Safety analysis of the wastewater treatment process in the field of organic pollutants including PAHs

Barbara Tchórzewska-Cieślak a, Maria Włodarczyk-Makuła b, *, Janusz Rak a

a Department of Water Supply and Sewage Systems, Rzeszow University of Technology, 6 Powstancow Warszawy Str., Rzeszow 35-959, Poland, email: cbarbara@prz.edu.pl (B. Tchórzewska-Cieślak), januszrak@prz.edu.pl (J. Rak)

b Department of Chemistry, Water and Wastewater Technology, Czestochowa University of Technology, 69 Dabrowskiego Str., Czestochowa 42-200, Poland, email: mwm@is.pcz.czest.pl

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ABSTRACT

The main goal of this work is to show the approach to determining safety of the wastewater treatment process. Household or municipal treated wastewaters discharged into waters should not exceed the maximum acceptable values of pollution indicators or should be treated at least to such degree that they meet the minimum percentage of pollution reduction specified in the current standards. Safety of the wastewater treatment process (SWsTP) is defined as a condition in which the process meets all the specified standards and is characterized by resistance, the ability to avoid hazards and exposures. In this paper, however, the proposal of a method for analysis and assessment of SWsTP, based on a risk analysis of the technological unreliability of the sewage treatment plant, in relation to the biodegradable organic pollutants expressed by the BOD 5 indicator, with particular emphasis on toxic organic micro-pollutants which are polycyclic aromatic hydrocarbons (PAHs), is presented. The presented method allows to take into account different levels of exceeding the maximum permissible load and scales resulting from the different probability of the occurrence of individual states. The concept was studied on the basis of real data from the wastewater treatment plant.

Keywords: Wastewater treatment process; Safety; Risk; BOD 5; PAHs-EPA

*Corresponding author.