

Removal of Trimethoprim and Sulfamethoxazole in Solid Waste Leachate by Two-Stage Membrane Bioreactor under High Mixed Liquor Suspended Solids Concentration

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Abstract : Purpose of study is to investigate performance of two-stage membrane bioreactor (2S-MBR) to treat trimethoprim and sulfamethoxazole in solid waste leachate. This system consists of 2 tanks, anoxic tank with incline plates and MBR tank. The system was operated at 12 h-HRT each, of which the MBR MLSS concentration was operated at 25,000-35,000 mg/L. The average sCOD concentration of the fed leachate was $6,310 \pm 3,595$ mg/L. It shows that high organic removals in terms of sCOD and sBOD were achieved as of 97-99% and 99%, respectively. The TKN and NH₃-N removals were 76-98% and 91-99%, respectively. Concurrently, trimethoprim and sulfamethoxazole were detected in the leachate with concentrations of 113-0 µg/L and 74-2 µg/L, respectively. High removals of trimethoprim and sulfamethoxazole were also found as of 95-99% and 85-95%, respectively. In sum, this MBR feature and operation gave achievement in treatment of macro-pollutants including trimethoprim and sulfamethoxazole existing in low levels in the solid waste leachate.

Keywords : membrane bioreactor, solid waste leachate, sulfamethoxazole, trimethoprim

Conference Title : ICESE 2018 : International Conference on Environmental Sciences and Engineering

Conference Location : Osaka, Japan

Conference Dates : March 29-30, 2018