

RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

1.1.1 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 normally manifest itself in two basic forms, viz fire, explosion or toxic release.

1.1.2 Scope

An important element of mitigation is emergency planning i.e. recognizing that accidents are possible, assessing the consequences of such accidents and deciding on the emergency procedures, both on site and off site that would need to be implemented in the event of an emergency.

Emergency planning is just one aspect of safety and cannot be considered in isolation.

1.1.3 Objective

The overall objectives of the emergency plan are:

- (a) To localize the emergency and, if possible eliminate it; and
- (b) To minimize the effect of the accident on people and 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.

1.1.4 Identification of Hazards

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

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

To deal with the above emergencies, the Emergency Plan is prepared.

1.1.5 Disaster Due To Surface Fire

The fire could be a surface fire. Such case has so far not been reported. Likewise equipment sometimes catches fire which needs to be dealt.

Code of Practice in Case of Fire at Mines

Objective:

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

Source of Fire:

- i) Electrical Sub Station.
- ii) Oil & Lubricant Room.
- iii) Mine machineries.

Line of Action:

- i) Sufficient fire extinguishers are installed at selected locations on site. Besides, number of water hydrants with sufficient length of hosepipes will be made available at the surface for fire protection.
- ii) Fire extinguishers are provided in all HEMM.
- iii) Any person notices any sign of fire 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.
- iv) Duties of mine Official: - The Mine officials receiving the warning forthwith inform at following places:
 - a) Fire fighting station
 - b) Security main gate
 - c) Mines Manager
 - d) Mines Agent / Owner

After intimation he would reach the spot, remove Men & Machinery and take steps to tackle the fire in accordance with the fire fighting instructions. Inform the security office to get an Ambulance if required.

- v) Duties of Fire Fighting Team: - On receiving warning, the team reach the site of fire and depending on its nature, class and extent shall take steps to extinguish it and rescue persons who may be caught in fire.
- vi) Duties of Mines Manager: -
- vii) On receipt of information about fire, the Manager forthwith rush to the spot and assess the situation. He oversee the overall rescue operation and make necessary arrangement for medical aid to the affected persons, if any.
- viii) Inform the management and statutory bodies.

1.1.6 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, would immediately take steps to give warning by suitable mean and at the same time take necessary action for withdrawal of men from the site. He also informs the mine's Manager and other officials without any delay.

Duties of Mine's Manager

- (a) On receipt of information about explosion or accident, the manager shall forthwith rush to the spot and take necessary actions. He shall make the arrangements for withdrawal of affected persons, if any.
- (b) Inform the hospital for Ambulance for affected persons, if any.
- (c) Provide First aid to affected persons.
- (d) Inform the senior officials and statutory bodies.

1.1.7 Action in Emergency

If any emergency like fire arises in the mine one would immediately inform to Security Supervisor. Security informs key personnel and act as detailed above and consequently inform to CCR for broad announcement by Public Address System and to blow the Alarm if CCR is not affected itself. The emergency alarm will be wailing sound for two minutes on hearing telephone or alarm; the key personnel act as per responsibilities. The procedure for all emergency situations as mentioned above would be same.

1.1.8 Site Restoration

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

The key personnel 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 restart 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.

1.1.9 Precautions

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

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

1.1.10 Post Disaster Analysis and Evaluation

When the emergency is over, the teams 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.

1.1.11 Off-Site Emergency Planning

1.1.11.1 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 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 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 is escalating 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.

1.1.11.2 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:

a) 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.

b) Communications

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

c) Special Emergency Equipment

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

d) Voluntary Organizations

Details of organizers, telephone numbers, resources, etc.

e) Meteorological information

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

f) Humanitarian Arrangements

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

g) Public Information

Arrangements for: -

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

h) 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.

1.1.11.3 Role Of The Emergency Coordinating Officer

The various emergency services are 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 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.

1.1.11.4 Role Of Mine Management in case of Major Hazard

Where the local authority has the organization to formulate the plan, the role of mine management in off-site emergency planning is to establish liaison with those preparing the plans and to provide information appropriate to such plans. This includes 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 mine managements to all the outside organizations which may become involved in handling the emergency off-site and which need previously to have familiarized themselves with some of the technical aspects of the mine activities, e.g. emergency services, medical departments, etc.

1.1.11.5 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 need to liaise with the mine 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.

1.1.11.6 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.

1.1.11.7 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 will be familiarized themselves with the location on site of all stores of flammable materials, water and foam supply points and fire-fighting equipments.

1.1.11.8 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.

1.1.11.9 Roles of The Government Safety Authority

The Inspectors of Directorate General of Mines Safety would like to satisfy themselves that the organization responsible for safety & risk management has made adequate arrangements for handling emergencies of all types including off-site plan in major emergencies.