

ANALISIS PENGUKURAN TINGKAT KEPEKATAN DAN KERAPATAN
ASAP SUMBER TIDAK BERGERAK PADA CEROBONG ASAP CV
TUMITAH

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ABSTRAK

Latar Belakang: Polusi udara memiliki berbagai dampak buruk terhadap kesehatan manusia dan lingkungan. Beberapa jenis polutan bersifat lebih beracun dan memberikan efek yang sangat merugikan bagi kesehatan pekerja maupun masyarakat umum salah satunya emisi gas buang sumber tidak bergerak pada cerobong asap industri. Berdasarkan data Direktorat Pengendalian Pencemaran Udara tahun 2022 Provinsi Daerah Istimewa Yogyakarta tercatat sebanyak 513 industri berskala sedang dan besar, serta 146.658 industri mikro dan kecil. Dari data tersebut, terdapat 55 industri yang diketahui menggunakan cerobong asap dan telah terdaftar di Kementerian Lingkungan Hidup dan Kehutanan.

Tujuan: Penelitian ini bertujuan untuk menganalisis tingkat kepekatan dan kerapatan asap (opasitas) yang dihasilkan oleh cerobong asap di CV Tumitah, serta meninjau kondisi lingkungan yang memengaruhi penyebaran emisi tersebut.

Metode: Pengukuran dilakukan selama lima hari dengan dua sesi pengamatan harian, menggunakan metode skala *Ringelmann* untuk opasitas serta alat bantu *Thermohygrometer* HTC-1 dan *Anemometer* untuk pengukuran suhu, kelembaban, dan kecepatan angin.

Hasil: Penelitian menunjukkan bahwa tingkat opasitas rata-rata sebesar 23,2%, masih berada di bawah batas maksimum 30% sesuai PermenLHK No. 7 Tahun 2007. Suhu di area pengamatan berkisar antara 27,5°C hingga 37°C, kelembaban relatif antara 63%–82%, dan kecepatan angin dari 0,2 m/s hingga 1,2 m/s. Kondisi ini menunjukkan bahwa penyebaran emisi dipengaruhi oleh faktor cuaca, kelembaban tinggi akibat material kayu, serta kecepatan angin yang cenderung rendah. Meskipun masih dalam ambang batas aman, akumulasi jangka panjang dari partikel emisi tetap berisiko bagi lingkungan sekitar, pekerja, dan masyarakat.

Kesimpulan: Tingkat opasitas asap rata-rata sebesar 23,2% menunjukkan bahwa emisi dari cerobong asap CV Tumitah masih memenuhi ketentuan. Namun, Dampak terhadap lingkungan tetap ada, khususnya jika tidak disertai dengan sistem pengelolaan emisi yang memadai.

Kata kunci: opasitas, cerobong asap, emisi, kualitas udara, sumber tidak bergerak.

*ANALYSIS OF MEASURED SMOKE CONCENTRATION AND OPACITY
LEVELS FROM A STATIONARY SOURCE IN THE CHIMNEY OF
CV TUMITAH*

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ABSTRACT

Background: Air pollution has various adverse impacts on human health and the environment. Some pollutants are more toxic and pose significant health risks to both industrial workers and the general public, including exhaust gas emissions from stationary sources such as industrial chimneys. According to data from the Directorate of Air Pollution Control in 2022, the Special Region of Yogyakarta recorded 513 medium and large-scale industries and 146,658 micro and small industries. Of these, 55 industries were identified as using chimneys and were registered with the Ministry of Environment and Forestry.

Objective: This study aims to analyze the level of smoke density and opacity emitted from the chimney of CV Tumitah and to examine the environmental conditions affecting the dispersion of emissions.

Methods: Measurements were conducted over five days with two observation sessions each day. The Ringelmann scale was used to assess opacity, while a Thermohygrometer HTC-1 and an Anemometer were employed to measure temperature, humidity, and wind speed.

Results: The results showed an average opacity level of 23.2%, which is below the maximum limit of 30% as stipulated in the Minister of Environment and Forestry Regulation No. 7 of 2007. Ambient temperatures ranged from 27.5°C to 37°C, relative humidity from 63% to 82%, and wind speeds from 0.2 m/s to 1.2 m/s. These conditions indicate that emission dispersion is influenced by weather factors, high humidity due to wood materials, and relatively low wind speed. Although the values are within safe limits, the long-term accumulation of emission particles still poses potential risks to the surrounding environment, workers, and the community.

Conclusion: The average smoke opacity level of 23.2% indicates that emissions from the CV Tumitah chimney are still within the regulatory limits. However, environmental impacts remain a concern, especially if not accompanied by an adequate emission management system.

Keywords: opacity, chimney, emissions, air quality, stationary source.