

ABSTRAK

Farid Hanafi. Evaluasi Kinerja Instalasi Pengolahan Air Limbah (IPAL) di Industri Penyamakan Kulit PT. X. Dibimbing oleh Dr. Eng. Awaluddin Nurmiyanto S.T., M. Eng dan Andik Yulianto S.T., M.T

Industri penyamakan kulit memiliki air limbah yang kompleks karena memiliki kadar COD, BOD, TSS, Sulfida, Krom yang tinggi. Maka, air limbah ini perlu diolah di IPAL agar memenuhi baku mutu. Namun, masih terdapat berbagai permasalahan di IPAL seperti kapasitas IPAL dan parameter yang masih melebihi baku mutu. Industri penyamakan kulit di PT. X memiliki debit rata-rata air limbah sebesar 61,83 m³/hari dan debit puncak 104,72 m³/hari. Pengujian kualitas air limbah dilakukan pada setiap unit pengolahan air limbah dan outlet IPAL. Unit pengolahan air limbah yang digunakan adalah *bar screen*, bak ekualisasi dan netralisasi, koagulasi-flokulasi, sedimentasi, lumpur aktif dan anaerobik-aerobik biofilter. Parameter yang diujikan mengacu dari Peraturan Daerah Istimewa Yogyakarta Nomor 7 tahun 2016 tentang baku mutu air limbah industri penyamakan kulit. Nilai BOD₅ sebesar 25,17 mg/l, COD sebesar 525 mg/l, TSS 93 mg/l, TDS sebesar 3150 mg/l, Sulfida sebesar 0,21 mg/l, Krom total sebesar 0,15 mg/l, Amonia sebesar 0,23 mg/l, Minyak & lemak sebesar 0,26 mg/l, suhu 31,9°C dan pH sebesar 9. Sementara, kondisi eksisting bangunan diukur lalu dibandingkan dengan kriteria desain. Saran dari evaluasi ini meliputi optimalisasi unit koagulasi-flokulasi, biofilter anaerobik-aerobik dan jika diperlukan maka perlu ditambahkan unit *constructed wetlands* agar kualitas limbah di outlet memenuhi baku mutu.

Kata kunci: air limbah, Instalasi Pengolahan Air Limbah (IPAL), penyamakan kulit

ABSTRACT

Farid Hanafi. *Performance Evaluation of Waste Water Treatment Plant (WWTP) in Tannery Industry at PT. X*. Supervised by Dr. Eng. Awaluddin Nurmiyanto S.T., M. Eng and Andik Yulianto S.T., M.T

The tanning industry has complex wastewater because it has high levels of COD, BOD, TSS, Sulfide, Chrome. Therefore, this wastewater needs to be treated at WWTP to meet quality standards. However, there are still various problems in WWTPs such as WWTP capacity and parameters that still exceed quality qualifications. The tannery industry in PT. X has an average discharge of wastewater of 61.83 m³/day and a peak discharge of 104.72 m³/day. Wastewater quality testing is carried out at each wastewater treatment unit and WWTP outlet. The wastewater treatment units used are bar screens, equalization and neutralization tanks, coagulation-flocculation, sedimentation, activated sludge and anaerobic-aerobic biofilter. Parameters tested according to Yogyakarta Special Region Regulation No. 7 of 2016 concerning the quality standards for the leather tanning industry wastewater. BOD₅ value of 25.17 mg/l, COD of 525 mg/l, TSS 93 mg/l, TDS of 3150 mg/l, Sulfide of 0.21 mg/l, Total Chrome of 0.15 mg/l, Ammonia of 0.23 mg/l, Oil & grease of 0.26 mg/l, a temperature of 31.9°C and a pH of 9.9. The advice of this evaluation is to add an optimization unit for coagulation-flocculation, anaerobic-aerobic biofilter and if needed, it is necessary to add a unit that is built so that the wetlands so that the quality of waste at the outlet meets quality standards.

Keywords: leather tannery industry, wastewater, Waste Water Treatment Plant (WWTP).