Abstract

The reliability of removal of selected contaminants in three technological solutions of the household sewage treatment plants was analysed in this paper. The reliability of the sewage treatment plant with activated sludge, sprinkled biological deposit and hybrid reactor (activated sludge and immersed trickling filter) was analyzed. The analysis was performed using the Weibull method for basic indicators of impurities, BOD$_5$, COD and total suspended solids. The technological reliability of the active sludge treatment plant was 70% for BOD$_5$, 87% for COD and 66% for total suspended solids. In the sewage treatment plant with a biological deposit, the reliability values determined were: 30% (BOD$_5$), 60% (COD) and 67% (total suspended solids). In a treatment plant with a hybrid reactor, 30% of the BOD$_5$ and COD limit values were exceeded, while 30% of the total suspended solids were exceeded. The reliability levels are significantly lower than the acceptable levels proposed in the literature, which means that the wastewater discharged from the analysed wastewater treatment plants often exceeds the limit values of indicators specified in currently valid in Poland Regulation of the Minister of Environment for object to 2000 population equivalent.

Key words: BOD$_5$, COD, household wastewater treatment plants, technological reliability, total suspended solids