

ABSTRAK

Limbah cair produksi tahu mengandung padatan terlarut dan tersuspensi yang dapat berubah secara kimia, fisik, dan biologi, berpotensi menghasilkan zat beracun, serta mendukung pertumbuhan bakteri. Tanpa pengolahan yang baik, limbah ini dapat mencemari lingkungan perairan dan menimbulkan masalah kesehatan. Pengolahan limbah cair penting untuk mengurangi dampak negatif terhadap lingkungan dan memastikan limbah memenuhi standar baku mutu.

Limbah ini diolah menggunakan metode Floating Treatment Wetland (FTW) yang menggabungkan biofiltrasi dan fitoremediasi. Biofilter menggunakan abu sekam padi dengan ketebalan 5 cm, 10 cm, dan 15 cm, sementara fitoremediasi menggunakan tanaman marigold. Pengamatan dilakukan untuk mengukur penurunan kadar Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), dan Total Suspended Solid (TSS) serta stabilisasi pH.

Hasil penelitian menunjukkan bahwa kombinasi biofiltrasi abu sekam padi dan fitoremediasi tanaman marigold efektif dalam menurunkan kadar BOD sebesar 57,2%, COD sebesar 57,9%, dan TSS sebesar 69,1%, serta peningkatan pH limbah cair tahu sebesar 44,4%. Penurunan kadar polutan ini menunjukkan bahwa FTW dengan kombinasi biofiltrasi abu sekam padi dan fitoremediasi marigold efektif dalam mengolah limbah cair tahu, menjadi solusi potensial bagi industri tahu untuk memenuhi standar baku mutu air limbah.

Kata kunci: biofiltrasi, fitoremediasi, abu sekam padi, tanaman marigold, limbah cair tahu

ABSTRACT

Tofu production wastewater contains dissolved and suspended solid that can undergo chemical, physical, and biological changes, potentially producing toxic substances, and support bacterial growth. Without proper treatment, this waste can pollute aquatic environments and cause health risks. Water Waste treatment is important to reduce negative impact for the environment and to ensure the waste meets quality standards.

This wastewater was treated using Floating Treatment Wetland (FTW) method, which combines biofiltration and phytoremediation. The biofiltration used rice husk ash with thickness 5 cm, 10 cm, and 15 cm, meanwhile phytoremediation utilized marigold plants. Observations were conducted to measure the reduction in Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solid (TSS) and pH stabilization.

The results showed that the biofiltration of rice husk ash and phytoremediation of marigold plants combination was effective in reducing BOD levels by 57,2%, COD by 57,9%, and TSS by 69,1%, also increasing the pH level of tofu water waste by 44,4%. The reduction in pollutant level demonstrated that FTW with the combination of rice husk ash biofiltration and marigold phytoremediation is effective in treating tofu wastewater, offering a potential solution for tofu industry to meet wastewater quality standards.

Keywords: *biofiltration, phytoremediation, rice husk ash, marigold plants, tofu wastewater*