

## ABSTRAK

### PENGARUH VARIASI WAKTU METODE AERASI DAN ADSORPSI DENGAN MEDIA ARANG TEMPURUNG KELAPA DALAM MENURUNKAN KADAR *CHEMICAL OXYGEN DEMAND* (COD) PADA AIR LIMBAH TAHU

Rosantika Alya Sukma, Hery Koesmantoro, ST,MT<sup>2</sup>. Sunaryo, S.ST, M,M<sup>3</sup>

Kementrian Kesehatan RI  
Politeknik Kesehatan Kemenkes Surabaya  
Program Studi Sanitasi Program Diploma III  
Kampus Magetan Jurusan Kesehatan Lingkungan  
Email : [rosantikaalya4@gmail.com](mailto:rosantikaalya4@gmail.com)

## ABSTRAK

*Chemical Oxygen Demand* (COD) merupakan jumlah oksigen yang dibutuhkan untuk mengoksidasi zat-zat organik yang ada pada limbah. Penurunan kadar COD dapat dilakukan dengan menggunakan metode aerasi dan adsorpsi. Tujuan penelitian ini adalah untuk mengetahui adakah penurunan kadar COD menggunakan bak aerasi dan adsorpsi.

Jenis penelitian ini adalah *pra-experiment*. Obyek dari penelitian ini adalah kadar COD pada air limbah pabrik tahu Cepoko dengan subyeknya yaitu variasi waktu aerasi dan adsorpsi 3 jam, 6 jam, 9 jam, menggunakan arang tempurung kelapa dan pengambilan sampel penelitian menggunakan metode grab sampel.

Hasil penelitian diketahui rata-rata presentase penurunan kadar COD pada variasi waktu aerasi dan adsorpsi 3 jam sebesar 12,474%, variasi waktu aerasi dan adsorpsi 6 jam sebesar 36,512%, dan variasi waktu aerasi dan adsorpsi 9 jam sebesar 65,39% dikarenakan makin lama waktunya makin tinggi juga penurunan kadar COD. Hasil analisis disimpulkan bahwa pada semua variasi waktu aerasi dan adsorpsi dengan arang aktif tempurung kelapa efektif dalam menurunkan kadar COD pada air limbah tahu dan nilai dari kadar COD memenuhi persyaratan sesuai baku mutu pada Peraturan Gubernur Jawa Timur Nomor 72 Tahun 2013.

Kesimpulan dari penelitian ini adalah Sig (0,000) < 0,001, berarti ada perbedaan variasi waktu aerasi dan adsorpsi arang tempurung kelapa terhadap penurunan kadar *Chemical Oxygen Demand* (COD) dalam air limbah tahu. Saran penelitian perlu untuk melakukan penelitian dengan parameter yang berbeda dengan jenis limbah yang berbeda.

Kata Kunci : Arang Aktif Tempurung Kelapa, Adsorpsi, COD, Limbah Tahu.

## ABSTRACT

### EFFECT OF TIME VARIATION OF AERATION AND ADSORPTION METHOD WITH ACTIVE COCONUT SHELL CHARCOAL MEDIA IN REDUCE CHEMICAL OXYGEN DEMAND (COD) CONTENT IN TOFU WASTE WATER

Rosantika Alya Sukma<sup>1</sup>. Hery Koesmantoro, ST, MT<sup>2</sup>. Sunaryo, S.ST, M, M<sup>3</sup>

Indonesian Ministry of Health  
Surabaya Ministry of Health Health Polytechnic  
Diploma III Sanitation Study Program  
Magetan Campus, Department of Environmental Health  
Email : [rosantikaalya4@gmail.com](mailto:rosantikaalya4@gmail.com)

## ABSTRACT

Chemical Oxygen Demand (COD) is the amount of oxygen needed to oxidize organic substances in waste. Reducing COD levels can be done using aeration and adsorption methods. The purpose of this study was to determine whether there was a decrease in COD levels using an aeration and adsorption bath.

This type of research is pre-experiment. The object of this study was the COD level in Cepoko tofu factory waste water with the subject being aeration and adsorption time variations of 3 hours, 6 hours, 9 hours, using coconut shell charcoal and taking research samples using the grab sample method.

The results showed that the average percentage decrease in COD levels in the 3-hour aeration and adsorption time variation was 12.474%, the 6-hour aeration and adsorption time variation was 36.512%, and the 9-hour aeration and adsorption time variation was 65.39% due to the longer time. the higher the reduction in COD levels. The results of the analysis concluded that at all variations in the time of aeration and adsorption with activated coconut shell charcoal it was effective in reducing COD levels in tofu waste water and the value of COD content met the requirements according to quality standards in East Java Governor Regulation Number 72 of 2013.

The conclusion of this study is Sig (0.000) <0.001, meaning that there are differences in variations in the time of aeration and adsorption of coconut shell charcoal on the decrease in Chemical Oxygen Demand (COD) levels in tofu wastewater. Research suggestions need to conduct research with different parameters with different types of waste.

Keywords: Coconut Shell Active Charcoal, Adsorption, COD, Tofu Waste.

