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Abstract: Model water solutions containing eight compounds chosen from the group of phytoestrogens and xenoestrogens were made subject to reverse osmosis and nanofiltration with the aim of examining how the membrane process and the filtration mode influence the removal of the micropollutants. The retention coefficients for the estro-genic micropollutants were related to the filtration mode (dead-end, cross-flow), the operating parameters of filtration (temperature, transmembrane pressure, linear velocity of feed flow), and the composition of the model solution. It has been demonstrated that the dead-end mode produced higher removal efficiencies during reverse osmosis than during nanofiltration. However, conducted in the cross-flow mode, nanofiltration also enabled efficient removal of the micropollutants examined. In the cross-flow mode, the retention of the micropollutants decreased with the rise in temperature and transmembrane pressure, and there was a concomitant increase in the performance of the membrane. The rise in the linear velocity of the feed flow was found to be a factor contributing to the increase in the retention coefficient. An increase in the retention coefficient was also observed under conditions of membrane fouling caused by the presence of humic acid in the water.

Keywords: Estrogenic micropollutants, humic acid, membrane filtration, reverse osmosis, nanofiltration, filtration mode.