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Review

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Fate of pharmaceuticals during membrane bioreactor treatment: Status and perspectives

Yanling Gu^{a,b}, Jinhui Huang^{a,b}, *, Guangming Zeng^{a,b}, Lixiu Shi^{a,b}, Yahui Shi^{a,b}, Kaixin Yi^{a,b}

^a College of Environmental Science and Engineering, Hunan University, Changsha, Hunan 410082, China

^b Key Laboratory of Environmental Biology and Pollution Control, Hunan University, Ministry of Education, Changsha, Hunan 410082, China

* Corresponding author. College of Environmental Science and Engineering, Hunan University, Changsha, Hunan 410082, China. Tel. / Fax: + 86 731 88821413.

E-mail addresses: huangjinhui_59@163.com (J. Huang)

Abstract

Pharmaceuticals in surface waters and wastewater treatment plants (WWTPs) as emerging pollutants have become a major concern. In comparison with other wastewater treatments, removal of pharmaceuticals in MBR has received much attention. This review presents the source and occurrence of pharmaceuticals in WWTPs influents. Experimental studies related to the removal of pharmaceuticals during MBR treatment, key affecting factors (including the different stages of MBR process configuration and the process parameters), and the underlying mechanisms proposed to explain the biodegradation and adsorption behaviors, have been comprehensively discussed. Several transformation products of pharmaceuticals are also reviewed in this paper. Furthermore, further research is needed to gain more information about the multiple influence factors of the pharmaceuticals elimination, appropriate methods for promoting pharmaceuticals elimination, more essential removal pathways, effect of pharmaceuticals on membrane fouling, and the detection and analysis of transformation products.

Key words: Pharmaceutical; MBR; Biodegradation; Adsorption; Affecting factors

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