

ABSTRACT

“The Use of Water Jasmine (*Echinodorus palaefolius*) as a Phytoremediation Agent for Liquid Waste in the Batik Industry to Reduce Heavy Metal (Pb)”

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XVI+50 pages, 6 tables, 7 figures, 22 appendices

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The batik industry is one of the creative economic sectors that plays a significant role in supporting the national economy and preserving Indonesian culture. However, batik wastewater containing lead (Pb) can have serious negative impacts on the environment and human health. Pb in batik wastewater can contaminate water, soil, and aquatic organisms, and poses potential health risks to humans upon exposure.

This study is an experimental research using a pretest-posttest design. The batik liquid waste was collected from Rumah Batik Siti Hajir, located in Jelmu, Pelayangan District, Jambi City, Jambi Province. Data analysis was performed using ANOVA tests.

Based on exposure duration and after three repetitions, the Pb levels in the batik liquid waste were found to be 0.0051 mg/L on day 14, 0.0019 mg/L on day 18, and 0.0004 mg/L on day 21. Observations of pH and water temperature were also carried out during the repetitions.

The conclusion of the study indicates a significant reduction in heavy metal Pb, with the result on day 21 falling below the permissible limit, at 0.0004 mg/L.

Keywords: Batik liquid waste, phytoremediation, lead (Pb)



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ABSTRAK

“Penggunaan Melati Air (*Echinodorus palaefolius*) Sebagai Agen Fitoremediasi Limbah Cair di Industri Batik Terhadap Penurunan Logam Berat (Pb)”

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XVI+ 50 halaman, 6 tabel, 7 gambar, 22 lampiran

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Industri batik merupakan salah satu sektor ekonomi kreatif yang memiliki peran penting dalam mendukung perekonomian nasional dan pelestarian budaya Indonesia. Limbah batik yang mengandung Pb dapat memberikan dampak negatif yang signifikan terhadap lingkungan dan kesehatan. Pb dalam limbah batik dapat mencemari air, tanah, dan biota perairan, serta berpotensi membahayakan kesehatan manusia jika terpapar.

Jenis penelitian adalah penelitian eksperimen dalam bentuk Pretest-Posttest Design, limbah cair batik diambil di Rumah Batik Siti Hajir. Jelmu, Kec. Pelayangan, Kota Jambi, Jambi. Analisis data menggunakan analisis uji Anova.

Berdasarkan lama waktu pemaparan setelah dilakukan 3 pengulangan hasil menunjukkan kadar logam Pb limbah cair batik didapatkan hasil 0,0051 Mg/L di hari ke-14 hari, 0,0019 Mg/L di hari ke-18 hari, dan 0,0004 Mg/L di hari ke-21 hari. Pada pengulangan terdapat juga pengamatan pH dan pengamatan suhu air.

Kesimpulan dari penelitian adanya penurunan logam berat Pb yang hasil signifikan pada hari ke-21 menunjukkan di bawah ambang batas yaitu 0,0004 Mg/L.

Kata Kunci: Limbah Cair Batik, Fitoremediasi, dan Pb