Phosphorus recovery from waters using nanofiltration

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Received 21 August 2013; Accepted 13 May 2014

\textbf{ABSTRACT}

Recovery of phosphorus has been gaining importance due to its natural scarcity and expensive price. In this work, nanofiltration (NF) has been tested as a technology to treat surface waters with phosphorus and simultaneously recover that phosphorus. Two membranes of same material, but different molecular size were tested (NF270 and NF90). Results showed that membrane fluxes were more affected by the presence of salts, natural organic matter, and especially microcystins than phosphorus. In addition, phosphorus removals were very high (>90%) and varied with the membrane type, feed conductivity, and dissolved organic carbon (DOC). The increase in feed conductivity and DOC originated higher phosphorus removals. Furthermore, the presence of microcystins did not affect the high-phosphorus removals. Results show that more than 96% of the total phosphorus mass can be recovered using NF membranes. NF is therefore a technology that should be considered for phosphorus recovery from surface waters.

\textit{Keywords:} Phosphorus; Recovery; Removal; Nanofiltration; Surface waters

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