عنوان مقاله:

Isolation and Removal of Halostonitrile from Water by Hybrid Adsorption and Nano Filtration System

محل انتشار:

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خلاصه مقاله:

In the present study, a hybrid method has been used to completely removal these compounds. This method is a combination of ۳ different separation processes including ultra-filtration, fixed bed adsorption and Nano filtration. The membranes used were made by Sepro USA and were made of Polyacrylonitrile and polyamide with ۰.۰۱۶۲ and ۰.۰۱۶۵ cm thickness and ۰.۰۵ and ۰.۰۰۳ µm pore sizes, Ultra and Nano types were used, respectively. The results showed that none of these processes alone can reduce the concentration to the standard level and eliminate them completely. The results of the hybrid combination of these processes showed that the use of ultra-filtration at the beginning and as a pretreatment increases the flux and thus increases the treatment rate. In general, the use of this combined method increased the speed of the treatment operation, reduced the choking rate and had a higher efficiency of the treatment operation. The results obtained from the study of adsorption models showed that the adsorption of halostonitriles on adsorbent particles is conform with the temkin equation. Optimal adsorption conditions of halostonitriles in continuous adsorption operation were obtained in a tower with a diameter of ۱.۶ cm with an adsorbent height of ۷۵ cm. None of the methods of removal of ultrafiltration, adsorption and Nano filtration alone, even at low feed concentrations, could not approach the standard of the World Health Organization, the standard of the Ministry of Health of Iran and the European standard in the product of permeation.

کلمات کلیدی:

Synthetic aqueous solution, Haloacetonitrile, Membrane processes, Hybrid system, Adsorption