

# A b s t r a c t

T i t l e	Release of bacterial foulants with chemical cleaning of membrane bioreactor
A u t h o r	FU CONG
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<b>[summary]</b> <p>Polysaccharides, proteins and other metabolites released from microorganisms cause serious problems of membrane fouling in the operation of membrane bioreactors (MBRs) for wastewater treatment. When membranes of MBRs are cleaned by hypochlorite solution in the place, residual hypochlorite in the reactor may adversely affect microorganisms in the activated sludge.</p> <p>The objective of this research was to clarify the conditions for the accumulation of foulants in MBR. The effect of the concentration of hypochlorite, solution pH and operation time on the release of total organic carbon (TOC) from microorganisms in activated sludge was investigated.</p> <p>In the experiment, sodium hypochlorite was added at a concentrations of 0, 10, 50 and 100 at different pH conditions to mixed liquor of activated sludge. In addition, a laboratory-scale MBR was operated for one week and the influence due to the addition of sodium hypochlorite was investigated. The TOC of the supernatant of the sample after centrifugation was measured as an indicator of the foulants.</p> <p>When sodium hypochlorite was added to the reactor at the concentration of 100 mg / L, TOC in the reactor increased from 13.3 mg/L to 165.4 mg/L, probably caused by the release of proteins and polysaccharides from microorganisms in the activated sludge. Among pH conditions between 5 and 8, a higher release of TOC was observed at an alkaline condition. In addition, the change in the concentration of TOC in the one-week MBR operation showed that microorganisms in the reactor took up approximately half of the foulants once released from themselves. The accumulation of polymeric persistent organic matter was found due to repeated exposure to hypochlorite.</p>	