Application of low-pressure reverse osmosis for effective recovery of bisphenol A from aqueous wastes

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ABSTRACT

In this study, bisphenol A (BPA) was removed from aqueous solutions using a low-pressure reverse osmosis system. The influence of various parameters such as feed pressure (136–544 kPa), feed flow rate (0.25–1.172 L/min), feed concentration (30–100 mg/L), and pH (8, 10, and 11) on BPA rejection was investigated. The results showed a maximum rejection of 87.34% for a 50 mg/L feed concentration at 408.1 kPa, pH 8, and 1.172 L/min feed flow rate. The effect of feed pressure on BPA rejection, showed a critical pressure at which the maximum rejection was observed. This critical pressure was measured to be in the range of 408–476 kPa. The most effective parameter on the BPA rejection was feed flow rate which showed a severe concentration polarization at the surface of the membrane. The effect of feed pH revealed a minimum rejection at pH 10.

Keywords: Bisphenol A; Reverse osmosis; Rejection; Membrane

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