

ANALISIS RISIKO KESEHATAN LINGKUNGAN PAPARAN NITROGEN
DIOKSIDA (NO₂) PETUGAS PARKIR PUSAT GROSIR SURABAYA
TAHUN 2024

Shaldan Naora Cavitha Syach¹, Rusmiati², Irwan Sulistio³

Kementerian Kesehatan RI
Politeknik Kesehatan Kemenkes Surabaya
Jurusan Kesehatan Lingkungan
Program Studi Sanitasi Kesehatan Lingkungan Program Sarjana Terapan
Email : shaldan19012@gmail.com

ABSTRAK

Tingginya mobilitas kendaraan bermotor di area parkir dapat meningkatkan risiko terhadap petugas parkir karena gas buang yang dihasilkan, salah satunya adalah Nitrogen Dioksida (NO₂). Petugas parkir seringkali mengalami keluhan seperti batuk dan mata perih. Situasi ini dapat terjadi di tempat parkir seperti Pusat Grosir Surabaya yang termasuk kategori semi tertutup. Paparan gas NO₂ yang terhirup oleh petugas parkir dapat menyebabkan gangguan pernapasan hingga kematian. Penelitian ini bertujuan untuk mengukur tingkat risiko paparan NO₂ pada petugas parkir di Pusat Grosir Surabaya.

Penelitian ini merupakan studi kuantitatif analitik dengan desain cross sectional dan pendekatan ARKL. Populasi penelitian mencakup seluruh petugas parkir di Pusat Grosir Surabaya yang bekerja di dalam area parkir, dengan sampel sebanyak 34 orang. Sampel diambil dari 10 titik lokasi di area parkir. Variabel bebas dalam penelitian ini adalah asupan inhalasi dalam skala waktu/time default dan estimasi pajanan harian (RfC). Variabel terikatnya adalah konsentrasi agen risiko (C), laju inhalasi (R), faktor fisik, dan karakteristik risiko (RQ) pada konsentrasi gas NO₂ di udara.

Hasil penelitian menunjukkan bahwa konsentrasi tertinggi gas NO₂ adalah 0,122 mg/m³. Durasi kerja tertinggi petugas parkir adalah 19 tahun, frekuensi paparan 312 hari per tahun, dan waktu paparan 12 jam per hari. Asupan tertinggi yang dihitung adalah 0.0162 mg/kg/hari dan nilai RQ yang didapat adalah 0.6243 mg/kg/hari.

Kesimpulan dari penetapan risiko menunjukkan bahwa $RQ < 1$, yang berarti aman dari gangguan kesehatan akibat paparan gas NO₂. Penulis menyarankan agar petugas parkir menggunakan alat pelindung diri (APD) dan memperketat kebijakan yang ada di Pusat Grosir Surabaya.

Kata Kunci: Nitrogen Dioksida, Gangguan Pernafasan, Petugas Parkir

ENVIRONMENTAL HEALTH RISK ANALYSIS OF NITROGEN DIOXIDE
(NO₂) EXPOSURE OF PARKING ATTENDANTS AT SURABAYA
WHOLESALE CENTER IN 2024

Shaldan Naora Cavitha Syach¹, Rusmiati², Irwan Sulistio³

Ministry of Health Republic Indonesia
Polytechnic Health Ministry of Health Surabaya
Environmental Health Study Program Department of Environmental Health
Email : shaldan19012@gmail.com

ABSTRACT

The high mobility of motor vehicles in parking areas poses a risk to parking attendants due to the exhaust gases produced, one of which is Nitrogen Dioxide (NO₂). Parking attendants often experience complaints such as coughing and eye irritation. This situation can occur in parking areas like Pusat Grosir Surabaya, which is categorized as semi-enclosed. The inhalation of NO₂ gas by parking attendants can lead to respiratory disorders and even death. This study aims to measure the risk level of NO₂ exposure among parking attendants at Pusat Grosir Surabaya.

This research was a quantitative analytical study with a cross-sectional design and ARKL approach. The study population includes all parking attendants at Pusat Grosir Surabaya working within the parking area, with a sample size of 34 people. Samples were taken from 10 different locations within the parking area. The independent variables in this study are inhalation intake over a time scale/time default and estimated daily exposure values (RfC). The dependent variables are the concentration of the risk agent (C), inhalation rate (R), physical factors, and risk characteristics (RQ) for NO₂ gas concentration in the air.

The results showed that the highest NO₂ gas concentration was 0.122 mg/m³. The longest working duration of a parking attendant was 19 years, with an exposure frequency of 312 days per year and an exposure time of 12 hours per day. The highest intake calculated was 0.0162 mg/kg/day, and the obtained RQ was 0.6243 mg/kg/day.

The risk assessment conclusion indicates that $RQ < 1$, meaning it was safe from health disturbances due to NO₂ gas exposure. The authors recommend that parking attendants use personal protective equipment (PPE) and that the existing policies at Pusat Grosir Surabaya be tightened.

Keywords: Nitrogen Dioxide, Respiratory Distress, Parking Attendant