ENVIRONMENTAL RISK MANAGEMENT REPORT BALMUKUND SPONGE & IRON PRIVATE LIMITED (MEGA DIVISION)

It is presumed that the proposed enhancement of production by replacing the existing rolling mill of 50 TPD with new 270 TPD re-rolling mill would be designed and engineered with all possible safety measures and standard code of practices of engineering. In spite of this due to some design deficiency or operation and maintenance fault may lead to accidental events causing damage to the life and property. This section describes the risk assessment and disaster management plan, occupational health and safety, other additional studies, for M/s Balmukund Sponge & Iron Pvt. Ltd (Mega Division).

OBJECTIVES

The main objective of the risk assessment study is to determine damage due to major hazards having damage potential to life and property and provide a scientific basis to assess safety level of the facility. The secondary objective is to identify major risk in manufacturing process, operation, occupation and provide control through assessment and also to prepare on-site, off site plans to control hazards.

The objectives of environmental risk assessment are governed by the following which excludes natural calamities:

- To identify the potential hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.
- To identify the potential areas of environmental disaster this can be prevented by proper design of the installations and its controlled operation.
- To manage the emergency situation or a disastrous event, if any form of the plant operation.

Managing a disastrous event will obviously require prompt action by the operators and the crisis management personnel using all their available resources like alerting the people and other plant personnel remaining inside, deployment of fire fighting equipments, operation of emergency shut off of valves, opening of the escape doors, rescue etc.

Minimizing the immediate consequence of a hazardous event include coordinating of, evacuation, medical assistance and giving correct information to the families of the affected persons and local public for avoiding rumors and panic. Lastly an expert committee is

required to probe the cause of such events and the losses encountered and suggest remedial measures for implementation so that in future such events or similar events do not recur.

DEFINITION OF ENVIRONMENT RISKS

The following terms related to environmental risks are defined before reviewing the environmental risks:

HARM: Damage to the person, property, or environment.

HAZARD: Something with the potential to cause harm; this could be characteristics of material being processed or malfunctioning of the equipment. An environmental hazard is thus going to be a set of circumstances, which leads to the direct or indirect degradation of environment and damage to the life and property.

RISK: The probability of the harm or like hood of harmful occurrence. Being released and its severity. Environmental risk is a measure of the potential threat to the environment, life and property.

CONSEQUENCE: Effect due to occurrence of the event, which may endanger the environment permanently or temporarily and or loss of life and property.

ENVIRONMENTAL

DISASTER: The consequence is so severe that it can extensively damage a one or all the four components of the environment namely a) Physico – chemical b) Biological c) Human and d) Aesthetics

Hazard Identification and Risk Assessment (HIRA)

The existing MS/TMT Rod manufacturing industry is labor intensive and uses large scale and potentially hazardous manufacturing processes. The industry experiences accident rates that are high compared with some other manufacturing industries.

Following hazard may occur at different units of the plant

- Noise and Vibration
- Heat related hazards
- Hazard due to Dust and Gaseous emission
- Electrical hazard
- Explosion hazard
- Accident due to fall of Machinery
- Automation of equipment

- Operation of Equipments
- Movement of heavy vehicles, loading and unloading
- Storage and handling of HSD

The associate risk related to the production process and proposed mitigation measures are as below:

Potential Hazard/ Source and Mitigation measures

Type of Hazard	**Source**	**Risk related to Hazard**	**Mitigation measures**
Noise & Vibration	Rolling Mill D.G Set, IF melting process, Blast furnace operation, Crushing, fuel burners, raw material, scrap and product handling, rotating equipment, furnace charging.	Hearing loss / Fatigue	Noise monitoring, Audiometic examination of workers, Workers provided with PPE like ear plug, muff isolation, substitution and engineering control installation of acoustical booth rotation of workers and minimize the time enclose fans, insulate ventilation pipes, cover and enclose scarp and storage and handling area adopting slag practice in IF.
Heat	Blast Furnace, Pig Iron collection area, Slag disposal area, Induction furnace (Molten metal and hot surfaces), CCM and Process of rolling etc.	Burn/ Heat stress	Use of helmet, heat resistant clothing, heat resistant gloves, Use of Goggles by the workers. Workers are advised to work at a distance of 4m from the molten metals. Rotation of workers.
Dust and Gaseous emission	Blast Furnace, Induction furnace, Raw material and product storage yard, Iron Ore beneficiation process	Pulmonary disease	Use of Nose Mask, Water sprinkling arrangement at requisite places, Provision of Bag filters and dust catchers as required. Stack monitoring and work zone

			monitoring to ensure the gaseous emission and dust emission within the prescribed standard.
Electrical	IF, Motors, Panels, Sub Station; Electrically operated equipments	Electrical shock and burn	Electrical area to be separated and assess given to authorized personnel. Spark proof motors used. Insulated cover provided in the electrical area. Proper earthing has been provided
Explosion	Molten metal, Contaminated scrap handling, During Casting	Burn, Injury	Use of contaminated scrap is completely avoided Combustible and flammable material to be separated from the molten metal area.
Accident related to fall of machinery	Moving machinery, on-site transport, forklifts and cranes	Injury	Safety check of operation of equipments at regular intervals. Properly trained workers appointed to operate machineries, Workers working with cranes will be provided with all PPEs with safety belts.
Accident due to operation of equipments	Operation of CCM, Rolling Mill and Induction furnace	Burn & Injury	Workers provided with PPE, Properly trained workers appointed to operate machineries
Storage & Handling of HSD	Leak, Spill, Fire explosion, Toxicity	Injury, Burn	PPEs provided to the personnel working in the area. Fire extinguishers provided

RISK MANAGEMENT MEASURES

The risk management measures for the proposed project activities require adoption of the best safety practice at the respective construction zones within the project boundary. In addition, the design and engineering of the proposed facilities would take into consideration of the proposed project protection measures for the air and water environment.

Safety Measures

The work place and surrounding area are need to kept clean and free from all obstructions. Solid waste, Hazardous waste like oily cotton, oily rags and empty barrels are properly stored away from any source of fire. Spill of oil and grease is immediately cleaned to reduce accidental fall.

Provision of PPEs:

Personal protective equipments like goggles, face masks, apron, gloves, Safety boots, helmets, Nose masks has been provided to the workers working in the hazard prone area.

Loading and transportation of Materials

- Overloading of the trucks is strictly prohibited and material is properly distributed and tied as far as possible.
- Care to be taken by the drivers while moving back to avoid any accident
- The maximum speed limit of the heavy vehicle is <20Km/ hr.

Operating Machineries

- Only the authorized person should operate the machine or equipment.
- The repairing, cleaning and oiling of machineries will done when the machineries are not in use.
- Before switching on electricity, gas, acid, air or gas this is ensured by the safety supervisor that no person should be injured nearby.
- All the exposed part of the moving machines like pully, belt, chains, rotating collars is properly guarded.
- The machine guard and safety device is confirming the statutory provisions required for the machine.
- No person allowed to stand in unsafe position while a Bucket (for Scrap or Sponge) is being loaded or unloaded by crane.
- No person is allow to stand in unsafe position while a Scrap or Sponge is being loaded or unloaded by Magnets though EOT crane.
- No one will ride stand or walk under load suspended from cranes
- When any defect is observed in a crane, it will be reported to the officer/supervisor concerned for rectification.
- A crane driver will not make a lift without standard signals from the person with the job and he will take signal only from one person at a time. All persons in places over which crane is operating, will listen for crane bells and other signaling devices

Vehicular Traffic

- All vehicles will comply with all the traffic regulations within the plant and they will not exceed the safe speed limits i.e. 20 Km/ hr.
- Riding on hand trolley is strictly prohibited.
- Sitting on the side flaps or standing in a truck while in motion is strictly prohibited.
- Overloading of the trucks are strictly prohibited

ONSITE EMERGENCY PLAN

In this plant, it is imperative that accidents occurring due to unforeseen acts and events will not affect the surrounding areas. Therefore an onsite emergency plan for prevention and mitigations of accidents will be enough to cater unforeseen acts and events that may occur.

Objectives of Onsite Emergency Plan

The main objective of the plan is to take immediate actions to meet any emergency situation for speedy and efficiency rescue and relief operations. The main steps in an onsite emergency plan are described below:

- Cordon and isolate the affected area for smooth rescue operation.
- Rescue and treat casualties and safeguards the rest.
- Minimize damage to person, property and surroundings.
- Secure and safe rehabilitation of the affected area.
- Identify any death and provide compensation as per labour law.
- Provide necessary information to statutory agencies.
- Provide authoritative information to the news media.
- Ward off unsocial elements and prying onlookers.
- Counter rumour mongering and panic by relevant accurate information.

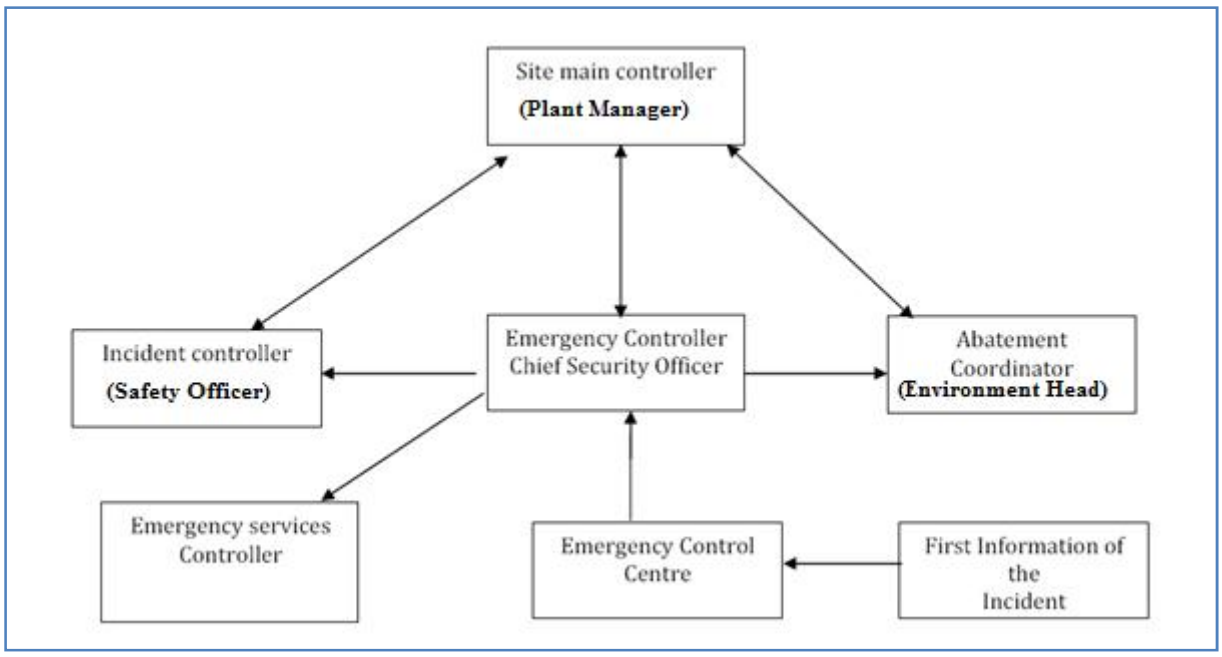
Onsite Emergency Control Canter

Emergency Control Centre is located at Main Security Gate have been designated as Emergency Control Centres in case of any emergency. Plant manager shall operate and give directions from the Emergency Control Centre. The emergency control center is having

- Telephone line connecting to all areas of the Plant specially those prone to emergency as well as to outside for obtaining emergency services.
- Dedicated Emergency Telephones facility.
- A site map showing details like location of fire-fighting equipments and hydrants, location of emergency exists etc.
- List of all possible emergency services providers with their contact numbers & address.

- Internal telephone directory of the plant including contact numbers of residences of senior personnel.
- List of Disaster team members and First Aiders.
- Stock of safety equipments like gloves mask etc.
- List of contacts of external emergency services like police station, fire station and local health center.

The flow sheet of the emergency control system is as below:



Roles and Responsibility

Site-Main-Controller

1. Overall responsibilities for handling of emergency situation within the plant site.
2. This responsibility has been designated to the plant head.
3. Continual review of the cause of accident and determine best counter measures.

Incident Controller

1. Responsible for handling the emergency situations and head the emergency control centre.
2. Informing to all external authorities in case of emergency requirement.
3. Arrangement of first –aid facilities from plant Dispensary.
4. Arrangement of transport facilities.

Emergency Controller

- Overall responsibility for handling & controlling the emergency incidents & operations with the help of disaster management team.
- Keep the entire gate closed to avoid any kind of rush on the gates.
- Provide all kinds of information regarding emergency to Incident Controller.
- Will inform to all nearby hospitals for medical aid for sufferers and fire station for fire brigade.

Emergency Services Controller

- Assist external services in directing them to the areas of incident and providing any help and assistance to them on their arrival.
- Ensure that breathing apparatus, torches and proper lighting arrangement is made at the place of emergency.
- Ensure proper arrangement of water.
- Arrange adequate work force for assistance.

Abatement Co-ordinator

- Keep watch on entire emergency operation.
- Guide the Rescue teams for safe functioning
- Ensure proper arrangement of safety equipment at site
- Ensure that water, air and any other disaster fighting operation does not pollute the environment.

INDUSTRIAL SAFETY AND FIRE FIGHTING

For protection of working personnel, equipment and machineries from any damage or loss and to ensure uninterrupted production, adequate safety and fire fighting measures have been planned for the proposed plant. Important provisions are as follows:

- Provision of adequate personnel safety appliances to workers engaged in hazardous installations.
- Provision of detection and alarm system to allow a developing fire to be detected at an early stage.
- Provision of water spray fire extinguishing system and portable extinguisher using carbon dioxide or chemical powder.

Portable Fire Extinguishers

All plant units, offices, buildings, stores, laboratories, etc. has been provided with adequate number of portable fire extinguishers to be used as first aid fire appliances. The distribution

and selection of extinguisher will be done in accordance with the requirement of fire protection manual.

Fire Hydrant System

Internal hydrants has been provided in all major plant units at suitable locations and in different levels inside the plant buildings. Yard hydrants has been provided in the vicinity of each plant unit, normally along the road to meet the additional requirement of water to extinguish fire.

Automatic Fire Detection System

Unattended vulnerable premises like electrical control rooms, cable tunnel, MCC rooms, has been provided with automatic fire detection and alarm system.

Manual Call Point System

All major units and welfare or administrative building will be provided with manual call points for summoning the nearest fire station for necessary assistance.