

**Effect of Heavy Metal Ions on the Wastewater Treatment using  
Membrane Bio-Reactor (MBR)**

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Bench scale experiments were conducted using a 9-L activated sludge bioreactor equipped with 0.06 m<sup>2</sup> submerged polysulfone hollow fiber membrane. Using medium strength synthetic wastewater, the system was operated without wasting sludge, and with a hydraulic retention time of 24 hours. The system showed a high resistance to fluctuation in environmental factors such as temperature changes, dissolved oxygen level, and the leakage of sludge. With a pressure drop of 0.96 bar applied as the trans-membrane pressure, a rapid decrease in flux occurred within 2 days; the flux dropped from 3.2 to 1 m<sup>3</sup>/m<sup>2</sup>day. The flux declined steadily over 10 days to a level of 0.5 m<sup>3</sup>/m<sup>2</sup>day, and maintained at this stable value over two months. The effects of introducing Cr (VI) to MBR system were investigated with different feeding concentrations (0 mg/L – 5 months, 0.4 mg/L – 1 month, 10 mg/L – 1 month and 50 mg/L – 1 month). High COD and BOD<sub>5</sub> removal could be maintained even feeding Cr (VI) concentration was 50 mg/L, which meant the carbonaceous removal was not obviously affected. However, nitrification was badly deteriorated when feeding Cr (VI) was 10 mg/L. These results were compared with data got from batch experiments. At the same time, a comparison was conducted on the sludge production in different MBRs as well as conventional activated sludge process.