



TREATMENT OF DOMESTIC WASTEWATER BY MEMBRANE BIOREACTOR(MBR)

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The reuse of waste water after treatment has become widespread all over the world. By treating the waste water, the fresh water supplies can be protected by shortening the water cycle in the nature, and the need for water can be compensated. In this study, the reuse areas of waste water have been investigated by treating the synthetic waste water with domestic characteristics via a lab/pilot scale membrane bioreactor system(MBR). The daily domestic wastewater and kitchen waste generation were estimated in a real household. The domestic wastewater generation from four person household as 728L/d (TUIK,2015). In the experiment studies, synthetic wastewater was prepared to represented wastewater with partial urine separation and kitchen wastewater was mixed to from the required wastewater stream. Activated sludge used in MBR system was collected from wastewater treatment facility in Bilecik First Organized Industry Zone, Bilecik, Turkey. The sludge was taken from aeration tank of the treatment plant. After that, it was acclimatized with influent wastewater for two weeks. The temperature of the aeration tank was controlled at 20 ± 1 °C, the pH value and the concentration of dissolved oxygen (DO) was kept respectively, in the range of (7,0-8,0) and 3-4 mg/L in the aeration tank. Samples were taken for analysis from wastewater tank, aeration tank and permeate outlet. COD, phosphate and nitrogen concentration value were measured daily in influent as well as effluent to assess the removal efficiency. As result of experimental studies, the removal efficiency of COD, phosphate and nitrogen was determined as %90; %88 and %91, respectively. The results obtained have exposed that by treating the waste water with domestic characteristics via a MBR system, the filtrate can be reused for fire hydrants, field irrigation, and toilet flushing.

Keywords: activated sludge 1, biological treatment 2, domestic wastewater 3, Membran Bioreactor (MBR) 4,

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