Improved membrane pretreatment of industrial wastewater

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Received 25 May 2015; Accepted 3 December 2015

\textbf{ABSTRACT}

The main objective of this research was to study the effect of coagulation on membrane performance by assessing the effect of retention of fine suspended and colloidal matter contained in industrial wastewater. Hybrid process was studied to show the improved efficiency of the coagulation–membrane filtration. It was found that some positively charged fine materials are forming a deposit on the inner surface area of the membrane that leads to its fast blockage, lowering the membrane performance life. In aiming to avoid such a fouling, a new technique was made from a combination between microfiltration and ultrafiltration used as a practical solution to overcome the problem. The combined process was named as micro-ultrafiltration (MUF) and investigated to check out the efficiency and the quality through the treatment plant for industrial wastewater of ceramic factory. The results showed (MF) modified devices were able to remove bacteria, cysts, and fine particles while the UF membranes were very effective to deal with viruses, color, and some colloidal natural organic matter. The whole process is aimed to find practical solution to deal with the extremely high turbidity where most of the standard process failed. The currently applied processes of treatment plant went through many modified stages starting from the equalization tank ending with UF passing through the type of coagulation/flocculation and the mixing conditions.

\textit{Keywords:} Membrane performance; Membrane filtration; Coagulation; Industrial wastewater

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\textit{Presented at the 3rd International Conference on Water, Energy and Environment (ICWEE) 24–26 March 2015, Sharjah, United Arab Emirates}

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