The removal of aniline from wastewater by electrodialysis in the presence of hydrochloric acid

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ABSTRACT

A novel method has been proposed for the treatment of aniline wastewater using electrodialysis (ED) apparatus to remove the aniline ions formed in the presence of hydrochloric acid (HCl). The optimum operating parameters, including HCl concentration, initial aniline concentration, applied voltage, and flow rate were determined via a series of experiments considering energy consumption and the aniline removal efficiency. Under the selected conditions, about 99% aniline removal was obtained within 120 min, and the aniline concentration can be reduced from 500 to 4 mg/L, which suggest the city standards of pollution discharge (namely, 5 mg/L) can be met. Further, the limiting current density was determined and the total energy consumption was calculated. It was proved that the ED apparatus can be used to remove aniline from wastewater effectively at low cost.

Keywords: Aniline; Wastewater treatment; Electrodialysis; Heterogeneous ion-exchange membrane

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