

A Survey on the Evaluation of Medical Emergency Response (MER) for Workplace Injuries in Asia-Pacific BASF

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ABSTRACT: *Despite high safety standards, workplace injuries still occur. Thus, it is important to ensure effective Medical Emergency Response (MER) to limit the impact of injury. The evaluation of MER for workplace injuries is crucial in determining whether the on-site response is adequate, and to develop the appropriate remedial action plan. In early 2021, a basic questionnaire was developed, and the staff of the related sites were guided in conducting MER evaluations. Following this, a survey was conducted over six months, between June and December 2021, to determine whether the respected sites had evaluated the MER. The results of the survey showed that there were 99 workplace injuries, of which 14 were Loss Time Injuries (LTI), nine were Restricted Duty Injuries (RDI), and 76 were First Aid Cases (FAC). However, the sites where six of these injuries happened did not respond to whether MER was evaluated within the timeline and was therefore excluded from further analysis. The percentage of workplace injuries (n=93) with MER evaluation were overall (43%), LTI (64%), RDI (44%), and FAC (39%). The results obtained in this study indicated that most MER for workplace injuries have not been evaluated, and the more severe an injury, the more likely for MER to be evaluated.*

Keywords: *Emergency response, Injuries, Medical emergency response, Workplace*

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1.0 INTRODUCTION

BASF is a chemical company based in Ludwigshafen, Germany, with companies in 90 countries and nearly 20,000 employees based in the Asia-Pacific region (BASF Report, 2021). The BASF Corporate Health Requirements define the standards to be adhered to by all BASF Group companies. It states that a site emergency response plan should define the relevant resources, procedures, tasks, and responsibilities required to manage medical emergencies, including mass casualty incidents, if applicable. The plan should include detailed procedures for emergency calls, first aid, medical emergency treatment, and

transportation to suitable clinics or hospitals. The sites should consistently aim for immediate emergency response and avoid any unnecessary delay. Regarding medical emergency preparedness, the BASF sites were classified into three risk categories, based on the total number of people on site and the health hazards, which, in turn, determine the level of Medical Emergency Preparedness and expected Emergency Response (MEPER). All the sites are expected to conduct at least one medical drill annually (BASF, 2021). The BASF guide on MEPER states that high-quality medical care should be made available to all individuals at BASF sites worldwide during acute illnesses or accidents. Additionally, it states that the following should be ensured: emergency telephone calls and first-aid measures by certified first aiders; prompt high-standard medical emergency treatment provided at the location of the incident; prompt transport to a hospital with the necessary facilities while guaranteeing continuous monitoring and treatment; and implementation of emergency response plans and regular drills to professionally manage acute illnesses, accidents, or incidents of mass casualties (BASF, 2020). Although the BASF requires incidents at the workplace to be investigated (BASF, 2022b), there are no specific company requirements that state the need for the Medical Emergency Response (MER) of workplace injuries to be evaluated. However, the benefits of evaluating or checking programs are well-accepted. A common management method used is the Plan, Do, Check, Act cycle.

Workplace injury is defined by the Department of Occupational Safety and Health (DOSH), Malaysia, as the negative impact on health due to exposure to chemical, biological, physical, work-organizational, or psychosocial factors at the workplace. A workplace is defined as any physical location where work-related activities are performed, and whenever the effects of occupational safety and health on the personnel are involved. This includes traveling or in transit, working at the premises of a client or customer, or working at home (DOSH, 2011).

The BASF defined work-related injuries as sudden bodily injuries of employees caused by work activities that are classified as work-related based on the investigation of the incident. Such incidents are categorized as fatalities (FAT), loss time injuries (LTI), restricted duty injuries (RDI), and first aid cases (FAC). All incidents must be reported in the Global Incident Database (GID) within two (2) business days (BASF, 2022b). The BASF, located in the Asia-Pacific region, uses the Asia-Pacific Accident Incident Management System (AP_AIMS) as its primary data collection tool. Every incident reported in AP_AIMS is transferred to the GID on the following day (BASF Training Material, 2022).

Experts have suggested that when defining the challenges of MER, the location, population, and type of injuries and illnesses must first be identified. Subsequently, legal requirements and industry standards for managing MER must be determined. Following this, appropriate existing and emerging practices for managing these challenges must be established (Ponsonby W et al., 2009). A qualitative study conducted on 114 critical offshore incidents identified seven themes related to MER challenges: communication, decision-making, facility layout, logistics problems, offshore medical response, SOP, protocols, and weather conditions (Huzaini et al., 2020).

One way of improving and standardizing the medical emergency response to major incidents is by creating a database to identify how the descriptive analysis of reports submitted to this database can be used to improve emergency response. Through systematic reporting, relevant data can be obtained and used to improve emergency medical responses to major incidents (Hardy S et al., 2018). Experts have stated that to improve MER, emergency departments and hospital staff should be familiar with the protocols and be trained to evaluate and treat victims of chemical exposure. Requirements and guidelines, such as decontamination procedures, methods of evaluating chemical exposure, identifying substances, recognizing toxidromes, ensuring adherence to appropriate personal protective equipment (PPE), and initiating treatment for life-threatening conditions must be properly identified (Wanner G et al., 2019). To enhance the ability to deal with Sudden Cardiac Arrest (SCA), blunt trauma to the chest, firearm injuries, asthma, head injuries, drug overdose, allergic reactions, and heatstroke, a summary of essential information regarding life-threatening decisions such as SCA, detailed information on cardiopulmonary resuscitation (CPR), and the automated external defibrillator (AED) has been developed (Hazinski M et al., 2004).

A cross-sectional study was conducted in schools in Osaka, Japan, to determine whether there was a well-prepared medical emergency response plan by identifying the type of school, the number of students, staff, AED, place of installation, training of staff on CPR, MERP development and implementation, and the number of SCA cases faced (Nishiuchi T et al., 2018).

Currently, there are no available data or surveys on the evaluation of MER for workplace injuries, which may suggest that such research or information may not have been widely published or may be limited in scope. Hence, a survey was conducted at the BASF in the Asia-Pacific region to determine the percentage of workplace injuries where MER was evaluated, and to determine whether there was a difference in the proportion of injuries evaluated based on the type of injury. The data obtained from this study is important in supporting the assumption that MER in most workplace injuries is not evaluated and that the more severe the injury, the more likely it is to be investigated.

2.0 METHOD

This study was conducted over six months between June 2021 and December 2021. All workplace injuries reported in the AP_AIMS, the BASF Asia-Pacific workplace incident database, were identified and included in the survey. Sites with workplace injuries were contacted and asked whether an evaluation of the MER for workplace injuries was performed. Only sites that evaluated the MER were included in the survey. Cases from sites that responded when contacted (93 in total) were included in the survey, whereas cases from sites that did not respond when contacted (six in total) were excluded. The evaluation of MER using the methods recommended by the BASF (Appendix A) or those of the sites was accepted as fulfilling the criterion of having been evaluated for MER. The responses were analyzed and summarized.

3.0 RESULT

During the study period, there were 99 workplace injuries and no fatalities. Six workplace injuries (6%) were from sites that did not respond within the stipulated timeline to the query of whether the MER was evaluated and were thus excluded from further analysis. These six cases were all FACs.

Table 1. Number of Workplace Injuries and Number and Percentage Evaluated

Category	Number	Number evaluated	Percentage evaluated
LTI	14	9	64%
RDI	9	4	44%
FAC	70	27	39%
Overall	93	40	43%

Of the 14 LTI cases, nine (64%) were evaluated for MER; of the nine RDI cases, four (44%) were evaluated; and of the 70 FAC cases, 27 (39%) were evaluated. Overall, 43% of the reported workplace injuries were evaluated for MER. Of these, 64% were LTI cases, 44% were RDI cases, and 39% were FAC cases (Table 1).

4.0 DISCUSSION

This preliminary study indicated that for most medical injuries, quick responses, appropriate first aid, and prehospital care assist in limiting the impact of an injury. An effective MER plan would facilitate such a response. Medical drills or evaluation of MER post MERs can be used to evaluate and enhance the effectiveness of the MER plan. To facilitate the evaluation of the MER, BASF Asia Pacific developed a basic evaluation questionnaire and guidance. Therefore, a survey was conducted using

existing resources to determine the number of sites that evaluate MER in workplace injuries in the organization and whether the decision to evaluate was based on the severity of the injury.

A limitation of this survey, as it was conducted in only one region, industry, and company, was that there might be differences in practices in different regions, industries, or organizations. Furthermore, it was conducted soon after the launch of the new MER assessment tool, which may have increased the staff's awareness and interest in conducting such evaluations. Before the launch of such assessment tools, the percentage of MER evaluations of workplace injuries was likely lower. In addition, this survey did not evaluate the quality or findings of MER evaluations at the sites.

The survey provided basic data on the incidence of workplace injuries; however, MER has not yet been evaluated. If the survey was not conducted soon after the launch of the new regional guidance and questionnaire on MER, the MER evaluation of workplace injuries may have been significantly lower. This is not surprising because, although the company requires an investigation of workplace incidents (BASF, 2022), the focus is on root cause analysis. Hence, from the perspective of MER, there is a missed opportunity to identify and close MER gaps.

Previously, many BASF sites in the Asia-Pacific region were unfamiliar with MER evaluation. Therefore, we developed an MER evaluation form and guide (Appendix A). We believe that this has increased the interest in and practice of evaluating the MER of workplace injuries at our sites in this region. However, there is a need to further promote the evaluation of MER to increase the number and quality of such evaluations.

The results of this survey indicated that the more severe the injury, for example, LTI compared to RDI or FAC, the higher the likelihood of it being investigated. Although this situation is understandable owing to greater attention being given to more severe cases, it is believed that there are also countless learning opportunities to be gained from the MER of less severe injuries.

Given the currently limited information on the evaluation of workplace injury MER and its value, a more comprehensive study is recommended to provide more representative figures on the MER of workplace injuries and determine the quality of evaluations and gaps in MER that can be used to strengthen existing workplace programs.

5.0 CONCLUSION

This study indicated that most MER of workplace injuries were not evaluated (57%). Additionally, it also signified that the severity of an injury (LTI 64%, RDI 44%, and FAC 39%) influences the likelihood of MER being evaluated. This demonstrates a significant loss in knowledge regarding MER, regardless of whether it meets expectations. Such knowledge can be used to determine whether an existing MER system at a site is in order, or to identify specific areas for improvement. These measures are important to ensure adequate MER at these sites in the future. It is highly recommended that all workplace injuries be evaluated and used as opportunities to improve MER. More extensive studies will be conducted in the future, including a pilot study and statistical analysis, to obtain more accurate data and a better understanding of the actual practice.

Appendix A

Medical Emergency Response (MER) Investigation Form

This is an example of a basic assessment form. It is not comprehensive, and some sections may not be applicable. Feel free to amend by deleting, changing column size, etc. as required.

1. Basic information (Fill in the blanks.)

Question	Answer
1.1 Date of Incident:	
1.2 Time of Incident:	
1.3 Area Incident Occurred:	
1.4 Company:	
1.5 Site/location:	
1.6 Country:	

2. Type of MER (Choose one best answer.)

Question	Answer
Resulted in patient	Not referred to Hospital
	Referred to Hospital
	Fatal

3. Summary of injury (Describe the number of persons and type of injury; i.e., cuts, burns, and area affected; i.e., head, chest, in the space below.)

4. Alarm (Fill in the empty spaces.)

Question	Answer
Who was the caller?	
Who received the call?	
Time the call was received	
Content of call:	
-When?	
-Where?	
-What?	
-Who?	
-How many?	
Time medical staff was informed	
Time ambulance was called	
Who decided to call an ambulance?	
Time ambulance arrived at the scene	

5. At the scene

5.1 First Aider (FA) (Fill in the empty spaces.)

Question	Answer
Was the FA notified?	
What time did the FA arrive at the scene?	
Did FA wear gloves and other PPEs?	
Does FA have valid FA certification?	

Summary of FA actions (Describe actions in the space below: ensure safety; assess patient; assure, stabilize, secure patient; transfer; equipment used; treatment given; communicate; record)

5.2 Medical Staff (MS) (Fill in the empty spaces.)

Question	Answer
Who was the most senior MS at the scene?	
What time did the MS arrive at the scene?	
Did the MS wear gloves and other PPE?	
Does MS have valid advanced life support certification?	

Summary of MS actions (Describe actions in the space below: ensure safety; assess patient; assure, stabilize, secure patient; transfer; equipment used; treatment given; communicate; record)

6. Transfer to Site Clinic or First Aid Room (Fill in the empty spaces if relevant.)

Question	Answer
What time did the patient arrive?	
Was the person on duty informed before transferring the patient?	
What type of vehicle was used?	
Does the vehicle have life support equipment?	
Was the patient secured (i.e., belt)?	
Who monitored the patient during the transfer?	
Was the person monitoring the patient secured?	
When did the patient arrive at the clinic or FA Room?	

Summary of actions at Site Clinic or First Aid Room (Describe actions in the space below: further assess patient; assure, stabilize, secure patient; transfer; communicate; record)

7. Transfer to Hospital *(Fill in the empty spaces.)*

Question	Answer
Was the hospital informed before the transfer?	
What type of vehicle was used?	
Does the vehicle have life support equipment?	
Was the patient secured (i.e., belt)?	
Who monitored the patient?	
Was the person monitoring the patient secured?	

8. At the Hospital *(Fill in the empty spaces.)*

Question	Answer
What time did the patient arrive?	
Was the hospital prepared to receive the patient?	
Who handed the patient over to the hospital?	
Which hospital personnel received the patient?	
Was the patient history document provided?	
Was BASF CEMG, MSDS provided?	

9. Strengths Identified from MER *(Describe in the space below.)*

10. Areas for Improvement from MER *(Describe in the space below.)*

Form Completed by:

Signature	
Name	
Designation	
Date completed	

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