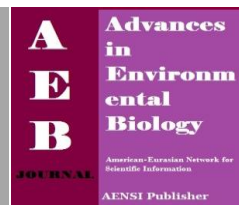




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Safety's Role in Addressing Disaster at the Workplace Using the Tactical Emergency Response Operations Concept

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ABSTRACT

An emergency such as severe illness or sudden injury, fire, floods, earthquake, power outage, chemical spills, explosions and violence does occur at the workplace that could affect business activities. Occupational safety and health programs as well as managing disaster at the workplace are implemented by the management through a three level of planning: strategic planning, operational planning, and tactical planning. Strategic planning lay down the framework and expectations for operational planning, whilst operational planning provides the framework for tactical planning. Consequently, this paper endeavour to introduce to the entrepreneur's of the Small and Medium Enterprises' (SMEs') the tactical emergency response operations concept vis-a-vis the emergency management model and the Occupational Safety and Health (OSH) Act 1994 in addressing disaster at the workplace.

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INTRODUCTION

In Malaysia the responsibilities to ensure the safety and health at the workplace lies with those who create the risk and with those who work with the risk. Hence, the prime responsibility for preventing and responding to a community at risk is specifically and legally assigned to the persons who cause that risk Section 15(1) of the Occupational Safety and Health (OSH) Act 1994 specifically states that "It shall be the duty of every employer and every self-employed person to ensure, so far as is practicable, the safety, health and welfare at work of all his employees.

An emergency such as severe illness or sudden injury, fire, floods, earthquake, power outage, chemical spills, explosions and violence does occur at the workplace that could affect business activities. Hence, safety's role at the workplace is to provide for the safety and health of all workers. Section 17(1) of the OSH Act 1994 emphasizes the need to protect persons other than employees in the workplace. In addition Section 20 of the OSH Act 1994 places a duty of care on those who design, manufacture or supply plant and substances for persons to use at work.

Hence, the law require the employers to take the primary responsibility for the workplace safety and health of their employees and for the potential risks that their operations present to the larger community.

The OSH Act 1994 or Act 514 was enacted on 25 February 1994. The Act was enacted to uphold the occupational safety and health agenda that is ensuring a safe and conducive working environment at the work place.

The Occupational Safety and Health OSH Act 1994 require some form of emergency response planning at the workplace. Under the Section 15 of the OSH Act, the employer's general duties in respect of emergency at the workplace are to:

- a. provide procedures to deal with emergencies that may arise while the employees ;
- and
- b. provide procedures to deal with emergencies that may arise while the employees are at work
- c. provide information, instruction, training and supervision as is necessary

In addition, Occupational Safety and Health (Control of Industrial Major Accident Hazards) Regulations 1996 has illustrated clearly duties of employer or occupier to the workers at the workplace and person's outside/surrounding premises. Subsequently this paper endeavour to introduce to the entrepreneur's of the Small and Medium Enterprises' (SMEs') on the tactical emergency response operations concept vis-a-vis the

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emergency management model and the Occupational Safety and Health (OSH) Act 1994 in addressing disaster at the workplace

Objective:

The objective of this study is to highlight to the entrepreneurs of the SMEs' on the role of the organizations' with regard to safety in a Tactical Emergency Response Operations while addressing disaster at the workplace.

Scope and Limitations of Study:

This study will focus on the organizations' safety's role in the preparedness and response phase in addressing workplace disaster using the Tactical Emergency Operations Concept. The Disaster Management Model vis-a-vis the Occupational Safety and Health Act 1994 will be applied to address disaster at the workplace that could affect business activities.

Definitions:

Emergency:

Emergency can be defined as "A sudden occurrence demanding immediate action that may be due to epidemics, to natural or technological catastrophes, to strife or to other man-made causes. [14]

Tactical Operation:

Refers to all activities conducted in direct response to an emergency or incident that directly impact the resolution of the disruption or interruption of business [12].

Response/Relief:

The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration [7].

Disasters:

Disaster is defined as "an incident which occurs unexpectedly, which is complex in nature, causes serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources., loss of life, Disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk [6].

Emergency Services:

Emergency services are organizations which ensure public safety and health by addressing different emergencies. Some agencies exist solely for addressing certain types of emergencies whilst others deal with ad hoc emergencies as part of their normal responsibilities.

Non-Disastrous Incidents:

Non-disastrous incidents are defined as accidental incidents in the form of critical or non-critical and involving a small number of victims and effects only to the related victims.

Problem Statement:

Manmade disasters and workplace disasters such as the Bhopal tragedy and the Bright Spark tragedy and many unmentioned workplace tragedies happened at the workplace. The outcome are numerous casualties, fatalities, displaced people, property losses, disruption of normal life support systems, essential public services, basic infrastructure; and significant damage to the environment. These disasters happening at the workplace had overwhelmed capabilities of local governments and private sector infrastructure owners and operators.

Thus, this necessitates the organizations' to implement actions to prevent disaster at the workplace and also addressing disasters at the workplace when it occurs. These endeavours require a constant disaster management planning and support activities at the workplace. Hence, the tactical emergency response operations' concepts which is a flexible, effective disaster operation plan can be readily adapted and be implemented at the workplace.

Responsibility of the Organizations' Towards Safety in Managing Disaster:

The task of undertaking safety at the workplace is the top management's or the Chief Executive Officer's (CEO's) responsibility which is then transfers to the management levels in the organizational hierarchy. Section 15(1) of the OSH Act 1994 specifically states "It shall be the duty of every employer and every self-employed

person to ensure, so far as is practicable, the safety, health and welfare at work of all his employees. The management levels in the organizational hierarchy support the implementation of the management of safety, health and environment at the workplace. Employers manage the occupational safety and health at the work place through a three level of goals: strategic goals, operational goals, and tactical (incident scene) goals. Strategic goals lay down the framework and expectations for operational goals, whilst operational goals provide the framework for tactical planning and getting the work done.

In Malaysia, the managing of disastrous disaster is governed by the National Security Council Directive No. 20: The Policy and Mechanism on national Disaster Management and Relief. There are typically two types of emergencies. The first is a general emergency or non disastrous incident. The nature of the accident or incident has no likelihood of spreading. Among the non-disastrous incidents are the vehicle accidents, the small fire or a mishap in a lake or river and so forth. Such occurrences/incidents usually can be handled by relevant agencies, using minimum resources and facilities at local level. Such incidents of non-disastrous are not govern under this directive.

The second type is Specific emergencies or disastrous incidents that require a tactical response by responders. The disastrous incidents covered by this directive are as below:

- a. Natural disaster such as flood, storm, drought, shore erosion, landslide or any other disaster because of strong wind and heavy rain.
- b. Industrial tragedy such as explosion, fire, pollution and leaking of hazardous materials from factories refineries and industrial depots which process, produce and stores such materials.
- c. Accident that involved the transportation, supply and removal of hazardous materials.
- d. The collapse of high rise building and special structures.
- e. Airs crashed occur at a place with building and men.
- f. Train collision and derailment.
- g. A fire which involve a huge areas or high rise building or any special structure with many people inside.
- h. The burst of a hydroelectric power station or a reservoir.
- i. Nuclear and radiology accident involving nuclear composites or radioactive agents in which the accident could spread out and causing the lost of life, property damage or the environment pollution and effecting the local activities.
- j. The release of toxic gas at a public area; and
- k. Haze which can cause a critical situation to the environment, threatening public harmony, government administration and economic activities of the state.

Other criteria to describe disaster as per Table 1 beneath:

Table 1: Criteria of disaster.

Malaysian Experts Criteria of Disaster - 2007 10 people or more killed or 100 people or more injured or 10,000 people or more evacuated or Vast area affected and caused extensive environmental degradation or ecological destruction or Level II or Level III disaster response activated
UNEP Disaster Criteria 25 death or more; or 125 injured or more; 10000 evacuated or more; or 10000 people or more deprived of water; or US\$10 million or more in damage to the parties
A. Fakhru'l-Razi, Disaster Management in Malaysia, Universiti Putera Malaysia, http://www.unisdrapps.net/confluence/download/attachments/3080193/Disaster+Management+in+Malaysia+-+UPM.pdf?version=1

General Concepts of Tactical Emergency Response Operations:

Workplace is subject to a wide range of natural and human caused hazards which leads to disaster. Subsequently disaster may occur at any time with little or no warning in the context of a general or specific threat or hazard. The outcome are numerous casualties, fatalities, displaced people, property loss, disruption of normal life support systems, essential public services, basic infrastructure; and significant damage to the environment. Top priorities for disaster management with regards to safety's agenda are to:

- a. Provide for the safety and health of all workers at the workplace
- b. Save lives and protect the health and safety of the public, responders, and recovery workers.
- c. Prevent an imminent incident, including from occurring.
- d. Protect and restore critical infrastructure and key resources so as to reduce economic and social losses.

Tactical operations in the military jargon means to engage and defeat the enemy in battlefield using techniques, specific actions and sequences of actions in combination of with equipments and weapons systems use. Tactical operations are conducted to achieve the objectives.

With regards to safety's role, Tactical operations focus on managing personnel, equipment, and resources which play a direct role in an incident response. Pre-incident tactical approach, based on existing operational plans, provide opportunities for pre-identified staff, equipment, exercise, and training requirements. These gaps can then be filled in various ways (examples mutual aid, technical assistance, updates to policy, acquisition, leasing contingency) [5].

The Conduct of Tactical Emergency Operations:

An emergency such as severe illness or sudden injury, fire, floods, earthquake, power outage, chemical spills, explosions and violence does occur at the workplace that could affect business. Employers must take primary responsibility for the workplace safety and health of their employees and for the potential risks that their operations present to the larger community. The Occupational Safety and Health (Control of Industrial Major Accident Hazards) Regulations 1996 has illustrated clearly the duties of employer or occupier to the workers at the workplace and person's outside/surrounding premises.

The law stipulated that they (the employers) are required to take preventive measures in order to ensure safety of their operations. Among others, they need to have an emergency response plan and provide information (as listed in Schedule 3 of the regulations) to the public. Consequently, there is also a need for safety to be actively involved in the planning for protection actions.

In any disaster scenario at the workplace responders are involve in managing the disaster. Responders are involved in the tactical operations on the scene to "fix the problem." They use technical skills related to their specialties such as firefighting, hazardous material response. They are the "hands on" first responders at the workplace known as "Emergency Management Personnel or Emergency Response Team. Emergency Management Personnel often engage in prevention, preparation, recovery so that those involve in tactical operations have the resources and support necessary to fixed the problems [12].

The complexity of the emergency whether disastrous incidents or non-disastrous incidents will determine the sources of response. The conduct of Tactical Emergency Operations towards whichever disaster phenomenon at the workplace can be carrying out using the Disaster Management Model as shown in Diagram 1.

Preparedness Phase:

In the preparedness phase will witness the development of an emergency response plan which begins with a comprehensive overview of the facility that includes all on-site and off-site operations; the industrial, commercial, community, and environmental surroundings of the facility and its operations; the analysis of potential hazards associated with facility operations as well as of potential human environmental targets of those hazards; and the identification of all community and in-plant emergency response resources available for managing both potential and actual emergencies [4]. The corporate plan for conducting emergency response must integrate these considerations into clear, concise directions for implementing immediate and effective response.

The organization and contents of emergency response plans can vary depending on the responsibility and needs of the particular facility or organization that develops the plan. Consequently, different industrial facilities may also develop the plan to meet specific requirements regarding type of industry, number of personnel, and nature of industrial hazard. Regardless of the type of facility, an emergency response plan for any facility should contain (at a minimum) the following basic categories of information in Table 1

Table 1: Basic Informations' in Emergency Response Plan.

Objectives
Responsibility and authority
Distribution of plan
Emergency equipment and supplies
Location of data/information
Assessment of hazards,
General procedures
Notification procedures
Evacuation procedures
Containment procedures
Special procedures (e.g., fire, explosion, flood, toxic gas release)
Equipment shutdown
Return to normal operations
Training
Documentation

Response Phase:

How to conduct a tactical operation with the available human resources or the responders, emergency response plan and adequate in-house emergency equipment in an emergency situation without compromising on safety? In the Response Phase, actions are taken to save lifes and prevent further property damage in an

emergency situation. Response is putting the preparedness plans into action Section 24 of the OSH Act 1994 outlines the duty of employees to cooperate with the employer in achieving the aims of the Act. (Example, if PPE is required, employee must wear it; if special training is required, employee must attend.) Section 25 of the OSH Act 1994 emphasizes the obligation of the employer to pay for all things done or provided pursuant to statutory requirement of the Act. (Example, if safety footwear is required, employer must pay for it.)

A military commander when run into an emergency situation will conduct an appreciation of the situation. Appreciation was formerly developed by the military to help commanders gain a comprehensive understanding of any fact, problem or situation that it was faced with in battle. Appreciation can also be applied in the workplace (Mind Tool, http://www.mindtools.com/pages/article/newTMC_01.htm). Appreciation is akin to the 5 Whys technique or Root Cause Analysis or Cause and Effect Analysis.

An appreciation is define as "A judgment or opinion, especially a favourable one [3]. Appreciation is the act of estimating the qualities of things and giving them their proper value. The actions allow the commander to design, plan, and execute his actions within the operational environment. [13]. Appreciation will assist to uncover factors that might have missed in solving problems such as Fire-fighting Response, HazMat (Hazardous Material) Response, HIRARC (Hazard Identification, Risk Assessment and Risk Control) etc. which path the way to Incident Management. Using Appreciation Process to address problems or emergency situations begin with a fact follow by asking the question "So what?" until all possible conclusions have been drawn from it. In other words, what are the implications of that fact? Why is this fact important? Regardless of the type of emergency, conducting an appreciation of the situation consists of five basic steps:

- a. Reconnaissance
- b. Statement of the aim
- c. The factors
- d. Courses open
- e. The outline plan

Reconnaissance. Reconnaissance is undertaken so as to obtain information regarding casualties, damage and likely hazards. Hence the aim of reconnaissance is for an accurate assessment of:

- a. the number and location of casualties
- b. access to the casualties or task
- c. the extent and type of the damage, dangerous situations etc
- d. available resources and the time the task will take

Statement of the aim. The aim is a clear statement of what to accomplish in order to solve the problem. The aim must be clear, concise, and attainable and expressed in positive terms. Example of the aim is to save life and minimise injury to people and damage to property during disaster at the workplace. Hence to accomplish the aim, all emergency response personnel must be trained in emergency response. The aim will form the mission statement in an operational briefing, and should be simple.

Regulation 5 of Occupational Safety And Health (Control Of Industrial Major Accident Hazards) Regulations 1996, OSH Act 1994, states the "Obligations of manufacturer and employee" whereby every manufacturer who undertakes an industrial as soon as he becomes aware of an imminent danger which may affect the safety of persons or the environment, take immediate action to rectify the situation; and establish and maintain a good management system for controlling any major accident..

Regulation 18 of Occupational Safety And Health (Control Of Industrial Major Accident Hazards) Regulations 1996, OSH Act 1994 states "On-site emergency plan" whereby a manufacturer has to prepare and keep an up-to-date and adequate on-site emergency plan detailing how major accidents are to be dealt with on the site on which the industrial activity is carried out. The plan has to include the name of the person who is responsible for safety on the site and the names of those who are authorised to take action in the event of an emergency.

Consider the factors:

Factors are indicators related to the problem that has to be resolved Factors to be consider in an operational situation may include the priority of tasks; time and space; topography; weather; resources available (personnel and equipment, support requirements, communications, logistics etc). Each factor will lead to one or more logical deductions. Factors in an appreciation may be set out as in the following example as explained beneath that is 'if this is the case—then ...

Factor	Workers are trapped in a lock room
Deduction	The rescue team must use protective equipments', fire fighting equipments', cutting and lifting equipments' to free the workers.

Determine Courses Open. In the 'courses open' part, think about all possible courses that will determine the accomplishment of the aim. It is emphasize only to consider all the facts that are dealt with in 'factors'; and do not bring in new subject at this juncture

Decide On the Best Course. At this juncture, select one of the best possible solutions developed by the appreciation process. However, if there is more than one workable solution and the best course is not clear, apply the subsequent criterion [1] that is considered:

- a. Risk: Which solutions carry the greater risk factor in its implementation or the consequence of failure?
- b. Simplicity: Which is the simplest course?
- c. Time: If urgency is a factor, which course can be completed in the shortest time?
- d. Economy: In terms of resources, which solution imposes the least demand?

Plan. The plan is the choice of the best course open. The plan must be simple, and should relate to the aim. It will be the solution with the most advantages and the least disadvantages.

When completed, the plan will be required to be delivered as operational orders to the Emergency Response Team members. Orders are given in a format known as SMEAC, which is an acronym meaning Situation, Mission, Execution, Administration and logistics, and Command and communications. [1]

Conclusion:

The workplace is vulnerable to man-made and natural disasters. At the same time, it has the capacity to mitigate the effects of disasters through pre-planning, event response, and post-event interventions. Properly implemented workplace disaster management plans have the potential to prevent further disaster happening at the workplace.

An emergency such as severe illness or sudden injury, fire, floods, earthquake, power outage, chemical spills, explosions and violence does occur at the workplace that could affect business. Hence, safety's role at the workplace is to provide for the safety and health of all workers. The law stipulated that they (the employers) are required to take preventive measures in order to ensure safety of their operations. Among others, they need to have an emergency response plan and provide information (as listed in Schedule 3 of the regulations) to the public.

Appreciation will assist to uncover factors that might have missed in solving problems such as Fire-fighting Response, HazMat Response etc. which path the way to Incident Management. When completed, the plan will be required to be delivered as operational orders to the Emergency Response Team members. Orders are given in a format known as SMEAC, which is an acronym meaning Situation, Mission, Execution, Administration and logistics, and Command and communications.

Recommendations:

Assistance from UniMAP can be sought by the employers to implement the following recommendations:

- a. Employers can address safety agenda and disaster happening at the workplace using the Tactical Emergency Response Operations Concept.
- b. Employers to use the above mention Appreciation of the Situation Concept to carry out Hazard Identification, Risk Assessment and Risk Control (HIRARC) to determine hazards that will cause disaster at the workplace.
- c. The employers can consult Universiti Malaysia Perlis (UniMAP) on the requirement of the law with regards to occupational safety and health at the workplace

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