



# Management of natural disasters in the environment PT. Mutiara Masyhur Sejahtera, with the formation of an emergency response team

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## ABSTRACT

**Background:** Sidoarjo Regency, East Java, is often hit by tornadoes that cause material losses and injuries, especially at PT. Mutiara Masyhur Sejahtera located at Jalan Kahuripan Raya No. 9-11, Entalsewu, Buduran, Sidoarjo. This phenomenon encourages the need to improve disaster preparedness and response. **Method:** This study uses a qualitative descriptive approach with primary data collection through direct observation and in-depth interviews with the company's Project Manager. Secondary data covering organizational structure and number of employees are also used. Data is analyzed through a reduction process to ensure relevant and accurate information. **Findings:** Although PT. Mutiara Masyhur Sejahtera already has fire protection equipment, such as Light Fire Extinguishers (APAR), but there is no system or policy that regulates emergency response management for fires or other disasters. Forming an Emergency Response Team and creating Procedures and Work Instructions (IKA) regarding Emergency Response are needed as a reference when an emergency occurs. **Conclusion:** To improve disaster preparedness, companies must equip themselves with an occupational safety and health management system (SMK3) that regulates all compliance related to K3 aspects. This aims to prevent work accidents and occupational diseases, reduce the negative impact of disasters and improve overall work safety. **Novelty/Originality of this study:** This study presents a new approach to improving disaster preparedness in the private sector, especially for companies operating in disaster-prone areas such as Sidoarjo. This study proposes the integration of an occupational safety and health management system (OHSMS) with a particular focus on disaster emergency response management, which can be a model for other companies in improving disaster resilience.

**KEYWORDS:** emergency response team ; disasters; private sector disaster resilience.

## 1. Introduction

Disasters are events or a series of events that threaten and disrupt people's lives and livelihoods, caused by natural or non-natural factors or human factors. They result in human casualties, environmental damage, property loss, and psychological impacts. Meanwhile, natural disasters are disasters caused by events or a series of events caused by nature, including earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes,

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and landslides (BPK, 2007). The loss level due to disasters depends on the type of event, frequency, magnitude, and risk of the exposed components.

Indonesia is a country that has a relatively high potential for natural disasters ranging from earthquakes, tornadoes, floods, and landslides to tsunamis. This condition is because, geographically, Indonesia is an archipelagic country located on the four plates of the Asian continent, the Australian continent, the Indian Ocean plate, and the Pacific Ocean plate. Sidoarjo Regency is one of the cities in East Java province, which also has the potential for natural disasters. Based on data from the Regional Disaster Management Agency (BNPD) of Sidoarjo Regency, it is stated that during the last 2 (two) years, there have been 17 (seventeen) natural disasters in Sidoarjo that have been reported, where these disasters consist of natural disasters such as floods, tornadoes, and fires (BPBD Sidoarjo, 2023). Tornadoes, if viewed based on the classification according to BNPB, are included in extreme weather phenomena, while based on the UNISDR classification, they are included in hydrometeorological phenomena. This type of disaster is part of the growth process of cumulus nimbus rain clouds, which are formed due to intensive heating. The threat of tornadoes is challenging to predict because they are a local-scale atmospheric phenomenon; some of the consequences of tornadoes are damage to buildings and fallen trees (Yanuarto, 2019).

The natural disaster tornado is the most frequent event that has hit Sidoarjo Regency in the last 1 year. This also happened to PT. Mutiara Masyhur Sejahtera is a company operating in the Property/Developer industry located on Kahuripan Raya Street No. 9-11, Entalsewu, Buduran, Sidoarjo, where in the last two years, the area where this company operates has experienced a significant increase in disaster events, especially natural disasters, namely the Puting Beliung wind. The tornado disaster on October 23, 2022, and February 26, 2024, resulted in severe disruption to the company's operational activities and employee safety and welfare, estimated by PT. Mutiara Masyhur Sejahtera experienced a financial loss of approximately Rp. 500,000,000.00 (consisting of damage to office buildings worth IDR 200,000,000.00, damage to area infrastructure and plants worth IDR 300,000,000.00), and 72 employees were directly affected by the tornado disaster, of which there were 2 (two) people were injured, and the rest were survivors.

These conditions encourage us to improve preparedness and response to natural disasters. One of the efforts is to form an Emergency Response Team to respond to emergencies resulting from natural disasters effectively and efficiently. The formation of this team is expected to increase the company's ability to deal with various types of disasters to reduce the negative impacts they cause. Efforts to form an Emergency Response Team are in line with what has been carried out by PT PLN (Persero) UPMK II Surabaya Project Management Center; by creating an Emergency Response Team at one of the state-owned companies, it can minimize the level of losses that occur due to natural disasters that occur at state-owned companies located on Ketintang Baru I Street No, 1 - 3 Surabaya. Thus, through a deep understanding of PT. Mutiara Masyhur Sejahtera, in preparing for natural disasters, it is hoped that recommendations and strategies can be found to increase the effectiveness of disaster management systems and emergency responses in the workplace environment. It is expected that the efforts of this research can contribute to the understanding and development of effective disaster management strategies in corporate environments and development areas.

## 2. Methods

The location for this research is PT. Mutiara Masyhur Sejahtera is a company in the property/development industry located in Kahuripan Raya Street St No. 9-11, Entalsewu, Buduran, Sidoarjo. It has 72 employees and a land area of ± 4000 m<sup>2</sup> consisting of a Marketing Gallery Room, Back Office Room, Meeting Room, Directors Room, Prayer Room, Warehouse, and other public facilities.

This research is descriptive qualitative, where the research is carried out non-structurally, systematically, factually, and accurately regarding the facts and characteristics

of the population at PT. Mutiara Masyhur Sejahtera. The data required in this research is primary data in the form of direct observations in the field, in-depth interviews with related parties, and secondary data in the form of organizational structure and number of active employees. Thus, the data collection method using interview techniques would be more suitable for this research, with a sufficient number of interview samples of 1 (one) person, because the aim is to analyze emergency response management in the company environment more deeply. Therefore, the respondents in this research involved one person from the construction section, Mr. Erwan Herigusyono, who served as a project manager at the PT office. Mutiara Masyhur Sejahtera. The Project Manager was chosen as the informant because he is responsible for ensuring the implementation of activities. The disasters described in this research include natural disasters such as tornadoes, floods, and earthquakes and non-natural disasters such as fires.

The initial step in data processing in this research is to carry out data reduction, which is the process of selecting information from interviews in the field so that its truth can be verified so that the reduction results can provide a more specific picture regarding the data needed.

In the interview process, the researcher will ask several descriptive questions, asking respondents to explain and validate several lists of questions according to the following table:

Table. 1. List of interview questions

No	Question	
	Theme	Subtheme
1	General Company Data	<ol style="list-style-type: none"> <li>1. Large Office Area</li> <li>2. Number of floor</li> <li>3. Number of rooms</li> <li>4. Number of employees</li> </ol>
2	Company Regulations	<ol style="list-style-type: none"> <li>1. Work procedurs</li> <li>2. Work instructions</li> <li>3. P2K3 team</li> </ol>
3	K3 Socialization	<ol style="list-style-type: none"> <li>1. K3 training</li> <li>2. K3 simulation</li> <li>3. K3 posters</li> <li>4. K3 information board</li> <li>5. Safety induction</li> </ol>
4	K3 Certification	<ol style="list-style-type: none"> <li>1. Firefighters</li> <li>2. First aid officer</li> <li>3. General K3 expert</li> <li>4. Electrical K3 expert</li> </ol>
5	Fire Protection Equipment	<ol style="list-style-type: none"> <li>1. Hydrant</li> <li>2. APAR</li> <li>3. APAT</li> <li>4. Sprinkels</li> <li>5. Fire exhausher sign</li> <li>6. Maintaining a checklist</li> </ol>
6	Personal Protective Equipment	<ol style="list-style-type: none"> <li>1. Helmet</li> <li>2. Safety shoes</li> <li>3. Gloves</li> <li>4. Waistcoat</li> <li>5. Face mask</li> <li>6. Ear protector</li> </ol>
7	First Aid	<ol style="list-style-type: none"> <li>1. First aid box</li> <li>2. Stretcher</li> <li>3. First aid room</li> <li>4. Maintaining a checklist</li> </ol>
8	Emergency Signs	<ol style="list-style-type: none"> <li>1. Evacuation route</li> <li>2. Assembly point</li> <li>3. Emergency lamp</li> </ol>

4. K3 flag
5. Alarm
6. Composition of the emergency response team
7. Emergency telephone list

### 3. Results and Discussion

Based on the results of interviews and documentation, several data were obtained that can be used as a reference in preparing a disaster emergency response system. PT. Mutiara Masyhur Sejahtera does not yet have Policies, Planning, Organization, Procedures, and Evaluations related to K3, especially regarding controlling and managing disaster emergencies. For emergency infrastructure, PT. Mutiara Masyhur Sejahtera has a light fire extinguisher (APAR) and a first aid box in each room.

Based on the Decree of the Minister of Manpower of the Republic of Indonesia No.186 of 1999 (BPK, 1999) concerning establishing an Emergency Response Team, PT. Mutiara Masyhur Sejahtera can form an Emergency Response Team, a combination of Security and employees from PT. Mutiara Masyhur Sejahtera. The formation of the Emergency Response Team includes non-structural disaster mitigation. Based on the results of an interview with Mr. Erwan Herigusyono as Project Manager, there are 7 (seven) rooms in the PT building. Mutiara Masyhur Sejahtera, with the following details:

Table 2. List of company workspaces

No	Room name	Floor Location
1	Marketing gallery room	1
2	Back office room	1
3	Meeting Room	1
4	Directors' Room	1
5	Prayer Room	1
6	Back office room	2
7	Meeting Room	2

Based on the list of rooms, each floor has representatives involved in becoming an Emergency Response Team, where these people have duties and responsibilities on their respective floors. There are 12 (twelve) people who make up the Emergency Response Team with details of the composition of the number of members as follows :



Fig. 1. Composition of emergency response team members

Furthermore, to improve the competency of each team of Emergency Response Team members in carrying out their duties, several certifications or training are required, including Class A and C Firefighter Certification and First Aid Officer Certification, due to the actual conditions currently running at PT. Mutiara Masyhur Sejahtera does not yet have a Firefighter or First Aid Certificate. Apart from forming an Emergency Response Team, it is also necessary to prepare Procedures or SOPs along with Emergency Response Work Instructions (IKA) for every disaster that has the potential to occur within the PT environment. Mutiara Masyhur Sejahtera. Procedures related to Emergency Response were then socialized to all PT employees. Mutiara Masyhur Sejahtera. Conducting Emergency Response socialization can provide all employees with a shared understanding and commitment regarding the emergency response management mechanism at PT. Mutiara Masyhur Sejahtera. Apart from giving socialization to employees, Safety Induction / Safety Briefing also needs to be conveyed to internal and external guests of the company, for example, when a meeting or meeting is to be held. To deal with emergencies, the company provides first aid personnel, first aid facilities or rooms, and first aid equipment. This Emergency Procedure must be checked periodically by personnel with work competence, and the installation of equipment with a high potential for danger must also be coordinated with the relevant authorized agency.

Inspection and maintenance of fire equipment such as Light Fire Extinguishers (APAR) must be carried out routinely and periodically or once every 1 (one) month by the Emergency Response Team. If a light fire extinguisher (APAR) has expired or is damaged, you can refill either powder or CO2 APAR. Apart from regular inspection and maintenance of APARs, it is also necessary to carry out training or simulations on the use of APARs, which can be carried out in conjunction with Emergency Response Training or Simulations by relevant External Parties. Apart from Light Fire Extinguishers (APAR), First Aid Boxes must undergo routine monthly inspection and maintenance.

When facing an emergency, the company also needs to prepare Personal Protective Equipment or Safety Equipment according to the potential disaster hazards that exist in the company. In general, the need for Personal Protective Equipment (PPE) that needs to be prepared by the company includes helmets, safety shoes, vests, and masks. , gloves, ear protectors, and others. Personal protective equipment (PPE), such as fire protection equipment, must also be maintained regularly and periodically. In dealing with emergencies, emergency response signs are also needed, including evacuation routes, gathering points or Assembly Points, K3 flags, Alarms/Sirens, installation of Emergency Response Team Structures, and Lists of Emergency Telephone Numbers such as Police Stations, Hospitals, Fire Brigades, BNPB, and others.

#### **4. Conclusions**

PT. Mutiara Masyhur Sejahtera already has fire protection equipment such as a Light Fire Extinguisher (APAR); however, no system or policy regulates emergency response management for fires or other disasters, so apart from forming an Emergency Response Team, Procedures and Work Instructions (IKA) are also needed. Regarding Emergency Response so that the document can be used as a reference if an emergency occurs. Then, consider the number of employees and the potential risk of danger that PT. Mutiara Masyhur Sejahtera, it would be best for company management to set up or implement an Occupational Safety and Health Management System (SMK3) to regulate all compliance related to K3 aspects which aim to prevent work accidents and occupational diseases (PAK) for employees.

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### Conflicts of Interest

The authors declare no conflict of interest

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