

Perbedaan Penurunan Kadar BOD5 dan COD dengan Pemberian Berbagai Dosis Urine Sapi Fermentasi dan Variasi Waktu Tinggal pada Limbah Cair PT. Sinar Sosro Ungaran

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PT. Sinar Sosro Ungaran merupakan industri pangan yang memproduksi minuman teh botol dengan kapasitas produksi sebesar 200.000 liter per hari. Waste Water treatment merupakan unit pengolahan air limbah yang didirikan untuk mengolah air sisa produksi dan kegiatan pabrik sehingga dapat dibuang ke badan air tanpa mengganggu kehidupan biota air di dalamnya. Tujuan penelitian untuk mengetahui perbedaan penurunan kadar BOD5 dan COD dengan pemberian berbagai dosis urine sapi fermentasi dan variasi waktu tinggal pada limbah cair PT. Sinar Sosro Ungaran. Urine sapi fermentasi digunakan untuk meningkatkan proses degradasi bahan organik oleh mikroorganisme di dalam air limbah. Metode penelitian yang digunakan eksperimental semu dengan rancangan percobaan pre and post test. Sampel penelitian adalah air limbah inlet dan outlet dengan tiga kali pengambilan sehingga jumlah sampel 54 buah. Hasil pemeriksaan rata-rata kadar BOD5 sebelum perlakuan adalah 1051 mg/l, sesudah perlakuan dengan pemberian dosis 10 liter dan waktu tinggal 5, 10, 15, 20 hari adalah 376 mg/l, 500 mg/l, 708 mg/l, 271 mg/l dan dengan pemberian dosis 5 liter adalah 723 mg/l, 61 mg/l, 568 mg/l, 179 mg/l. Hasil pemeriksaan kadar COD sebelum perlakuan adalah 2867 mg/l, sesudah perlakuan dengan pemberian dosis 10 liter dan waktu tinggal 5, 10, 15, 20 hari adalah 1027 mg/l, 1494 mg/l, 2121 mg/l, 820 mg/l dan dengan pemberian dosis 5 liter adalah 1973 mg/l, 181 mg/l, 1705 mg/l, 538 mg/l. Uji statistik digunakan Uji Anova Dua Arah. Hasil uji menunjukkan ada perbedaan penurunan kadar BOD5 dan COD dengan pemberian berbagai dosis urine sapi fermentasi dan variasi waktu tinggal. Hasil penelitian didapatkan bahwa kadar BOD5 dan COD air limbah perlakuan belum sesuai dengan Peraturan daerah Jawa Tengah No. 10 Tahun 2004 tentang Baku Mutu Limbah Cair Bagi kegiatan Industri Minuman Ringan sebesar 50 mg/l untuk BOD5 edan 100 mg/l untuk COD. penelitian sebaiknya dilengkapi dengan pemeriksaan kadar oksigen terlarut dan nitrogen di dalam bak aerasi.

Kata Kunci: Urine Sapi Fermentasi, Lumpur aktif, BOD5, COD

The Difference Of Degradation Between BOD5 and COD Contains By Giving Various Dosage of Cow's Urine fermentation and Various Retention Time In Waste Water of PT. Sinar Sosro Ungaran

PT. Sinar Sosro Ungaran is a food and beverage company in bottle tea with the capacity of production is 200.000 liter per day. Waste Water Treatment is the unit of waste water processing to process waste water of production and from activities of manufacturing so that it can be throw away to rthe body of water without disturbing the life of biota in it. The purpose of this research is to know the difference of degradation between BOD5 and COD contains by giving various dosage of cow's urine fermentation and various retention time on liquid waste on PT. Sinar Sosro Ungaran. Cow's urine fermentation is used to increase degradation of organic substances by microorganisms in waste water. The research method is quasi experimental with the research design of pre and post test. the sample of this research are waste water of inlet and outlet with three times taken so that total of sample are 54. The result of average in BOD5 contain before treatment is 1051 mg/l, after treatment by giving dosage of 10 liter and retention time 5, 10, 15, 20 days are 376 mg/l, 500 mg/l, 708 mg/l, 271 mg/l also by giving dosage of 5 liter are 723 mg/l, 61 mg/l, 568 mg/l, 179 mg/l. The result of COD contain before treatmnet is 2867 mg/l, after treatment by giving dosage of 10 liter and retention time of 5, 10, 15, 20 days are 1027 mg/l, 1494 mg/l, 2121 mg/l, 820 mg/l also by giving dosage of 5 liter are 1973 mg/l, 181 mg/l, 1705 mg/l, 538 mg/l. The statistic test used id Two-Tailed Anova. There was significant difference of degradation between BOD5 and COD contains by giving various dosage of cow's urine fermentation and retention time. The research concluded that the BOD5 and COD contains in treated waste water are not adaptable according to Peraturabn Daerah Jawa Tengah No. 10 tahun 2004 about Standard Quality of Liquid Waste For Sosft Drink Industry Manufacturing namely 50 mg/l for BOD5 and 100 mg/l for COD. The next research could be better if completed with control the dissolved oxygen contain and nitrogen contain in chamber aeration.

Keyword : Cow's Urine Fermentation, activated sludge, BOD5, COD