

ABSTRACT

THE CORRELATION BETWEEN COCONUT COIR DUST EXPOSURE AND LUNG FUNCTION CAPACITY AMONG WORKERS IN A COCONUT FIBER PROCESSING FACTORY IN NATAR DISTRICT SOUTH LAMPUNG REGENCY

by

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Background: Exposure to dust in industrial work environments has the potential to cause respiratory system disorders, particularly a decrease in lung function capacity. Workers in the coconut fiber processing industry are at high risk of exposure to organic dust generated from the processes of cutting, sieving, and drying raw materials. Continuous exposure without the use of personal protective equipment can gradually lead to pulmonary impairment.

Methods: This study was an observational analytic study with a cross-sectional design. The sample consisted of coconut fiber processing industry workers who met the inclusion criteria. Dust concentration was measured using an Air Quality Monitor with the laser scattering method for the PM₁₀ parameter, while lung function capacity was measured using a spirometer with FVC and FEV₁ parameters. Data were analyzed using the chi-square correlation test to determine the correlation between dust concentration and lung function capacity.

Results: The results showed that a portion of the workers were exposed to dust exceeding the threshold value and 30 out of 70 workers had abnormal lung function capacity. The correlation test results indicated a significant correlation between airborne dust concentration and lung function capacity ($p < 0.000$), meaning that the higher the dust concentration, the lower the workers' lung function values.

Conclusion: There is a significant correlation between long-term dust exposure and lung function capacity among workers in the coconut fiber processing industry. It is recommended that the company implement dust control measures, conduct regular health examinations, and enforce the use of respiratory protective equipment to prevent lung function decline.

Keywords: Coconut coir, Dust, Lung function capacity, PM₁₀, Workers.

ABSTRAK

HUBUNGAN PAPARAN DEBU SABUT KELAPA TERHADAP KAPASITAS FUNGSI PARU PEKERJA DI SEBUAH PABRIK PENGOLAHAN SABUT KELAPA DI KECAMATAN NATAR KABUPATEN LAMPUNG SELATAN Oleh

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Latar Belakang: Paparan debu di lingkungan kerja industri berpotensi menyebabkan gangguan sistem pernapasan, terutama penurunan kapasitas fungsi paru. Pekerja pada industri pengolahan serabut kelapa memiliki risiko tinggi terpapar debu organik yang dihasilkan dari proses pemotongan, pengayakan, dan pengeringan bahan baku. Paparan yang berlangsung terus-menerus tanpa penggunaan alat pelindung diri dapat menimbulkan gangguan paru secara bertahap.

Metode: Penelitian ini merupakan studi analitik observasional dengan desain *cross-sectional*. Sampel terdiri dari pekerja industri pengolahan serabut kelapa yang memenuhi kriteria inklusi. Pengukuran kadar debu dilakukan menggunakan Air Quality Monitor dengan metode *laser scattering* untuk parameter PM_{10} , sedangkan kapasitas fungsi paru diukur menggunakan spirometer dengan parameter FVC dan FEV_1 . Analisis data dilakukan menggunakan uji korelasi chi square untuk mengetahui hubungan antara kadar debu dengan kapasitas fungsi paru.

Hasil: Hasil penelitian menunjukkan bahwa sebagian pekerja terpapar debu melebihi Nilai Ambang Batas (NAB) dan sebanyak 30 dari 70 pekerja memiliki kapasitas fungsi paru yang tidak normal. Hasil uji korelasi menunjukkan terdapat hubungan yang signifikan antara kadar debu udara dengan kapasitas fungsi paru ($p < 0,000$), yang berarti semakin tinggi kadar debu, semakin rendah nilai fungsi paru pekerja.

Kesimpulan: Terdapat hubungan yang bermakna antara paparan debu jangka panjang dan kapasitas fungsi paru pekerja di industri pengolahan serabut kelapa. Disarankan perusahaan melakukan pengendalian debu, pemeriksaan kesehatan berkala, serta mewajibkan penggunaan alat pelindung pernapasan untuk mencegah penurunan fungsi paru.

Kata Kunci: Debu, Kapasitas fungsi paru, Pekerja, PM_{10} , Sabut kelapa