

Dudziak, M. Removal of Mycoestrogens from Aqueous Solutions in the Integrated Photocatalysis–Microfiltration–Nanofiltration Process. *Ochrona Srodowiska* 2012, Vol. 34, No. 1, pp. 29–32.

Abstract: The efficiency of pollutant removal obtained with the integrated photocatalysis–microfiltration–nanofiltration process exceeded 90%, which includes the removal of low-molecular-weight mycoestrogens (zearalenone and α -zearalenole, at concentrations of 500 mg/m³). The extent of mycoestrogen removal was significantly higher in the integrated process than in photocatalysis alone. Comparisons have shown that nanofiltration alone produced removal of mycoestrogens similar to that obtained in the integrated process, but when nanofiltration was integrated with photocatalysis and microfiltration, the hydraulic capacity of the membrane was more advantageous. Analysis of the efficiency and capacity of nanofiltration in the integrated process substantiated the advantage of cellulose acetate membranes over composite membranes with polyamide skin, which display greater proneness to clogging. When in the integrated system photocatalysis preceded nanofiltration, the occurrence of membrane clogging was noticeably reduced. Yet, there is still a real risk that surface water may contain organic compounds with lower molecular weight as compared to those present in model solutions, and this may cause the removal efficiency of the treatment process to decline.

Keywords: Water treatment, mycoestrogens, integrated process, photocatalysis, nanofiltration.