates bioindical value of these taxons.