

Perbedaan Penurunan Kadar BOD pada Limbah Cair Tahu Menggunakan *Rotating Biological Contactor* (RBC)

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ABSTRAK

Di Kabupaten Magetan, Desa Tawangrejo, Kecamatan Takeran terdapat *home industry* tahu menghasilkan limbah cair yang langsung dibung ke badan air tanpa dilakukan pengolahan terlebih dahulu yang dapat menimbulkan pencemaran lingkungan. Penelitian bertujuan untuk mengetahui perbedaan kadar BOD limbah cair tahu sebelum dan sesudah perlakuan dengan *Rotating Biological Contactor* (RBC) waktu kontak 24 jam, 36 jam, dan 48 jam. Metode penelitian adalah kuantitatif menggunakan jenis penelitian eksperimen semu (*quasi experiment*) dengan *two group pretest-posttest design*. Sampel dalam penelitian ini, limbah cair tahu sesudah perlakuan dengan *Rotating Biological Contactor* (RBC) yang diambil untuk diperiksa kadar BOD di laboratorium kimia. Hasil pemeriksaan kadar BOD akan di uji menggunakan analisis statistik dengan uji *anova one way*.

Hasil kadar BOD sebelum perlakuan (281,66 mg/L), sesudah perlakuan 24 jam (165,16 mg/L) dengan penurunan (41,36%), 36 jam (159,16 mg/L) dengan penurunan (43,56%), 48 jam (126,16 mg/L) dengan penurunan (55,20%). Kadar BOD pada limbah cair tahu menurun karena semakin lama waktu pengolahan, sama dengan memberi peluang untuk mikroorganisme yang berkembang biak saat pengolahan dengan *Rotating Biological Contactor* (RBC) sehingga semakin banyak bahan organik yang terurai.

Ada perbedaan kadar BOD pada limbah cair tahu sebelum dan sesudah perlakuan dengan *Rotating Biological Contactor* (RBC) pada waktu kontak 24 jam, 36 jam, dan 48 jam. Dari hasil analisis nilai Sig. (*p value*) 0,000 sehingga lebih kecil (<) dari 0,05. Waktu terbaik pengolahan dengan *Rotating Biological Contactor* (RBC) pada waktu kontak 48 jam (126, 16 mg/L) dengan penurunan (55,20%). Diharapkan untuk melakukan penelitian lebih lanjut dengan mencoba menggunakan reaktor yang sama, dengan ukuran *Rotating Biological Contactor* (RBC) yang diperbesar.

Kata Kunci : Limbah Cair Tahu, Kadar BOD, RBC, Waktu Kontak

Difference in Reduction of BOD Levels in Tofu Liquid Waste Using Rotating Biological Contactor (RBC)

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ABSTRACT

In Magetan Regency, Tawangrejo Village, Takeran District, there is a tofu home industry that produces liquid waste that is directly flushed into water bodies without first processing which can cause environmental pollution. The study aimed to determine the difference in BOD levels of tofu liquid waste before and after treatment with Rotating Biological Contactor (RBC) contact time of 24 hours, 36 hours, and 48 hours. The research method is quantitative using a type of quasi-experimental research with two groups pretest-posttest design. The sample in this study, tofu liquid waste after treatment with a Rotating Biological Contactor (RBC) was taken to check BOD levels in a chemical laboratory. The results of the BOD level examination will be tested using a statistical analysis with a one-way anova test.

The results of BOD levels before treatment (281.66 mg/L), after 24 hours (165.16 mg/L) with a decrease (41.36%), 36 hours (159.16 mg/L) with a decrease (43.56%), 48 hours (126.16 mg/L) with a decrease (55.20%). The BOD level in tofu liquid waste decreases because the longer the processing time, the same as providing opportunities for microorganisms to multiply during processing with Rotating Biological Contactor (RBC) so that more organic matter decomposes.

There was a difference in BOD levels in tofu liquid waste before and after treatment with Rotating Biological Contactor (RBC) at 24 hours, 36 hours, and 48 hours of contact. From the results of the analysis, the value of Sig. (p value) is 0.000 so that it is smaller (<) than 0.05. The best time of treatment with Rotating Biological Contactor (RBC) was at 48 hours contact time (126.16 mg/L) with a decrease (55.20%). It is expected to conduct further research by trying to use the same reactor, with an enlarged Rotating Biological Contactor (RBC) size.

Keywords : Tofu Liquid Waste, BOD Level, RBC, Contact Time