PERBEDAAN PENURUNAN KADAR BOD_5 ANTARA *TRICKLING FILTER* MEDIA BATU KALI DENGAN *TRICKLING FILTER* MEDIA POTONGAN PIPA PVC PADA AIR LIMBAH RUMAH PEMOTONGAN AYAM TRADISIONAL PASAR KOBONG SEMARANG

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Air limbah Rumah Pemotongan Ayam (RPA) tradisional Pasar Kobong Semarang memiliki kadar BOD_5 yang tinggi sebesar 2.185,92 mg/l, sementara kadar BOD_5 maksimum yang diperbolehkan untuk air limbah industri rumah pemotongan hewan berdasarkan Keputusan Gubernur Kepala Daerah Tingkat I Jawa Tengah No.660.1/02/1997 adalah 150 mg/l, maka diperlukan suatu pengolahan air limbah untuk menjamin tersedianya daging ayam yang sehat dan mencegah pencemaran lingkungan. *Trickling filter* adalah salah satu pengolahan air limbah biologis yang dapat menurunkan kandungan senyawa organik dan dapat menurunkan kadar BOD_5. Jenis media akan mempengaruhi penurunan kadar BOD_5 oleh *trickling filter*. Penelitian ini bertujuan untuk mengetahui media mana, antara batu kali dan potongan pipa PVC, yang lebih baik dalam mempengaruhi penurunan kadar BOD_5 air limbah RPA tradisional Pasar Kobong Semarang. Penelitian ini menggunakan metode *quasi experiment* dengan rancangan *pretest-posttest with control group*. Variabel bebas dalam penelitian ini adalah jenis media *trickling filter*; variabel terikatnya adalah kadar BOD_5; variabel pengganggu yang dikendalikan adalah diameter media, ketebalan media, ketebalan media, lama pengoperasian, dan kecepatan aliran. uji statistik yang digunakan yaitu Uji Wilcoxon untuk menguji perbedaan kadar BOD_5 sebelum dan sesudah perlakuan serta Uji Kruskal Wallis dan Uji Mann-Whitney untuk menguji perbedaan kadar BOD_5 antar perlakuan. Hasil dari penelitian ini adalah : ada perbedaan penurunan kadar BOD_5 air limbah RPA tradisional Pasar Kobbong Semarang antara sebelum dan setelah melewati unit kontrol (prosentase penurunan=18,34%, p=0,004); ada perbedaan kadar BOD_5 air limbah RPA tradisional Pasar Kobong Semarang antara sebelum dan sesudah melewati *trickling filter* media batu kali (prosentase penurunan=70,76%, p=0,004); ada perbedaan kadar BOD_5 air limbah RPA tradisional Pasar Kobong Semarang antara sebelum dan sesudah melewati *trickling filter* media potongan pipa PVC(prosentase penurunan=63,31%, p=0,004); dan ada perbedaan penurunan kadar BOD_5 air limbah RPA tradisional Pasar Kobong Semarang antara *trickling filter* media batu kali dengan *trickling filter* media potongan pipa PVC (p=0,006). Saran dari penelitian ini adalah penelitian akan datang tentang penerapan resirkulasi untuk memperbaiki kualitas efluen.

Kata Kunci: *trickling filter*, air limbah, rumah pemotongan ayam tradisional, kadar BOD_5, media batu kali, media potongan pipa PVC, *biofilm*

THE DIFFERENCE OF BOD_5 RATE REMOVAL BETWEEN RIVER STONE MEDIUM TRICKLING FILTER AND PVC PIPE PIECE MEDIUM TRICKLING FILTER AT WASTE WATER OF TRADITIONAL CHICKEN-ABATTOIR PASAR KOBONG SEMARANG

Traditional Chicken-Abattoir Pasar Kobong Semarang, in where about 5000 chickens are sloughtered everyday, had 2,185.92 mg/l of BOD_5 rate whereas the maximum allowed BOD_5 rate in Decision of Central Java Governor Num.660.1/02/1997 for abattoir is 150 mg/l. A waste water treatment is needed in order to prevent chickens and environtment from contamination. Trickling filter, one of biological waste water treatments, is able to remove organic compound and BOD_5 rate. The type of media will influence the BOD_5 rate removal by trickling filter. This researsch aimed to see which one, between river stone and PVC pipe piece, is better in influencing the BOD_5 removal of traditional chicken-abattoir waste water. Experiment method and pretest-posttest with control group design were applied in this research. The independent variable in this research was the type of trickling filter media, and the independent variable was BOD_5. The controlled confounding variables were media diameter, media height, operational period, and stream speed. Wilcoxon Test was applied to test the difference of BOD_5 rate removal between before and after treatments. Kruskal Wallis Test and Mann-Whitney Test were applied to test the difference of BOD_5 rate removal among treatments. The results of this research were : there was BOD_5 rate difference of traditional chicken-abattoir waste water between before and after passing control unit (removal presentage=18.34%, p=0.004); there was BOD_5 rate difference of traditional chicken-abattoir waste water between before and after passing trickling filter with river stone media(removal presentage=70.76%, p=0.004); there was BOD_5 rate difference of traditional chicken-abattoir waste water between before and after passing trickling filter with PVC pipe piece media(removal presentage=63.31%, p=0.004); and there was BOD_5 rate difference of traditional chicken-abattoir waste water between after passing river stone medium trickling filter and after passing PVC pipe piece medium trickling filter(p=0.006). Resirculation applaying was suggested for refining the quality of effluent.

Keyword : trickling filter, waste water, traditional chicken-abattoir, BOD_5 rate, river stone medi