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FACTORS INFLUENCING THE IMPLEMENTATION OF FIRE SAFEGUARDS: A QUALITATIVE APPROACH. (A CASE STUDY AT THE JOB MARKET CENTER OFFICE – HEAD OFFICE, MINISTRY OF MANPOWER)

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ABSTRACT

The image of the Ministry of Manpower as a regulator and labour inspector in the OHS sector in companies plays a major role in enforcing Fire Protection Management in Indonesian office buildings. Unfortunately, the results of the OHS risk assessment at the Ministry of Manpower Building from the fire protection sector are a moderate risk rating, in addition to several deficiencies recorded in another report. This research wants to carry out further analysis of the factors for implementing fire protection at the Ministry of Manpower based on the results of the OHS Risk Assessment and the results of the inspection and testing of fire protection installations at the Ministry of Manpower Building in 2021. The purpose of this study was to determine the implementation of fire safety management in the Ministry of Manpower's Job Market Center Office. In addition to the conceptual framework, this paper has explained the research background, literature review, and research methodology. The application of this paper will establish recommendations for developing effective fire safety management to reduce the risk of fire in the Ministry of Manpower head office.

Keywords:
Fire Safeguards, Office Building, Occupational Health and Safety, Qualitative Approach.

INTRODUCTION

The Ministry of Manpower is one of 34 Ministries in the Republic of Indonesia whose duties and functions are set out in Article 27 of the 1945 Constitution, which is to help the Indonesian people obtain welfare through decent work. One of the regulations regulated by the Ministry of Manpower is related to Occupational Health and Safety (OHS) to be implemented in all companies to realize aspects of decent work and increase the work productivity of workers. One of the OHS areas that are a concern for the Ministry of Manpower to be implemented in all companies is Work Safety in the Fire Sector. As a party that makes regulations as well as oversees the implementation of fire management in each company, the head office and the Central Technical Service Unit office outside the head office belonging to the Ministry of Manpower have implemented building fire protection management following applicable laws and regulations.

Based on the OHS risk assessment report at the Ministry of Manpower Building in 2021, it can be concluded that the results of the OHS risk assessment at the Ministry of Manpower Building from the fire protection sector are a moderate risk rating. The results of the report state that the Ministry of Manpower as the maker of labour regulations has not implemented fire protection management internally. The risk assessment for fire protection in general on all floors of the Ministry of Manpower Building (building A and building B, each with 8 floors) obtained the following results:

1. Having fire protection facilities but not according to the type of fire class;
2. There is a firefighting team but the number of members is not according to the rules;
3. Does not fulfil all elements of emergency response facilities;
4. There is assistance from the fire department/institution but there is no MoU;
5. PPE index < 50% which meets the standards;
6. PPE is inappropriate and is used only during inspections or at certain times;
7. There are no signs of chemicals;
8. All chemicals do not have a Safety Data Sheet (SDS);
9. Available posters and signs <50%;
10. Has an emergency clinic or first aid room but no first aid staff.

In addition, the Report on the Results of Inspection and Testing of Fire Protection Installations at the Ministry of Manpower in February 2021 found several deficiencies, namely the lack of maintenance of the outdoor hydrant along with its canvas hose and nozzle, not being orderly in maintaining evacuation routes and emergency exits (there are still a lot of items and equipment that is placed on each path leading to the emergency lane), and has not routinely conducted firefighting or trail training and periodic evaluations. This report also requires that the Ministry of Manpower conduct another test and inspection in February 2022. This report has not technically examined the management, organization and competence of human resources for handling fires in the head office.

Implementation of a comprehensive fire protection management at the Ministry of Manpower's head office can enhance the image of the Ministry of Manpower as a role model for companies and other government agencies in implementing a qualified Fire Management System as well as a preventive effort in preparing for fire disasters that can occur at any time. Based on the description of this background, it is deemed necessary to conduct a study regarding the suitability of the fire protection management regulations for office buildings and the implementation of fire safety measures that have been carried out in the Ministry of Manpower office buildings.

The image of the Ministry of Manpower as a regulator and labour inspector in the OHS sector in companies plays a major role in enforcing Fire Protection Management in Indonesian office buildings. The implementation of Fire Protection Management in the Ministry of Manpower's head office building is a model for other agencies and institutions in Indonesia. This research wants to carry out further analysis of the factors for implementing fire protection at the Ministry of Manpower based on the results of the OHS Risk Assessment and the results of the inspection and testing of fire protection installations at the Ministry of Manpower Building in 2021.

The implementation of fire management in the head office will be comprehensively reviewed by

reviewing the implementation of active and passive fire protection management in routine activities and emergency activities. This research will be preceded by field observations to see the follow-up results of the OHS Fire Risk Assessment and the results of the inspection and testing of fire protection installations at the Ministry of Manpower headquarters which were carried out in February 2021. in the field are as follows:

1. Building Fire Protection Facilities and Infrastructure;
2. Building Fire Safety Organization;
3. Building Fire Security Operational Procedures;
4. Human Resources for building fire protection.

LITERATURE REVIEW

Fire-related Occupational Safety

Dewi Kurniwati (2013) explains that fire is a flame, whether small or large, where we don't want it and is detrimental, and in general it is difficult to extinguish. Fire is an event or occurrence of an uncontrolled fire which can endanger the safety of life and property. Fire can be seen as an event that occurs due to emergency conditions either in the company environment, in the residential environment or at the workplace. The National Fire Protection Association (NFPA) defines fire as an oxidation event involving three elements, namely flammable fuel, oxygen in the air, and a source of energy or heat which results in loss of property, injury or even the potential to take someone's life. cause death).

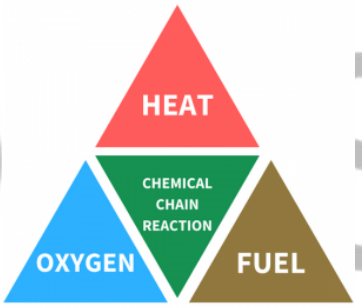

Figure 1 ***Tetrahedron of Fire***

Oxygen is naturally the second most abundant gas on earth (up to 20% of the total gas content). Fire hazard occurs due to a chain of chemical reactions involving oxygen, flammable materials and hot temperatures or conditions. Fire events can occur if this fire triangle is filled with all the elements that are united by a chain of chemical reactions. If one of the elements is removed, the fire cannot be lit and if it is in progress it will be extinguished. The chemical reactions that occur produce several combustion products including CO, CO2, SO2, smoke and gas. Another result of this reaction is the presence of free radicals from oxygen and hydrogen atoms in the form of hydroxyl (OH). If 2 OH groups split into H2O and O free radicals, these O radicals will function again as feed in the combustion process so it is called a chain combustion reaction (Triyono, 2001).
The cause of the fire originates from 3 factors that can cause a flame (Dewi Kurniawati, 2013) which include:

1. Human factor. The causes of fires from the human factor can be in the form of workers (human error), lack of discipline, etc. An example of a person who lacks discipline is throwing cigarette butts carelessly. Cigarette butts that have not died completely have the potential to cause a fire. another example is building managers who do minimal supervision, low attention to work safety and so on.
2. Technical factors. Causes of fire from technical factors can be:
    a. Physical or mechanical, namely an increase in temperature (heat) or the presence of an open fire

b. Chemicals, namely handling, transportation and storage not according to existing instructions.
c. Electricity (short circuit), the cause of this fire is because the electrical equipment used is not in accordance with the correct procedures and standards set by the Electrical Problems Agency of the Indonesian State Electricity Company, because of the low quality of the electrical equipment and cables used, and because of the installation which is random and unlawful.

3. Natural factors and natural disasters. Causes of fire from natural factors and natural disasters can be in the form of lightning, volcanic eruptions, earthquakes and so on. Lightning can also cause fires. Lightning is a natural factor that cannot be avoided.

In tackling fire incidents in buildings, fires are divided into fire classifications based on the type of fuel and the extinguishing media. Ramli (2010) describes that the purpose of fire classification is to facilitate the selection of extinguishing media (materials) as well as appropriate and appropriate means of protection for a class of fire so that prevention and suppression efforts will be efficient and effective. Regulation of the Minister of Manpower and Transmigration, Number PER.04/MEN/1980, divides the classification of fires and their extinguishing media as follows.

Table 1 ***Classification of Fire and Extinguishing Media***

No	Class	Type	Fire Objects	Effective Extinguishing Media
1	A	Solid material other than metal	Wood, paper, textiles, charcoal, foam rubber, foam plastic	Extinguishing powder
2	B	Flammable liquids and gases	Diesel fuel, kerosene, gasoline, asphalt, grease, alcohol, carbide, phosphite	Combination of sodium bicarbonate and alkaline salt
3	C	Tensile electric wire	Connecting panels, connecting crates, transformers, telephone exchanges	Carbon dioxide, quenching powder, and Bromochlorodifluoromethane halon gas
4	D	metal material	Magnesium, titanium, uranium, sodium, lithium, potassium	Metal special extinguishing powder

(Source: Regulation of the Minister of Manpower and Transmigration Number PER.04/MEN/1980)

Fire Protection System Management

Fire safety is an effort to prevent fires with various efforts to identify every form of energy, procure fire protection facilities and rescue facilities as well as the establishment of an emergency response organization to eradicate fires (Indonesia's Regulation of Ministry of Manpower Number 186/MEN/1999). Fire safety is all actions related to the prevention, observation and suppression of fires and includes the protection of life and human safety as well as the protection of property (Suma'mur, 1996). Five main principles of fire prevention and reduction of fire victims:

1. Prevention of accidents as a result of accidents or panic situations;
2. Creation of fire-resistant buildings;

3. Regular and periodic supervision;
4. Discovery of fires at the initial stages of extinguishing them;
5. Damage control to limit the damage as a result and suppression measures.

Emergency Alert System

According to the Occupational Safety and Health Administration, fires can reach dangerous levels within seconds and delays in recognizing a high-risk emergency can result in loss of life and property. Therefore, an early emergency warning is needed to minimize losses, both life and material.

According to SNI 03-3985-2000 fire is a phenomenon that occurs when a material reaches a critical temperature and reacts chemically with oxygen (for example) which produces heat, flame, light, smoke, steam, water, carbon monoxide, carbon dioxide, or other products and effects. A fire detector is a device designed to detect a fire and initiate an action. In the National Fire Protection Association (NFPA) 72, the detector is an early detection system for fire hazards that has provisions for installation, including:

1. There should be no more than 40 thermal sensors in a group of systems;
2. On flat roofs the detector should not be installed at a distance of less than 10 cm from the wall;
3. The maximum distance between detectors is 9.1 m or as recommended by the manufacturer;
4. Sensitive elements or sensors are clean and not painted;
5. The detector must not be installed within 1.5m of the air conditioner;
6. Each group of systems may not be installed with more than 20 pieces
1. smoke sensor.

Evacuation Management System

If a fire has occurred, the top priority is to save the occupants at the scene (Ramli, 2010). According to the Occupational Safety and Health Administration (2001), an irregular evacuation can cause confusion, injury, and property damage. Therefore, it takes management as follows:

1. Evacuation Decision;
2. Emergency Rescue Routes and Procedures;
3. Evacuators and Procedures;
4. Calculation of Workers After Evacuation.

Emergency Communication

Based on the Decree of the State Minister for Public Works Number 10/KPTS/2000, every building must be equipped with an emergency communication facility that can be used at any time to facilitate the delivery of fire information. In the event of an emergency such as a fire, a communications officer must be appointed with a list of posts that need to be contacted by order of the field coordinator. Therefore, the field coordinator can focus on dealing with emergencies at the scene. Who to contact and messages to communicate. When an emergency occurs, written text must be prepared beforehand to be conveyed on loudspeakers so that the emergency information can be understood and implemented by all employees in the office building (Sahab, 1997).

Organization

Fire prevention and control efforts must be managed and coordinated properly because it involves many parties from various functions. Therefore, to support this, an organization is needed (Ramli, 2010). The organization referred to in the Decree of the Minister of Manpower Number Kep.186/MEN/1999 is a firefighting unit. The definition of a fire management unit is a work unit that is formed and assigned to handle fire prevention problems in the workplace which includes administrative activities, identification of sources of danger, inspection, maintenance and repair of fire protection systems. The fire management unit consists of fire officers, fire management teams, fire management unit coordinators, and Occupational Safety and Health specialists in fire prevention.

Fire Protection System

The existence of a fire protection system aims to detect and extinguish fires as early as possible by using equipment that is driven manually or automatically (Ramli, 2010). According to Ramli (2010: 80) and the Decree of the Minister of Public Works Number 10/KPTS/2000, the fire protection system is divided into 2, namely as follows.

1) Active Protection System
   An active protection system is a fire protection system implemented by using equipment that can work automatically or manually, used by occupants or firefighters in carrying out extinguishing operations. In addition, this system is used in carrying out initial fire prevention. There are various active protection systems including smoke detectors (detect fire based on the presence of smoke), heat detectors (detect fires based on the presence of heat), flame detectors (detect fires based on the presence of infrared and ultraviolet radiation released by fire), fire extinguishers lighters, hydrants, and others.
2) Passive Protection System
   A passive protection system is a fire protection system that is carried out by regulating building components from architectural and structural aspects in such a way as to protect occupants and objects from physical damage in the event of a fire (Decree of the Minister of Public Works Number 10/KPTS/2000). Based on SNI 03-1736-2000, a building must have parts or building elements that at a certain level can maintain structural stability during a fire. Building materials and components must be able to withstand the spread of fire to limit the growth of smoke and heat as well as the formation of toxic gases caused by fires.

Office Building

Based on the Regulation of the Minister of Public Works Number 20/PRT/M/2009 concerning technical guidelines for fire protection management in urban areas, a building is a physical form of construction work that is integrated with its location, part or all of which is above and/or in the ground and/or water. , which functions as a place for humans to carry out their activities, both for housing or residence, religious activities, business activities, social, and cultural activities, and special activities. An office building is a building as place for carrying out administrative or administrative activities such as collecting, recording, processing, storing or distributing data.

The Minister of Public Works also explains the types of building construction classifications in Regulation Number 20/PRT/M/2009 concerning technical guidelines for fire protection management in urban areas as follows:

1. Classification of building construction type I (fire-resistant construction)
   Buildings made with fire-resistant materials (concrete, brick and other protected metal materials) with structures made in such a way as to withstand allotment and the spread of fire have a classification number of 0.5;
2. Classification of building construction type II (non-combustible, heavy wood construction)
   Buildings in which all parts of the construction (including walls, floors and roofs) consist of non-combustible materials which are not classified as fire-resistant materials, including buildings of wooden construction with brick walls, 20.3 cm wooden pillars, 76 mm wooden floors, wooden roof 51 mm, wooden beams 15.2 x 25.4 cm, determined to have a building construction classification number of 0.75;
3. Classification of building construction type III (ordinary)
   Buildings with outer walls of bricks or other non-combustible materials while other parts of the building consist of wood or flammable materials are determined to have a construction classification number of 1.0;
4. Classification of building construction type IV (wood frame)
   Buildings (except residential buildings) whose structures partially or completely consist of wood or flammable materials that are not classified as ordinary building construction (type III) are determined to have a construction classification number of 1.5.

Based on the explanation of the Decree of the Minister of Manpower Number Kep.186/Men/1999 concerning Fire Fighting Units in the Workplace, office buildings are classified as "Light Fire Hazard". This classification explains that office buildings have low volume and low flammability. In the event of a fire, the release of heat is low so that the spread of the fire becomes slow.

In the Regulation of the Minister of Public Works Number 20/PRT/M/2009, it is also explained that buildings must be protected against the possibility of a fire hazard with a fire protection system. Buildings must maintain and maintain the reliability of existing protection systems, including the ability and skills of officers in handling early-stage fire control. Buildings including hospital buildings must have a Fire Emergency Action Plan which includes joint and coordinated readiness in dealing with the possibility of fire (fire response) from all personnel in various facilities within the building. The required fire protection system must be used in buildings referring to the applicable provisions /National Indonesian Standard.

Fire hazard protection infrastructure in office buildings is emphasized on the following matters:

1. Adequate availability of water sources to facilitate fire extinguishing in the event of a fire;
2. Adequate access for fire engines to make it easier for fire engines to manoeuvre without obstacles;
3. Access to enter the building by providing a Master Key, road guide officers, or other means;
4. Unobstructed means of exit/evacuation route.

Fire protection facilities consist of:

1. Fire detection and alarm system, and emergency voice communication system;
2. Fire Fighting System. The fire extinguishing system in the building consists of a Light Fire Extinguisher, fire hydrant system, fire sprinkler system, and others;
3. Smoke control system.

QUALITATIVE APPROACH

Based on the research background in the introduction and the theoretical review of the literature review, this research will be conducted in a descriptive qualitative approach. Based on its type, this research is an observational study which aims to analyze the fire protection system as an effort to prevent and control fires at the Ministry of Manpower headquarters. The analysis in this study is descriptive, namely describing objects with qualitative analysis without testing the hypothesis.

METHODOLOGY

The type of research used by the author is the qualitative approach. The research process used is qualitative research to determine the application of fire protection management in terms of fire evacuation systems using a case study approach. Through this case study research is carried out intensively and in-depth to answer why this situation occurred and researchers are expected to be able to find relationships that were not expected. This research is detailed research regarding the analysis of a certain object over a certain period with sufficient depth and thoroughness.

Data was collected through the in-depth interview method which was carried out by purposive sampling. Research informants are parties who have the authority and knowledge regarding the implementation of fire safety management at the Ministry of Manpower head office. The human element as an instrument, namely the researcher is directly involved in the participatory observation. The data obtained will also be processed and validated through the triangulation method.

CONCLUSION

This paper was created to develop a conceptual model. The purpose of this study was to determine the implementation of fire safety management in the Ministry of Manpower's Job Market Center Office. In addition to the conceptual framework, this paper has explained the research background, literature review, and research methodology. The application of this paper will establish recommendations for developing effective fire safety management to reduce the risk of fire in the

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