In this study, an assessment of the performance of combined moving bed biofilm reactors and a membrane filtration system (MBBRs, anaerobic–aerobic in series and MF) for the treatment of azo dye reactive brilliant red X-3B-containing wastewater was performed. Each reactor was filled with 35 vol.% of the suspended biofilm carriers for biological treatment. To assess the performance of the hybrid processes, the removal efficiencies of color, COD, and SS were analyzed by experiments. The average removal efficiencies of color, COD, and SS were 90, 85 and 94% (influent color = 400 Pt–Co unit, COD = 500 mg/L, and SS = 310 mg/L), respectively when the hydraulic retention times in the anaerobic and aerobic reactors are 11 and 5 h, respectively. The combined MBBRs and membrane system was highly efficient for the treatment of azo dye-containing wastewater. The experimental results showed that the combined processes are a viable technique for textile wastewater treatment.

Keywords: MBBR; Printing and dyeing wastewater; Membrane filtration; COD; Azo dye