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Abstract

In the present research, laboratory-scale tests were conducted to assess the impact of membrane ageing, defined as the cumulative exposure to sodium hypochlorite, on the filtration and cleaning performances of PVDF-based membranes. Filtration tests using virgin and laboratory aged (i.e., previously exposed to sodium hypochlorite) membranes were conducted using activated sludge as a model foulant solution. As membranes age, both the filtration and cleaning performances were negatively impacted. At a given exposure dose of sodium hypochlorite, the impact of ageing was greater at a lower exposure concentrations and larger exposure times, indicating that the relationship commonly used to quantify age and assess the cumulative impact of previous exposure to sodium hypochlorite (i.e., Ct value) on the state of membranes is not appropriate. A new non-destructive technique is proposed to quantify the state of a membrane, and potentially gain insight into the need for membrane replacement, based on the rate of permeability recovery during extended cleaning chemical.

Key words

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