



Impact of high turbidity on reverse osmosis: evaluation of pretreatment processes

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ABSTRACT

This study evaluates the performance of sand filtration (SF) and ultra-filtration (UF) as pretreatment processes for reverse osmosis (RO) for seawater with turbidities of 4.8, 23.2, and 99.7 NTU. For seawater with a turbidity of 4.8 and 23.2 NTU, the average membrane flux and the water recovery rate in the RO process did not improve significantly by pretreating the seawater using SF or UF. However, when the turbidity of seawater was 99.7 NTU, pretreating the seawater with UF improved the average membrane flux and the water recovery rate in the RO process by 5 LMH and 1.7%, respectively. Pretreatment of seawater with a turbidity of 99.7 NTU with UF reduces the specific energy demand and increases the average membrane flux and water recovery rate.

Keywords: Reverse osmosis; Pretreatment; Ultrafiltration; Sand filtration; Turbidity removal; Desalination

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