

ABSTRAK

Yoga Maulana Putra, 2023, Pengolahan Limbah Laboratorium Dengan Metode Kombinasi Filtrasi Adsorpsi dan Fitoremediasi, Proposal Tugas Akhir Progam Studi Teknik Lingkungan, Fakultas Teknik, Universitas PGRI Adi Buana Surabaya. Dosen Pembimbing : Dra. Indah Nurhayati, S.T., M.T.

Untuk mengatasi permasalahan timbunan limbah laboratorium di Universitas PGRI Adi Buana diperlukan pengolahan yang efektif dan efisien. Salah satunya menggunakan metode kombinasi filtrasi adsorpsi dan fitoremediasi. Tujuan penelitian ini untuk menurunkan kadar COD, Hg dan TDS pada limbah cair laboratorium lingkungan, metode yang digunakan pada penelitian ini adalah kombinasi filtrasi, adsorpsi, dan fitoremediasi menggunakan tanaman melati air (*Echinodorus palaefolius*). Penelitian ini merupakan penelitian skala laboratorium menggunakan filtrasi, adsorpsi dan fitoremediasi. Variabel bebas yaitu menggunakan 2 dan 4 tanaman melati air. Variabel terikat pada penelitian ini adalah kadar COD, Hg dan TDS. Filtrasi menggunakan media ijuk, pasir, karbon aktif, zeolit, dan kerikil dengan debit 140ml/menit. Analisis COD menggunakan SNI 6989.02:2019, Hg SNI 6989-78:2019 dan TDS SNI 6989.27:2019. Hasil penelitian adalah proses filtrasi adsorpsi dapat menurunkan TDS sebesar 35.94% dan Hg 66.11%. fitoremediasi dengan pengenceran 20%, penurunan COD dan Hg tertinggi terjadi pada bak fitoremediasi B dengan jumlah tanaman 4, dengan efisiensi masing-masing 61.99% dan 99.70%.

Kata kunci : Adsorpsi, Filtrasi, Fitoremediasi, Limbah Laboratorium

ABSTRACT

Yoga Maulana Putra, 2023, Laboratory Waste Treatment Using a Combination of Adsorption and Phytoremediation Filtration Methods, Final Project Proposal for the Environmental Engineering Study Program, Faculty of Engineering, PGRI Adi Buana University Surabaya. Supervisor : Dra. Indah Nurhayati, S.T., M.T.

To overcome the problem of laboratory waste accumulation at PGRI Adi Buana University, effective and efficient treatment is needed. One of them uses a combination of adsorption filtration and phytoremediation methods. The purpose of this study is to reduce COD, Hg and TDS levels in environmental laboratory liquid waste, the method used in this study is a combination of filtration, adsorption, and phytoremediation using water jasmine plants (*Echinodorus palaeifolius*). This study is a laboratory-scale research using filtration, adsorption and phytoremediation. The independent variable is to use 2 and 4 water jasmine plants. The variables tied to this study were COD, Hg and TDS levels. Filtration uses palm oil, sand, activated carbon, zeolite, and gravel media with a discharge of 140ml/minute. COD analysis used SNI 6989.02:2019, Hg SNI 6989-78:2019 and TDS SNI 6989.27:2019. The results of the study are that the adsorption filtration process can reduce TDS by 35.94% and Hg by 66.11%. Phytoremediation with 20% dilution, the highest decrease in COD and Hg occurred in the B phytoremediation tub with a total of 4 plants, with an efficiency of 61.99% and 99.70%, respectively.

Keywords : Adsorption, Filtration, Phytoremediation, Laboratory Waste