

## ABSTRACT

Exposure to PM<sub>2.5</sub> in the environment is one of the potential factors that can cause lung function disorders. The higher the exposure to dust in the air, the higher the risk of lung function disorders. The general objective of this research was to analyze the correlation of PM<sub>2.5</sub> level, the behavior and the characteristics of the workers with lung function disorders to the workers in the gosok akhir Industri X Surabaya.

This study used a cross sectional study design, using total population of 14 people. Inhaled PM<sub>2.5</sub> dust levels were measured using a Personal Dust Sampler. Worker characteristics include age, employment, nutritional status, smoking habits, and respiratory tract usage. It also looks at worker behavior that includes knowledge, attitudes, and actions. There were also measurements of PM<sub>2.5</sub> in environmental using EPAM 5000.

The result of this research was showed that there are 5 respondents have restriction lung condition with mild severity. About 85,7% operators having PM<sub>2.5</sub> inhaled  $\geq 3 \text{ mg} / \text{m}^3$ . The highest PM<sub>2.5</sub> level was  $7.9276 \text{ mg} / \text{m}^3$  so it has passed the specified limit. While the lowest level was  $2,0044 \text{ mg} / \text{m}^3$ . Moreover 33.3% of workers who have levels of inhaled PM<sub>2.5</sub>  $\geq 3 \text{ mg} / \text{m}^3$  have lung function disorders.

The conclusion of this study was there correlation between knowledge, age, work period, nutritional status, smoking habit, and the use of respiratory tract with lung function disorder at worker of gosok akhir Industrial X Surabaya. Recommended for workers with lung function disorders to immediately perform further medical examination, maintain diet and exercise regularly.

Keywords: Consentration of PM<sub>2.5</sub>, Characteristic worker's, Lung Disorder

**ABSTRAK**

Paparan kadar PM<sub>2,5</sub> di lingkungan kerja merupakan salah satu faktor potensial yang dapat menyebabkan gangguan faal paru. Semakin tinggi paparan debu di udara, maka semakin tinggi pula risiko gangguan faal paru. Tujuan umum dari penelitian ini yaitu untuk Menganalisis hubungan kadar PM<sub>2,5</sub>, perilaku dan karakteristik pekerja dengan gangguan faal paru pada pekerja di bagian gosok akhir Industri X Surabaya.

Penelitian ini menggunakan rancangan studi *cross sectional*, dengan menggunakan *total population* sebanyak 14 orang. Kadar debu PM<sub>2,5</sub> yang terhirup diukur menggunakan *Personal Dust Sampler* (PDS). Karakteristik pekerja meliputi usia, masa kerja, status gizi, kebiasaan merokok, dan penggunaan pelindung saluran pernafasan. Selain itu, juga melihat perilaku pekerja yang meliputi pengetahuan, sikap, dan tindakan. Kemudian, dilakukan juga pengukuran faktor fisik lingkungan yang terdiri dari kadar PM<sub>2,5</sub> menggunakan EPAM 5000, suhu dan kelembapan menggunakan *Thermohygrometer*.

Hasil dari penelitian ini adalah terdapat 5 responden memiliki kondisi gangguan faal paru restriksi dengan derajat keparahan ringan. Sebesar 85,7% operator memiliki kadar PM<sub>2,5</sub> terhirup  $\geq 3\text{mg}/\text{m}^3$ . Kadar PM<sub>2,5</sub> tertinggi adalah sebesar  $7,9276\text{ mg}/\text{m}^3$  sehingga telah melebihi nilai ambang batas yang telah ditentukan. Sedangkan kadar terendah yaitu  $2,0044\text{ mg}/\text{m}^3$ . Selain itu sebesar 33,3% pekerja yang memiliki kadar PM<sub>2,5</sub> terhirup  $\geq 3\text{mg}/\text{m}^3$  mengalami gangguan faal paru.

Kesimpulan dari penelitian ini yaitu, terdapat hubungan antara pengetahuan, usia, masa kerja, status gizi, kebiasaan merokok, dan penggunaan pelindung saluran pernapasan dengan gangguan faal paru pada pekerja bagian gosok akhir Industri X Surabaya. Disarankan bagi pekerja yang mengalami gangguan faal paru agar segera melakukan pemeriksaan kesehatan lebih lanjut, menjaga pola makan serta melakukan olahraga secara teratur.

Kata kunci : kadar PM<sub>2,5</sub> karakteristik pekerja, gangguan faal paru