

**EFEKTIVITAS PENGOLAHAN AIR LINDI TPA  
JATIBARANG DENGAN MENGGUNAKAN KOMBINASI  
KOAGULASI – FLOKULASI KIMIA, ADSORPSI, DAN  
FITOREMEDIASI**

**EFFECTIVENESS OF JATIBARANG LANDFILL  
LEACHATE WATER TREATMENT USING A  
COMBINATION OF CHEMICAL COAGULATION-  
FLOCCULATION, ADSORPTION, AND  
PHYTOREMEDIATION**

**TUGAS AKHIR**



**Maria Beneficia Divina  
21.03.0004**

**PROGRAM STUDI REKAYASA INFRASTRUKTUR DAN LINGKUNGAN  
FAKULTAS ILMU DAN TEKNOLOGI LINGKUNGAN  
UNIVERSITAS KATOLIK SOEGIJAPRANATA  
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## ABSTRAK

Nama : **Maria Beneficia Divina**  
Program Studi : **Rekayasa Infrastruktur dan Lingkungan**  
Judul : **EFEKTIVITAS PENGOLAHAN AIR LINDI TPA  
JATIBARANG DENGAN MENGGUNAKAN  
KOMBINASI KOAGULASI-FLOKULASI KIMIA,  
ADSORPSI, DAN FITOREMEDIASI**

Pembimbing :

Air lindi merupakan air hasil perkolasi yang mengandung berbagai zat pencemar berbahaya yang dapat mencemari air tanah dan lingkungan sekitar. Penelitian terdahulu telah menggunakan metode konvensional seperti fitoremediasi, adsorpsi, dan koagulasi-flokulasi, tetapi memiliki kelemahan yaitu kurang efektif dalam menguraikan semua jenis pencemar secara optimal. Penelitian ini bertujuan untuk menganalisis efektivitas kombinasi metode koagulasi-flokulasi kimia, adsorpsi, dan fitoremediasi dalam menurunkan kadar polutan air lindi Tempat Pembuangan Akhir (TPA) Jatibarang. Metode pengolahan yang digunakan dalam penelitian ini dengan pendekatan eksperimental yang bertujuan untuk mengurangi kandungan polutan dalam air lindi, termasuk parameter kualitas air seperti, N-Total, *Total Suspended Solids* (TSS), *Chemical Oxygen Demand* (COD), *Biochemical Oxygen Demand* (BOD), dan pH. Hasil penelitian dikatakan berhasil apabila seluruh parameter kualitas air yang diuji sesuai dengan batas baku mutu dan dikatakan tidak sesuai jika melebihi ambang batas baku mutu. Hasil penelitian menunjukkan bahwa koagulasi-flokulasi dapat menurunkan kadar BOD 7,9%, COD 19,5%, pH 4,4%, dan N-Total 9,3%, sedangkan adsorpsi dapat menurunkan kadar pencemar parameter BOD 98,8%, COD 98%, N-Total 19,7, dan pH 1,2%, dan fitoremediasi efektif dalam menurunkan kadar polutan pada parameter N-Total 49,9% dan TSS 59,1%. Dari hasil tersebut, pendekatan kombinasi tiga proses ini terbukti lebih efektif dalam menurunkan kadar polutan air lindi dari pada proses tunggal. Pendekatan kombinasi ini direkomendasikan untuk diterapkan dalam pengolahan air lindi secara berkelanjutan di TPA Jatibarang.

Kata kunci : Air lindi, baku mutu, efektivitas, pengolahan, TPA Jatibarang.

## ABSTRACT

Name : **Maria Beneficia Divina**  
Study Program : **Infrastructure and Environmental Engineering**  
Title : **EFFECTIVENESS OF JATIBARANG LANDFILL  
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Counsellor :

Leachate is percolated water containing various hazardous pollutants that can contaminate groundwater and the surrounding environment. Previous studies have used conventional methods such as phytoremediation, adsorption, and coagulation-flocculation, but these methods have the disadvantage of being less effective in optimally decomposing all types of pollutants. This study aims to analyze the effectiveness of a combination of chemical coagulation-flocculation, adsorption, and phytoremediation methods in reducing leachate pollutant levels at the Jatibarang Landfill (TPA). The treatment method used in this study is an experimental approach aimed at reducing the pollutant content in leachate, including water quality parameters such as Total N, Total Suspended Solids (TSS), Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), and pH. The results of the study are considered successful if all tested water quality parameters are in accordance with the quality standard limits and are considered inappropriate if they exceed the quality standard threshold. The results showed that coagulation-flocculation can reduce BOD levels by 7.9%, COD by 19.5%, pH by 4.4%, and N-Total by 9.3%, while adsorption can reduce pollutant levels by 98.8%, COD by 98%, N-Total by 19.7%, and pH by 1.2%, and phytoremediation is effective in reducing pollutant levels in N-Total parameters by 49.9% and TSS by 59.1%. From these results, the combined approach of these three processes is proven to be more effective in reducing leachate pollutant levels than a single process. This combined approach is recommended to be applied in sustainable leachate treatment at the Jatibarang Landfill..

Keywords : Leachate, quality standards, effectiveness, processing, Jatibarang landfill.