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## USE OF NANOFILTRATION MEMBRANE IN THE REMOVAL OF CARBOFURAN, ACETAMIPRIDE AND PROPICONAZOLE FROM WATERQ

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### ABSTRACT

Persistency and excessive use of pesticides in the agricultural domain has raised an issue on the potential harmful effects of pesticides on the environment, including water sources. Due to the negative impact of pesticides on aquatic environment, their efficient removal from water is required. The aim of this study was to determine efficiency of a nanofiltration membrane in the removal of two insecticides (carbofuran and acetamiprid) and one fungicide (propiconazole). METCell dead end filtration unit was used in nanofiltration experiments, while a nitrogen gas cylinder was used for obtaining a 7 bar pressure. Commercially available polyamide membrane with molecular weight cut off (MWCO) 200 Da was used for the removal of selected pesticides. Molecular weights (MW) of propiconazole, acetamiprid and carbofuran are 342.22 Da, 222.67 Da and 221.25 Da, respectively. Amount of propiconazole in the permeate was below the limit of detection and, therefore, had the highest apparent rejection (100%). However, the rejections of acetamiprid and carbofuran were 81.19% and 94.90%, respectively. Lower rejections of acetamiprid and carbofuran compared to propiconazole could be due to the lower MW. Additional molecular descriptors could cause the differences in rejections of acetamiprid and carbofuran, since the differences in MW are not significant.

*Keywords: Nanofiltration, pesticides, water treatment*

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