



## LEADERSHIP SUPPORT IN FIRE RISK CONTROL IN COAL MILL AREA IN SOUTH SULAWESI, INDONESIA

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### ABSTRACT

*The major significant factor for reducing the risk of fire incidence is leadership support. The objective of this study is to analyze leadership support and their roles in fire control in Coal Mill area in PT.X South Sulawesi. This research used a quantitative design with descriptive approach. Research sample consists of 17 respondents from 14 leaders in the production department and 3 leaders from Occupational and safety department in PT. X South Sulawesi. The results showed that leadership support plays important roles in fire control. Majority of leaders in PT. X stated that they are responsible for controlling fire risk in Coal Mill area and only 52.9% are actively participated in composing and drafting regulation and policy on fire risk control. The other findings indicated that leaders implement the function of auditing and supervising fire control in Coal Mill area. In fact, however, 58.8% said that fire reduction has never become an agenda in their meeting. Another interesting point is that the leaders also play a role in reward and punishment mechanism. Furthermore, 88.2% of the leaders suggested giving reward and 94.1% supported to give punishment to workers in term of a fire accident in Coal Mill area. Leadership support plays important roles to decrease fire risk accident in Coal Mill area. Responsiveness of leaders determines the willingness in responding fire control to support zero accident in a company.*

**KEYWORDS:** *Leadership Support, Fire Risk Control, Coal Mill*

### INTRODUCTION

The cement industry is one of the industrial sectors that have a high fire risk, especially in the area of Coal Mill because materials of the cement are mixed and burned with coal powder in order to produce cement. So this area is high to the fire risk. The output of this combustion is clinker which will subsequently be destroyed in the finishing mill until it becomes cement (Varma & Sirisha, 2013).

As one of the largest cement company in the Eastern part of Indonesia, PT. X has implemented risk management in accordance with The Australian Standard/New Zealand Standard (AS/ NZS 4360: 2004). However, the incidence of work accidents was still fluctuating in the company. Based on risk management data, the most frequent accident risk is fire, mainly in the area of Coal Mill (SA/NZS, 2001).

Risk management, as the core of the Occupational Safety and Health Management System (OSHMS), can run properly if supported by top management leaders in the form of strong policy and high commitment to implementation. One

of the goals of risk management is to safe labors from incidence. Therefore, strong policy and high commitment of leaders is significantly needed to decrease accident, specifically in coal mill area. It means a policy is a key requirement in all systems (Ramli, S., 2010). Thus, management support is an important aspect of the successful implementation of a risk management system within a company.

The aim of this study was to analyze leadership support and their roles in fire control in Coal Mill area of PT. X South Sulawesi, Indonesia.

## LITERATURE REVIEW

### Policy and Commitment

The policy is a key requirement in the Occupational Safety and Health Management System (OHSMS) because the policy is a manifestation of support and commitment of leaders to achieve corporate Occupational safety and health goals.

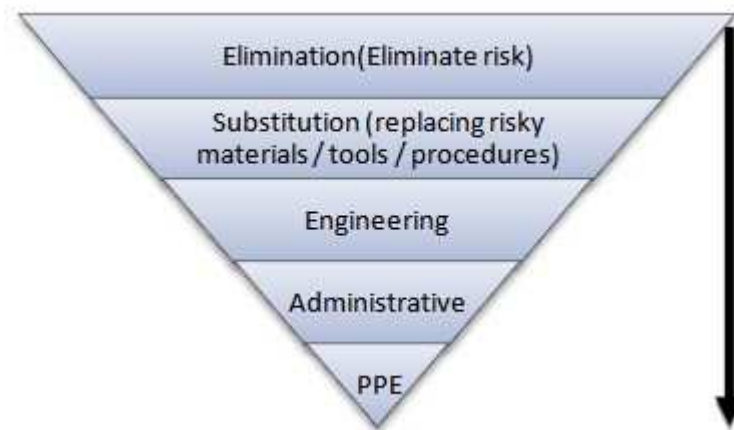
## RISK MANAGEMENT

Risk management consist of Hazard Identification, Risk Assessment and Risk Control are the central elements of OHS management, because, if there is no risk of OHS to be managed, the OHSMS will be unnecessary. Other elements such as documentation, document control, operation control, and others are the supports in the implementation of OHSMS.

There are five main steps in the implementation process of risk management (AS/NZS 4360:2004). The steps are: 1) establishment of the context, 2) identification of risk, 3) analysis of risk, 4) evaluation of risk and 5) treat risk. Establish the Context is carried out by establishing the objectives, policies, implementation strategies, methods or means of risk management implementation, along with the achievements targeted by the company; Identify Risk is to identify the hazard risks to be managed, to find out what types of hazards might pose risks, how and why they arose; Analyse Risk involves estimating risk by combining probability or likelihood factors and consequences, by considering the risk control efforts that have been made; Evaluate Risk is to determine whether a risk is acceptable or not; and Treat Risk is the realization of the plan will be implemented, so its nature leads to technical implementation.

### The Control Hierarchy is as Follows (OHSAS 18001:2007)

The control hierarchy is also in line with the fire tree concept in terms of fire prevention developed by the National Fire Protection Association (NFPA) with the NFPA 550 standard that is started by preventing ignition. Preventing the ignition means eliminating elements that can lead to fires of oxygen, fuel, and heat.



**Figure 1: Hierarchy of Risk Control (Ramli, 2013)**

## **METHODS**

This research was a quantitative study with a descriptive approach (Sugiono, 2013). The sample of this study consisted of all the existing managers at the Production Department of PT.X, head of quality and environmental Assurance department, head of Occupational Health and Safety Bureau and Head of Health and Safety section. Data were collected by interviewing managers in the production department of PT.X. The questionnaire used was an open-structured questionnaire. After data collection, data were edited. After that, the information from the open question was analyzed using descriptive analysis method to strengthen the result of analysis (Dahlan, 2014; Hastono & Sabri, 2011).

## **RESULTS**

The main focuses of this research were to determine leadership supports by exploring factors of policymaking, reward and punishment mechanism, availability and distribution of personal protection equipment (PPE) and fire protection system.

## **POLICY MAKING**

The policy is the spirit of a system. A policy is produced by the managers and then consistently implemented by staffs and workers. This study found that based on interviewed done to all of managers in PT.X. Majority of the managers (52.9%) were involved in policy making of fire protection policy in Coal Mill area and 47.1% were not involved. Another significant result showed that 82.4% argued that fire risk in Coal Mill area was in the high-risk condition. (Table 1). Therefore, it was highly recommended that fire protection in Coal Mill area was needed for labors' safety.

### **Reward & Punishment Mechanism**

In general, the manager considers the need for providing rewards and punishment for workers to minimize the risk of accidents or zero accidents in Coal Mill area. 15 managers (88.2%) considered that it is necessary to give rewards to workers and only 2 managers (11.8%) who are not considered to give rewards. In addition, 16 (94.1%) managers who consider that it is necessary to provide punishment to workers who comply with OSH rules, only 1 (5.9%) of them considered not to give punishment (Table 2).

### **Availability & Distribution of Personal Protection Equipment (PPE)**

The most important technique of protection and safety for workers is the availability and utilization of personal protection equipment in workplaces. All workplaces have their own risks; therefore, all workers should be equipped with PPE. In the case of Coal Mill area, fire protection equipments were a must for all workers. Table 3 showed availability and distribution of Personal Protection Equipment (PPE) in Coal Mill Area of PT.X. The results found that 35.3% of managers argued that PPE was met the quality and quantity standard, while only 29.4% said that were not met the standard.

### **Fire Protection System**

The fire protection system is based on Fire Tree concept proposed by National Fire Protection Association (NFPA), with standard 550, including the target of fire and protection, prevention of lighting and protection of fire effects. Prevention of fire effects involves the management of fire effects and exposure (NFPA 550, 2007).

In term of the fire protection system, the finding of this study depicted that the majority of the leaders (52.9%) argued that the fire protection system already met both quantity and quality standards. However, 4 (23.5%) argued that the fire protection system only met quantity but not quality, and 4 (23.5%) stated that the fire protection system only met quality, not quantity. It indicated that the leaders had a different perception of fire protection system in PT.X (Table 4).

## **DISCUSSIONS**

Leadership support is a key aspect in controlling fire risks in the Coal Mill area. Leaders' perceptions of fire risk levels in the Coal Mill area are important to minimize accidents rate for workers. Although the result of this study found that there were different perceptions in terms of fire control, all leaders believe that fire control efforts in the Coal Mill area need to be undertaken.

Referring to the result mentioned above, one of the causes is the lack of communication between workers and managers as leaders. In addition, less clarity of job responsibility for fire controlling became another inhibiting factor for reducing fire risks. Therefore, there should be a clear definition between authority and responsibility at this point, the role of communication is an important aspect among all level in the organization or company (Terry, 2014).

In term of preparation of fire risk control policies in the Coal Mill area, there are four points that should be considered. They are 1) risk assessments made by workers in the Coal Mill section, 2) the costs, 3) time required for implementation, and 4) the long-term effects of risk control. In order to fulfill OHSAS 1800:2007, number 4.3.1, risk identification, risk assessment and risk control (Ghaisani, H., Nawawinetu, E.D, 2014). A process of risk management divided into seven steps including planning, identification, analysis of qualitative and quantitative risks, risk response planning, monitoring and control (Soputan, G.E.M, Sompie, B.F., and Mandagi, R.J.M., 2014).

Efforts of fire risk control can be done technically in the form of leadership proposal or regulation related to the replacement of Coal Mill machine spare parts, as an administrative control which is aimed for reducing contact between workers and the source of danger. For example, workers only enter the Coal Mill area when there is a command from Central Control Room (CCR), smoking prohibition for workers in the Coal Mill area, education, and training, including rewards and punishment.

Providing rewards for workers who follow occupational health and safety rules as a form of motivation and punishment for the worker who violates the regulation in order to create work safety environment. Rewards and punishment mechanism is to give a deterrent effect. A study by Saragih, V.I, Kurniawan B., and Ekawati (2016) reported that rewards and punishment has a positive impact on workers' obedience for using PPE.

The last fire risk control management is the use of Personal Protective Equipment (PPE). Basically, personal protective equipment cannot prevent accidents, but it can reduce exposure or severity. Previous studies by Malik (2010) and Akintayo (2013) found that usage of PPE is very important to protect workers from occupational hazard exposures. Availability of PPE must meet the standards in terms of quality and quantity so that the number of work accidents can be minimized and achieve zero accident. In this study, the majority of leaders suggested the importance of personal protective equipment for workers. (Novianto, ND, 2015). This finding is in line with a study by Gulhan, B., Ilhan, M.N, and Civil, E.F. (2012) which found that the major reasons accidents happened in metal industry was because of inappropriate usage of personal protective equipment (44%). Another research found that there was a significant relation between leadership and usage of personal protective equipment, the role of leadership was to give the suggestion for using PPE during working time (Saragih, V.I, Kurniawan B., and Ekawati., 2016). Therefore, creating a safety climate for increasing use of PPE became an important aspect (Leiss, 2014).

Leadership support related to fire risk control can be seen from the implementation of meetings related to fire investigation, fire risk assessment, fire audit result, reward and punishment and PPE that must be available according to potential hazards in the workplace. Fire risk control as a part of the fire management system is aimed to increase awareness of all element, both workers and leaders, about fire hazard, preventive efforts to reduce fire risks (Ramli, S., 2010). In addition, the Leader supervising the fire risk control at the Coal Mill indirectly can contribute to the control of fire risk, such as supervising the maintenance of the machine, so that it is still feasible to operate so as to reduce the risk of fire caused by engine damage and leakage. A study was done by Deng, Yongliang et.al suggested strategies for Coal Mine Safety by exploring coal mine risk network modeling.

## CONCLUSIONS

Leadership support contributed to improving attempts to decrease fire risk accident in Coal Mill area. Responsiveness of leaders determines the willingness in responding fire control to support zero accident in a company.

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**Table 1: Distribution of Opinion's Leaders by Risk Level and Involvement in Coal Mill Area of PT.X**

Level of Risk	n (17)	%
High Risk	14	82.4
Low Risk	3	17.6
Involvement		
Involved	9	52.9
Not Involved	8	47.1

**Table 2: Distribution of Opinion's Leaders by Giving Reward and Giving Punishment For Workers Complying with OSH Rules in Coal Mill Area of PT.X.**

Leaders' Opinion	n (17)	%
Giving Rewards		
Giving Rewards	15	88.2
Not Necessary	2	11.8
Giving Punishments		
Necessary	16	94.1
Not Necessary	1	5.9

**Table 3: Distribution of Opinion’s Leaders by Availability & Distribution of Personal Protection Equipment in Coal Mill Area of PT.X**

Availability of Personal Protection Equipment	n (17)	%
Meet Standard In Quality & Quantity	6	35.3
Meet Standard In Quality But Not Quantity	6	35.3
Not Meet Standard	5	29.4
Distribution of Personal Protection Equipment		
Good	7	41.2
Not Good	10	58.8

**Table 4: Distribution of Opinion’s Leaders by Fire Protection System in Coal Mill Area of PT.X**

Fire Protection System	n (17)	%
Meet Standard In Quality & Quantity	9	52.9
Meet Standard In Quality But Not Quantity	4	23.5
Meet Standard in Quantity But Not Quality	4	23.5

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