CARBON MONOXIDE (CO) LEVELS IN THE FORMER PIYUNGAN LANDFILL AREA (NGABLAK HAMLET) AND RESPIRATORY HEALTH PROBLEMS

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ABSTRACT

Background : *The burning of trash in the area of the former Piyungan Landfill, Ngablak Hamlet, is still frequently carried out by residents and has the potential to produce hazardous gases, such as carbon monoxide (CO), which can harm respiratory health.*

Objective : *This study aims to determine carbon monoxide (CO) levels under active and inactive waste burning conditions and to describe respiratory health problems among residents living near waste burning sites that use open pits.*

Method : *This study employed a descriptive observational design. Measurements of carbon monoxide (CO) levels, temperature, humidity, and wind speed were taken at several measurement points during active and inactive waste burning. Data on respiratory health complaints were collected through questionnaires administered to respondents and analyzed descriptively.*

Results : *The results of the study show that carbon monoxide (CO) levels during active combustion ranged from 132 to 189 ppm, while during inactive combustion they ranged from 81 to 176 ppm. The air temperature during active combustion ranged from 29.7 to 33.8 °C and during inactive combustion from 32.9 to 36.3 °C. Air humidity during active combustion ranges from 65.8–80.1%, and during inactive combustion from 56.8–67.1%. Wind speed during active combustion ranges from 0.3–0.8 m/s, while during inactive combustion it ranges from 0.3–1.0 m/s. Most measurement points during active burning exceeded the CO quality standard of 168 ppm. Additionally, some respondents experienced respiratory symptoms, such as coughing, shortness of breath, and throat irritation. Conclusion: Waste burning activities using open pits have the potential to increase CO levels in the air and cause respiratory health issues among the surrounding community.*

Conclusion : *Carbon monoxide (CO) levels are higher during active waste burning and are influenced by physical environmental factors such as temperature, humidity, and wind speed, thereby potentially causing respiratory health problems among nearby residents.*

Keywords : *Carbon monoxide levels; waste incineration; physical environmental factors; respiratory disorders.*

KADAR KARBON MONOKSIDA (CO) DI WILAYAH BEKAS TPA (DUSUN NGABLAK) DAN GANGGUAN KESEHATAN

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ABSTRAK

Latar Belakang : Pembakaran sampah di wilayah bekas TPA Piyungan, Dusun Ngablak, masih sering dilakukan oleh masyarakat dan berpotensi menghasilkan gas berbahaya seperti kadar karbon monoksida (CO) yang dapat mengganggu kesehatan pernapasan.

Tujuan : Penelitian ini bertujuan untuk mengetahui kadar karbon monoksida (CO) pada kondisi pembakaran sampah aktif dan tidak aktif serta menggambarkan gangguan kesehatan pernapasan pada masyarakat yang tinggal di sekitar lokasi pembakaran sampah menggunakan tobong.

Metode : Penelitian ini menggunakan desain deskriptif observasional. Pengukuran kadar karbon monoksida (CO), suhu, kelembaban, dan kecepatan angin dilakukan pada beberapa titik pengukuran saat pembakaran sampah aktif dan tidak aktif. Data gangguan kesehatan pernapasan diperoleh melalui kuesioner yang diberikan kepada responden dan dianalisis secara deskriptif.

Hasil : Hasil penelitian mnunjukkan bahwa kadar karbon monoksida (CO) saat pembakaran aktif berkisar antara 132-189 ppm, sedangkan saat pembakaran tidak aktif berkisar antara 81-176 ppm. Suhu udara saat pembakaran aktif berkisar 29,7-33,8 ℃ dan saat tidak aktif 32,9-36,3 ℃. Kelembaban udara saat pembakaran aktif berkisar 65,8–80,1% dan saat tidak aktif 56,8–67,1%. Kecepatan angin saat pembakaran aktif berkisar 0,3–0,8 m/s, sedangkan saat tidak aktif berkisar 0,3–1,0 m/s. Sebagian besar titik pengukuran pada kondisi pembakaran aktif melebihi baku mutu CO sebesar 168 ppm. Selain itu, sebagian responden mengalami gangguan pernapasan, seperti batuk, sesak napas, dan iritasi tenggorokan.

Kesimpulan : Aktivitas pembakaran sampah menggunakan tobong berpotensi meningkatkan kadar CO di udara dan menimbulkan gangguan kesehatan pernapasan pada masyarakat sekitar.

Kata Kunci : Kadar karbon monoksida; pembakaran sampah; faktor lingkungan fisik; gangguan pernapasan.