

## SUMMARY

### **The Relation of Hydrogen Cyanide Gas Exposure with the Employee Adverse Health Effect at Gold Processing Plant, Central Kalimantan**

Using cyanide for gold ore extraction would release hydrogen cyanide and brought cyanide exposure to the employee. Cyanide exposure to human would cause acute and chronic health effect. According to some research cyanide exposure in low concentration for long term would cause adverse health effect to the employee such as changed in cardiovascular system, central nervous system and decreased thyroid function.

This cross sectional study had studied if there was adverse health effect on the employee because of cyanide exposure in low concentration for long term in the Gold processing Plant. These study had been done some physical examination and had taken blood sample to know there had been decreased in thyroid hormone in the exposed employee. The result then compared with the result from the unexposed group.

In this study the population was the entire employee who works on the processing plant area including processing unit, laboratories, safety and maintenance unit. They should have been work more than 5 years in the company and they didn't smoke, in a good health condition and didn't have any thyroid dysfunction before.

This study would use primary and secondary data to determine whether there was adverse health effect or not. The primary data were the results of the physical examination and the concentration of thyroid hormone in the employee blood. The secondary data were the results from the daily record of hydrogen cyanide and annual medical record of the employee especially electrocardiography and spirometri data.

The results of this study showed that there is adverse health effect caused of hydrogen cyanide exposure. The adverse health effect was tremor on the upper extremity and decreased of T3 thyroid hormone. So it had been suggested the company to add thyroid hormone as the item to their medical checkup, and should took action to reduce the exposure by providing the appropriate personal protective equipment, set the alarm at the concentration 6 ppm of hydrogen cyanide and continue to rotate the employee's work station, added thyroid hormone examination as an item for initial and annual medical check up.

## ABSTRACT

### **The Relation of Hydrogen Cyanide Gas Exposure with the Employee's Adverse Health Effect at Gold Processing Plant, Central Kalimantan**

The purpose of this study was to know the relation between the hydrogen cyanide exposures in the air with the exposed employee's adverse health effect at the gold processing plant, Central Kalimantan.

This was an observational study with cross sectional approach. The exposed groups were 24 employees at the gold processing plant and 26 employees at the base camp as the unexposed group.

84% of the respondent was male and the duration of work was 5-6 years (86%) with age between 25-29 years old. This study showed most of the respondent felt increasing heartbeat (75%), headache (58,33%), and nausea (54,17%). There were tremor and decreased in thyroid hormone of T3 with significant differences between the exposed group and the unexposed group (  $p = 0,000$  ).

Recommendation has been given to reduce the exposure by providing the appropriate protective equipment, setting the alarm at hydrogen cyanide concentration 6 ppm in the leaching tank, continue to rotate employee's work station, add nervous system and thyroid hormone examination as an item in employee's initial and annual medical check up.

Keywords : gold processing plant, hydrogen cyanide, adverse health effect