SAFETY MANAGEMENT PLAN

For Limestone Mine of UltraTech Cement Limited
RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

1. Definition

1) 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.

2) 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.

1.2 Scope

3) 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.

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

Roles & Responsibilities

Function of Mines Safety Board

1) Focus on correcting unsafe acts & Conditions.

2) Implementation of the Safety Standards & Procedures laid down by Unit Safety Board & DGMS.

3) Focus on improvement in health & hygiene for workers.

4) Focus on improvement of basic upkeep & cleanliness of atmosphere.

5) Learning / sharing safety culture across Mines.

Risk Management

1. Identifying the hazards – involves recognising things which may cause injury or harm to the health of a person, e.g. flammable material, ignition sources or unguarded machinery;

2. Assessing the risk – involves looking at the possibility of injury or harm occurring to a person if exposed to a hazard;

3. Controlling the risk – by introducing measures, which will remove or reduce the risk of a person being exposed to a hazard; and

4. Monitor the effectiveness of the control measures – involves the regular review of the control measures to ensure that they are suitable.

Method of Identifying Hazards

a) Looking around the workplace (walk-through surveys).

b) Looking over information from designers or manufacturers.
Risk & Disaster Management Plan

c) Looking at unsafe incidents, accident and injury data.
d) Looking at work processes.
e) Talking with workers.
f) Closely looking at and thinking about material safety data sheets (MSDS'S) and product labels.
g) Asking for help from people who have special knowledge (specialist practitioners, consultants and representatives).
h) DGMS Safety Statistics
i) Incidents reported within group units

Assessment of the risk

Assess the risk using the Kinney & Fine method. This assessment will show what the real level of risk is that we want to manage via all our procedures, rules, tools/equipment, PPE etc.

- Identify task and sub-tasks
- Identify Hazard
- Calculate initial Risk-Score
- Define Corrective and Control Measure(s)
- Calculate Actual Risk
- Implement Corrective and Control Measure(s)
  - Acceptable?
    - Yes
      - File Risk Analysis
    - No
      - Include standard and additional measures. Always take preventive hierarchy into account

UltraTech Cement Limited
Risk & Disaster Management Plan

Risk = Exposure X Severity X Probability = E X S X P

Controlling the Risk
To eliminate or minimize the risk, measures are proposed that should be implemented in an action-plan or job-plan. Both routine and non-routine measures need to be listed. When defining these measures, the prevention hierarchy needs to be taken into account. First try to eliminate the risk. Highest priority is given to elimination.

Hierarchy of Risk Controls:
When we select a control for an identified hazard, we will always choose the highest measure of control possible.

There is a hierarchy of controls or preferred order of control measures, which range from the most effective to the least effective. The hierarchy of control measures is:

Elimination
Removing the hazard or hazardous work practice from the mine. This is the most effective control measure.

Substitution
Replacing a hazard or hazardous work practice with a less hazardous one

Isolation
Stopping persons from interacting with the hazard e.g. machine guarding, remote handling;

Engineering Control
If the hazard cannot be removed, replaced or isolated, an engineering control is the next preferred measure. This may include changes to tools or equipment, providing guarding to machinery or equipment.

Administrative Control
Includes introducing work practices that reduce the risk. This could include limiting the amount of time a person is exposed to a particular hazard.

Personal Protective Equipment
Should be considered only when other control measures are not suitable or to increase protection.

There may be circumstances where more than one control measure should be used to reduce exposure to hazards.

Monitoring control Measures
Constantly reviewing control measures is important to ensure they continue to be relevant and stop or control exposure to hazards or hazardous work practices.

Engineering controls should be regularly tested to ensure they work. Performance testing and evaluation standards should be set up.
HIRA shall be reviewed in following conditions:

a) Minimum once in year
b) Addition/Deviation of new equipment / activities
c) Changes/ modification in Man, Machine, Material and Method
d) Change in legal requirements
e) Incident and injury

Risk Assessment

Risk assessments during excavation process are given below:

<table>
<thead>
<tr>
<th>Sr</th>
<th>Activity</th>
<th>Hazards</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climbing/getting down from the machine for inspection of oil &amp; water and during operation</td>
<td>slipping</td>
<td>Laceration/Abrasion/Sprain/Fracture</td>
</tr>
<tr>
<td>2</td>
<td>Opening and closing the cabin door during operation of machine</td>
<td>slipping</td>
<td>Laceration/Abrasion/Sprain/Fracture</td>
</tr>
<tr>
<td>3</td>
<td>Movement of person into the vicinity of Loading operation</td>
<td>Hitting by machine parts</td>
<td>Fracture</td>
</tr>
<tr>
<td>4</td>
<td>Hitting to dumper body by bucket while loading</td>
<td>Jerk/vibration</td>
<td>Sprain/Muscular pain</td>
</tr>
<tr>
<td>5</td>
<td>While in operation</td>
<td>Exposer to Noise, Dust &amp; Vibration</td>
<td>Temporary discomfort, Temporary fatigue</td>
</tr>
<tr>
<td>6</td>
<td>Opening and closing the cabin door</td>
<td>Exposer to sharp edge/damaged door lock handle</td>
<td>Scratch/cut to finger or palm</td>
</tr>
<tr>
<td>7</td>
<td>Adjusting the cabin fan or any moving part while in operation</td>
<td>Exposer to sharp edge</td>
<td>Cut to finger or palm</td>
</tr>
<tr>
<td>8</td>
<td>Unloading into the Dumper</td>
<td>Hitting to dumper body by bucket while loading</td>
<td>damage of cabin/body of dumper</td>
</tr>
<tr>
<td>9</td>
<td>While in operation</td>
<td>Failure of equipment safety devices</td>
<td>Failure of Engine/parts</td>
</tr>
<tr>
<td>10</td>
<td>Unsafe practices / wrong operation</td>
<td>Hitting with Boulder/other nearby equipment</td>
<td>Damage to equipment/parts</td>
</tr>
</tbody>
</table>
Risk & Disaster Management Plan

Risk assessments during dumpers process are given below:

<table>
<thead>
<tr>
<th>Sr</th>
<th>Activity</th>
<th>Hazards</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climbing/getting down from the m/c for inspection of oil &amp; water and during operation</td>
<td>slipping</td>
<td>Laceration/Abrasion/Sprain/Fracture</td>
</tr>
<tr>
<td>2</td>
<td>Failure of Brakes While in operation</td>
<td>Unbalance of equipment, hitting with structure /other equipment</td>
<td>External Injury, Laceration / abrasion / muscular pain</td>
</tr>
<tr>
<td>3</td>
<td>Tyre bursting</td>
<td>hitting with cabin wall/exposer to sharp edges</td>
<td>Laceration/Abrasion/Sprain</td>
</tr>
<tr>
<td>4</td>
<td>While in operation</td>
<td>Exposer to Noise, Dust &amp; Vibration</td>
<td>Temporary discomfort, Temporary fatigue.</td>
</tr>
<tr>
<td>5</td>
<td>Reversing the Dumper</td>
<td>Run over/Hitting to person</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>6</td>
<td>Opening and closing the cabin door</td>
<td>Exposer to sharp edge/damaged door lock handle</td>
<td>scratch/cut to finger or palm</td>
</tr>
<tr>
<td>7</td>
<td>Running on haul road</td>
<td>Roll down of loose stone on haul road</td>
<td>body injury</td>
</tr>
<tr>
<td>8</td>
<td>Running on haul road</td>
<td>Head on collision</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>9</td>
<td>While unloading</td>
<td>Chances of toppling</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>10</td>
<td>While in operation</td>
<td>Failure of brakes</td>
<td>Hitting to other equipment/structure</td>
</tr>
<tr>
<td>11</td>
<td>Reversing the Dumper</td>
<td>Hitting to other equipment/structure</td>
<td>Damage to equipment/parts/structure</td>
</tr>
<tr>
<td>12</td>
<td>While in operation</td>
<td>Failure of equipment safety devices</td>
<td>Failure of Engine/parts</td>
</tr>
<tr>
<td>13</td>
<td>Unsafe practices / wrong operation</td>
<td>Hitting with excavator/ other equipment's/blasted muck /Boulder</td>
<td>Damage to equipment/parts</td>
</tr>
</tbody>
</table>
Risk & Disaster Management Plan

Risk assessments during Dozer operation process are given below:

<table>
<thead>
<tr>
<th>Sr</th>
<th>Activity</th>
<th>Hazards</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climbing/getting down from the m/c for inspection of oil &amp; water and during operation</td>
<td>slipping</td>
<td>Laceration/Abrasion/Sprain/Fracture</td>
</tr>
<tr>
<td>2</td>
<td>While in operation</td>
<td>falling from height</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>3</td>
<td>Reversing</td>
<td>Run over/Hitting to person</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>4</td>
<td>While in operation</td>
<td>Exposer to Noise, Dust &amp; Vibration</td>
<td>Temporary discomfort, Temporary fatigue</td>
</tr>
<tr>
<td>5</td>
<td>Opening and closing the cabin door</td>
<td>Exposer to sharp edge/damaged door lock handle</td>
<td>scratch/cut to finger or palm</td>
</tr>
<tr>
<td>6</td>
<td>While in operation</td>
<td>falling from height</td>
<td>Damage to equipment/part</td>
</tr>
<tr>
<td>7</td>
<td>While in operation</td>
<td>Failure of equipment safety devices</td>
<td>Failure of Engine/parts</td>
</tr>
<tr>
<td>8</td>
<td>Reversing</td>
<td>Hitting to other equipment/structure</td>
<td>Damage to equipment/parts/structure</td>
</tr>
<tr>
<td>9</td>
<td>Unsafe practices / wrong operation</td>
<td>Hitting with blasted muck/Boulder/other nearby equipment</td>
<td>Damage to equipment/parts</td>
</tr>
</tbody>
</table>

Risk assessments during Surface Miner process are given below:

<table>
<thead>
<tr>
<th>Sr</th>
<th>Activity</th>
<th>Hazards</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Climbing/getting down from the m/c for inspection of oil &amp; water and during operation</td>
<td>slipping</td>
<td>Laceration/Abrasion/Sprain/Fracture</td>
</tr>
<tr>
<td>2</td>
<td>Reversing</td>
<td>Run over/Hitting to person</td>
<td>Fracture/Head injury/Fatality</td>
</tr>
<tr>
<td>3</td>
<td>While in operation</td>
<td>Exposer to Noise, Dust &amp; Vibration</td>
<td>Temporary discomfort, Temporary fatigue</td>
</tr>
<tr>
<td>4</td>
<td>Opening and closing the cabin door</td>
<td>Exposer to sharp edge/damaged door lock handle</td>
<td>scratch/cut to finger or palm</td>
</tr>
</tbody>
</table>
# Surface Miner Operation

<table>
<thead>
<tr>
<th>Sr</th>
<th>Activity</th>
<th>Hazards</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>While in operation</td>
<td>falling from height</td>
<td>Damage to equipment/part</td>
</tr>
<tr>
<td>6</td>
<td>While in operation</td>
<td>Failure of equipment safety devices</td>
<td>Failure of Engine/parts</td>
</tr>
<tr>
<td>7</td>
<td>Reversing</td>
<td>Hitting to other equipment/structure</td>
<td>Damage to equipment/parts/structure</td>
</tr>
<tr>
<td>8</td>
<td>Unsafe practices / wrong operation</td>
<td>Hitting with loader/other nearby equipment</td>
<td>Damage to equipment’s/parts</td>
</tr>
</tbody>
</table>

## Site Specific Safety Standards

The followings Safety Standards are derived by the group of Experts to cater the safety requirement while at work for various activities being involved. The standard entails precaution to be taken, safety requirement, supervision and safe completion of various works.

1. Mining Standard
2. Scaffolding
3. Confined Space Entry
4. Lock Out & Tag Out
5. Handling of load by Mobile Crane & Lifting Tackles & Hydras
6. Excavation
7. Heavy Earth Moving Machinery
8. Electrical Safety
9. Machine Guarding
10. HIRA/JSA
11. Contractor Safety Management

## Mining Standards

The followings are the list of standard framed for Mines Safety

1) Standards on Ripping & Dozing
2) Standards on safety in Mines Transportation
3) Standard on Safety in Windrowing Operation by Surface mines
4) Dump Management
1) **Loading & Rock Breaking at Mines**
This standard describes the requirements for protecting people from the hazards of Loading and Rock Breaking Operations in mining areas. It describes operating practices which must be applied when operating Excavator, Loader and Rock Breaker at a Mines facility and/or which are used in connection with the Mines activities/work.

2) **Standards on Ripping & Dozing**
This standard describes the requirements for protecting people from the hazards of Ripping and Dozing Operations in mining areas. It describes operating practices which must be applied when operating Ripper Dozer at a Mines facility and/or which are used in connection with the Mines activities/work.

3) **Standards on safety in Mines Transportation**
This standard describes the requirements for protecting people from the hazards of Transportation operations in mining areas. It describes operating practices which must be applied when operating HEMM, at a Mines facility and/or which are used in connection with the Mines activities/work. It provides helpful information to the Mines sites / facilities as they implement procedures to control hazards associated with Transportation operation in mining areas in line with Management Safety Commitment.

4) **Standard on Safety in Windrowing Operation by Surface mines**
This standard describes the principles used to protect all from the hazards of windrowing Operations in mining areas. It describes operating practices which must be applied when operating surface miner for windrowing operations and/or which are used in connection with the Mines activities/work.

5) **Dump Management**
This standard describes the requirements for protecting people from the hazards associated with Dump Management in mining areas.

**Scaffolding**
This standard describes the principles used for preparation of temporary elevated platform and its supporting structure (including points of anchorage) used for supporting men, material & both.

**Confined Space Entry**
This standard describes the principles used to perform work at the place where limited or restricted means of entry or exit and is not designed for continuous human Occupancy. The place may have contaminated atmosphere or presence of flammable atmosphere or presence of toxic material or absence of adequate oxygen.
Lock out Tag out Try out (LOTOTO)
This Standard Lockout & Tag Out describes the principles used to perform work at all applicable single/Multiple energy sources de – energized & isolated & preceding, following equipment stopped. The Equipment may be energized and work to be performed by the concerned person.

Handling Of Loads by Mobile Cranes & Lifting Tackles and Hydras
This Standard describes the principles used for safe lifting of loads. The safe load limit depends on loading capacity of the Crane, lifting radius. The safe work load at lift radius is based on Crane Load Chart for the different capacity.

Excavation
This Standard describes the principles used for Excavation which includes Excavation Plan, type of material to be excavated, depth & barrier to be provided for safe excavation of material. It contains the check list to be followed before undergoing the operation.

Heavy Earth Moving Machinery
This Standard designates the principles for safe Operation of Heavy Earth Moving Machinery. This includes all safety features to be provided in the equipment like Roll over Protection system, Alarm devices and Ergonomics. It includes person authorized to operate, pre- start check, Standard Operating Procedure to be followed while in Operation.

Electrical Safety
This Standard designates the principles used for safe working in Electrical Equipment. It involves Tolls & tackles, PPE, Earthing & isolation of circuits.

Machine Guarding
This Standard describes the principles used for safe guarding of machine/equipment against all hazardous moving parts of the machine including auxiliary parts.

HIRA/JSA
This standard describes the principles used for identification of hazards for various activities involved and Jobs safety analysis. It involves listing out the Control measures to be taken for various sub- activities and assign personal responsibility to ensure safe accomplishment of the specific job.

Contractor Safety Management
It is the company wide practice to contract with companies that embrace the ABG CB SHE Commitment. All ABG CB facilities using Contractor services on-site should observe the provision of the six step process, which are as follows.

1. Contractor Pre-Qualification
2. Contract Preparation
3. Contract award
4. Contractor Orientation and training
5. Contractor work Co-ordination and auditing
6. Contract evaluation

Site Specific Procedures for Hazard Management

High Risk Permits

1) High-risk permits are needed for work done in places that are always dangerous and need extra precautions to make them safe.

2) Permits are good only for a short time and are only given out when the person in charge has checked that the workplace is safe to carry out the work. The person in charge of handing out permits must sign all permits.

3) Workers should know about the type of work or the places where permits are needed, and must have special training for that type of work.

4) The permits and the type of work they cover should be checked from time to time. Changes should be made to the permits where workers have experienced extra risks or the supervisor has seen other risks when working on a high-risk job.

5) There are a number of jobs on mine sites that need high-risk permits.

Permit-to-work System

It is a formal written system used to control certain types of work which are potentially hazardous. It is also a mean of communication among site personnel to ensure all necessary safety precautions are taken before commencing such work. The types of work permits are:

(1) General Work Permit which includes:
   i) Cold Work Permit
   ii) Hot Work Permit

(2) Special work permit
   i) Working at Height & Fragile Roof,
   ii) Electrical Work Permit (HT/LT)
   iii) Material Lowering & Lifting

Cold work permit:
It is first level permit issued for jobs of general nature not involving any special activities like jobs which can generate spark/heat or confined space entry, working height, excavation and electrical maintenance on HT/LT, material lowering and lifting or any hot job.

Hot Work Permit:
It is work permit issued for jobs involving activities which generates spark and flame. Welding, Gas cutting, grinding, chipping are few activities which necessarily should have Hot work Permit.
Confined Space Entry Permit:
This special permit is applicable when the job requires entry into a Confined space as specified in Confined space entry standard. This permit is add on special work permit and should necessarily have General work permit attached to it.

Working at Height Permit:
This special permit is required when the work involves working at height, more than 1.8 metres, as specified in Working at height standard. This permit is add on special work permit and should necessarily have General work permit attached to it.

Excavation Permit:
This special permit is required when the work involves excavation as specified in Excavation standard. This permit is add on special work permit and should necessarily have General work permit attached to it.

Electrical Work Permit (HT/LT):
This special permit is required when the work involves working on electrical installations as specified in Electrical safety standard. This permit is add on special work permit and should necessarily have General work permit attached to it.

Material Lowering and Lifting Permit:
This special permit is required when job involves any material handling, lower & lifting either manual or with machine. This permit is add on special work permit and should necessarily have General work permit attached to it.

Custodian:
Means any on-site company’s senior employee, who is a designated by Unit Apex SHE committee, as owner of clearly marked area on plot plan having all facility, building, structure, or any equipment on-site within the functional area. Custodian is generally a person responsible for operation of the area. He will be accountable to ensure isolation of all hazardous energy sources to provide safe work environment to job executors.

Issuer:
Means company employee designated by custodian with relevant job experience & authorized by Unit Apex SHE committee who will issue work permit for respective area. Issuer should be knowledgeable of the hazards and safety requirements for the equipment and process, and who is trained in Work Permit processes and shall be responsible to get physical isolation of all hazardous energy sources to provide safe work environment to initiator. It is recommended that issuer should have 5 years work experience.

Initiator:
Means any person, from the job executing agency, having relevant job experience & authorized by Unit Apex SHE committee. It is recommended that initiator should have 5 years work experience.
**Authorized isolator:**
Means the person identified and authorized by Unit Apex Committee. Authorized isolator shall be different for different discipline like Electrical, Instrumentation, Mechanical and Process. It is recommended that Authorized isolator should have 3 years work experience in his functional area.

**Co-permittee:**
Means contractor supervisor or the gang leader of work group who is carrying out the job at site.

**Hazardous Energy Sources:**
Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear radiation or any other energy that, if not controlled, could cause injury to personnel or damage to property and/or environment.

**Near-Miss and Accident reporting & Investigation System**
In case of accidents, external investigation will be carried out by concerned government officials as per the procedure on receiving the information from the Mines manager. The company on its part nominates an officer / a team, depending upon the severity of the unusual occurrence, to enquire into the details of the occurrence to identify the causes of the occurrence, the details of the damages to persons, plant and the machinery and submit a report, suggesting the remedial actions to prevent reoccurrence, (wherever possible) the management on receiving the enquiry report, initiate appropriate actions such as deliberating on the report, deciding on corrective actions, directing the concerned to implement the proposed corrective actions, fixing a time frame and finally ensuring the compliance.
Behavioural Change by Safety Observation system

Safety observation is a structured and planned pro-active two way safety conversation process with people at their workplace to achieve positive change in people’s behaviour towards safety through:

a) Recognizing and reinforcing positive safety behaviour
b) Identifying and correcting behaviour at risk
c) Engaging in conversation regarding safety concerns or issues

Objective

To inculcate world class safety culture through positive change in people’s behaviour towards voluntary adherence to safe practices. In the picture of the Iceberg below, the invisible portion of the iceberg (Unsafe Acts and man-made Unsafe Conditions) is the main focus of the Safety Observation process. In other words, safety observation process helps to prevent Incidents and Injuries by minimizing the Unsafe Acts and Conditions.
Benefits

1) Demonstrate leadership commitment to safety
2) Reinforce positive safety behaviour
3) Raise safety awareness
4) Motivate people to be committed to and responsible for safety
5) Correct unsafe behaviours in a positive, proactive way
6) Prevent injuries and property loss
7) Establish standards/procedure
8) Test understanding of standards/procedures
9) Test compliance with standards/procedures
10) Identify trends and weaknesses in the safety system

1. Emergency response planning and preparedness

To meet the general emergencies in the mines, the following facilities have been provided.

i) In case of any emergency inside the mine, all the employees in the mine will quickly assemble at the assembly point (Mines office). The Safety Officer / Mine Manager shall address the gathering detailing the situation and directing various urgent follow up actions required to be taken to bring the situation under control. All concerned nominated persons shall proceed according to the deployment / assignment to attend their respective duties. Safety Officer shall monitor and co-ordinate all the corrective actions till the situation are brought under control. Thereafter, he shall attend to all the statutory / mandatory actions such as informing / reporting the situation to the government officials, etc.

ii) First Aid boxes / kits have been provided in all the buildings & sections, which are periodically checked and replenished wherever required – First aid trained personal are available in the
Risk & Disaster Management Plan

mines and they are located in various sections and their services could be drawn upon whenever & wherever required at any point of time.

iii) Fire fighting equipment are provided at all the buildings. These are checked and kept in working condition from time to time.

iv) In the event of any fire etc. at electrical installations / distribution lines, power can be isolated at all the places and appropriate / suitable fire fighting equipment have been provided for to meet the contingency.

v) Ambulance is available in mines to meet any emergency.

vi) Mock drill is being carried out once in a quarter to check the system and ensure preparedness.

The emergency organization chart is included

Emergency response planning and preparedness such as first aid, testing of emergency plan once in a year

EMERGENCY ORGANISATION CHART

Chart 2 Emergency Organisation Chart
2. **Disaster Management Plan**

   **Identification of Hazards**
   
a) The following types of Hazards are identified at Limestone Mines:

b) Fire in HEMM, Electric Panels, Oil room, Diesel storage and near magazine.

c) Inundation in rainy season due to seasonal Nallah and barrier gets breached or when impermeable barriers are removed.

d) Accident due to Heavy machinery
Onsite Emergency Planning

DMP IN CASE OF FIRE:

Code of Practice In Case Of Fire at Mines

Objective:

To deal with Fire efficiently and quickly at different location of Mine including HEMM.

Source of Fire:

1) HEMM  2) Oil & Lubricant Room  3) Diesel Pump/storage area

Line of Action:

i) Any person notices any sign of fire shall start shouting FIRE, FIRE (Aag, Aag) to seek assistance and also 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.

ii) Duties of Mine Official:

The Mine officials receiving the warning shall forthwith inform following on Phone;

a) Fire fighting station:
   For sending fire-fighting team.

b) Security main gate:
   To inform senior person and to prevent unauthorized entry.

c) Shift Engineer:
   To manage with available resources till then.

d) Mines Manager:
   For overall supervision and control.

   After giving information, reach the spot, remove Man & Machinery and take steps to tackle the fire in accordance with the fire fighting instructions. Inform at security office to get Ambulance if required.

iii) Duties of Fire Fighting Team:

   On receiving warning the team shall reach the site of fire and depending on its nature, class and extent shall take steps to extinguish it and rescue persons if involved in fire.

iv) Duties of Mines Manager:

   a) On receipt of information about fire the Manager shall forthwith rush to the spot and assess the extent of fire. He shall supervise the fire fighting operation and make necessary arrangement for medical aid to affected person, if any.

   b) Inform to senior officials and statutory bodies.

   Appropriate drainage measures have been evolved & undertaken so that water entering into the slope is kept at a minimum during rainy season. A garland drain is cut all around
Risk & Disaster Management Plan

the mine to collect the surface run-off of the rain water before it goes into the mine slopes.

The presence of soil & Limestone berms on the top to prevent ingress of rain water into mine workings is working well. However, the slopes are regularly inspected for the development of any tension cracks & other signs of instability during the mining operation so that appropriate corrective measures can be implemented.

MISFIRE

1) Before commencing the drilling in the area where shots have been fired, Assistant manager will make a thorough examination of all the places including remaining butts of old holes for unexploded charges that the drill rod or tool may strike.

2) Connections are done under the supervision of Assistant manager

3) In case of any misfire, it is dealt as per the regulation 167 of MMR

   1. Accidents in handling & transportation of explosives or due to pilferage of explosives:
      Remedial Measure: All precaution laid down in the regulation regarding storage, transport & handling of explosives is meticulously followed.

DMP IN CASE OF HEAVY MACHINERY

1. Accident due to dumpers

   Remedial measure:

   1) In-pit crushers have been installed in the mines, so that dumpers ply only between face & the crusher & would not need to go out of the mine.

   2) Dumper operators are selected very carefully & given a thorough initial training. Periodical refresher training & examinations is been organised to test their skills & attitudes.

   3) Every case of incident due to dumpers occurred in other mines are discussed with the operators & the unsafe act and condition is explained to them.

   4) Adequate transport arrangements are made for equipment maintenance staff, operators, etc. So that they are not tempted to steal a ride on dumpers.

   5) Unauthorised driving of machinery is strictly prohibited.

   6) All curves in haul roads are designed with a large radius so that the driver has a clear view for a distance of not less than 30 m along the road.

   7) All dumpers must be equipped with audio visual alarms for facilitating safe reversal.

   8) A scheme of maintenance, examination & testing is drawn up & strictly followed. The scheme is specified with the nature & frequency of examinations & the way in which the information is to be reported & stored.

   9) Vehicle brakes & steering test is done regularly as per DGMS circular.
10) Haul roads are planned, designed, constructed & maintained on sound scientific principles. Particular attention is paid to the drainage of rain water.

11) A special road maintenance group is formed under a properly trained foreman.

12) Traffic rules specifying speed limits, right of way, overtaking & parking and other general precautions are framed & strictly enforced.

13) Code of practise for safe tipping & dumping is established & strictly adhered.

**Roles & Responsibilities in case of Emergency**

Effective emergency plans require that, in the event of an accident, nominated individuals be given specific Responsibilities, often separate from their day-to-day activities. The two principal people are the site incident controller and the site main controller. The site incident controller will take control of handling the incident. He or she will often be the person in charge of mine at the time of the incident and should provide 24-hour cover when shift operation applies. The site incident controller will have to take decisions involving neighbouring area perhaps, to be involved in an escalating emergency if it is not shut down.

The responsibilities of the site incident controller include the following:

a) To assess the scale of the incident (both for internal and external emergency services);

b) To initiate the emergency procedures to secure the safety of employees, minimize damage to plant and property and minimize loss of material;

c) To direct rescue and fire-fighting operations until (if necessary) the fire brigade arrives;

d) To search for casualties;

e) To arrange evacuation of non-essential workers to assembly areas;

f) To set up a communications point with the emergency control centre;

g) To assume the responsibilities of the site main controller pending his or her arrival;

h) To provide advice and information as requested to the emergency services.

The site main controller will be chosen from the senior management of the works with general responsibility of directing operations from the emergency control centre after relieving the site incident controller of the responsibility for overall control.

The specific responsibilities of the site main controller include:

a) To decide (if not decided already) whether a major emergency exists or is likely, requiring the emergency services and the off-site emergency plan;

b) To exercise direct operational control of the mines outside the affected area;

c) Continually to review and assess possible developments to determine the most probable course of events;

d) To assess the shutting down of all operation and then evacuation, in consultation with the site incident controller and key personnel;
e) To ensure that casualties are receiving adequate attention;
f) To liaise with Chief Officers of the fire and Police services and with the Mines Safety Directorate and district authorities.
g) To control traffic movement within the mines.
h) To arrange for a log of the emergency to be maintained;
i) To issue authorized statements to the news media;
j) To control rehabilitation of affected areas after the emergency.

Apart from the two site controllers, other works personnel will have key roles to play in the implementation of the emergency plan. These will include senior management of project not directly involved in the emergency, first aid, atmospheric monitoring staff, casualty reception staff and public relations staff to liaise with the media. All need to be aware at the emergency pre-planning stage of the precise nature of their roles.

Action on Site

The primary purpose of the on-site emergency plan is to control and contain the incident and to prevent it from spreading to nearby area. It is not possible to cover every eventuality in the plan and the successful handling of the emergency will depend on appropriate action and decisions being taken on the spot. Other important aspects needing to be considered include the following:

(a) Evacuation:
   Non-essential personnel will be evacuated from the incident area and also from adjacent area. Evacuation should be to a predetermined assembly point in a safe part of the works.

(b) Accounting for personnel:
   It is important to be able to account for personnel during an emergency. The number of workers present should always be made available. The area should be properly cordoned and exact record of movement of persons should be made, so as to know the affected persons. No un-authorized persons or visitors are allowed to enter the area.

(c) Access to records:
   The time office has to function properly with handy records of persons on duty. This will be necessary in order that relatives of any causality can be quickly informed.

(d) Public relations:
   Any incident will attract the interest of the media and a major accident is likely to involve widespread radio and television coverage. Unless appropriate arrangements are made, this can divert personnel from the task of handling the emergency. It is essential to make arrangements for the authoritative release of information during any emergency of significant length and a senior manager or member of the staff should be appointed as the sole source of this information. Inquiries made to other employees should be directed to this appointed person.
(e) Rehabilitation:

The rehabilitation work shall be carried out once after the emergency is over. Care is required when re-entering the incident area. The Site controller may initiate an inquiry and should be consulted regarding the collection of evidence before it is disturbed.

Post Disaster Analysis and Evaluation

When the emergency is over, the team will carry out a detailed analysis of the causes of the accident, evaluate the influence of various factors and minimize them for future. At the same time, the adequacy of the Disaster Preparedness Plan will be evaluated and shortcomings will be rectified for subsequent improvement of the plan.