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TRANSFORMATION AND FLUORESCENCE SPECTROSCOPY OF DISSOLVED ORGANIC MATTER (DOM) IN LANDFILL LEACHATE TREATED BY COMBINED PROCESS

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Abstract

The paper analyses the removal efficiency and fluorescence spectroscopic characterization of landfill leachate dissolved organic matter (DOM) fractions in the combined stripping, fenton oxidation, sequence batch reactor, and coagulation process. The high contents of DOM of landfill leachate in each process unit were fractionated into HA, FA, and HyI. The result was the combined process availability for effective removal of DOM fractions. The removal rates for DOM, HA, FA and HyI were 91.9%, 97.1%, 95.8% and 71.7%, respectively. The major fluorescence peaks observed in the process were protein-like fluorescence peak a (Ex/Em= 280nm/345nm), humic-like fluorescence peak b (Ex/Em=295/400nm), short excitation wavelength tryptophan-like fluorescence peak c (Ex/Em=230nm/340nm) and ultraviolet band fulvic acid-like fluorescence peak d (Ex/Em=235nm/400nm). Types and intensities of fluorescence peaks of HA, FA and HyI decreased after treatment. The capability for removal of different components of leachate DOM was determined by each unit process adopted.

Key words: combined treatment process, DOM, fluorescence spectra, leachate

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