

## **An Assessment of the Effects of Microbial Products on the Specific Oxygen Uptake in Submerged Membrane Bioreactor**

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**Abstract :** Sustaining a desired rate of oxygen transfer for microbial activity is a matter of major concern for Biological Wastewater Treatment (MBR). The study reported in the paper was aimed at assessing the effects of microbial products on the Specific Oxygen Uptake Rate (SOUR) in a Conventional Membrane Bioreactor (CMBR) and that in a Sponge Submerged MBR (SSMBR). The production and progressive accumulation of Soluble Microbial Products (SMP) and Bound-Extracellular Polymeric Substances (BEPS) were found affecting the SOUR of the microorganisms which varied at different stages of operation of the MBR systems depending on the variable concentrations of the SMP/bEPS. The effect of bEPS on the SOUR was stronger in the SSMBR compared to that of the SMP, while relative high concentrations of SMP had adverse effects on the SOUR of the CMBR system. Of the different mathematical correlations analyzed in the study, logarithmic mathematical correlations could be established between SOUR and bEPS in SSMBR, and similar correlations could also be found between SOUR and SMP concentrations in the CMBR.

**Keywords :** microbial products, microbial activity, specific oxygen uptake rate, membrane bioreactor

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