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Evaluation of Readiness of Emergency Response Facilities and Means in Industrial Areas: Literatur Review

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ABSTRACT

In the industrial world, the risk of disasters such as fires, explosions, or workplace accidents can arise at any time, so preparation to deal with emergency situations is very important. Emergency preparedness involves a variety of elements, from physical infrastructure and equipment to training and awareness-raising of human resources. This research applies library research or literature study. To obtain data for literacy studies, books, research journals published locally and internationally, scientific articles, and research conducted by others can be referred to. A literature review is an overview of the literature related to a theme. It provides information on recent advances in the field. Based on the analysis of eight journals on the readiness of facilities and emergency response systems in industrial areas, it can be concluded that, although many industries have made significant efforts to improve their emergency response systems, there are still several challenges that need to be addressed. Some key findings from this research include: Compliance with Standards, Many facilities show a high level of compliance with safety standards, but there are still elements that need improvement. Routine assessments are crucial to ensure that every element of the disaster response system functions well. The significance of training, awareness, and understanding of emergency response procedures among employees is very important.

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INTRODUCTION

In assessing the readiness of facilities and facilities for emergency response in industrial estates, which is a crucial element in risk management and occupational safety. In the industrial world, the risk of disasters such as fires, explosions, or workplace accidents can arise at any time, so preparation to deal with emergency situations is very important. Emergency preparedness involves a variety of elements, from physical infrastructure and equipment to training and awareness-raising of human resources. Sufficient facilities and appropriate tools can reduce the impact of unexpected events.(Sugiantoro, 2024)

This study aims to assess the extent to which infrastructure and facilities in industrial estates comply with safety standards set by regulations and best practices. Preparedness for emergencies is

not only the responsibility of management, but also requires the active involvement of all employees. Understanding and awareness of emergency response procedures can improve responsiveness when dealing with emergency situations.(Sumang, 2024), Dengan demikian, penelitian ini juga akan mengevaluasi sejauh mana pemahaman dan persiapan karyawan. Thus, this study will also evaluate the extent of employee understanding and preparation. Based on information, accidents in industrial environments are often triggered by the lack of adequate preparation and training. Assessments of the readiness of emergency handling facilities and facilities need to be conducted regularly to identify shortcomings and aspects that need to be improved.(Fadlullah & Raharja, 2023)

This study will apply both qualitative and quantitative methods in data collection, which include surveys as well as direct observation. In general, assessing the readiness of emergency response facilities and facilities in industrial estates is a crucial step in building a safe and effective working environment. This research is expected to provide in-depth insights and benefit all interested parties in improving emergency preparedness in the industrial sector..(Zidan Ramadan & Mudayat, 2025)

METHOD

This research applies library research or literature study. To obtain data for literacy studies, books, research journals published locally and internationally, scientific articles, and research conducted by others can be referred to. A literature review is an overview of the literature related to a theme. It provides information on recent advances in the field. The literature review gives the researcher the opportunity to propose a particular method, develop that method, and understand its relationship to philosophy and how it relates to a particular topic/result. The research tool utilizes mobile devices, laptops, and Wi-Fi connections to collect existing research data to identify journals published in the last five years, from 2019 to 2024. Explore or utilize publication sources to investigate the literature and use Google Scholar and relevant references to conduct searches.(Sabban, 2024)

RESULTS AND DISCUSSION

Based on the search results regarding the Evaluation of Readiness of Emergency Response Facilities and Means in Industrial Areas, there are several relevant journals related to this research. The results of the analysis of these journals will be described in Table 1 below.

Title	Year	Result
Evaluation of the Disaster and Fire Emergency Response Management System at the FTI UII Building Yogyakarta.(Rajab, 2024)	2024	Based on the data results and analysis, the researchers concluded that the FTI UII building falls into the "good" category because there are still discrepancies between the information obtained from interviews and the documentation from the FTI, as seen in the hydrant box record card. There are still some minor damages, such as a loose hydrant door, an uninstalled alarm cover, and some equipment obstructed by other objects, making them difficult to see and reach.
Implementation of the Emergency Response System based on the National Fire Protection Association (NFPA) 1600 at PT. LG Electronics Indonesia.(Asfarisya & Koesyanto, 2021)	2021	The study results show that out of 194 indicator elements, 82.5% (160 elements) meet the standards, while 17.5% (34 elements) do not meet the standards, including half compliant and non-compliant. The implementation of the emergency response system at PT. LG Electronics Indonesia is in the good category, but still requires improvement in several indicators.
ANALYSIS OF STRATEGIC EFFORTS IN FIRE PROTECTION: EVALUATION STUDY AT PT X.(Firdaus et al., 2025)	2025	Based on the research and analysis presented, it can be concluded that the active fire protection system in the PT. X warehouse is classified as good with a compliance level of 92.5%. The core issue lies in the improper placement of fire extinguishers. Access and provision of water for firefighting, the availability of access and provision of water for firefighting in this building also fall into the good category, with a compliance rate of 95%. This indicates a lack of facilities that support fire extinguishing. The passive fire protection system, the assessment of the passive fire protection system shows a low category with a compliance level

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		of 20%. The main issues are the lack of fire-resistant doors, minimal routine maintenance on fire-resistant construction, and the use of non-fire-resistant windows. Life-saving equipment, the life-saving equipment in the PT. X office building falls into the low category, with a compatibility level of 50%. Factors that need to be improved include emergency stairs, emergency exits, and emergency lighting systems.
EVALUATION OF THE FIRE EMERGENCY RESPONSE SYSTEM IN THE WARSHIP DIVISION OF PT PAL INDONESIA (PERSERO).(ADINDA NOVIA ARDHANI, 2022)	2022	The research results show that the fire emergency response system in the Naval Ship Division has met the ISO 45001:2018 recommendations in 6 points. In point 1, it is already in accordance with ISO 45001:2018. Clause 8.2, but hazard mapping based on location has not been conducted. In point 4, it is still not in line with the recommendations of ISO 45001:2018. Clause 8.2 because performance evaluations have never been conducted and the preparation of the Emergency Preparedness Standard Operating Procedures is only handled by the Corporate K3LH. In point 5, the Naval Vessels Division has implemented the guidelines from ISO 45001:2018, but it was only done once during the preparation for the emergency response simulation. In addition, regarding the understanding of the material, an objective assessment has never been conducted. In point 7, the Naval Vessels Division has implemented the guidelines from ISO 45001:2018. The Warship Division has implemented updates during training and emergency preparedness simulations. However, they have never conducted a refresher outside the simulation schedule.
Analysis of the Emergency Response System for Hazardous Waste Spills: A Case Study in a Manufacturing Company.(Pasha et al., 2022)	2022	The assessment results show that the implementation value of the B3 emergency response system at PT X is 49.82%, due to several components that are not yet in place and several components that do not meet the standards. Therefore, an emergency response system for hazardous waste spills is needed in the form of an emergency management plan (EMP), which includes planning spill prevention actions, actions during a spill, and recovery after a hazardous waste spill.
Evaluation of the Implementation of the Emergency Response & Preparedness Program as an Effort to Control Emergency Situations at PT PPLI Depo EJTS Surabaya.(Erlita Sandra Deviana P. S, 2019)	2019	Based on the observations conducted at PT PPLi Depo EJTS regarding the Assessment of Emergency Response and Preparedness Program Implementation as an Effort to Control Emergency Situations, the following conclusions can be drawn: 1. PT PPLi Depo EJTS has identified potential emergencies that may occur in the company, such as fires, leaks or spills of hazardous waste, workplace accidents, and natural disasters. Please provide the text that you would like me to paraphrase! PT PPLi Depo EJTS has established emergency response procedures, evacuation processes, communication procedures, and emergency situation reporting, which are reviewed by management every 2-3 years. In facing emergency situations, PT PPLi Depo EJTS has established an emergency response organizational structure with clear duties and responsibilities. To support the emergency response process, PT PPLi Depo EJTS has provided various means and facilities such as an emergency contact number, emergency channel, flow chart, and emergency alarm system. The implementation of the emergency response and preparedness system at PT PPLi Depo EJTS The depot is supported by the availability of supporting facilities and the implementation of training or simulations for each potential emergency situation as follows: a. In facing the possibility of a fire emergency, PT PPLi Depo EJTS has prepared fire-fighting facilities such as fire extinguishers, emergency alarms, smoke detectors, wind direction indicators, and an ERT team in accordance with regulations. In facing the potential of work accident emergencies, PT PPLi Depo EJTS has prepared supporting facilities such as first aid kits and operational vehicles. However, the operational vehicle does not yet have medical equipment or resuscitation/life support devices to assist the victim's condition. In facing the possibility of a B3 leak or spill emergency, PT PPLi Depo EJTS has prepared supporting equipment such as emergency showers, portable eye wash stations, spill kits, sawdust, and containment wells.
Community Service Education on Emergency Response Team Organization in the Workplace for Employees of PT. Sarana Tirta Alamindo.(Usman et al., 2022)	2022	Management and training participants, who are employees of PT. Sarana Tirta Alam Indo, better understand and recognize the importance of implementing an emergency response organizational system in the workplace and forming a company-level emergency response team that is on standby in the work area.
Evaluation of the Implementation of Means Of Escape (MOE) at PT. Prasadha Pamunah Limbah Industri.(Roni Noor Adam, 2019)	2019	Based on the results and analysis that have been explained, a conclusion can be drawn. The implementation of Self-Rescue Facilities at PT. PPLi EJTS Depot is as follows: PPLi EJTS Depot has provided evacuation instructions and has an emergency response plan, but it is not yet complete. The placement of evacuation facility signs at PT. PPLi EJTS Depo has been implemented in accordance with SNI 03-6574-2001 but is not yet comprehensive. The determination of the assembly point location at PT. PPLi EJTS Depot has been implemented.

Discussion and analysis the Evaluation of Readiness of Emergency Response Facilities and Means in Industrial Areas

The analysis conducted on the eight journals reviewed provides a deep understanding of the readiness of emergency response facilities and infrastructure in industrial areas. The first journal indicates that the emergency response management system at the FTI UII Yogyakarta Building is classified as "good," but there is an inconsistency between the data from interviews and documents, which suggests the need for improvement in information management and facility maintenance. Next, research at PT. LG Electronics Indonesia states that 82.5% of the indicator elements have met the standards, while 17.5% still need improvement.

This underscores the need for regular evaluations to ensure all system components are functioning well. In company X, although the active fire protection system shows a good level of compliance, the incorrect placement of fire extinguishers has become a major issue, while the passive protection system shows low compliance. The journal on the Warship Division of PT PAL Indonesia shows that although it has met several ISO 45001:2018 recommendations, there are still deficiencies in hazard identification and performance assessment. A study on hazardous waste spills shows that the implementation rate of the emergency response system is only 49.82%, indicating the need for a more comprehensive emergency management plan.

At PT PPLI Depo EJTS, although emergency measures have been established, there are still deficiencies in facilities and training. The journal on emergency response team training at PT. Sarana Tirta Alamindo highlights the crucial role of employee training in improving responsiveness. Finally, a study on the implementation of Means of Escape (MOE) at PT. Prasadha Pamunah Limbah indicates that the execution of the evacuation plan has not been fully comprehensive. In general, although various industries have taken steps to improve emergency preparedness, challenges remain. Management and employee participation, regular assessments, and adequate training are important factors in creating a safe work environment.

CONCLUSION

Based on the analysis of eight journals on the readiness of facilities and emergency response systems in industrial areas, it can be concluded that, although many industries have made significant efforts to improve their emergency response systems, there are still several challenges that need to be addressed. Some key findings from this research include: Compliance with Standards, Many facilities show a high level of compliance with safety standards, but there are still elements that need improvement. Routine assessments are crucial to ensure that every element of the disaster response system functions well. The significance of training, awareness, and understanding of emergency response procedures among employees is very important. Regular training and simulations can improve employees' reactions in facing emergencies. Management involvement and readiness for emergency response are not only the responsibility of management but also require active participation from all employees. Cooperation between management, employees, and other related parties is crucial for creating a safe work environment. Infrastructure Improvement, Some studies indicate that the available infrastructure and facilities still require improvement, particularly in terms of maintenance and the placement of emergency response equipment. Emergency Response Plan, Studies show that a more comprehensive emergency response plan is needed, particularly in handling incidents involving hazardous waste.

Overall, to enhance emergency preparedness in the industrial sector, a comprehensive approach is needed, including regular evaluations, adequate training, and infrastructure improvements. Through these measures, it is hoped that a safer and more responsive work atmosphere to emergency situations can be achieved.

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