



## FACTORS CAUSING WORK ACCIDENTS AT THE MEDAN CLASS A SEARCH AND RESPECT AGENCY OFFICE

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### Abstract

Work accidents are unplanned events that cause injuries, pain, or damage that occur at work. Work accidents usually occur in workplaces that have high potential hazards. This study aims to determine the potential dangers that allow accidents, accidents that often occur, and the causes of accidents that often occur. Research Types and Design Using Qualitative Descriptive Methods With a Case Study Approach. In this study, the focus of the study contains the main subjects: unsafety action, age, use of PPE, K3 Knowledge, UNSAFE Conditions, and Ergonomics. From the results of the situation analysis that has been carried out and observations obtained at the Medan Class A Search and Relief Office, it is known that several factors cause work accidents. In the theory of three main factors (three main factors theory), 3 factors cause work accidents, namely human factors, environmental factors, and ergonomic factors.

**Keywords:** Basarnas, UnsFety Action, Work Accident

### Introduction

Work accidents according to the World Health Organization (WHO) are events that cannot be prepared in advance to produce real injuries. According to the Regulation of the Minister of Manpower (Permenaker) Number: 03/Men/1998, a work accident is an unwanted and unexpected event that can cause casualties of life and property. This Work Accident must be borne by the company through BPJS Employment and has become the agenda of every company in the framework of the company's Occupational Safety and Health (K3) management program.

Work accidents are unplanned events that cause injury, pain, or damage to occur in the workplace. Work accidents usually occur in workplaces that have high potential hazards. Based on data from BPJS Ketenagakerjaan, in 2018 there were 114,148 accidents at work, and in 2019 there were 77,295 cases. This shows a decrease in accident cases that occur in the workplace by 33.05%. but as well as work accident cases in 2020 to 177,000. There has been a significant increase, therefore it needs to be emphasized again in the K3 culture.

As its role is quite important in development and is one of the assets in the country's economy, Office Workers are one of the jobs that have a high risk of work accidents. This is due to several factors. Data in Indonesia, during December 2008 – March 2009, as many as 18 ships sank. Of the tragedies, as many as 43 people died, 386 people were declared missing, and 105 people survived or suffered injuries, both physical and psychological.

The International Labour Organization (ILO) concluded that Indonesia ranks second bottom out of 53 countries that cause 65,474 cases of work accidents. The high number of workplace accidents is

an indication of weak or lack of supervision from various companies to protect their workers from harm (ILO, 2013).

Data from the Ministry of Manpower and Transmigration in Indonesia states that until 2012 no less than six workers died every day due to work accidents. This figure is relatively high compared to European countries, only as many as two people die per day due to work accidents. Occupational protection covers a fairly broad aspect, including occupational health and safety protection. The purpose of this protection is that the workforce, in general, carries out daily work to increase productivity, therefore work safety is an important aspect of labor protection (Kristiawan & Abdullah, 2020).

Law number 14 of 1969 article 9 concerning the main provisions regarding labor states that every worker has the right to protection for safety, health, decency, maintenance of work morals, and work treatment by human dignity and religious morals. The obligations of management and labor about Personal Protective Equipment are regulated in articles 9 and 12 of Law No. 1 of 1970 concerning Work Safety.

Article 9 paragraph 1 states that: "The management is required to show and explain to the new worker about the means of protection for the new worker about the means of protection for worker concerned". Article 12 sub c states, "Bylaws and regulations, the obligation and right of workers to wear the required Personal Protective Equipment is stipulated".

Article 12 sub c states that: "Workers have the right to object to work in work where occupational health and safety requirements and personal protective equipment are required to be used by them, except in special cases specified otherwise by employees who can still be accounted for". Article 4 paragraph 3 of the Regulation of the Minister of Manpower and Transmigration No. 01 / Men / 1981 concerning the Obligation to Report Occupational Diseases states that "Management must provide free of charge all Personal Protective Equipment required by its users by the workforce under its leadership for the prevention of occupational diseases."

To ensure occupational safety and health, qualified PPE is needed so that it can reduce the risk of work accidents (Ministry of Manpower of the Republic of Indonesia, 1996). Therefore, with the existence of a developing industry, occupational safety and occupational health must be a guideline for workers and companies. The emergence of occupational hazards can be in the form of work accidents. Occupational accidents have many factors that influence them, including accidents related to employment relations in companies (ILO, 1999).

Several theories regarding work accidents have been developed, especially related to the factors that cause work accidents. In 1931, Heinrich came up with a theory that every work accident was caused by five consecutive factors described as dominoes. The domino theory explains that work accidents can occur due to habits, mistakes, actions, and unsafe conditions that can cause work accidents. The theory was later redeveloped by Bird and Germain.

Work accidents are caused directly by unsafe actions and unsafe conditions. Based on the results of the study, 85% of the causes of work accidents are caused by unsafe actions. Work accidents can occur because they are caused by several factors, including environmental factors and human factors. Environmental factors related to equipment, policies, supervision, regulations, and procedures recognize the implementation of K3.

While the human factor is unsafe behavior, knowledge, or work habits. Efforts to prevent work accidents are to eliminate risks or control sources of hazards and even use PPE. According to ILO (1989), the hazard control hierarchy has 5 (five) hazard controls, namely elimination, substitution, engineering, administration, and PPE. The prevention is focused on the work environment, equipment, and especially workers/people (According to the ILO, 1989 in Permana2015).

Pusarnas is a Basari unit responsible for implementing SAR operations in Indonesia. Even with limited personnel and equipment, aviation and shipping disaster management activities have been

carried out with satisfactory results, including Boeing 727-PANAM in 1974 in Bali and Twinotter aircraft operations in Sulawesi known as Tinombala operations.

Slowly Pusarnas continued to grow under the leadership of (late) Marsma S. Dono Indarto. In the framework of this development in 1975 Pusarnas officially became a member of NASAR (National Association of SAR) based in America, so that Pusarnas has officially been involved in SAR activities internationally. The following year Pusarnas participated in the Working Group On Satellite Aided SAR of the International Aeronautical Federation.

## **Research Methodology**

Based on the problems discussed in this study, this research is classified as descriptive research. Descriptive research is research that describes a symptom, fact, event, or event that is or has occurred. This study aims to determine the potential hazards that allow accidents to occur, accidents that often occur, and the causes of accidents that often occur.

The type and design of the research use qualitative descriptive methods with a case study approach. In this study, the focus of the study contains the subject of study which includes: unsafety action, age, use of PPE, K3 knowledge, unsafe conditions, and ergonomics.

## **Results and Discussion**

From the results of the situation analysis that has been carried out and observations obtained at the Medan Class A Search and Rescue Office, it is known that several factors cause work accidents. In the theory of three main factors (Three Main Factor Theory), 3 factors cause work accidents, namely human factors, environmental factors, and ergonomic factors.

Of the several theories about the factors that cause accidents that exist, one of them that is often used is the theory of three main factors (Three Main Factor Theory). According to this theory, it is stated that three factors cause work accidents. These three factors can be broken down into:

### **1. Human Factor**

Usually caused by deficiencies of individuals such as careless attitude, carelessness, inability to carry out tasks properly, drowsiness, drug addiction, or alcohol. Furthermore, factors that affect work accidents can also be grouped, namely internal factors derived from the employees themselves and external factors derived from the environment

### **Unsafely Action (Tindakan Tidak Aman)**

Based on the results of the researchers' analysis, Unsafely action at the office of the Search and Relief Agency (BASARNAS) is an action that can endanger the occupational safety and health of employees, equipment, or the environment. Examples of unsafely actions at the BASARNAS office based on the results of interviews with Medan Class A Search and Rescue Agency office employees include:

- Not using personal protective equipment when conducting search and rescue operations
- Not complying with standard operating procedures when using search and rescue facilities and infrastructure
- Not reporting or handling work accidents, fires, or disasters that occur in the office
- Not maintaining cleanliness and order in the office
- Not participating in training, simulations, or periodic exercises organized by BASARNAS

Unsafty actions at the BASARNAS office can cause material loss, injury, illness, or death to employees, victims, or the community. Therefore, unsafty action in the BASARNAS office must be prevented and reduced by:

- Increase employee awareness and discipline toward occupational safety and health
- Conduct regular inspection, supervision, and evaluation of the implementation of search and rescue operations
- Provide and maintain adequate and standard personal protective equipment, search and rescue facilities, and infrastructure
- Develop and disseminate standard operating procedures, work instructions, and regulations related to occupational safety and health
- Conduct training, simulations, or periodic training to improve employee skills and knowledge in dealing with emergencies
- Report and handle work accidents, fires, or disasters that occur in the office quickly and precisely
- Maintain cleanliness and order in the office

This is in line with Hizamul Fikri's research. (2023) there is a relationship between unsafty action and work accidents that occur in the production of PTX's workshop division. As can be seen from the findings of descriptive analysis, unsafe action, unsafe conditions, and workplace accidents are all placed in the low category. The findings showed that unsafe behavior and conditions significantly reduced the number of injured PT X workshop division production section workers at the workshop division's workplace. This is in line with research conducted by Hilman Adam et al. (2020) that there is a relationship between unsafe actions and the incidence of work accidents among workers at the BPBD Banyuwangi Office. Some unsafe actions taken while working are such as running the ship's motor at an inappropriate speed, ignoring checking the condition and feasibility of work equipment when starting work, using damaged work equipment, not maintaining work machinery and equipment, using personal protective equipment incorrectly, and so on.

### **Use of PPE**

Based on the results of the situation analysis, compliance with the use of personal protective equipment (PPE) at the Search and Rescue Agency (BASARNAS) is one of the important aspects in preventing and controlling infection, especially when conducting search and rescue operations. based on the results of interviews regarding the factors behind non-compliance with the use of Medan Class A Search and Rescue Agency office employees, among others:

- Lack of employee knowledge, attitudes, and skills about PPE
- Unavailability, quality, and comfort of adequate and standard-compliant PPE
- Incompatibility of the type of PPE with the type of work
- Unsafty employee habits, tenure, and behavior
- Absence or weak supervision, training, and socialization from superiors

To improve compliance with the use of PPE in BASARNAS, efforts are needed such as:

- Conduct education and simulation about PPE regularly and fun
- Provide and maintain adequate and compliant PPE
- Develop and enforce standard operating procedures, work instructions, and regulations related to PPE
- Inspect, supervise, and evaluate the use of PPE
- Provide rewards, sanctions, or feedback to employees related to PPE

The frequency of injuries to Office Workers can occur if Office Workers do not pay attention to their work safety, in this case, it is referred to the mechanism of injury events that can occur due to being hit or slipped, causing more severe injuries. Based on the results of research conducted by Suardi Zurimi (2019), the results of this study show that the use of PPE is very effective in reducing the frequency of work accidents that cause injuries / vulnus in BASARNAS Office Workers in Sidoarjo. In the results of the analysis before the use of PPE, 63.3% of respondents experienced vulnus / wound events. In this study, the most data on vulnus / wound events in respondents of Office Workers were caused by the puncture mechanism (vulnus punctum) and abrasions (vulnus laceratum) which have a higher frequency, this is because abrasions are easier to occur, namely by moving the superficial skin epithelial layer which can be caused by friction, this is associated with the use of PPE.

### **Knowledge of K3**

Based on the results of research by Hilman Adam et al. (2020), there is a relationship between knowledge about occupational safety and health with the incidence of work accidents in Pertamina Office Workers in Medan. The results of this study are by Green's opinion which states that knowledge is one of the important factors in motivating someone to act. Workers who have less knowledge about occupational safety and health will tend to work in a hurry and want to get work done quickly to save rest time. This is due to workers' ignorance and unawareness of the importance of procedures and regulations at work to protect the workers themselves. Therefore, workers' lack of knowledge about occupational safety and health can lead to work accidents.

## **2. Environmental Factors**

Based on the results of the researchers' analysis, an Unsafe condition at the Search and Relief Agency (BASARNAS) is a dangerous condition or condition that has the potential to cause work accidents, material losses, injuries, illnesses, or deaths for employees, victims, or the community. Examples of unsafe conditions in BASARNAS based on the results of interviews with Medan Class A Search and Rescue Agency office employees include:

- Search and rescue facilities and infrastructure that do not meet safety standards, such as damaged, dirty, or poorly maintained boats, helicopters, cars, or radios
- Unsafe work environments, such as bad weather, rough terrain, or conflict areas
- Hazardous materials that are not handled properly, such as chemicals, fuels, or explosives
- Improper office facilities, such as electricity, water, or problematic ventilation

To prevent and reduce unsafe conditions in BASARNAS, efforts are needed such as:

- Conduct regular inspections, supervision, and evaluation of search and rescue facilities and infrastructure
- Provide and maintain adequate and standard-compliant search and rescue facilities and infrastructure
- Adapt search and rescue operations to existing environmental conditions
- Carry out handling and storage of hazardous materials by procedures
- Maintain the cleanliness and comfort of office facilities

A noisy environment can reduce the comfort of a worker, interfere with communication, reduce concentration, reduce hearing, and can cause deafness. Meanwhile, by the Decree of the Minister of Manpower Number: KEP-51 / MEN / 1999 concerning the Threshold Value of Physical

Factors in the Workplace, the recommended noise intensity is 85 dBA for 8 hours of work. In addition to environmental factors, other things that can be the cause of injury are temperature, lighting levels, to the condition of the surface where work.

Based on statistical results, 85% of accidents are caused by unsafe acts, and 15% are caused by unsafe conditions. Here is the explanation: Dangerous conditions are physical environmental factors that can cause accidents such as unprotected machinery, inappropriate lighting, oily floors, and others. Dangerous actions are behaviors or mistakes that can cause accidents such as carelessness, not using complete PPE, health problems, lack of knowledge in the work process, and others.

### **3. Ergonomic Factors**

Ergonomic hazards in Search and Rescue Agency (BASARNAS) are threats or potential damage that can occur due to mismatches between workers, equipment, and the work environment. Ergonomic hazards can cause musculoskeletal disorders, fatigue, stress, or injury to BASARNAS workers, especially those performing search and rescue operations. Ergonomic hazards can also reduce productivity, quality, and work safety. Some examples of ergonomic hazards in BASARNAS include:

- Heavy workload, both physical and mental, which can trigger fatigue, stress, or errors in work
- Non-ergonomic work postures, such as bending, bowing, twisting, or reaching, which may cause pressure or pain in the muscles, joints, or spine
- Work equipment that does not fit the size, shape, or function of the worker's body, such as chairs, tables, computers, or communication devices, which may cause discomfort, irritation, or injury
- Unsupportive work environments, such as lighting, temperature, noise, or vibration, that may interfere with worker concentration, vision, hearing, or balance

To prevent and reduce ergonomic hazards at BASARNAS, efforts are needed such as:

- Conduct ergonomic risk analysis and assessment on every job, equipment, and work environment
- Make improvements or adjustments to work, equipment, and the work environment to conform to ergonomic principles
- Conducting training and socialization on ergonomics for all BASARNAS workers
- Monitoring and evaluating ergonomic conditions in the workplace
- Conducting health checks and providing health facilities to BASARNAS workers

### **Conclusion**

From the results of the situation analysis that has been carried out and observations obtained at the Medan Class A Search and Rescue Office, it is known that several factors cause work accidents. In the theory of three main factors (Three Main Factor Theory), 3 factors cause work accidents, namely human factors, environmental factors, and ergonomic factors.

Based on the results of the researchers' analysis, Unsafe action at the office of the Search and Relief Agency (BASARNAS) is an action that can endanger the occupational safety and health of employees, equipment, or the environment. An unsafe condition in the Search and Relief Agency (BASARNAS) is a dangerous condition or condition that has the potential to cause work accidents, material losses, injuries, illnesses, or deaths for employees, victims, or the community. Ergonomic

hazards in Search and Rescue Agency (BASARNAS) are threats or potential damage that can occur due to mismatches between workers, equipment, and the work environment.

## References

- [1] Emil Salim. 2020. Green Company. Jakarta: PT. Astra Internasional Tbk. Gempur Santoso. 2004. Manajemen Keselamatan dan Kesehatan Kerja. Jakarta: Prestasi Pustaka
- [2] Heinrich, H.W. (2020). Industrial Accident Prevention: A Scientific Approach. McGraw-Hill Book Company, New York City.
- [3] Hinze, Jimmie W. (2019). Construction Safety (1st Edition). Prentice Hall Upper Saddle River, New Jersey.
- [4] Hosmer, D.W., dan Lemeshow, S. (2019). Applied Logistic Regression. John Wiley & Sons Incorporation, New York.
- [5] ILO. 2003. Pencegahan Kecelakaan. Jakarta: PT. Pustaka Binaman Prestindo PT. Jamsostek. 2005. Petunjuk Teknis Penyelesaian Jaminan (JKK, JHT, JK). Jakarta: PT. Jamsostek
- [6] Institut Pendidikan dan Pembinaan Manajemen: PT. Pustaka Binaman Pressindo, Jakarta Depnaker RI. 1996. Indonesian Journal of Industrial Hygiene Occupational Health and Safety Volume XXIX No.4. Jakarta: Depnaker. Depkes RI, 2007, Kecelakaan di Industri, (<http://www.depkes.go.id>), diakses 8 Februari 2024
- [7] Persero Rudi Suardi. 2018. Sistem Manajemen Keselamatan dan Kesehatan Kerja. Jakarta: Penerbit PPM Siswanto Sastrohadiwiry. 2003. Manajemen Tenaga Kerja Indonesia. Jakarta: Bumi Aksara
- [8] Silalahi, Bennet., dan Silalahi, B. Rumondang. (2018). Manajemen Keselamatan dan Kesehatan Kerja.
- [9] Kristiawan, R., & Abdullah, R. (2020). Faktor Penyebab Terjadinya Kecelakaan Kerja Pada Area Penambangan Batu Kapur Unit Alat Berat PT. Semen Padang. *Jurnal Bina Tambang*, 5 (2), 11–21.