Penurunan kadar merkuri (hg) melalui metode construced wetland pada air limbah tailing tambang emas rakyat Pongkor Jawa Barat = Reducing levels of mercury hg through constructed wetland method in artisanal and small scale gold mine tailing pongkor west java / Aulia Qisthi

Aulia Qisthi, author

Abstrak

ABSTRAK
Hingga saat ini kasus pencemaran air limbah tailing akibat pertambangan emas rakyat di Pongkor, Jawa Barat masih termasuk dalam kategori yang cukup memprihatinkan. Tingginya kadar merkuri pada air limbah yang melebihi baku mutu lingkungan, membuat kebutuhan pengolahan air limbah tambang emas rakyat menjadi penting untuk dilaksanakan. Pada penelitian ini, metode constructed wetland dengan menggunakan tanaman Phragmites Australis digunakan untuk mengurangi kadar merkuri pada air limbah tersebut. Air limbah yang digunakan pada penelitian terdiri dari limbah asli tambang emas rakyat Pongkor dengan kadar 27 ppb dan limbah buatan dengan kadar 30 ppb, 60 ppb dan 90 ppb. Hasil penelitian menunjukkan tingkat efisiensi penurunan kadar merkuri yang dihasilkan adalah sebesar 99,8% pada air limbah buatan dengan kadar 60 ppb dan 90 ppb, serta sebesar 99,6% pada air limbah asli dan air limbah buatan kadar 30 ppb. Tingkat akumulasi Hg tertinggi ditemukan di bagian akar tanaman dengan konsentrasi merkuri total pada bagian akar, batang dan daun tanaman adalah sebesar 3,502 mg/kg, 5,102 mg/kg dan 12,066 mg/kg pada air limbah buatan kadar 30 ppb, 60 ppb dan 90 ppb.
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ABSTRACT
Water contamination due to artisanal and small-scale gold mine activity at Pongkor, West Java is still in an alarming condition. The high level of mercury in gold mine tailing wastewater in Pongkor, West Java, has exceeded government regulations on the standard of wastewater quality. This has increased the need for the implementation of wastewater treatment. In this study, a constructed wetland method was applied to reduce the levels of mercury (Hg) in gold mine tailing with Phragmites Australis. Wastewater which was used in this study consisted of original gold mine tailing wastewater that was contaminated by mercury up to 27 ppb and artificial wastewater consisting of various doses of mercury in 30 ppb, 60 ppb and 90 ppb levels. The results showed that the efficiency levels of mercury after treatment reached 99.6% in both the original wastewater as well as 30 ppb wastewater of mercury, while the efficiency levels for wastewater of 60 ppb and 90 ppb levels of mercury reached 99.8%. This study also showed that the highest accumulation of mercury was found in the roots, with a total accumulation mercury in Phragmites Australis of 3.502 mg/kg, 5.102 mg/kg and 12.066 mg/kg in artificial wastewater at 30 ppb, 60 ppb and 90 ppb levels.