

SUMMARY

Effect of Limestone Dust Exposure on Lung Physiology Decline and Increase of Interleukin 6 Level of Blood Serum of Limestone Processing Workers in Kesamben Village, district Plumpang subdistrict, Tuban District

Air pollution is a global problems that occurs in almost all developing countries. High air pollution can adversely affects the respiratory system. Limestone dust containing CaO (22-56%) and MgO (21%) with size of dust particle is 3-5 mg / m³. Being exposed by limestone dust for long periods will cause respiratory system inflammation include changes in IL-6 levels of blood serum followed by changes in lung functions.

The purpose of this study was to analyze the effect of limestone dust exposure on lung function decline and the increase of IL-6 levels of blood serum of limestone workers in Kesamben, Plumpang, Tuban district after working for 6 hours.

This research was analytic study with case control design. lung function and IL 6 levels of blood serum, limestone dust exposure measurements were performed to workers (case group) and health center officers (control group). The measurements were performed after their work done. Limestone dusts exposure as independent variable, lung function and IL-6 levels of blood serum as dependent variables. Age and length of work were confounding variables. Total sample was 18 respondents. They were divided into 9 respondents who work in the limestone processing and 9 other respondents who work in health centers. Control group was taken in same number as case group. The measurement of individual dust exposure level used the PDS, the measurement of lung function (FVC and FEV1) used a spirometer (Spirolab III), and the method of ELISA technique was used for the measurement of IL-6 serum. Data of characteristics of respondent included age and tenure were collected through questionnaire. The analysis used independent t-test with 2 sample group, Mann Whitney test and multiple regression tests with significant value of 5%.

The results of multiple regression test showed that limestone dust exposure could increase serum levels of IL-6 ($p < 0.05$), but did not decline lung function. Factors of physical activity and immune system could affected the respiratory system which was showed by changes in levels of IL-6 serum and lung function after 6 hours of work.

Based on few researches, limestone dust exposure does not affect lung function but may increase serum levels of IL-6 that causes inflammation of the lungs. The conclusion from this research is that the limestone dust exposure can

increase IL-6 levels of sserum of limestone workers. There are differences in serum of IL-6 levels of workers of limestone processing and health center officers. The measurement of lung function (FVC,% FVC, FEV1, FEV1%) showed no difference between lung function of limestone processing workers and health centers officers. The recommendation obtained from this study is that the self protective equipment such as respirator masks for protection against dust is needed. It is also important to held periodic medical examinations on workers, especially for lung function. Local government, health authorities and health centers need to provide health education about the importance of self protective equipments for health, especially the health of lung.

