

PENGOLAHAN LIMBAH RESTORAN SECARA ELEKTROKOAGULASI MENGUNAKAN MULTI ELEKTRODA ALUMINIUM

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ABSTRAK

Air limbah restoran pada kegiatan perhotelan dengan kandungan bahan organik yang tinggi merupakan salah satu sumber pencemar yang dapat merusak lingkungan jika tidak tertangani dengan baik. Penelitian ini bertujuan untuk menentukan efisiensi dan kualitas hasil pengolahan air limbah restoran secara elektrokoagulasi menggunakan multi elektroda aluminium. Sebanyak 2,0 liter sampel air limbah restoran diolah dalam reaktor elektrokoagulasi pada variasi waktu kontak (15-90 menit), jarak antar elektroda (5-15 cm), pH (4-10) dan jenis garam yaitu garam dapur dan natrium sulfat. Hasil penelitian menunjukkan bahwa efisiensi penurunan COD, BOD, dan amonia secara berturut-turut sebesar 90,61%; 94,38%, dan 99,82% pada kondisi pH 6, waktu kontak 60 menit, jarak elektroda 10 cm dan penambahan garam dapur 0,5 gram per liter limbah. Penambahan garam berdampak terhadap meningkatnya nilai TDS air limbah dari 271 mg/L menjadi 720 mg/ tetapi masih berada dibawah ambang batas maksimum yang dipersyaratkan. Berdasarkan nilai COD, BOD, amonia, TDS dan pH pada air limbah restoran dalam kegiatan perhotelan yang sudah diolah menggunakan elektrokoagulasi dengan multi elektroda aluminium menghasilkan kualitas air limbah yang memenuhi standar baku mutu air limbah yang dipersyaratkan bagi usaha/atau kegiatan perhotelan berdasarkan Peraturan Gubernur Bali Nomor 16 Tahun 2016 tentang Baku Mutu Lingkungan Hidup.

Kata kunci: limbah restoran, elektrokoagulasi, multi elektroda aluminium

ELECTROCOAGULATION OF RESTAURANT WASTE TREATMENT USING MULTI ALUMINUM ELECTRODES

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ABSTRACT

Restaurant waste water in hospitality activities with a high organic matter content is a source of pollutants that can damage the environment if not handled properly. This study aims to determine the efficiency and quality of restaurant wastewater treatment by electrocoagulation using multiple aluminum electrodes. A total of 2.0 liters of restaurant wastewater samples were treated in an electrocoagulation reactor at various contact times (15-90 minutes), distances between electrodes (5-15 cm), pH (4-10) and types of salt, namely table salt and sodium sulfate. The results showed that the reduction efficiency for COD, BOD, and ammonia was 90.61%, 94.38%, and 99.82% at pH 6, contact time 60 minutes, electrode spacing of 10 cm and addition of 0.5 gram of table salt per liter of waste. The addition of salt had an impact on increasing the TDS value of wastewater from 271 mg/L to 720 mg/L but still below the required maximum threshold. Based on the values of COD, BOD, ammonia, TDS and pH in restaurant wastewater in hospitality activities that have been treated using electrocoagulation with multiple aluminum electrodes, it produces wastewater quality that meets the wastewater quality standards required for hospitality businesses/or activities based on Bali Governor Regulations Number 16 of 2016 concerning Environmental Quality Standards.

Keywords: restaurant waste, electrocoagulation, aluminum multi electrode