

Presence of Pharmaceuticals in Wastewater from Waste Water Treatment Plant “Zabrze – Śródmieście in Poland – Ewa Felis, Korneliusz Miksch, Joanna Surmacz-Górska, Thomas Ternes

Summary

This article describes monitoring results of raw wastewater from one Polish municipal wastewater treatment plant (WWTP). The residues of 30 pharmaceuticals belonging to particular drug classes such as contrast media, antibiotics, lipid regulators, antiphlogistics, psychiatric and antiepileptic agents, drug's metabolites and 2 musk compounds have been investigated. The investigation showed occurrence of 20 out of 32 selected compounds above their limit of detection. Iopromide, a compound belonging to contrast media, was noticed at the highest concentration. The concentration of this compound in WWTP-influent was equalled to $27.0 \mu\text{g}/\text{dm}^3$. Other drugs, such as, like iopamidol, iomeprol, diatrizoat, iohexol, sulfomethoxazole, carbamazepine, ibuprofen, ibuprofen-OH, naproxen, diclofenac, bezafibrate, ketoprofen, and musk compound – galaxolide were detected at maximum concentration between $1.0 \mu\text{g}/\text{dm}^3$ (bezafibrate) and $13.0 \mu\text{g}/\text{dm}^3$ (iomeprol). The acidic compounds such as gemfibrozil and indomethacin were determined above their limit of detection, with concentration up to $0.22 \mu\text{g}/\text{dm}^3$ and $0.42 \mu\text{g}/\text{dm}^3$, respectively. Based on the literature data, the above-mentioned drugs are not completely removed from sewage during treatment processes and with effluent from WWTP they are introduced to receiving waters. Due to their chemical properties, residues of pharmaceuticals may persist in the environment and the present knowledge about their ecotoxicological effects is insufficient.