SUMMARY

Relationship between Exposure Benzene Exposure to Haematological Status Employee of The Gas Station in Surabaya

Benzene is a toxic chemical substances, especially against hemopoetic system so that it can lead to either aplastic anemia or leukemia. Petrol (gasoline) is a liquid mixture derived from petroleum and is mostly composed of hydrocarbons and used as fuel in internal combustion engines. The group is composed of hydrocarbon chains containing 4-12 carbon, especially isoparafin (isoalkanes), sikloparafin (cycloalkanes), aromatics and n-hexane. In the United States, gasoline contains carcinogens benzene as much as 0.5% - 2.0%, UK 2% -3%, whereas in other countries can achieve a 5% concentration. Fuel Filling Station Employees General (gas stations), especially the operator has more chance of exposure to benzene vapor.

This study aims to analyze the relationship between exposure benzene to haematological status employee of the gas station in Surabaya. The benefits of this research can provide input for the management and employees of gas station about the dangers of benzene vapor in the air which raised awareness to protect themselves with the use of Personal Protective Equipment (PPE) and the periodic health examination.

This research was observational analytic study and conducted applying a cross-sectional study. Research sites in the gas station of North Surabaya, South Surabaya, Central Surabaya, East Surabaya and West Surabaya. The research was conducted from February -August 2011. The population in this study was employees stations in Surabaya with some criteria that worked at least 1 year old, male, not smoking and were willing to participate in the study. Sample size was 28 persons taken at random, 14 persons from each study and control group. Data analysis used two-sample independent t test and multiple logistic regression.

Average of benzene measurements at each gas station was 9.6085 ppm, 9.7215 ppm, ppm 11.7375, 10.4705 ppm and 10.2975 ppm. So we get an average measurement of benzene in the gas station did not meet the threshold limit value obtained Surabaya environment based on Minister of Manpower 01/1997 of 10 ppm.

Results of phenol in the urine of 6 people were found the respondent had abnormal levels of phenols which exposure to benzene, while the results of the hemoglobin levels of 7 people were found to had abnormal hemoglobin that was also the respondents with exposure to benzene.
There was a significant association between levels of benzene to urinary phenol level with \( p = 0.000 \) using two-sample independent \( t \) test. While the results of the analysis with multiple logistic regression test was found that the most influential factor (\( p < 0.05 \)) on levels of hemoglobin are the urinary phenol level of employees with the odds ratio of 3.278.

It's concluded that the higher levels of phenol in the urine then the risk of decline in hemoglobin levels will be higher. Using masks, gloves and long sleeved clothing will help minimize exposure to benzene in gas station employees. The management should provide adequate Personal Protective Equipment (PPE) and regularly carry out health checks on employees.

**ABSTRACT**

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Benzene is a toxic chemical substances, especially against hemopoetic system so that it can lead to either aplastic anemia or leukemia. This study aims to analyze the relationship between exposure benzene to haematological status employee of the gas station in Surabaya.

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Average of benzene measurements obtained at the gas stations in Surabaya did not meet the threshold limit value environment based on Minister of Manpower 01/1997 of 10 ppm. Results of phenol in the urine of 6 people was found the respondent had abnormal levels of phenol, while the results of the hemoglobin levels of 7 people was found had abnormal hemoglobin levels. There was a significant association between levels of benzene to phenol urine with \( p = 0.000 \) using two-sample independent \( t \) test. The results of analysis with multiple logistic regression test was found that the most influential factor (\( p < 0.05 \)) on levels of hemoglobin was urinary phenol level of employees with the odds ratio of 3.278.

It's concluded that the higher levels of phenol in the urine then the risk of decline in hemoglobin levels will be higher. Using masks, gloves and long sleeved clothing will help minimize exposure to benzene in gas station employees. The management should provide adequate Personal Protective Equipment (PPE) and regularly carry out health checks on employees.

Keywords : exposure vapor of benzene, gas stations, Phenol urine levels, hemoglobin levels