

## **RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN**

### **Definition**

A major emergency in a work is one, which has the intensity to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the work. It would normally require the assistance of emergency services to handle it effectively.

Emergency may be caused by a number of different factors; it will normally manifest itself in two basic forms, viz. fire, explosion or toxic release.

### **Purpose and Scope**

The purpose of formulating the Disaster Management Plan is to develop a state of readiness, which will allow for a prompt and orderly response to an emergency & disaster and to comply with the statutory obligations as mentioned above. This plan is structured around four major objectives:

- Understanding the type and extent of a potential emergency (risk/exposures);
- Establishing a high order of preparedness (equipment, personnel) commensurate with the risk;
- Ensuring an orderly and timely decision-making and response process (notification, standard operating procedures), and
- Providing an incident management organisation with clear missions and lines of authority (Incident Command System, field supervision, unified command).

This Plan is targeted to –

- Contain the incident.
- Minimize casualties and prevent further injuries.
- Quick and streamlined relief and rescue operation without unnecessary delay.
- Speed up restoration of normalcy.
- Ensure that each member of the emergency operation including response team and employees are aware of his specific role in emergency.

### **Objective**

The overall objectives of the emergency plan are:

- a. To localize & contain the emergency and, if possible eliminate it; and

b. To minimize casualties & prevent further injuries to people & damage to property

Elimination requires well planned process/technology and its effective implementation, so that such situation should either not arise or if it comes, a pre warning is received for timely action in built or by preparedness for zeroing the effects.

Minimizing the effects may include prompt action, rescue, first aid, and evacuation, fire fighting and also passing on information promptly to people living nearby.

### **Emergency Organization**

Command & control of an emergency condition encompasses the key management functions necessary to ensure the health & safety of employees, as well as of the public living in the vicinity, in addition, the implementation of an Emergency Response Plan relies on a number of response functions, which deal with different aspects of emergency, with the most important ones being:

- Communication, coordination & liaison
- Fire & rescue
- Technical
- Medical services
- Security
- Logistics
- Administration

### **Identification of Hazards**

The possibility of the following may be there for such projects:

- (a) Fire associated with storage of combustible material, lubricants, oil.
- (b) Accidents in the mine

To deal with the above emergencies, the Emergency Plan has been prepared.

### **Code of Practice in Case of Fire at Mines**

#### **Objective:**

To deal with fire efficiently and quickly at different locations of mine.

#### **Line of Action:**

- i) Sufficient fire extinguishers will be installed at selected locations on site. Besides, numbers of water hydrants with sufficient length of hosepipes will be made available at the surface for fire protection.
- ii) Any person when notices any sign of fire shall immediately take steps to give warning by blowing the siren continuously and take steps to extinguish the fire by using appliances available near the site.

Duties of Incident Controller (IC): - The IC operates from the nearest accident site. Sh. Pattu Singh and his team (S/Sh. SKP / DS/ BRS) assume the role of IC. Primary duty of the IC is to take charge of the scene of emergency. In the initial stages, he may be required to take decisions regarding operation of the plant as to whether they should continue their operations or shut down the plant and to take decisions to control the incident. The responsibilities of the IC are as under:-

- (1) As soon as he assumes the position as IC after noticing an emergency situation or after receiving such information, he should assess the scale of emergency and immediately activate the Disaster management plan and inform to SC and ECC.
- (2) His main function is to direct all operations at the scene of emergency / Disaster, i.e.
  - Search for trapped persons or casualties, if any. Prepare for rescue promptly.
  - Initiate rescue operations until the rescue team arrives.
  - Evacuate the non-essential persons to the allocated Assembly Point.
- (3) Set up communication network with the Emergency Control Centre (as the case may be).  
[Using Landline / Mobile or Wireless set].
- (4) Direct all operations within the affected area with following priorities
  - Secure safety of personnel. Give priority to saving life and preventing further injury.
  - Minimise damage to plant, property, and the environment.
  - Minimise loss of material.
- (5) Give advice and information as required by the emergency responders or emergency services.
- (6) Keep the SC informed of the developments.

- (7) Preserve evidences, which would be necessary for subsequent investigation to find out the immediate and underlying causes of the emergency and for concluding preventive measures.
- (8) Direct the rescue team.
- (9) Assess whether the leakage and / or fire can be stopped or controlled and consult the SC.

iii) Duties of Site Controller: - The SC has an overall responsibility for directing operations and calling outside help. Specific responsibilities / duties of the SC are as under:

- (1) After assuming the position as SC, he would get the information from the Incident Controller (IC) and take overall control of the emergency.
- (2) On consultation with the IC, key personnel in the Plant and his own assessment, he shall decide whether major emergency exists or likely to take place, necessity to alert the public living in the vicinity of the Plant, call outside emergency services, inform authorities, etc. after due clearance from Unit Head.
- (3) Ensure that the key personnel are called in.
- (4) Exercise direct operational control of those parts of the plant which are outside the affected area.
- (5) Continuously review and assess existing and possible developments to determine most probable course of events and effective methods to deal with them.
- (6) Direct safe shut down and evacuation of plant in consultation with the IC and key personnel.
- (7) Ensure that casualties are receiving adequate attention. Arrange for hospitalisation of victims and additional help if required. Ensure that their relatives are informed.
- (8) If necessary, inform and liaise with Chief of Fire and Police Services, District Emergency Authority and with the Office of Directorate of Industrial Safety and Health, Govt. of Gujarat.
- (9) Ensure accounting of personnel and rescue of missing ones.
- (10) Arrange control of traffic movement within the Plant.
- (11) Arrange maintenance of chronological record of the emergency.
- (12) Issue authorised statements to the press or the media. Also inform senior officers.
- (13) Control rehabilitation of affected area after the emergency.

(14) In case of strike by the plant personnel, identify critical areas of the Plant in advance. If emergency occurs during strike, following arrangements are to be made to meet the crisis.

- Keep List of Technical & Administrative personnel needed to run the power station in an emergency and train the team.
- Keep the record of Personnel (Non-executive) likely to be available during the strike and keep in safe custody.
- Identify alternate arrangements to run the Power Station i.e. by mutual aid with other power stations, etc.

#### **Code of Practice in case of Explosion & Accidents**

##### **Objective**

To deal with accidents efficiently and quickly.

##### **Line of Action**

Any person, who notices any explosion or accident, should immediately take steps to give warning by suitable means and at the same time take necessary action for withdrawal of men from the site. He shall also inform the Mines Owner and other officials without any delay.

##### **Action in Emergency**

If any emergency like fire arises in the mine one should immediately inform Security Supervisor and inform the key personnel and act as detailed above and below the Alarm. The emergency alarm will be wailing sound for two minutes on hearing alarm; the key personnel will act as per responsibilities. The procedure for all emergency situations as mentioned above would be same.

##### **Site Restoration**

The incident controller will check the areas thoroughly for possible hazards such as toxic fumes or live wires after emergency and will inform site controller accordingly.

The key personnel will meet to evaluate their individuals and overall performance in responding to situation after the emergency is over. The review shall determine.

- Effectiveness of emergency response plan.
- Mine crew performance.
- Any need for updating or revision of the emergency response plan.
- Suitable arrangement for restarting of the work.

- Evaluation and control of effluent arising out of mitigating measures like foam discharge & overflow of oil in water.
- Rehabilitate evacuated area.
- Adopt measures to prevent similar recurrence.

### **Precautions**

To avoid all these disasters at working place and to minimize their effects following precautions shall be taken and arrangement shall be made at the working place.

- (i) Periodical maintenance of mine machineries.
- (ii) The persons shall be trained properly to handle the situation.
- (iii) Detailed warning system, implementation procedure, emergency control centre shall be maintained at the mine with names of trained persons.
- (iv) Details and availability of heavy machinery, fire-fighting equipment shall be available at the site.
- (v) Proper arrangements shall be made for treatment of injured person, if any.
- (vi) All the safety equipment shall be available at the mine.

### **Post Disaster Analysis and Evaluation**

When the emergency is over, the team will carry out a detailed analysis of cause of accident/occurrence, evaluate the influence of various factors and find out the procedures to minimize them in future. At the same time adequacy of disaster management plan shall be evaluated and shortcomings shall be rectified to improve the plan.

### **Off-Site Emergency Planning**

#### **Introduction**

The off-site emergency plan is an integral part of any hazard control system. It would be based on those accidents identified by the works management, which could affect people and the environment outside the works. Thus, the off-site plan follows logically from the analysis that took place to provide the basis for the on-site plan and the two plans should, therefore, complement each other. The key feature of a good off-site emergency plan is flexibility in its application to emergencies other than those specifically included in the formation of the plan. The roles of the various parties that may be involved in the implementation of an off-site plan are described below.

The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority.

Either way, the plan must identify an emergency coordinating officer who would take overall command of the off-site activities. As with the on-site plan, an emergency control center will be required within which the emergency coordinating officer can operate. An early decision will be required in many cases on the advice to be given to people living “within range” of the accident – in particular whether they should be evacuated or told to go indoors. Consideration of evacuation may include the following factors:

- a. In the case of a major fire but without explosion risk (e.g. an oil storage tank), only houses close to the fire are likely to need evacuation, although a severe smoke hazard may require this to be reviewed periodically.
- b. But if the fire escalates it might be necessary to evacuate people nearby, but only if there is time; if insufficient time exists, people would be advised to stay indoors and shield themselves from the fire while measures are taken by those outside to douse fire

#### **Aspects to Be Included In an Off-Site Emergency Plan**

Some of the aspects to be included in off-site emergency plan are as follows:

##### **1. Organization**

Details of command structure, warning systems, implementation procedures, emergency control centers, name and appointments of incident controller, site main controller, their deputies and other key personnel.

##### **2. Communications**

Identification of personnel involved, communication center, call signs, network, list of telephone numbers.

##### **3. Special Emergency Equipment**

Details of availability and location of heavy lifting gear, bulldozers, specified fire-fighting equipment, fireboats.

##### **4. Voluntary Organizations**

Details of organizers, telephone numbers, resources, etc.

##### **5. Meteorological information**

Arrangements for obtaining details of weather conditions prevailing at the time and weather forecasts will be made.

#### **6. Humanitarian Arrangements**

Transport, evacuation centers, emergency feeding, treatment of injured, first aid, ambulances, temporary mortuaries.

#### **7. Public Information**

Arrangements for: -

- (i) Dealing with the media-press office
- (ii) Informing relatives, etc.

#### **8. Assessment**

Arrangements for: -

- (i) Collecting information on the causes of the emergency
- (ii) Reviewing the efficiency and effectiveness of all aspects of the emergency plan.

#### **Role of the Emergency Coordinating Officer**

The various emergency services will be coordinated by an Emergency Coordinating Officer (ECO) who is likely to be a senior police officer but, depending on the circumstances, could be a senior fire officer. The ECO will liaise closely with the site main controller. Again depending on local arrangements, for very severe incidents with major or prolonged off-site consequences, the external control may pass to a senior local authority administrator or even an administrator appointed by the Central or State Government.

#### **Roles of Major Hazard Management**

Where the local authority has the organization to formulate the plan, the role of management in off-site emergency planning will be to establish liaison with those preparing the plans and to provide information appropriate to such plans. This will include a description of possible on-site accidents with potential for off-site harm, together with their consequences and an indication of the relative likelihood of the accidents.

Advice should be provided by works managements to all the outside organizations which may become involved in handling the emergency off-site and which will need previously to have familiarized themselves with some of the technical aspects of the works activities, e.g. emergency services, medical departments, etc.



### **Role of the Local Authority**

In some places the duty to prepare the off-site plan lies with the local authorities. They may have appointed an emergency planning officer (EPO) to carry out all this duty as part of the EPO's roles in preparing for a whole range of different emergencies within the local authority area. The EPO will need to obtain the information to provide the basis for the plan.

Rehearsals for off-site plans are important for the same reasons as on-site plans and will need to be organized by the EPO.

### **Role of the Police**

The police normally assume the overall control of an emergency, with a senior officer designated as emergency coordinating officer.

Formal duties of the police during an emergency include protecting life and property and controlling traffic movements.

The functions include controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

### **Role of the Fire Authorities**

The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site. The senior fire brigade officer may also have a similar responsibility for other events. Fire authorities having major hazard works in their area should have familiarized themselves with the location on site of all stores of flammable materials, water and foam supply points and fire-fighting equipments.

### **Role of the Health Authorities**

Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan.

For major fires, injuries will be the result of the effects of thermal radiation to a varying degree and the knowledge and experience to handle this in all, but extreme, cases may be generally available in most hospitals.

### **Roles of the Government Safety Authority**

The Inspectors of Director General of Mines Safety may want to satisfy themselves that the organization responsible for including the off-site plan has made adequate arrangements for handling emergencies of all types including major emergencies.

In the event of an accident, local arrangements regarding the role of the factory inspector will apply. In the aftermath, factory inspectors may wish to ensure that the affected areas are rehabilitated safely.