



UNIVERSITAS ANDALAS

**ANALISIS RISIKO KESEHATAN LINGKUNGAN PAJANAN PM_{2,5}
PADA PEKERJA DI PT SUMATERA TROPICAL SPICES TAHUN 2024**



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FAKULTAS KESEHATAN MASYARAKAT

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xii + 92 halaman, 18 tabel, 16 gambar, 13 lampiran

ABSTRAK

Tujuan Penelitian

PT Sumatera Tropical Spices, sebuah perusahaan pengolahan kulit kayu manis, memiliki sumber pencemaran udara dalam ruang dari proses produksi, yaitu penggilingan dan pemotongan. Perusahaan mengalami peningkatan kasus ISPA sebesar 58% dari tahun 2022 hingga 2023. Oleh karena itu, penelitian ini bertujuan untuk menganalisis tingkat risiko kesehatan lingkungan akibat pajanan PM_{2.5} pada pekerja.

Metode

Penelitian ini dilakukan dari Mei 2024 hingga Juni 2025 menggunakan metode Analisis Risiko Kesehatan Lingkungan (ARKL). Pengukuran PM_{2.5} dilakukan di 33 titik udara dalam ruangan menggunakan alat *Air Quality Monitor* Tipe BF-SMART. Sampel responden sebanyak 62 pekerja dengan teknik *total sampling*.

Hasil

Konsentrasi rata-rata PM_{2.5} adalah 25,3 µg/m³. Berdasarkan data responden dengan rata-rata berat badan 58,02 kg, lama pajanan 8 jam/hari, frekuensi 220 hari/tahun, dan durasi 12,61 tahun, tingkat risiko pajanan *real-time* tergolong aman ($RQ \leq 1$). Sebaliknya, risiko pajanan *lifetime* secara signifikan tidak aman ($RQ > 1$) di ruang penggilingan.

Kesimpulan

Konsentrasi rata-rata PM_{2.5} tidak memenuhi baku mutu. Meskipun risiko paparan *real-time* tergolong aman ($RQ \leq 1$) di semua area, risiko paparan *lifetime* di ruang penggilingan tidak aman ($RQ > 1$) dan berpotensi menyebabkan gangguan pernapasan pada pekerja dalam 30 tahun mendatang. Oleh karena itu, perusahaan disarankan untuk memantau kualitas udara produksi secara rutin.

Daftar Pustaka : 61 (2005-2024)

Kata Kunci : ARKL, PM_{2.5}, Pabrik Kulit Kayu Manis, ISPA

FACULTY OF PUBLIC HEALTH

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**ENVIRONMENTAL HEALTH RISK ANALYSIS OF PM_{2.5} EXPOSURE IN
WORKERS AT PT SUMATERA TROPICAL SPICES IN 2024**

xii + 92 pages, 18 tables, 16 figures, 13 appendices

ABSTRACT

Objective

PT Sumatera Tropical Spices, a cinnamon bark processing company, had indoor air pollution sources from production processes, namely grinding and cutting. The company experienced a 58% increase in acute respiratory infection (ARI) cases from 2022 to 2023. Therefore, this study aimed to analyze the level of environmental health risk due to PM_{2.5} exposure among workers.

Method

This research was conducted from May 2024 to June 2025 using the Environmental Health Risk Analysis (EHRA) method. PM_{2.5} measurements were taken at 33 indoor air sampling points using the Air Quality Monitor Type BF-SMART. The sample consisted of 62 workers selected using total sampling technique.

Result

The average concentration of PM_{2.5} was 25.3 µg/m³. Based on respondent data with an average body weight of 58.02 kg, 8 hours of daily exposure, 220 days per year, and a duration of 12.61 years, the real-time exposure risk level was considered safe (RQ ≤ 1). Conversely, the lifetime exposure risk was significantly unsafe (RQ > 1) in the grinding room.

Conclusion

The average concentration of PM_{2.5} did not meet quality standards. Although the real-time exposure risk (RQ ≤ 1) in all areas was considered safe, the lifetime exposure risk (RQ > 1) in the grinding room was unsafe and had the potential to cause respiratory problems in workers over the next 30 years. Therefore, the company was advised to regularly monitor production air quality.

References : 61 (2005-2024)

Keywords : ARKL, PM_{2.5}, Cinnamon Bark, ARI.

