

SUMMARY

Effect Of Exposure Wood Burning Smoke Against Enzymes Activity Serum SOD, GPx And Health Complaints Of Worker At Home Industry Petis In Desa Sekardangan Kabupaten Sidoarjo

Nitrogen dioxide and formaldehyde gases are the chemical substance of wood burning product affect to respiratory disorders. Chronic exposure of nitrogen dioxide and formaldehyde gases effected cellular influence enzymes activity serum SOD and GPx. Measurements of home industry petis of nitrogen dioxide were 0,2673 ppm, 0,2673 ppm, 0,0908 ppm, 0,0826 ppm and formaldehyde were 0,0751 ppm, 0,0260 ppm, 0,0250 ppm, 0,0160 ppm, that still under to the threshold limit value. This aim of study was to analyze the effect of exposure to nitrogen dioxide and formaldehyde gases against serum SOD, GPx and health complaints of worker in home industry petis. The benefit of this study could give information about nitrogen dioxide and formaldehyde gases in air, enzymes activity SOD, GPx and health complaints of worker at home industry petis. And also it could provide input for gas stadion management to monitore exposure of nitrogen dioxide and formaldehyde gases at home industry petis.

The design of this study was observational analytic with prospective longitudinal study. The study sites of home industry petis and government sekardangan office. The research was conducted from February to Mei 2015. The population of this study was 2 population that were the workers of home industry petis and the administration worker of government sekardangan office in Desa Sekardangan Kabupaten Sidoarjo with some inclusive criteria those are male worker, not getting sickness asthma and willing to participate in this study. Sample size was 24 workers that was taken by simple random sampling, 12 workes from home industry petis and administratif workers in government sekardangan office.

Midget impinger was used to obtain nitrogen dioxide and formaldehyde gases level in air. Spectrophotometry was used to obtain nitrogen dioxide and formaldehyde gases level level and ELISA technique was used to obtain SOD and GPx activity serum. Health complaints data collection bas gained by interview using a questionnaire, likewise to obtain the age data, works period, eating habits, using mask habits, smoking habits, and nutritional status. Data analysis used linear regression. The research result showed 50% of administration worker in government sekardangan office were about 36- 51 years old, while 75% of workers home industry petis were 20-35 years old. The BMI of administration worker was normal (75%) and thin (25%), but the BMI of worker petis was 50% was normal and thin (50%). Work period of administration worker was 42% about 8-9 years, while 60% of worker petis work period about 2-3 years. Indicates that the respondents who used to eating vegetables and fruits that contain vitamin C and E in the group exposed to the exposed group by 42 % , while the unexposed group by 50 %. Respondents have a habit of smoking for the group exposed to smoke criteria > 600 stem by 42 % and in the group not exposed to smoke criteria < 0-200 rod by 50 %. And that workers in the home industry petis that uses a mask at work by 25 % and 75 % did not use a mask.

The average level of nitrogen dioxide were 0,0132 ppm and formaldehyde 0,0045 ppm in administration works place while in worker petis work place average level of nitrogen dioxide were 0,1454 ppm and formaldehyde 0,0291 ppm. The average level of SOD enzyme pre were 3,92 U/ml and SOD enzyme post 5,92 U/ml of administration worker while at worker petis result showed SOD enzymes pre 14,52 U/ml and SOD enzyme post 32,42 U/ml. The average level of GPx enzyme pre were 5,08 U/ml and GPx enzyme post 7,08 U/ml of administration worker while at worker petis result showed GPx enzymes pre 39,33 U/ml and GPx enzyme post 48,67 U/ml. And the most health complaint of worker bas respiratory disorders.

The analysis result showed that nitrogen dioxide and formaldehyde gases in air effected of enzymes serum Δ SOD and Δ GPx difference before and after exposure working group and not exposed (independen t test, $p < 0,05$). The effect of nitrogen dioxide and formaldehyde gases in air effected enzymes activity serum Δ SOD and Δ GPx (linier regression, $p < 0,05$), but health complaints was effected by nitrogen dioxide and formaldehyde gases (logistic regression, $p \leq 0,05$).

It is concluded that exposure of nitrogen dioxide and formaldehyde gases effect increasing of enzymes activity serum SOD and GPx of worker at home industry petis. Otherwise, there is effect of exposure of nitrogen dioxide and formaldehyde gases to health complaints. It is suggested that need work rotation for workers have period of more than 5 years, workers should eating vegetables and fruits that contain vitamin C and E.