

# Dust Exposure and Respiratory Health of Workers in a Steel Mill in Terengganu, Malaysia

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**ABSTRACT :** Air pollution in steelmaking operations would lead to adverse effect to respiratory health. This study aimed to measure the dust exposure and evaluate the respiratory health among steel workers. A cross sectional study was conducted among 402 male workers. Respiratory symptoms were assessed using British Medical Research Council (BMRC) Questionnaire while lung function was measured by spirometer. The airborne dust [ $PM_{2.5}$ ,  $PM_{10}$ , and Total Particulate Matter (TPM)] were monitored by Handheld 3016 IAQ Particle Counter. All the parameters studied exceeded the limit of Malaysian guideline standard. Prevalence of chronic cough, chronic phlegm, chest of tightness, and shortness of breath were 35.8 %, 32.8 %, 23.4 %, and 22.4 %, respectively. There were significant differences between shortness of breath and work section ( $\chi^2=9.236$ ,  $p=0.026$ ) and  $\%FEV_1/FVC$  with work section [ $F(3, 3.98=3.194)$ ,  $p=0.025$ ]. Smoking was associated with chronic cough (Adj OR = 1.07, 95% CI: 1.04 - 1.10), chronic phlegm (Adj OR = 1.05, 95% CI: 1.03 - 1.08), and shortness of breath (Adj OR = 1.05, 95% CI: 1.00 - 1.10) while past respiratory illnesses was associated with chest tightness (Adj OR = 2.24, 95% CI: 1.04 - 4.84) and shortness of breath (Adj OR = 4.16, 95% CI: 1.92 - 9.92). Duration of employment was associated with  $FEV_1$  ( $\beta=-0.025$ , 95%CI:-0.030-0.020) while past respiratory illnesses was associated with  $\%FEV_1/FVC$  ( $\beta =-1.784$ , 95% CI: -3.017 - 0.551). Steel workers are at risk of developing respiratory symptoms and lung function impairment.

**Keywords -** Dust Exposure, Lung Function, Occupational Respiratory Diseases, Respiratory Symptoms, Steel Workers

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