A Review on Industrial Hazards And Pertinent Risk Assessments

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Abstract- *Ensuring the safety of steel manufacturing industries is the biggest challenge facing National Technocrats and Professional in handling, transporting and storing bulk hazardous materials. Hazardous material characteristics in the form of flammability, toxicity and reactivity reinforce the presence of hazard in all parts of the steel industries. The existence of the problem in the form of danger is due to a combination of several factors. The technological development of the industries is still rapid and large-scale. The causes of accidents are the hazards in the steel manufacturing industries. An accident occurs when the hazard becomes an adverse event. Therefore, identifying and eliminating hazards from the work system is essential. The identification of hazards during workplace operations, processes and activities provides a solid basis for conducting a system safety assessment. This paper presets a comprehensive review on Industrial Hazards and Pertinent Risk Assessment methods.*

Keywords- Hazard identification, Quantitative risk assessment Manufacturing industries, HAZOP, Fault Tree Analysis

I. INTRODUCTION

Hazard Identification (HAZID) is the process of hazard identification, which is the first most important step the risk assessment. There are two possible purposes for hazard identification:

•Obtain a list of risks for later assessment using other risk assessment techniques. This sometimes known as “failure case selection”.
•Carry out a qualitative assessment of the significance of the hazards and the risk reduction measures risks.

However, serious events are rare and historical events are unlikely to represent the full circle possible events. Incident data should be used to complement more systematic hazard identification techniques. Another useful source of information on the storage and handling of hazardous materials hazardous substances in MSDS. It is also worth referring to the literature provided by the material suppliers on their products. Workplace safety requires effective identification, assessment, and monitoring significant occupational hazards.

Hazard identification.

The term "hazard" is a condition, event, or circumstance that could lead to or contribute to an unplanned or unwanted event and is divided into environmental subcategories, such as system states, environmental conditions, or "initiator" and "contributor." .dangers. A security analysis requires four key elements if the result is to have a timely and cost-effective impact on the system.

These are: (i) Hazard identification - “Identification”, “Assessment” and “Solution” (ii) Timely solutions - Verification that safety requirements have been met or that the risk is eliminated or controlled to an acceptable level.

Risk Management and Decision Making

The security risk management effectively, managers of the program to provide a suitable, he is guilty, and the craftsmen qualified engineers are appointed in program offices and business organizations to manage the system security program. Ensure that system security managers are integrated into the organizational structure so that they have the authority and organizational flexibility to perform effectively. Ensure that all known hazards and associated risks are identified, documented, and followed as program policies so that decision makers are aware of the risks involved when the system becomes operational. Requires a security risk assessment to be presented as part of the program review and at decision milestones. Decide on the risks

II. PREVIOUS WORK

This section presents important contribution in the domain of research.

T.A Yusuf,S.OIsmaila,S.IKuye and O.D Samuel.et al (2015) Accidents are typical phenomena in the manufacturing industry. They distort the health of factory workers and thus the efficiency of these industries. The aim of the study was to assess the causes and consequences of industrial accidents. The data used were obtained from the 2002-2006 accident reports in the selected Nigerian manufacturing industry and through questionnaires submitted to factory workers. An average of twenty-four minor and one serious accident are discovered each year. The negligence of workers was found to be a major cause of accidents. It was also found significant that accidents were rarely investigated (less frequently per year). There was a significant correlation between the causes of accidents and the frequency of accident investigations. About one hundred and twenty-five thousand naires (N125,000.00) were spent on treating injured workers, while about a thousand, two hundred and forty-five (1245) man-hours of production were lost. Annually, the severity of accidents (ASR) was 0.1 and the frequency of accidents (AFR) was 0.01, both after millions of lost working hours. Personal injuries were the most common effect of accidents, with a case-death rate (CFR) of 58.3 percent.medium-scale industries by methods of analysis and comparison. A total of 324 polls were collected. Structural equation modeling is then used for data analysis. The results reveal that management commitment, harmony of mutual relations, continuous improvement and empowerment of employees significantly affect security performance. However, blame the cultural barriers that pervade security behavior through the security reporting system or the reward system. Large companies, senior management, interpersonal relationships, continuous improvement, impeccable culture, and employee empowerment significantly affect safety awareness and safety behavior. This research provides a valuable assessment for decision makers regarding the effectiveness of security performance in Jordanian companies.

Jimmie Hinze.et al. (2013) described changes in key indicator methodology becoming quite apparent to the security professional, particularly when they attempt to normalize key indicator information in an existing matrix of residual indicator datasets. Any firm that truly embraces the zero-damage philosophy will easily consider using measures other than traditional residual safety performance indicators. With the remaining indicators, the need for a change in safety program has not been met until at least one injury has occurred.

Frank Huess Hedlund.et al (2013) Little is known about studies of occupational accident statistics in South Africa, with the most recent article on manufacturing in 1990. Accidents in South Africa are recorded in two systems: exhaustive information is available from the insurance system under the Workmen's Compensation Commission (WCC), but it is difficult to access it in time. The Legislative System of the Department of Labor (DOL) makes rough but timely recordings. However, interpretation is not

Straight forward; in both systems, reporting formats and inclusion criteria have changed over time, hampering trend analysis. In addition, the recordings of the two systems are not comparable due to large scope differences. This article examines the relationship between recordings in the two systems. It was found that the data from both fatal accident recording systems are consistent with each other, to a lesser extent in the case of permanent accident / incident shutdown.

Abbas Al-Refaie .et al (2013) successfully examined the relationships between organizational, management, work group, and security performance based on the perceptions of employees in large and medium-sized enterprises in Jordan. It uses analytical and comparison methods to describe the global scenario session and the different levels of security performance in the large, small, and medium-sized industries as well. A total of 324 surveys are collected. Structural equation modeling is then applied to analyze the data. The results show that managerial commitments, harmony of interrelationships, continuous improvement, and employee empowerment have a significant impact on safety performance. Nevertheless, you can blame cultural behavioral barriers in disseminating safety behavior through the safety reporting system or reward system. For large companies, top management, interrelationships, continuous improvement, a flawless culture, and employee empowerment have a significant impact on safety awareness and safety behavior. This research provides valuable feedback to policy makers on the effectiveness of security performance by Jordanian companies.

Jimmie Hinze et al. (2013) described that differences in lead indicator methodology become quite apparent to the safety professional, especially when attempting to normalize lead indicator information to an existing one.lag indicator data set matrix. Any company that actually applies the zero injury philosophy is willing to consider measures other than traditional lag performance indicators. With lagging indicators, the need to change the security program is only realized if at least one injury remains.

Frank Huess Hedlund.et al (2013). There are few studies on occupational accident statistics in South Africa, the most recent study on manufacturing was published in 1990. Accidents in South Africa are recorded in two systems: exhaustive information is available from the insurer The Workers' Compensation Commissioner (WCC) is a subordinate system, but it is difficult to access in a timely manner. The Legislative System of the Department of Labor (DOL) makes rough but timely recordings. However, interpretation is not straightforward; in both systems, reporting formats and inclusion criteria have changed over time, hampering trend analysis. In addition, the recordings of the two systems are not comparable due to large scope differences. This article examines the relationship between recordings of the two systems. Putting the data of both systems side by side, it was found that the recordings of fatal accidents agree, to a lesser extent in the case of a permanent ban on accidents /incidents.

According to Danny Faturachman, Shariman Mustafa.et al (2012), Indonesia is the largest archipelago in the world, with two-thirds of the country covered by the sea. But due to many factors, there were a lot of shipwrecks every year and many casualties were claimed. Most accidents occur due to low knowledge of the safety and security aspects of staff. Efforts have been made to improve the safety of inland maritime transport. This means that in order to achieve the objective, it has been concluded from the standard international convention governing the safety of the ship that the safety of the seafarers needs to be improved, subgroup / system requirements: - Main human resources (requirements), Ship as equipment (requirements and equipment), Operation (operation of the Governing Board), External factors (infrastructure), Management (which is the coordination process for the four other subsystems).

G.S. Beriha.et al. (2012) discussed a classification and forecasting model based on soft computing techniques (FIS) for managers in analyzing occupational injuries and planning the financial costs of different expenditures to improve safety performance. Although the methodology addresses the safety performance of some Indian industries, the model is quite general in nature. A forecasting model based on fuzzy logic can effectively handle inaccuracies and uncertainties inherent in a system and avoid the need for large amounts of data. Investments in safety equipment, training and education of employees, process planning and machinery can be used to reduce accidents at work through effective prevention measures. In order to develop a good safety culture, employee attitudes need to be redirected by adopting best practices, good housekeeping, changing work culture and improving safety performance.

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Giuseppe Guido .et al (2011) focused on analyzing road safety from two different perspectives: micro simulation and observational data. Thus, it can be determined that micro simulation reflects the behavior and traffic conditions of the “real” driver for a case study. As a case study, the microscopic model makes it possible to estimate road safety performance using an indicator that plots real-time interactions between different pairs of vehicles in traffic.When these indicators reach action on the organization and management of the safety organization, safety equipment and measures and accident investigation. The practical application of the study shows that safety management and safety climate are two important predictors of good safety performance and that safety climate plays a mediating role in the relationship between safety management and safety performance.

D. Guillén, March .et al 2012. To address them, appropriate risk assessment procedures and related priorities have been developed to provide the scientific support needed for regulatory procedures. In this paper, we have discussed the two elements that form the basis of the risk assessment, namely occurrence and effects on hazards. Instead of analytical measurements, occurrence models can provide a very interesting approach for risk managers to estimate environmental concentrations from real or hypothetical scenarios.

Miao jian. et al 2012 introduced the concept of participatory risk management (PRM), outsourcing parts of the risk management process to a wide audience of participants, either from the communities affected by the risk or from the netizens who want to lend to the assistant (analytical) hand. The PRM consists of six parts that closely follow the ISO31000 risk management framework: tasks and requirements, participatory risk identification, participatory risk analysis, participatory risk assessment, participatory risk mitigation, and communication. Each phase utilizes one or more modern mass procurement concepts, such as participatory perception, human computation, and goal-related games. As an example of the application of PRM, we present the promotion of community risk management with a game that rewards a potential PRM toy.

The author, Venkatesh Balasubramanian.et al 2011 described that labor is still labor-intensive in developing economies due to the cost requirements of production. In this situation, improved productivity means continuous assessment of manual work on ergonomic risks and taking corrective action. Existing tools for risk assessment seek to measure risk in isolation, while risk often depends on several factors, such as posture, load, propensity to injure work, and environmental factors (temperature, light conditions, etc.).Existing tools for risk assessment seek to measure risk in isolation, while risk often depends on several factors, such as posture, load, propensity to injure work, and environmental factors (temperature, light conditions, etc.). In the absence of an integrated measurement tool for ergonomic risk assessment, we recommend a complex measurement called the RBG risk scale. Ergonomic evaluation provides a single measurement of a number of factors (e.g.,) posture, biomechanical forces, environmental, etc.) that together contribute to ergonomic damage. This integrated score provides a clearer picture of the risks involved in the work and can thus be used to prioritize the operations of ergonomic interventions.

TerjeAven.et al 2011 reviews the definition and meaning of risk. The review has a historical and developmental trend perspective that extends to recent years. It is questionable whether and to what extent it is possible to identify some underlying patterns in the way risk exists and is understood. The analysis is based on a new categorization of risk definitions and an assessment of these categories on a number of critical issues, including how these risk definitions fit into risk terms in typical everyday life. The paper presents a set of constructed pathways for the concept of risk and concludes that over the past 15 to 20 years we have moved from a rather narrow perspective based on probabilities to a mindset that highlights events, consequences, and uncertainties. However, some narrower perspectives (such as expected values and probabilistic perspectives) continue to have a strong impact on the risk field, although arguments can be made against their use. The effects of this situation for risk assessment and risk management are also discussed. RBG Risk Scale: An integrated tool for ergonomic risk assessments

The author, Ross B. Corotis.et al 2010 reviews the process of risk-based decision- making and creates a new, multi-feature framework for natural hazard risk analysis. Consideration of engineering risk and perceived risk to society has led to the development of a graphical tool that conveys the essential features of decision-making about natural hazards in the built environment. In his article on the multi-attribute aspects of natural hazard risk assessment,

Ross B. Corotis 2010 et'al reviews the risk-based decision-making process and creates a new multi-attribute framework for natural hazard risk analysis. This is related to perceived risks, which are areas of the social sciences, and mathematical risks, based on the work of the technical sciences.
Consideration of engineering risk and perceived risk to society has led to the development of a graphical tool that conveys the essential features of decision-making about natural hazards in the built environment. The multi-characteristic risk model includes factors derived from risk perception; specifically from fear and awareness, and using them to develop a method for quantifying perceived risk. The method has been calibrated in the U.S. with 45-year data on natural hazards, and the data are presented on a breakdown of total risk as well as byevent.

The author, R. Uribe-Hernandez,.et al 2010 and the current study of the environmental and health risk assessment of the oil-contaminated area in the tropical southeast of Mexico was aimed at the environmental and health risk assessment of the soil contaminated with Mexican tropical oil. The case is based on soil pollution from petroleum hydrocarbons (TPH) and polycyclic aromatic (PAH) resulting from 70 years of activity in the oil industry. The results of the study were estimated using the CalTOX multimedia exposure model.

Identified Research Gap

The members of the working group believe that any security program should achieve the ultimate goal elimination of all accidents. There is no planned or uncontrolled activity that can cause it an injury must occur. An accident-free work environment may be an idealistic goal, but it is certainly available. The following ten principles are valuable guides:

1. All injuries and occupational diseases are preventable.

2. Management is directly responsible for the prevention of injuries and illnesses, with responsibilities at all levels to the above and is responsible for the level below. The president assumes the role of Chief Security guard.
3. All employees must take responsibility for safe work.
4. Professionalism in safety as important as the professionalism of production, quality and cost control.
5. Training is an essential element of safe workplaces. Full safety awareness is not natural - management must teach, motivate and maintain employees' safety knowledge to prevent injuries.
6. Security checks must be performed. Management should monitor workplace performance.
7. All deficiencies must be rectified without delay by modifying the facilities, changing the procedures, and better training or discipline of employees in a constructive and consistent manner. Follow - up inspections should be used to check effectiveness.
8. It is essential to investigate all unsafe practices and accident hazards as well as injuries
9. Safety outside the workplace can have an important impact on work place safety.
10. Preventing disease and injury is a good deal. They involve significant costs - direct and indirect. The highest cost is human suffering.
11. People are the most critical elements in the success of a security program. Management responsibility should be complemented by employee suggestions and active participation.

III. CONCLUSION

It can be concluded from previous discussions that hazard regulations can be applied in hazardous industries with high risk estimates. Risk management is used by management to develop policies appropriate to the factory. Hazard control includes elimination, replacement, technical inspections, administrative inspections and personal protective equipment. However, only three hazard controls were used in this study. These are engineering inspections, administrative inspections and personal protective equipment. These safety inspections serve as a guide in the steel manufacturing plant. This paper presents a comprehensive review on the hazards and associated risk management strategies.

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