عنوان مقاله:
Ion rejection improvement using composite reverse osmosis element

محل انتشار:
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خلاصه مقاله:
A pilot study for wastewater treatment of Exir pharmaceutical Co. in Iran was conducted using a RO system with the capacity of 14.38 m3/d. A Filmtec TW30HP-4641 RO element (Thin-Film Composite Polyamide) was used in this study. The pilot plant consists of two spiral-wound RO elements. The RO train was configured in series. Rejection of nitrite, nitrate, sulfite and phosphate using Filmtec TW30HP-4641 RO element was about 91%, 93%, 95% and 99%, respectively, in this case study. The experiments showed KH2Po4 increased the rejection of nitrite, nitrate and sulfite ions up to 99.9%. The feed electrolyte solution contains potassium and dihydrogen phosphate ions that make a binding with membrane. The strength of the complexation is a function of both of the donor atom and the metal ion. Qualitative predictions about the strength of donor acceptor complexation can be made on the basis of the hard-soft-acid-base concept. The better matched the donor and acceptor, the stronger is the complexation. The binding potassium ion to the electronic lone-pair of membrane holds 4 2PO H ions too. This makes a negative layer on the .surface of membrane. Diffusion of other anions through the membrane will prevent by this layer

کلمات کلیدی:
Reverse osmosis; Nitrate; Nitrite; Sulfite; Phosphate