

ABSTRAK

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PENGOLAHAN LIMBAH *GREY*WATER RUMAH TANGGA
MENGUNAKAN SISTEM *BIOCONTACT* DALAM
MENURUNKAN KANDUNGAN BOD₅ dan COD
(Studi Kasus Pada Saluran Drainase di Lingkungan Margorejo
Surabaya Tahun 2023)

XVI + 50 Halaman + 7 Tabel + 3 Gambar

Limbah rumah tangga atau *greywater* di lingkungan Margorejo, Surabaya umumnya dibuang langsung tanpa pengolahan di saluran drainase, sehingga menyebabkan pencemaran lingkungan. Air limbah ini mempunyai kandungan BOD₅ sebesar 54,2 mg/L dan COD sebesar 276 mg/L. Tingginya nilai BOD₅ dan COD dapat menurunkan kandungan oksigen terlarut, sehingga dapat mengganggu ekosistem. Penelitian ini bertujuan menganalisis penggunaan sistem *biocontact* dalam menurunkan kandungan BOD₅ dan COD pada saluran drainase.

Jenis Penelitian ini *quasi experiment*, yaitu sebuah metode penelitian yang mirip dengan eksperimen tetapi tidak memenuhi kriteria eksperimen sejati. Penelitian ini memanfaatkan media batu sungai, ijuk, kerikil, karbon aktif sebagai *biocontact* pada pengolahan *greywater* dalam menurunkan kandungan BOD₅ dan COD. Lama kontak *greywater* dalam tangki *biocontact* adalah 3 hari, dan sampel diambil dari tangki *biocontact* sebanyak 3 kali perhari. Data BOD₅ dan COD diolah dengan menyajikan tabel kemudian dianalisis secara deskriptif.

Hasil penelitian kandungan BOD₅ dan COD antara *inlet* dan *outlet* menunjukkan penurunan masing-masing hingga 46,7 mg/L dan 79,4 mg/L dalam waktu 72 jam. *Biocontact* efektif untuk menurunkan kadar BOD₅ dan COD dalam limbah *greywater* yang dibuktikan dengan hasil uji sudah sesuai Pergub jatim 72/2013, Lampiran III Nomor 4 Tentang Baku Mutu Limbah Domestik BOD₅, 30 mg/L dan COD 50 mg/L.

Kesimpulan dari penelitian ini, *biocontact* menggunakan media batu sungai, kerikil, ijuk, karbon aktif mampu menurunkan BOD₅

sebesar 91,6% dan COD sebesar 75,1% sehingga layak digunakan masyarakat untuk mengolah *greywater*. Selain itu biaya pembuatan *biocontact* cukup rendah. Penelitian ini mengindikasikan perlunya penelitian lanjutan dengan variasi waktu kontak berbeda, seeding dan masa aklimatisasi minimal 2 minggu.

Kata Kunci: *Biocontact*, *Greywater*, BOD5, COD.
Daftar Bacaan: 9 Buku + 28 Jurnal (1981 – 2023)

ABSTRACT

Faiq Azmiy Fadllullah

HOUSEHOLD GREYWATER WASTE TREATMENT USING A BIOCONTACT SYSTEM IN REDUCING BOD5 AND COD CONTENT

(Case Study on Drainage Channels in Margorejo environment, Surabaya in 2023)

XVI + 50 Pages + 7 Tables + 3 Pictures

Household waste or greywater in the Margorejo neighborhood, Surabaya is generally disposed of directly without treatment in drainage channels, causing environmental pollution. This wastewater contains BOD5 of 54.2 mg/L and COD of 276 mg/L. High values of BOD5 and COD can reduce dissolved oxygen content, so that it can disrupt the ecosystem. This study aims to analyze the use of biocontact systems in reducing the content of BOD5 and COD in drainage channels.

This type of research is quasi-experimental, that is, a research method that is similar to experiments but does not meet the criteria of true experimentation. This research utilizes river stone media, palm fiber, gravel, activated carbon as biocontact in greywater treatment in reducing BOD5 and COD content. The duration of greywater contact in the biocontact tank is 3 days, and samples are taken from the biocontact tank 3 times per day. BOD5 and COD data are processed by presenting tables and then analyzed descriptively.

The results of the study of BOD5 and COD content between the inlet and outlet showed a decrease of up to 46.7 mg/L and 79.4 mg/L respectively within 72 hours. Biocontact is effective in reducing BOD5 and COD levels in greywater waste as evidenced by test results in accordance with East Java Governor Regulation 72/2013, Annex III Number 4 concerning Quality Standards for Domestic Waste BOD5, 30 mg/L and COD 50 mg/L.

The conclusion of this study, biocontact using river stone, gravel, palm fiber, activated carbon media can reduce BOD₅ by 91.6% and COD by 75.1% so that it is suitable for community use to process greywater. In addition, the cost of making biocontacts is quite low. This study indicates the need for further research with variations in contact time different, seeding and acclimatization periods of at least 2 weeks.

Keywords: Biocontact, Greywater, BOD₅, COD.

Bibliography: 9 Books + 28 Journals (1981 – 2023)