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Study of reverse osmosis treatment for micropollutants rejection in advanced water reuse applications

C. Martínez[a], V. Gómez[b], D. Dubert[b], K. Majamaa[b], E. Pocurull[a,*], F. Borrull[a]

[a]*Department of Analytical Chemistry and Organic Chemistry, Universitat Rovira i Virgili, Marcel·lí Domingo s/n, Sescelades Campus, 43007 Tarragona, Spain, Tel. +34 977558492; Fax: +34 977558446; email: eva.pocurull@urv.cat (E. Pocurull)*
[b]*Dow Water & Process Solutions, Dow Chemical Ibérica S.L, Autovia Tarragona-Salou s/n, 43006 Tarragona, Spain*

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ABSTRACT

Reverse osmosis (RO) membranes have made a breakthrough in waste water reclamation for the rejection of micropollutants in multiple applications such as reuse. Since these compounds are not completely eliminated using conventional treatments. This paper offers an overview of a waste water treatment plant using RO membrane treatment to study the rejection of 75 micropollutants from different families. The 75 selected micropollutants include some emerging and persistent compounds like volatile organic compounds (52), endocrine disrupting compounds (2), odor compounds (8), fragrance allergens (10), and some pesticides (3). Experimental results indicated that secondary effluents from conventional treatments contained most of the micropollutants studied; showing that conventional treatments such as activated sludge are not able to completely eliminate them. The rejection of these organic compounds was studied after the RO system. In addition, the relation between the micropollutant's rejection, the molecular weight, and the octanol-water partition coefficients was also evaluated.

Keywords: Advanced waste water treatment; GC-MS; Organic micropollutants; Reverse osmosis.

*Corresponding author.

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