

**Wegrzyn, A., Machura, M., Zabczynski, S. Possibilities for Removal of Contrast Agents from Wastewater. *Ochrona Srodowiska* 2015, Vol. 37, No. 1, pp. 55–63.**

**Abstract:** Scientific studies indicate presence of contrast agents, used for X-ray imaging of soft tissues, in wastewater. Unmetabolized drugs as well as their metabolites enter municipal sewage system and then are discharged into the wastewater treatment plant. Contrast agents are not fully mineralized in conventional treatment processes and enter surface waters with treated wastewater. It was demonstrated that the highest efficacy of contrast media removal (above 80%) was obtained in advanced oxidation processes (AOPs:  $O_3/H_2O_2$ , Fenton's reaction,  $TiO_2/H_2O_2$ ). The efficacy of contrast media removal using the activated sludge process is lower than in AOPs and ranges from 40 to 80%. As none of the treatment techniques currently used is sufficient to eliminate all the pharmaceutical contaminants, new solutions are tested (biologically produced nanoparticles of manganese oxide, BioMnOx or palladium, Bio-Pd) and a combined approach of physicochemical and biological methods for the effective removal of pharmaceuticals from wastewater is taken into consideration.

**Keywords:** Pharmaceuticals, sewage treatment, biodegradation, photolysis, AOPs, Fenton's reaction.