



Changes in quantity of non-biodegradable organic micropollutants in municipal wastewater based on COD fractionation

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ABSTRACT

The article presents the possibility of using the chemical oxygen demand (COD) fractionation to the monitoring of non-biodegradable organic pollutants in municipal wastewater. Understanding the origin of pollutants contained in wastewater is important in the aspect of their treatment. The characteristics of municipal wastewater are mainly affected by the water supply and sewage infrastructure in a given area, as well as factors resulting from the way of life of residents. The presence of chemical compounds practically in all spheres of human life has meant that their quantity in municipal wastewater increased. The latest publications and reports on the qualitative characteristics of municipal wastewater indicate an increase in the scope of micro-contaminants identified in them, for example, priority substances and so-called emerging contaminants. To confirm the thesis that the quality of wastewater changes, as a consequence of the lifestyle of residents, 2 y research was carried out in a mechanical-biological wastewater treatment plant of 26,000 PE. Analysis of test results showed a reduction of biodegradable organic pollutants in raw wastewater from $82.8\% \pm 3.2\%$ to $73.9\% \pm 4.9\%$ and the reduction of the effectiveness of removing organic pollutants from wastewater, expressed in the COD index from 93% to 91%, while the efficiency determined for biochemical oxygen demand (BOD_5) remained unchanged. Analysis of COD fractions in treated wastewater showed a reduction in the share of non-biodegradable fractions. Differences in efficiency of removal of organic pollutants from wastewater expressed as BOD_5 and COD may indicate an increase in the amount of non-biodegradable micro-pollutants affecting the change in the quality characteristics of wastewater supplied to the wastewater treatment plant.

Keywords: Wastewater; Biodegradation; COD; BOD_5 ; COD fractions

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