ABSTRAK

Lignin dan turunannya merupakan polutan pada limbah pulp dan kertas yang memberikan warna cokelat, dan sulit didegradasi secara alami. Penelitian ini bertujuan untuk mengolah limbah cair model industri pulp dan kertas menggunakan kombinasi metode koagulasi-flokulasi dan irradiasi UV/H_2O_2. Limbah yang digunakan merupakan limbah model yang dihasilkan dari delignifikasi jerami padi. Kondisi optimum pengolahan limbah cair model industri pulp dan kertas yaitu pH 8, dosis koagulan PAC 700 ppm, dosis kitosan 60 ppm, kecepatan pengadukan koagulan 130 rpm, kecepatan pengadukan flokulan 40 rpm, waktu irradiasi UV 1 hari dan dosis hidrogen peroksida 25mmolL^{-1}. Efesiensi pengolahan limbah menggunakan kombinasi metode koagulasi-flokulasi dan irradiasi UV/H_2O_2 yaitu absorbansi limbah mengalami penurunan sebesar 69,56%, turbiditas limbah berkurang sebesar 72,4%, dan COD limbah berkurang sebesar 38,23%.

Kata kunci : koagulasi-flokulasi, irradiasi UV/H_2O_2, limbah cair pulp dan kertas.

ABSTRACT

Lignin and its derivatives is a pollutant in the pulp and paper waste that gives brown color, and difficult to degrade naturally. This study aimed at treating wastewater models pulp and paper industry using a combination of coagulation-flocculation and irradiation UV/H_2O_2 method. Brownish liquid resulted from rice straw delignification are used as a wastewater model for pulp and paper mill effluent. The optimum conditions of the wastewater treatments are pH 8, 700 ppm of *PAC* coagulant dose, 60 ppm of chitosan dose, 130 rpm of coagulant mixing speed, 40 rpm of flocculant mixing speed, 1 day of UV irradiation time and 25 mmolL^{-1} of dose of hydrogen peroxide. The efficiency of wastewater treatment using a combination of coagulation-flocculation and irradiation UV/H_2O_2 methods are 69.56% of absorbance removal at 500 nm, 72.4% of turbidity removal and 38.23 % of COD removal.

Keyword : coagulation-flocculation, UV irradiation/H_2O_2, pulp and paper mill wastewater