

Puspitasari, E., 2019. Bioremediasi Logam Berat Pb (II) pada Air Lindi TPA Oleh *Skeletonema* sp. Imobil. Skripsi ini dibawah bimbingan Dra. Thin Soedarti, CESA., dan Dr. Eko Prasetyo Kuncoro, S. T., DEA. Program Studi S-1 Teknik Lingkungan, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui ada atau tidaknya perbedaan persentase efisiensi penyisihan logam berat Pb (II) pada air lindi TPA oleh *Skeletonema* sp. imobil berdasarkan variasi waktu kontak, waktu kontak persentase efisiensi maksimum penyisihan logam berat Pb (II) pada air lindi TPA, dan ada atau tidaknya perbedaan ukuran sel *Skeletonema* sp. sebelum diimobilisasi dan sesudah *beads* imobil dilelehkan. Pada penelitian ini sel *Skeletonema* sp. diimobilisasi dengan natrium alginat dengan konsentrasi sebesar 0,65% dengan variasi waktu kontak 1-7 hari. Data pengamatan persentase efisiensi penyisihan logam berat dianalisa secara statistik menggunakan uji *One Way Anova*. Berdasarkan hasil analisis diketahui bahwa terdapat perbedaan persentase efisiensi penyisihan logam berat Pb (II) pada air lindi berdasarkan waktu kontak. Waktu kontak maksimum dalam proses penyisihan logam berat Pb (II) pada air lindi ini terjadi pada hari ke-7 dengan persentase efisiensi sebesar 89,353%. Sedangkan, perbedaan ukuran sel *Skeletonema* sp. sebelum diimobilisasi dan sesudah *beads* dilelehkan dilakukan analisis statistik dengan uji *Kruskal Wallis* dan Uji *Mann Whitney*. Berdasarkan hasil analisis diketahui bahwa tidak terdapat perbedaan ukuran sel *Skeletonema* sp. sebelum diimobilisasi dan sesudah *beads* dilelehkan.

Kata Kunci: air lindi TPA, bioremediasi, natrium alginat, Pb (II), *Skeletonema* sp. yang diimobilisasi

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ABTRACT

The purpose of this research were to determine the difference of heavy metal Pb (II) removal efficiency percentage in landfills' (TPA) leachate by immobilized Skeletonema sp. based on variations in contact time, maximum contact time of heavy metal Pb (II) removal efficiency percentage in landfills' leachate, and to determine the cell size difference of Skeletonema sp. before and after being immobilized beads are melted. In this research, Skeletonema sp. cells were immobilized using sodium alginate; with a concentration of 0.65%, and a period of 1-7 days of contact time variation. Observation data on the removal efficiency percentage of heavy metals were statistically analyzed using the One Way Anova test. Based on the results of the analysis, it is known that there is a difference in heavy metals Pb (II) efficiency removal percentage in landfills' leachate based on the determined contact time. The maximum contact time of the heavy metals removal Pb (II) in leachate was found to occur at the 7th day with an efficiency percentage of 89.353%. Meanwhile, the difference in cell size of Skeletonema sp. before the immobilization and after melting the beads was determined using statistical analysis of Kruskal Wallis test and Mann Whitney test. Based on the results of the analysis, it is known that there is no difference in cell size of Skeletonema sp. before immobilization and after melting the beads.

Keywords: *bioremediation, Pb (II), Skeletonema sp. immobilized, sodium alginate, TPA leachate*