

Szylak-Szydłowski, M. Assessing Toxicity Variations in Landfill Leachates during Biological Treatment. *Ochrona Środowiska* 2011, Vol. 33, No. 2, pp. 65–68.

Abstract: Selected ecotoxicological tests were analyzed for potential use in assessing toxicity variations in landfill leachates during biological treatment in a model sequencing batch reactor (SBR). For this purpose, raw leachates, municipal sewage combined with leachates, and the effluent from the biological treatment process were made subject to acute toxicity analysis (TU_a). Toxicological analyses were performed with reference to four representatives of water organisms: the insect maggot *Chironomus* sp., the crustacean *Daphnia magna*, the fish *Lebistes reticulatus*, and the alga *Scenedesmus quadricauda*. The results obtained have revealed that over the entire range of activated sludge loading with organic pollutants (COD) the acute toxicity of the treated leachate decreased as compared with the acute toxicity of the influent to the SBR. This finding excludes the possibility that more toxic intermediates may form during leachate treatment by the activated sludge process. Among the water organisms tested, the insect maggot *Chironomus* sp. (acute toxicity, 8.0 to 16.7) was most vulnerable to the pollutants in the sewage+leachate stream entering the SBR, and the fish *Lebistes reticulatus* (acute toxicity, 85.8) to the pollutants in raw leachates. The results of the study have substantiated the applicability of the ecotoxicological tests chosen to the assessment of toxicity variations in landfill leachates during biological treatment.

Keywords: Landfill leachates, acute toxicity, sequencing batch reactor (SBR), activated sludge, *Chironomus* sp., *Daphnia magna*, *Lebistes reticulatus*, *Scenedesmus quadricauda*.