

Removal of taste and odor model compounds (2-MIB and geosmin) with the NF membrane

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ABSTRACT

The objectives of this research were to identify seasonal variations of 2-MIB and geosmin which have been one of the biggest problems in the drinking water in the Han River in Korea and to evaluate the performance of the loose and tight NF membranes with respect to 2-MIB and geosmin rejection. Two kinds of NF membranes with different NaCl rejections were compared using a batch stirred cell to determine the membrane flux and the solute rejection for feed water. The results of the analysis of the occurrence characteristics of 2-MIB and geosmin, the major taste and odor material in the Han River water system show that the occurrence of 2-MIB continued from winter to spring (January–May) and through autumn (August–September), whereas geosmin occurred for about one to two weeks from summer to autumn (July–September) and spring (March–April). Following the rejection test of the taste and odor using the loose and tight NF membranes, it appeared that the two showed high rejection rates of 98% and above, irrespective of their concentration factor. The rejection of 2-MIB and geosmin increased with increasing shear rates for all of the NF membranes tested. Hydrodynamic operating conditions greatly affect the rejection of solutes in NF treatment. The rejection of taste odor compounds should increase with increased shear rates near the membrane surface. This suggests that the rejection will be further improved using dynamic membrane filtration.

Keywords: NF membrane; Taste and odor; Concentration polarization

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