Abstract: The efficiency of ultrafiltration/microfiltration (UF/MF) and of the hybrid system coagulation–sedimentation–UF/MF as unit processes in the treatment of natural riverine water (Czarna Przemsza) was made subject to analysis. UF/MF efficiency was predicted using two models: a model in a nonstationary process (a relaxation model) that described time-related changes in the volume flux of the permeate and determined the time constant t_o, as well as a resistance model that analyzed the resistance induced by the interaction of the membrane with water pollutants, and determined the time constant t_{Ro}. The experiments were conducted using modules of capillary polyethersulfone (PES) ultrafiltration and polypropylene (PP) microfiltration membranes. It has been found that the models characterize adequately both the process of direct UF/MF and the hybrid system, and that the calculated values are consistent with the experimental ones.

Keywords: Water treatment, ultrafiltration, microfiltration, coagulation, hybrid system.