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Risk Management Assessment (Case Study Accident Work) at PT. Makassar Tene in Makassar City

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ABSTRACT

²The purpose of this study is to identify hazards with risk management implemented at PT. Makassar Tene. The purpose of this study is to know risk management in terms of probability, exposure, consequences, and accident work implemented at PT Makassar Tene.

This type of research is an analytical survey which aims to see the relationship between the independent variable and the dependent variable. With a cross sectional research design. The population referred to in this study are all workers as many as 68 people. The sample in this study were all workers as many as 58 people.

²The results showed that there was no relationship between hazard identification and risk management at the Power Plant Department of PT. Makassar Tene. By using chi-square the value of $p = 1,000$ is obtained. There is a relationship between risk analysis and risk management at PT. Makassar Tene using the chi-square value obtained $p = 0.004$. There is no correlation analysis of exposure risk (exposure) with risk management using chi-square value obtained $p = 0.343$. There is no analysis of risk consequences (consequences) with risk management where the results of statistical tests using the chi-square value obtained $p = 0.177$.

⁴It is hoped that companies can identify hazards before starting to work more so that things that can be dangerous do not occur at work, it is necessary to increase the awareness of a possible risk of unwanted things occurring in the work environment. As well as reducing the level of consequences (consequence) which are severe and have a loss that is large enough so that workers can carry out activities safely and safely while working.

Keywords: Risk Management, Identification, Probability, Exposure, Consequences

INTRODUCTION

A work accident means a work-related incident, where an injury, illness (regardless of severity), or death occurred, or could possibly occur. In this case, what is meant by illness is a condition of physical or mental disorders that is identified as originating from and or getting worse due to work activities and / or work-related situations. Risk management is "an activity carried out to respond to known risks (through a risk analysis plan or other forms of observation) to minimize the possible adverse consequences". For that risk must be defined in the form of a reactive plan or procedure¹.

The occupational accident rate in Spain was found for occupational accidents and factors such as high school education level (OR = 2,082), full-time job (OR = 4,814), having three or more jobs (OR = 2,593), radiation exposure, asthma (OR = 4,880), and alcohol consumption (OR = 4,620), according to each marked block, which significantly increases the chance of a work accident occurring. Managers and legislators must look at factors that increase the chance of accidents occurring in order to develop policies or preventive measures².

²The Ministry of Health of the Republic of Indonesia in 2015 stated that the number of cases of occupational diseases in Indonesia in 2011 was 57,929 cases; in 2012 as many as 60,322 cases;

2013 as many as 97,144 cases; in 2014 as many as 40,694 cases. Meanwhile, the number of work accident cases in Indonesia in 2011 was 9,891 cases; In 2012, there were 21,735 cases; In 2013, there were 35,917 cases; In 2014, there were 24,910 cases. From these data, the highest number of PAK cases and work accidents occurred in 2013³.

Identify hazards in each job. Hazard identification is a management tool to control losses and is proactive in efforts to control hazards in the work environment. Hazard identification is intended to prevent incidents from occurring by making efforts such as making close observations, knowing things related to the work being observed, making repeated observations, and conducting dialogue with operators who are considered experienced in the work being observed^{4,5,6}.

The final step in the JSA method is to develop safe work procedures that can be recommended to prevent an accident from occurring. Solutions that can be developed include finding other ways to do work that is considered critical, changing physical conditions that can cause accidents, eliminating hazards by replacing existing work procedures, regularly taking corrective actions or services, and reviewing existing work designs^{7,8}.

OHS risk management is an effort to manage risks to prevent unwanted accidents in a comprehensive, planned and structured manner in a good system, thus enabling management to improve results by identifying and analyzing existing risks. Based on field observations that PT Makassar Tene has not evaluated OSH risk management in the workplace.⁷ PT. Makassar Tene (Sugar Refinery) was established as one of the efforts of the refinery industry to follow the growth of the

food and beverage industry in Eastern Indonesia, where the need for sugar has only been imported from the island of Java. Therefore, the existence of continuous sugar production of PT. Makassar Tene is both a supplier and a stabilizer for sugar prices in East Kawassan Indonesia for the food and beverage industry.

Based on preliminary observations, workers at the Power Plant Department at the PT. Makassar Tene have 70 workers. The daily activities of workers in the Power Plant department have the potential to experience work accidents such as electric shocks, being hit by heavy equipment, slipping and being exposed to dust. Therefore, workers still have to pay attention to safety and health at work. From the data on accident cases that occurred in 2018-2019 at PT Makassar Tene, there were 25 accidents, including electrocution, being hit by heavy equipment, slipping and being exposed to dust in the power plant department of PT. Makassar Tene.

METHOD

This type of research is an analytical survey that aims to see the relationship between the independent variable and the dependent variable. With a cross sectional research design because it uses independent variables, namely hazard identification, risk analysis and risk control, while the dependent variable is risk management. The samples in this study were the entire number of workers in the Department of Power Plant PT. Makassar Tene with a total of 58 workers.

The data obtained from the results of the laboratory examination will be analyzed using the SPSS program using the Chi-square test. Data that has been collected and analyzed is then presented in tables, graphs and narrations.

RESULT

Table 1: Identification Hazard Accident Work At PT. Makassar Tene

Proses Produksi	Work steps	Risk Identification	Potency risk	Risk
Coalmill Bearing Replacement	Stop coal mill operation	Electricity	Electric shock	Low risk
	Open the main hole using keys, then the forklift helps to lift the main hole	Heavy load	Stuck, hit by a heavy load	High risk
	Use a blower for cooling the room	Dust	Exposure to dust	High Risk

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Table 2: Relationship between Hazard Identification and Risk Management Workers at PT. Makassar Tene

Identification hazard	Risk management				Total		p
	Not qualify		Qualify				
	n	%	n	%	n	%	
High risk	43	74.5	14	24.6	57	100	1,000
Low risk	1	100	0	0	1	100	
Total	44	75.9	14	24.6	58	100	

Based on the table 2 results show that the results of statistical tests using the chi-square obtained p-value is constant because the value $>1,000$ then H_0 is accepted, which means that there is no effect between Hazard Identification and risk management in the employees of the Department of Power Plant PT. Makassar Tene.

Table 3: Relationship Analysis Of Risk Likelihood (Probability) Against Risk Management Workers At PT. Makassar Tene

Risiko Probability	Risk management				Total		p
	Not qualify		Qualify				
	n	%	N	%	n	%	
High risk	31	86.1	5	13.9	36	100	0,0 04
Low risk	13	59.1	9	40.9	22	100	
Jumlah	44	75.9	14	24.1	58	100	

Based on Table 3 shows that the results of statistical tests using the chi-square value obtained $p = 0.004$ because the value <0.05 , H_1 is accepted, which means there is a relationship between probability risk analysis and risk management.

Table 4: Relationship Of Exposure Risk To Risk Management Workers At PT. Makassar Tene

Risk Exposure	Risk management				Total		p
	Not qualify		Qualify				
	n	%	N	%	n	%	
High risk	4	57.1	3	42.9	7	100	0,343
Low risk	40	78.4	11	21.6	51	100	
Total	44	75.9	14	24.1	58	100	

Based on Table 4 shows that the results of statistical tests using chi-square value obtained $p = 0.343$ because the value $>1,000$ then H_0 is accepted, which means there is no relationship between exposure risk and risk management at PT. Makassar Tene.

Table 5: Consequences Risk Relationship (Consequences) to Risk Management Workers at PT. Makassar Tene

Risk Management Workers at P.T. Makassar Pene							
Risk Consequence	Risk management				Total		p
	Not qualify		Qualify		n	%	
	n	%	N	%			
High risk	10	62.5	6	37.5	16	100	0,177
Low risk	34	81.0	8	19.0	42	100	
Total	44	75.9	14	24.1	58	100	

Based on Table 5, it shows that the results of statistical tests using the chi-square value obtained $p = 0.177$ because the value >0.05 then H_0 is accepted, which means there is no relationship between Risk Consequence and risk management for workers in the Department of Power Plant PT. Makassar Tene.

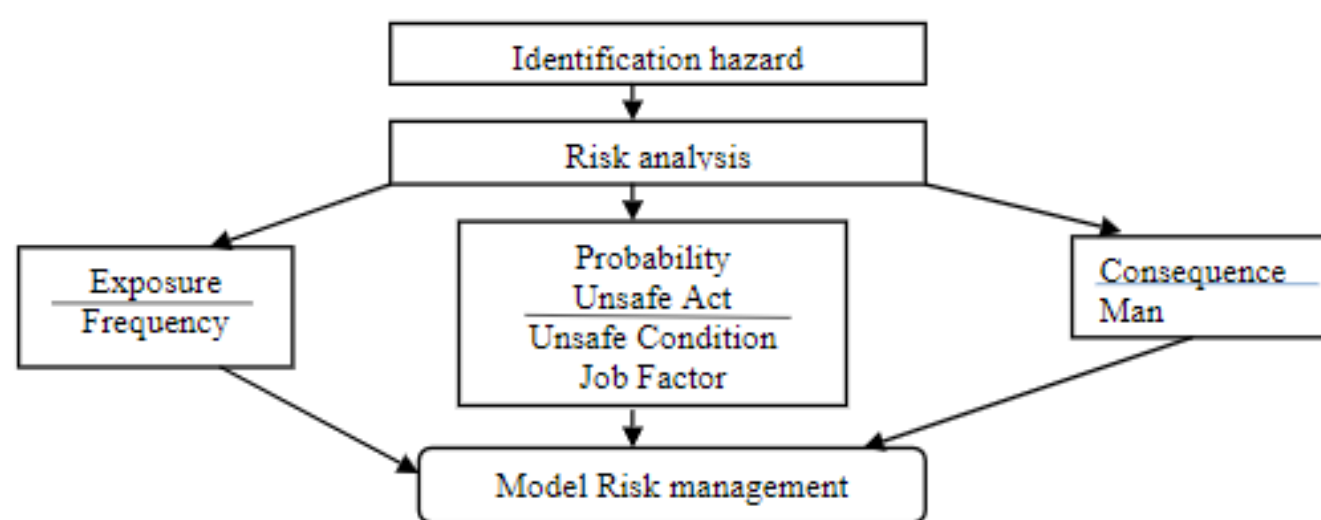


Figure 1: Model Risk Management

DISCUSSION

The first step in health risk management in the workplace is the identification or recognition of health hazards. At this stage, the identification of health risk factors which can be classified as physical, chemical, biological, ergonomic, and psychological exposure to workers is

carried out. To be able to find these risk factors, it is necessary to observe the processes and nodes of production activities, the raw materials used, the materials or goods produced including the by-products of the production process, and the waste formed by the production process⁸.

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In cases related to chemicals, it is necessary: possession of material safety data sheets (MSDS) for each chemical used, grouping chemicals according to the type of active ingredients contained, identifying the solvent used, and accompanying inert materials, including their toxic effects. When two or more risk factors are found simultaneously, it is possible to interact and become more dangerous or may also become less dangerous. For example, a work environment that is exposed to dust and, therefore, respiratory problems will more easily occur⁹.

Based on data obtained from the results of research on workers of the department power plant PT. Makassar Tene, which shows that 58 (100%) workers identified a high hazard at work and 0 workers identified a low risk at work. Of the 58 worker respondents who identified high-risk hazards at work, there were 29 workers (50.0%) who met the Risk Management requirements and there were 25 workers (50.0%) who did not meet the Risk Management requirements^{5,10}.

² This research is in line with Annisa's research (2010) which states that of the 50 respondents, among the 20 workers whose identification process did not meet the risk management requirements, and among 30 people whose hazard identification process was deemed eligible. This condition is due to the lack of protection against certain potential hazards that will result from work accidents. This study is not in line with Annisa's (2010) study which states that there is no relationship between hazard identification and risk management in the butane treater replacement process^{11,12}.

Probability risk is an approximation. Because it is very rare or even impossible to know the absolute magnitude of the probability (it must be the same as reality). What we get is only an estimate, which may or may not be true. So what we get from a study or calculation based on the definition of probability is an expression, that is, as a percentage of the total exposure in order to get an empirical estimate of the probability.

Therefore probability from an empirical point of view is seen as the frequency of occurrence of events in the long run, expressed as a percentage^{8,13}.

Probability is a theory that defines the possibilities that may occur either profit or loss in a company. The purpose of this theory is to estimate the probability of each possible outcome. For example, a weather forecaster might say, "Today the chances are 40% it will rain and 60% won't." If we list every possible event and assign a probability to each event then the list is called the probability distribution of 70 respondents, of which 31 workers stated the possibility of being at high risk and among 39 workers stated that they were likely to be at low risk¹⁰.

Based on data obtained from the results of research on workers of the department power plant PT. Makassar Tene which shows that 7 workers who experience high risk of Consequence at work and 51 workers are exposed to low exposure at work. Of the 58 worker respondents who had a high risk of exposure at work, there were 3 workers (42.9%) who met the risk management requirements and there were 4 workers (57.1%) who did not meet the risk management requirements while workers who had a low risk of exposure at work there were 26 workers (51.0%) who met the risk management requirements and there were 25 workers (49.0%) who did not meet the risk management requirements.

Consequence analysis is the level of severity or loss that may occur from an accident (loss) due to hazards in the workplace, this can be related to humans, property, the environment, etc. Consequences are the result of an event which is stated qualitatively or quantitative, in the form of loss, illness, injury, adverse or favorable circumstances. It can also be a range of consequences that may occur and are associated with an event. This research was conducted by interview using a questionnaire^{6,11}.

² This research is in line with the research which states that out of 60

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respondents, 4 workers have a high risk of consequences and 56 workers have a low risk of consequences. This condition states that the management has succeeded in minimizing the potential of Hazard.

CONCLUSION

- 1) There is no relationship between hazard identification and risk management at the Power Plant Department of PT. Makassar Tene. By using chi-square the value of $p = 1,000$ is obtained.
- 2) There is a relationship between risk analysis and risk management at the Power Plant Department at PT. Makassar Tene using the chi-square value obtained $p = 0.004$.
- 3) There is no relationship analysis risk exposure (exposure) with risk management at the Department of the Power Plant PT. Makassar Tene using the chi-square value obtained $p = 0.343$.
- 4) There is no risk analysis on the consequences with risk management at the Power Plant Department PT. Makassar Tene. The results of statistical tests using the chi-square value obtained $p = 0.177$.

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