

RISK ASSESSMENT

The Khajuri Murrum deposit quarry lease area is located at Village – Khajuri, Tehsil - Huzur, District - Bhopal (M.P.). 4.000 Ha quarry lease area with Murrum **10,000 cubic** meter/Year is being operated by the lessee **Shri Rishab Pachauri S/o Shri Gaurishankar Pachauri**, at R/o Pachauri Complex Pipal Chauraha Bairasiya Road Karond, District - Bhopal (M.P.)

The anticipated risks in the mining operations are mentioned below:

Hazard Identification and Risk Analysis discusses about the various types of hazards associated with the operation of the Project due to process, storage & handling, human errors, electric failures and natural calamities. It also presents the calculated frequencies of occurrence of different accident scenarios for the identified potential hazard occurrence.

Risk Reducing Measures based on the calculated frequencies and consequences.

IDENTIFICATION OF HAZARDS

Technological Hazards

These include disastrous events or hazards occasioned by human impact on the Environment and technical causes. They may be divided into Noise hazard from intense noise sources on operating equipment like excavation/loading, transportation etc. Fires on large surface vehicles through ignition of fuel/hydraulic fluids. Injuries and fatalities during transport of materials by road.

Structural failure

Instability of dumps, bench/pit slopes in mine which may cause injury and Fatalities.

SCENARIO CONSIDERED FOR RISKASSESSMENT

Knowledge of work

The application of risk assessment depends upon full understanding of all aspects of the job being undertaken. In carrying out a risk assessment in relation to a particular task, the evaluation must include a review of the knowledge, experience and training of those persons carrying out the work.

Personal Competence

It follows that the knowledge, experience and training of personnel involved in work is critical to evaluate any risk assessment. A knowledgeable, experienced well- trained and competently supervised workforce will be at a lower risk of accidents occurring than a poorly trained and badly supervised workforce.

Co-ordination

It is essential that the coordinator ensures that everyone engaged in the work is capable and understands the role of others and their responsibility for each other. This is particularly important when contract workers undertake part or all of the work to be carried out.

Health hazards

For the purposes of this document, health hazards should be interpreted as being harmful dust, gases and noise which is emitted during surface mining operations. Similarly other hazardous operations involved in the mining operations which are related to the health and well-being of the workers.

Noise

Noise is considered as a common occupational hazard in mine environment. Prolonged exposure to noise over a period of years may cause permanent damage to auditory nerves and its sensory components (Noise Induced Hearing Loss). In order to avoid Noise Induced Hearing Loss (NIHL) to the operators of the HEMMs, the cabins of these machines will be made sound proof. Also, the operators and other workers working in the high noise generating areas are being provided with ear plugs/ ear muffs to protect their hearing. No worker will be allowed to enter high noise generating areas without wearing proper protection equipment's.

Surface Fire

There are no ignitable materials in a Red Ochre deposit. However, the dumpers deployed in the mine may catch fire. No inflammable material shall be stored except in a fire proof receptacle.

No person shall place or permit to throw any naked light or lamp on or near any combustible material.

As per Regulation 121 of MMR 1961 adequate supply of sand or incombustible dust or sufficient portable fire extinguishers shall be provided at every entrance to the mine or at every place where inflammable material is stored.

Loading

All loading of mineral will be done using loaders/excavators. There is no risk associated with the activity. However, precautions are required to be taken to remove workers away from the loading operations, to avoid any fall of material on persons. Also, the loading operations are supervised by a site supervisor for properly guiding the loading machine operator.

Pit Slope Failure

The sides of the mine benches will be suitably sloped to avoid bench failure. The bench height is planned to be kept 6 m height with width more than the height of the bench. The bench sides and edges will be regularly inspected for any signs of failure, development of cracks, etc. Due precautionary measures will be adopted to avoid any bench or pit slope failure.

Heavy Vehicles

Proper care will be taken while loading and transportation of mineral and overburden. Good maintenance and regular testing are necessary to reduce the possibility of brake Failure. An area shall be set out as a testing area where regular tests are carried out on the effectiveness of a vehicles braking system.

Personal Protective Equipment(PPE)

The PPE should be of good construction, where ever possible ISI certified, suitable for the hazard e.g. a dust respirator fitted with the correct filter to capture the particular hazardous dust and maintained to recommended standards. As personal protective equipment only affords limited protection it should only be used as a last resort and then as an interim arrangement until other steps are taken to reduce the risk of personal injury to an acceptable level.

Traffic Movement

As the vehicles used are very less in number, there is no risk of accidents due to the traffic movement. However, haulage roads will be properly maintained and the speed limits shall be implied on the vehicles plying for mineral transport to avoid accidents.

DISASTER MANAGEMENT PLAN

The complete mining operation will be carried out under the management control and direction of qualified Mines Manager. The Directorate General of Mines Safety (DGMS), Dhanbad have issued a number of standing orders, model standing orders and circulars to be followed by the mine management:

Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.

Provision of pumps for pumping out water from the mining pit.

Entry of unauthorized persons will be prohibited.

Fire fighting and first aid provision shall be kept in the mines office complex and mining area.

Safety equipment such as safety boots, helmets, goggles etc. will be made available to the employees and regular checked for their use.

Training and refresher courses for all the workers.

Working of mine as per approved scheme and regular updating for the same.

Regular cleaning of mine faces. Regular maintenance and testing of all mining equipment as per manufacture's guidelines. Suppression of dust on the haulage roads. Increasing the awareness of safe practices through competitions, posters and other similar drive.

OUTLINE OF DISASTER MANAGEMENT PLAN

The purpose of disaster management plan is to restore the normalcy for early resumption of mining operation due to an unexpected, sudden occurrence resulting to abnormalities in the course of mining activity leading to a serious danger to workers or any machinery or the environment. The main objectives of preparing a disaster management plan in mining project include:

- To protect workers in mine from accident
- To prevent or reduce the incidence and severity of injury during mining operations.
- To respond immediately and adequately in case of a serious accident.

System of communication

An internal communication system for the department head and to their line of command should be maintained. Having the telephone no's and addresses of rescue station, police station, Fire service station, local hospital, electricity supply agency and standing consultative committee members is another essential aspect.

Consultative committee

A standing consultative committee will be formed under the head of Mine's manager.

First Aid & medical facilities

The mine management is having first aid facilities for use in emergency situation. All casualties would be registered and will be given first aid. The mine management has proper telephone / wireless set for quick communication with nearest hospitals where the complicated cases are to be sent.

Functions of public relations group

A cordial relation with government officials and other social service organization and working groups shall be maintained. To liaise with representatives of the mineworkers to ameliorate the situation of panic, tension, sentiments, grievances and misgivings created by any disaster. To ameliorate the injured, survivors and family members of affected persons by providing material, moral support, finance and establishing contact with relatives of victims.

Care and maintenance during temporary discontinuance

During temporary discontinuance of mine the mining operation due to any reason, notice (as per Rule 24 of MCDR, 1988 & Reg.6 of MMR, 1961) will be sent to IBM and mines safety authorities. Notice will be accompanied as per Rule

24 of MCDR, 1988, vide, Form no.D-1. All precautionary steps will be taken into account in respect of care and maintenance. Following steps will be taken:

Protection of the pits:

The quarry part of the lease will be protected by fence as per DGMS circular all around the open pit with caution board displaying the danger in local language.

Protection of area:

The area will be protected by displaying a board at the entry with caption like "Entry in the premises without permission is strictly prohibited" in local language.

Maintenance and monitoring:

The area will be monitored every week by competent person and if maintenance is needed will be done as per requirement.

All the mining machinery shall be shifted to a safe place.

Care and upkeep of plantation done shall be carried out on regular basis.

All rules and regulations shall be followed in case of any temporary discontinuance of mine.

Emergency Plan

On realizing anything serious happened anywhere in the mine, the foreman or the mate will immediately inform the nearest mining official & the manager of mine.

On receiving information of emergency, Shift in-charge will ensure that all the materials and transport system to deal with emergency situation is kept under readiness.

First aid facilities to be kept ready to receive the cases.

Regulations laid down by DGMS should be fully complied.

SOCIAL IMPACT ASSESSMENT, R & ACTION PLAN

There will be the positive impact on the villagers of the nearby villages in the form of employment. There is no human settlement in the lease area. Thus there is no impact on the human settlement and thus no R & R plan is required

Conceptual reclamation and rehabilitation of the worked out area.

After reaching the maximum feasible depth i.e. permissible depth from the surface with the dumping material and the remaining area will be developed as water storage. A sufficiently thick bund wall will be constructed all around the ultimate pits for safety. The plantation will be done all around the bunds. Thus, at conceptual stage, there will not be any surface dump. The infrastructure like mine road, office etc. being of semi-permanent nature will be removed and reclaimed for plantation as proposed. Thus, at conceptual stage all waste generated will be completely backfilled in the worked out pit.