Efisiensi pengolahan Lindi menggunakan anaerobic baffled reactor (ABR) dengan hydraulic retention time (HRT) 3 dan 4 hari: studi kasus: lindi TPA Cipayung = Efficiency of leachate treatment by using anaerobic baffled reactor (ABR) with hydraulic retention time (HRT) 3 and 4 days: case study leachate final disposal Cipayung

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Abstrak

ABSTRAK
Produksi lindi terjadi seiring beroperasinya TPA dan menjadi potensi pencemar lingkungan sehingga mendorong penelitian lebih lanjut mengenai penanganan lindi. Tujuan penelitian ini adalah menganalisa efisiensi penurunan kadar COD, BOD, dan ammonia pada pengolahan dengan Anaerobic Baffled Reactor (ABR). Selain itu, ingin diketahui pengaruh perbedaan hydraulic retention time (HRT) pada hasil pengolahan. Lindi berasal dari TPA Cipayung, yang diproses dalam ABR 5 kompartemen bervolume 37,5 L. Proses penelitian meliputi persiapan reaktor, seeding atau proses pengaktifan mikroorganisme dengan metode fermentasi EM4. Selanjutnya aklimatisasi, tahap pengadaptasian mikroorganisme dengan limbah dilakukan 33 hari diakhiri dengan uji C/N. Running menjadi tahap akhir penelitian, pembebanan dimulai dengan HRT 3 selanjutnya 4 selama 4 siklus untuk tiap HRT agar terlihat konsistensi datanya. Rentang presentase removal untuk parameter COD HRT 3 dan 4 hari yaitu 66,31% ? 69,82% dan 72,59% ?75,28%. BOD yaitu 70,25% ? 72,64% dan 76,28% ? 79,55%. Dan ammonia yaitu 16,31% ? 28,95% dan 30,10% ? 33,25%. Berdasarkan uji statistik dengan metode independen t-test diketahui terdapat pengaruh signifikan dari perbedaan HRT terhadap efisiensi removal. Semakin besarnya oraganic loading tidak diimbangi dengan kecenderungan peningkatan efisiensi removal. Lorg dengan nilai 0,105 Kg COD/ m3.hari menghasilkan efisiensi removal yang maksimum yaitu 79,55%. Ammonia bersifat inhibitor pada sistem pengolahan rentang optimumnya 378,03-395,12 mg/L.
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ABSTRACT
Production occurs following the operation of landfill leachate and become potential environmental contaminants, so as to encourage further research into the treatment of leachate. The purpose of this study is to analyze the efficiency decreased levels of COD, BOD and ammonia in processing with Anaerobic Baffled Reactor (ABR). In addition, we want to know the effect of different hydraulic retention time (HRT) on the processing results. Leachate from the landfill processed in the ABR 5 compartment volume of 37.5 L. The research process includes the preparation of the reactor, seeding or activation process of microorganisms by fermentation EM4. Furthermore acclimatization, the stage adaptation of microorganisms with waste carried out 33 days ending with the test C / N. Running into the final stage of research, starting with the imposition of HRT 3 next 4 for 4 cycles for each HRT to look consistency of data. Range of percentage removal of COD parameter HRT 3 and 4 days ie 66.31% - 69.82% and 72.59% -75.28%. BOD is 70.25% - 72.64% and 76.28% - 79.55%. And ammonia that is 16.31% - 28.95% and 30.10% - 33.25%. Based on the statistical test by independent t-test method known significant effect of HRT on the differences in removal efficiency. The greater oraganic loading is not matched by an increasing trend of removal efficiency. Lorg with a value of

0,105 kg COD / m3.days generate maximum removal efficiency is 79.55%. Ammonia is the inhibitor on COD processing and optimum range of 378.03 to 395.12 mg / L.