

RISK ASSESSMENT

On site- offsite emergency preparedness plan.

1. Introduction

The emergency plan delineates the Organizational procedures for dealing with accidents or unexpected events and natural calamities arising from operations.

An experience of any accidents that have occurred in other construction and operation and maintenance projects is considered to prepare this plan specially handling the hazardous chemicals of this plant. This Emergency plan should be periodically reviewed and modified. It should also be changed based on the observations of emergency mock drills and experience of handling actual emergencies.

2. Objective

The main objective of emergency plan has been to get prepared for any foreseeable emergency situations and to reduce the damage to the property, environment and human life in these situations. The emergency plan is useful to tackle emergencies such as fire, explosion, major accidents at the mining site and natural calamities.

This Emergency response plan has been designed to fix responsibilities and action to be executed by various groups to contain the emergency within short time period with minimum damage of human lives, environment, materials, machines and properties. It is responsibility of all persons in their respective areas to ensure success of this emergency plan.

Major objectives of this onsite – offsite emergency plan are:

1. To take necessary proactive and preventive actions to avoid the emergency. The main aim of any emergency plan should be to prevent emergency situations
2. To train the manpower to handle the emergencies of the following nature:
 - i. Onsite (Within boundary of centre)
 - ii. Offsite (Outside agencies)
3. To control the disaster (Emergency) with minimum damage to people, Environment, Machines and Natural resources.
4. To identify the persons affected and arrange first aid and medical treatment to the affected persons.
5. Inform relatives of the affected persons, provide authoritative information to Government authorities, media and others, preserve relevant records and equipment's needed as evidence in any inquiry or investigation.

3. Onsite off-site emergency Plan.

3.1. Type of emergencies. : There have been some identified as emergency situation at in side of centre such as:

- A. Emergency on account of
 - Fire
 - Explosion
 - Electrocution
 - Major accidents involving man-made collapse of the mining edges.
- B. Disaster due to natural calamities like
 - Flood/ heavy rains which can involve natural landslides.
 - Earth quake
 - Cyclone
 - Lightening
- C. Emergencies due to external factors
 - Sabotage
 - Civil riots.
 - Terrorism, air raid etc.

Type C emergencies in medical centre can be rare but cannot be excluded.

3.2 Preventive actions / measures to avoid emergencies

- **Fire:** As we all know, fire sets in with combination of air, fuel and heat. That is why it's necessary to eliminate all sources of heat generation. Proactive measure and prevention is the best remedy to avoid fire incidence.
 1. Install fire alarms and flammable gas detectors with proper guidelines by safety auditor this should be done if LPG or natural gas is used as fuel for operations of machinery in the mines.
 2. Installation of flame proof electric fittings.
 3. Ensure earthing of all equipment's such as, electrical motors, air compressors, drilling machines to avoid static electricity generation and static spark.
 4. Storing of explosives and fuels like diesel in separate areas at a safe distance away from the main operations.
- **Explosion:** When a mixture of flammable gas and air gets a source of ignition a spontaneous reaction takes place causing a pressure and sound wave of high intensity, this is termed as explosion. In mining the unintended explosions of explosives can occur. The explosion of the air receivers is common in compressed air system if proper checking and maintenance is not done. To avoid explosions in day to day operations following precautions should be taken.
 1. Handle and store all explosives in shaded area to avoid direct sun light. The diesel and fuel drums should also be kept in shed to avoid direct sunlight.
 2. Always check leaky fuel drums.

- **Electrocution:** To Prevent electric shock and electrical short circuit following preventive actions should be taken
 1. Install Ground Fault Circuit Interrupter (GFCI) outlets and adapters.
 2. Ensure all the electrical equipment's are properly grounded.
 3. Wear protective gears e.g. insulated hand gloves while working on electric switches, motors or generators..
 4. Lock out/tag out permit to be enforced for working on electrically operated equipments.

4) General Guidelines:

- Fire and first aid trained Operator/Fireman must be available at all the times during mining operations.
- All operations should be immediately stopped in case of any emergency. A siren can be sounded if available.
- An emergency assembly point should be created and all Employees should guide visitors or contractors to approach assembly point.
- The site office can serve as emergency control room (Centre) in case of emergency.
- Emergency vehicle should be available near security main gate and rush to the emergency control centre at the blowing of emergency siren. The driver of emergency vehicle will follow the instructions of Incident Controller / Site Main Controller.
- The shift engineer/electrician should get ready to manage generator set and MCC as per the instructions of Incident Controller.
- People should be trained for the precautions to be taken during natural disasters like heavy rain, floods, earthquake and cyclone.
- All weather escape routes from mines to the assembly point or any other safe location should be made.

5) Emergency Prevention:

- Prepare maintenance Schedule for all the equipments as per recommendations of manufacturer's user manuals.
- To collect and analyse information of minor incidents and accidents at site and recording near emergencies that were averted which gives indication of likely or unlikely site facing emergencies.

6) Emergency Structure and Responsibility:

The emergency preparedness organizational structure should consist of the following persons

- I. Site main controller- The manager can be named as site main controller
- II. Incident Controller – The site supervisor can act as incident controller in case of emergency.
- III. Safety officer or fire & safety co coordinator (if available)
- IV. Security head or security in charge -

V. Rescue team consisting of operators and mine employees specially trained in safety and/or first aid

I) Role of Site Main Controller:

- Site Main controller relieves the incident Controller of the responsibilities of overall emergency control as soon as he arrives at the site and takes stock of the situation and thereafter will position himself in the Emergency Control Centre and give directions from here.
- Ensures the medical aid is promptly provided to the causalities and their relatives are informed.
- Organize evacuation and transportation of personnel from the assembly points to a safe location outside.
- If external help is needed, co-ordinate with outside emergency services like fire brigade of the nearest town, ambulance etc.
- Ensures that affected personnel are transported to external medical centres, and keep constant liaison with these medical centres during the course of the emergency through the medical officer.
- Keeps concerned Government Agencies informed of the emergency and if necessary arranges information to the outside habitants through police.
- Decides to call off the emergency when everything is OK

II) Role of Incident Controller:

- Incident Controller on reaching the site of the incident relieves the in-charge of the responsibilities of directing the emergency operations and assumes total control of emergency operations in the affected area.
- Determines the adequacy of the emergency services.
- Direct emergency operation from the incident site to localize emergency, keeping in mind the priorities for safety of personnel, least damage to the property and environment & minimum loss of materials.
- Provide advice and information to the Fire and Security Personnel and Local Fire Services as and when they are called.
- Continuously reviews the situation with the site Main Controller.

III) Role of Manager (safety)/ Executive (Fire and Safety)

- Proceeds to the emergency control centre, establishes contact with firemen and incident controller and supplements efforts in fire fighting in case of fire and other such emergencies involving people.
- Assist nurse in providing first aid to those who are injured.
- Mobilize personal protective equipment and safety appliance and assists personnel handling emergency in using them.
- Collect and preserve evidence to facilitate future inquiry.

IV) Role of Security In-charge:

- Assumes charge of all external communication in consultation with Site Main Controller.
- Takes charge of EPABX (Electronic Private Automatic Branch Exchange, if available) Board and deputes a trained person (e.g. security guard) to man the board when regular telephone operator is off duty and restrict the unnecessary calls.
- Assumes total control of the storage facility under the direction of the Site Main Controller.
- Controls traffic movement, removes truck and tanker drivers outside the mining site and prevents entry of all non-essential personnel.
- Cordon off the incident site and keeps the site clear off observers.

V) Fire fighting staff:

The fire fighting staff in mines consists of the persons trained in fire fighting and rescue operations. These people should be fully trained in operations of the fire fighting equipments readily available at site e.g. fire extinguishers, CO₂ extinguishers, water hoses etc.

- Fire fighting team must be alert in any case of emergency.
- The fire fighting team should use the equipments and means available at site, until external help comes in.
- Direct the external agencies in fighting fire and help them as needed.

VI) Trained First Aider:

1. First aider or the team shall rush to emergency control point and get the feedback from the site controller about the emergency.
2. As per the instruction, they must rush to the area of emergency and assess the situation.
3. Approach emergency site quickly with BA set and First Aid Box Kit.
4. Diagnoses the situation and decides whether the affected persons shall be moved to the safe area.
5. The injured personnel are moved to the safe place and given first aid as required by the situation.
6. Follow instructions of incident Controller.
7. Move/Transport the causalities to the ambulance/ near medical centre for necessary medical assistance.

7) Emergency Control Centre. An Emergency Control Centre (ECC) is the primary area from where emergencies are handled. An ECC should contain various items as listed. The site office can serve as emergency control centre if a special ECC is not created.

7.1 For communication:

- Siren.
- Telephone directory (with all mobile phone numbers), and emergency numbers like police, Ambulance, nearby Hospitals, company medical doctor, and any other number useful in emergency.
- Directory (if applicable)
- List of important & Emergency phone numbers.

7.2 Documents for ready reference:

- Site plan or current operation plan.
- Layout plan with hazard zones, assembly points marked and location of siren, safety/fire system shown (Display).
- Stock list of Fire extinguishers.
- Stock list of safety appliances
- Fire-water system and additional sources of water (if applicable)
- The existing water storage and water pumping system can be easily converted into fire water system.
- Emergency Response Plan and Company Lay out Plan, Flip chart.
- Copy of First Aid procedures
- Copy of MSDS of the chemicals stored, handled at site. E.g. Diesel, explosives, etc.
- Mutual Aid Members list
- List of employees and their addresses and phones numbers.

7.3 Wall Display:

- Site plan
- Layout plan
- Emergency Organization.
- Fire fighting system layout and additional source of water.
- Site entrance, roadway and emergency exist.
- Storage area of hazardous materials. (explosives & diesel, LPG cylinders)
- Assembly points.
- Storage of safety equipment

7.4 Other:

- Stationary.
- Recording System.
- Utility Items (Torches and umbrellas.)
- First aid box & common antidotes

8) Emergency Control:

- Shut down of mining operations: Raising the alarm or siren followed by immediate safe shut down of the power supply, and isolation of affected areas.
- Treatment of injured: First aid and hospitalization of injured persons
- Protection of environment and property: During mitigation, efforts should be made to prevent impacts on environment and property to the extent possible.
- Preserving all evidences and records: This should be done to enable a thorough investigation of the true causes of the emergency.
- Ensuring safety of personnel prior to restarting of operations: Efforts required to be made to ensure that work environment is safe prior to restarting the work.

9. Offsite Emergency Plan:

❖ Off-site Emergency Response Plan

An emergency may affect areas offsite (outside) of the works as for example, an explosion can scatter debris over wide areas and the effects of blast can cover considerable distances, wind can spread burning brands of gases.

In some cases e.g. as the result of an explosion, outside damage will be immediate and part of the available resources of the emergency services may need to be deployed in the affected areas. In any case, the possibility of further damage may remain, e.g. as the result of further explosion or by the effect of wind spreading burning brands of hazardous material.

It will be necessary to prepare in advance simple charts or tables relating the likely spread of the vapours cloud taking into account its expected buoyancy, the local topography and all possible weather conditions during the time of release.

It may also be desirable to install instruments indicating wind speed and direction, which could be done jointly.