PENURUNAN TSS AIR LIMBAH TAMBANG BATUBARA MENGGUNAKAN POLY(DIALLYLDIMETHYLAMMONIUM CHLORIDE) DI *SETTLING POND* WMP 28 PT. ASMIN BARA BRONANG, KALIMANTAN TENGAH

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INTISARI

Penelitian dilakukan di PT. Asmin Bara Bronang, Kapuas, Kalimantan Tengah. Lokasi penelitian merupakan area pengolahan air limbah tambang batubara yang memiliki kadar TSS yang tinggi dan pH yang sudah sesuai dengan baku mutu. Penelitian ini bertujuan untuk menganalisis kualitas air limbah tambang batubara di daerah penelitian, memberikan evaluasi pengolahan air limbah tambang batu bara di daerah penelitian, Optimalisasi penggunaan Flokulan PDADMAC yang mengandung Poly(diallyldimethylammonium chloride) pada pengolahan air limbah tambang batubara di daerah penelitian, serta memberikan saran berupa arahan pengolahan air limbah tambang batubara.

Metode yang digunakan pada penelitian yaitu metode survei lapangan dan pemetaan lapangan untuk mengidentifikasi permasalahan pada Lokasi penelitian, Metode *purposive sampling* digunakan untuk pengambilan sampel air limbah tambang batubara. Dilanjutkan dengan metode percobaan laboratorium menggunakan metode *jar test* dilakukan untuk menentukan dosis PDADMAC dalam pengolahan air limbah tambang batubara dalam penurunan kadar TSS dan Penetralan pH. Analisis Matematis digunakan untuk mengevaluasi kualitas air limbah tambang batubara serta evaluasi secara kuantitas yang disesuaikan dengan SNI 6774 : 2008 dan mengolah data serta mengetahui debit aliran dan penentuan kebutuhan PDADMAC dalam pengolahan pada daerah penelitian, metode analisis deskriptif untuk mengevaluasi kualitas air limbah tambang batubara agar sesuai dengan parameter pada peraturan yang digunakan.

Hasil penelitian menunjukkan bahwa kualitas air limbah tambang batubara di WMP 28 memiliki kadar TSS yang belum memenuhi baku mutu, sedangkan pH 7,3–8,1 sudah sesuai. Evaluasi berdasarkan SNI 6774:2008 menunjukkan nilai beban permukaan dan waktu tinggal belum memenuhi ketentuan, dengan aliran bersifat laminer (bilangan Reynold) dan sub-kritis (bilangan Froude). Dosis optimum PDADMAC sebesar 0,4 ppm mampu menurunkan TSS hingga 84,13%. Rekomendasi pengelolaan meliputi pemasangan pintu air pada kompartemen 1 (*inlet*) untuk mengatur debit masuk, penambahan loncatan hidraulik setelah pintu air, pembangunan saluran drainase di sekeliling WMP 28 untuk menampung limpasan permukaan, serta tanggul pelindung guna mencegah masuknya air limpasan dari luar, sehingga pengolahan air limbah dapat berjalan lebih optimal dan efisien.

Kata Kunci : Air limbah tambang batubara, Poly(diallyldimethylammonium chloride) *(PDADMAC)*, TSS (*Total Suspended Solid*), pH (*Potensial Hydrogen*)

TSS REDUCTION OF COAL MINE WASTEWATER USING POLY(DIALLYLDIMETHYLAMMONIUM CHLORIDE) IN SETTLING POND WMP 28 PT. ASMIN BARA BRONANG, CENTRAL KALIMANTAN

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ABSTRACT

The research was conducted at PT Asmin Bara Bronang, Kapuas, Central Kalimantan. The research location is a coal mine wastewater treatment area that has high TSS levels and pH that is in accordance with the standard. This study aims to analyze the quality of coal mine wastewater in the research area, provide an evaluation of coal mine wastewater treatment in the research area, optimize the use of PDADMAC coagulant containing Poly (diallyldimethylammonium chloride) in coal mine wastewater treatment in the research area, and provide advice in the form of coal mine wastewater treatment directions.

The method used in the research is the field survey method and field mapping to identify problems at the research location, purposive sampling method is used for taking coal mine wastewater samples. Followed by a laboratory experiment method using the jar test method carried out to determine the dose of PDADMAC in coal mine wastewater treatment in reducing TSS levels and neutralizing ph. Mathematical analysis is used to evaluate the quality of coal mine wastewater and quantity evaluation adjusted to SNI 6774: 2008 and processing data and knowing the flow rate and determining the need for PDADMAC in processing in the study area, descriptive analysis method to evaluate the quality of coal mine wastewater to match the parameters in the regulations used.

The results showed that the quality of coal mine wastewater in WMP 28 has TSS levels that do not meet the quality standards, while pH 7.3-8.1 is appropriate. Evaluation based on SNI 6774: 2008 shows the value of surface load and residence time has not met the provisions, with laminar (Reynold number) and subcritical (Froude number) flow. The optimum dose of PDADMAC of 0.4 ppm was able to reduce TSS by 84.13%. Management recommendations include the installation of a sluice gate in compartment 1 (inlet) to regulate the inflow discharge, the addition of a hydraulic spring after the sluice gate, the construction of drainage channels around WMP 28 to accommodate surface runoff, and protective embankments to prevent the entry of runoff water from outside, so that wastewater treatment can run more optimally and efficiently.

Keywords: *Coal mine wastewater, Poly(diallyldimethylammonium chloride) (PDADMAC), TSS (Total Suspended Solid), pH (Potential Hydrogen)*