



## Impact of vibration on treatment and filtration performance of membrane bioreactors treating municipal wastewater

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### ABSTRACT

Membrane bioreactors (MBRs) are commonly used in municipal and industrial wastewater treatment. However, membrane fouling problem limits the performance of MBRs. The objective of this study was to determine the impact of vibration on membrane fouling. Long-term filtration experiments were conducted to compare treatment and filtration performance of vibrated (magnetically induced) and non-vibrated modules in an MBR treating synthetic municipal wastewater. Results showed that vibration did not have any remarkable effect on treatment performance. However, filtration performance and thus, membrane fouling were significantly affected by the vibration. Magnetically induced vibration system achieved better filtration performance than the non-vibrated module. Cake layer formation found in the magnetically induced vibrating system resulted in low potential for pore clogging. The results suggest that magnetically induced vibration is a promising alternative for reducing membrane fouling problem in MBR systems.

*Keywords:* Membrane bioreactor; Membrane fouling; Transmembrane pressure; Vibration

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