Analisis perbandingan efektifitas bioaktivator antara effective microorganisms 4 (em4) dan bioprisma dalam penurunan konsentrasi chemical oxygen demand (COD) dan amonia dengan bioreaktor aerob pada air lindi: studi kasus: Pasar Induk Kramat Jati, Jakarta = Analysis of bio activator comparative effectiveness between effective microorganisms 4 (em4) and bioprisma in decreasing the concentration of chemical oxygen demand (COD) and ammonia with aerobic bioreactor on leachate: case study Kramat Jati traditional

Rania Amalia F Alatas, author

Abstrak

ABSTRAK
Pasar tradisional sebagai lokasi penghasil timbulan limbah padat kedua terbesar menghasilkan air lindi melalui proses dekomposisi limbah padat. Penelitian ini menggunakan unit bioreaktor secara aerob dengan proses aerasi dalam mengolah air lindi sampah Pasar Induk Kramat Jati, Jakarta Timur. Penelitian ini bertujuan untuk mengindentifikasi karakteristik awal dan mengetahui waktu kontak serta persentase efisiensi penurunan konsentrasi COD dan amonia (NH3) yang optimum dengan pemberian bioaktivator, yaitu antara bioaktivator Effective Microorganisms 4 (EM4) dan Bioprisma. Bioaktivator merupakan stimulan bakteri in situ air limbah dalam proses pengolahan biologis yang mengandung konsorsium mikroorganisme sehingga pencemaran dapat cepat terurai. Kinerja bioreaktor diketahui melalui eksperimental secara batch dengan waktu kontak 7, 14, 21, 28, dan 35 hari. Variasi pemberian bioaktivator tidak menghasilkan perbedaan yang signifikan berdasarkan uji statistik Independent t-Test (95%). Hasil penelitian memperoleh konsentrasi COD sebesar 15025 mg/L dan amonia sebesar 161,52 mg/L yang melebihi baku mutu PermenLH No. 5 Tahun 2014 sehingga perlu diolah. Waktu kontak optimum pada kedua bioaktivator selama 28 hari dengan melakukan tahapan pengenceran (dilution) 10 kali sebelum pengolahan dan menghasilkan konsentrasi akhir COD sebesar 516,25 mg/L (65,63%) dan amonia sebesar 5,35 mg/L (66,58%) pada pemberian bioaktivator EM4 serta konsentrasi akhir COD sebesar 298 mg/L (80,16%) dan amonia sebesar 4,82 mg/L (69,89%) pada pemberian bioaktivator Bioprisma.
<hr>
ABSTRACT
Traditional market as the biggest second producer location of solid waste which generates leachate through decomposition of solid waste processes. This research uses aerobic bioreactors unit with aeration process on leachate treatment from solid waste of Traditional Market at Kramat Jati, East Jakarta. It aims to identify initial characteristic and know both the detention time and presentation of reduction efficiency of COD concentration and ammonia (NH3) which optimum by giving bio-activator which is among Effective Microorganisms 4 (EM4) and Bioprisma. Bio-activator is stimulant of in situ bacterial of waste water in biological treatment process which contain microorganism?s consortium so the pollution can quickly unravel. Bioreactor performance is known through experimental in batch system with the detention time of 7, 14, 21, 28, and 35 days. Variation of given bio-activator does not produce significant differences based on statistical tests Independent t-Test (95%). The research results shows COD?s concentrations is amount

15025 mg/L and ammonia is amount 161.25 mg / L which exceed the adequate quality of PermenLH No. 5 Tahun 2014 so it need to manage furthermore. The optimum detention time on both bio-activator for 28 days by doing dilution process 10 times before processing and produce COD final concentration is amount 516.25 mg/L (65.63%) and ammonia is amount 5.35 mg/L in given bio-activator EM4 then COD final concentration is amount 298 mg/L (80.16%) and ammonia is amount 4.82 mg/L (69.89%) in given Bioprisma?s bio-activator.;