Politeknik Kesehatan Kemenkes Bandung

Program Studi Sarjana Terapan Sanitasi Lingkungan

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Abstrak

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PERBEDAAN SISTEM FILTRASI *UP FLOW* DAN *DOWN FLOW* MENGGUNAKAN MEDIA KARBON AKTIF TERHADAP PENURUNAN KADAR AMONIA PADA LIMBAH CAIR DOMESTIK

ix + 124 Halaman + 9 Tabel + 11 Lampiran

Tingginya kadar amonia pada limbah cair domestik dapat memberikan dampak buruk bagi makhluk hidup karena bersifat toksik dalam tubuh manusia dan organisme akuatik. Salah satu pengolahan yang dilakukan dalam menurunkan kadar amonia yaitu metode filtrasi menggunakan adsorben karbon aktif. Penelitian ini bertujuan untuk mengetahui perbedaan sistem aliran filtrasi *up flow* dan *down flow* menggunakan media karbon aktif dalam menurunkan kadar amonia pada limbah cair domestik. Jenis penelitian ini yaitu *Quasi Experiment* dengan rancangan penelitian *Post-Test Only Control Group Design*. Kadar amonia pada limbah cair domestik sebelum dilakukan pengolahan yaitu rata – rata sebesar 17,54 mg/L, namun setelah melewati reaktor filter sistem *up flow* maupun sistem *down flow* kadar amonia mengalami penurunan. Setelah melalui sistem filtrasi *up flow* kadar amonia pada limbah cair domestik yaitu rata – rata sebesar 1,41 mg/L dan setelah melalui sistem filtrasi *down flow* yaitu rata – rata sebesar 4,02 mg/L. Selisih penurunan kadar amonia setelah melalui sistem filtrasi *up flow* yaitu rata – rata sebesar 16,13 mg/L dengan persentase penurunan sebesar 91,96%. Sedangkan selisih penurunan kadar amonia setelah melalui sistem filtrasi *down flow* yaitu rata – rata sebesar 13,52 mg/L dengan persentase penurunan sebesar 77,04%. Jika dilihat dari segi teknis pembuatan alat dan pemeliharaan alat atau *maintenance*, sistem filtrasi *down flow* lebih efektif digunakan karena mudah diaplikasikan dan diimplementasikan di lapangan. Selain itu, perlunya dilakukan penelitian lebih lanjut mengenai masa jenuh media karbon aktif yang digunakan, sehingga dapat mengetahui jangka waktu penggunaan media tersebut.

DAFTAR PUSTAKA : 32 (2001 – 2019)
KATA KUNCI : Adsorben, Adsorpsi, Amonia, Filtrasi, Karbon Aktif, Limbah Cair Domestik, Sistem Filtrasi *Down Flow*, Sistem Filtrasi *Up Flow*.

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Abstract

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DIFFERENCES OF UP FLOW AND DOWN FLOW FILTRATION SYSTEM USING ACTIVATED CARBON MEDIA ON DECREASE AMMONIA LEVELS IN DOMESTIC WASTE WATER

ix + 124 Pages + 9 Tables + 11 Appendices

High levels of ammonia in domestic waste water can have a negative impact on living things because it is toxic in the human body and aquatic organisms. One of the treatments carried out in reducing ammonia levels is the filtration method using activated carbon adsorbents. This study aims to determine the differences in up flow and down flow filtration systems using activated carbon media in reducing ammonia levels in domestic wastewater. This research is a Quasi Experiment with a Post-Test Only Control Group Design. Ammonia levels in domestic wastewater prior to treatment are on average 17.54 mg/L, while after passing through the filter reactor system up flow or down flow system the ammonia levels decrease. After going through the filtration system up flow ammonia levels in domestic wastewater is an average of 1.41 mg/L and after going through a down flow filtration system that is an average of 4.02 mg/L. Difference in decrease in ammonia levels after going through the filtration system up flow is an average of 16.13 mg/L with a percentage decrease of 91.96%. While the difference in the reduction in ammonia levels after going through a down flow filtration system is an average of 13.52 mg/L with a percentage decrease of 77.04%. If seen from the technical aspect of tool manufacturing and maintenance, down flow filtration systems are more effective to use because they are easy to apply and implement. In addition to that, the need for further research on the saturation period of the activated carbon media, so that it can determine the period of use of the media.

REFERENCES : 32 (2001 - 2019)
KEY WORDS : Activated Carbon, Adsorbent, Adsorption, Ammonia, Filtration, Domestic Liquid Waste, Down Flow Filtration System, Up Flow Filtration System.