Dairy wastewater purification by vibratory shear enhanced processing

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ABSTRACT

This study investigated the performance of a Vibratory Shear Enhanced Processing (VSEP) using ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO) membrane system for decreasing of chemical oxygen demand (COD) from dairy wastewater. Three commercially available membranes having different pore sizes were used to compare their relative efficiency for COD decreasing. Permeate flux and membrane rejection of COD were measured as well as mean shear rates and the specific energy demands of vibrated and non-vibrated methods were calculated and compared. Furthermore, flux and COD rejection were also studied increasing by transmembrane pressure (TMP) and vibration amplitude. Concentration test were performed by UF, NF and RO.

Keywords: VSEP; Dairy wastewater; Shear rate; Amplitude; Energy consumption; Vibration

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