

RISK ASSESSMENT REPORT (MOHIT PAPER MILLS LIMITED)

RISK ASSESSMENT

Industrial accident results in great personal & financial loss. Managing these accidental risks in today's environment is the concern of every industry, because either real or perceived incidents can quickly jeopardize the financial viability of a business. Many facilities involve various manufacturing processes that have the potential for accidents which may be catastrophic to the plant, work force and environment or public. The main objective of the risk assessment study is to propose a comprehensive but simple approach to carry out risk analysis and conducting feasibility studies for planning & management of industrial prototype hazard analysis in Indian context.

Hazard Identification & Risk Assessment (HIRA)

Hazard identification involves the identification and quantification of the various hazards (unsafe condition) that exist in the plant. On the other hand, risk analysis deals with the identification and quantification of the risk, the plant equipment and personnel are exposed to accidents resulting from the hazards present in the plant.

Risk assessment involves the identification and assessment of risks to the population which is exposed to as a result of hazards present. This requires an assessment of failure probability, credible accident scenario, vulnerability of population etc. Much of this information is difficult to get or generate consequently, the risk analysis in present case is confined to maximum credible accident studies and safety and risk aspect related to Pulp and Paper industry.

Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site.

On-site

- Exposure to fugitive dust, noise, and other emissions
- Housekeeping practices requiring contact with solid and liquid wastes
- Emission/spillage etc. from storage & handling

Off-site

- Exposure to pollutants released from offsite/ storage/related activities
- Contamination due to accidental releases or normal release in combination with natural hazard
- Deposition of toxic pollutants in vegetation / other sinks and possible sudden releases due to accidental occurrences

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Identification of types of hazards involved in Pulp and Paper industry

A) Process related hazards:

The potential hazardous areas and the likely accidents with the concerned area have been enlisted below.

S. No.	Hazardous Area	Likely Accident
1.	Boiler Area	Explosion
2.	Electrical rooms	Fire and electrocution
3.	Transformer area	Fire and electrocution
4.	Cable tunnel	Fire and electrocution
5.	Digester	Explosion
6.	Fuel Storage yard (coal/Rice husk)	Sliding, fire
7.	Paper storage area	Fire
8.	Process area	Spillage of caustic soda or black liquor
9.	Chemical storage area	Leakage of chlorine or chlorine di-oxide
10.	Stack	Uncontrolled air pollution due to failure of APCE
11.	Work space	Slips and falls

Physical Hazards:

Physical hazards are most common in any manufacturing industries; mostly physical hazards can result injuries.

Physical Hazards	Causes	Mitigation measures
Slips	Handling with machines	<ul style="list-style-type: none"> • Proper training • Usage of PPE • Machine guarding
Falls	Working in heights	<ul style="list-style-type: none"> • Proper roping • Usage of PPE • Relevant training to the workers
Skidding	Oils spills, Water leaks, stagnation of chemicals on floors	<ul style="list-style-type: none"> • Maintaining good housekeeping practices • Wearing helmet • Arrange proper sign boards
Noise	Machineries	<ul style="list-style-type: none"> • Isolation of machineries • Regular maintenance of machineries • Usage of ear plugs • Work rests
Confined spaces	Tanks, Water cisterns, Bins, Crawl spaces	<ul style="list-style-type: none"> • Warning signs • Proper ventilation • Self-contained breathing apparatus or appropriate PPE

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B) Physical Hazards:

Physical hazards are most common in any manufacturing industries; mostly physical hazards can result injuries.

Physical Hazards	Causes	Mitigation measures
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Noise	Machineries	<ul style="list-style-type: none"> • Isolation of machineries • Regular maintenance of machineries • Usage of ear plugs • Work rests
Confined spaces	Tanks, Water cisterns, Bins, Crawl spaces	<ul style="list-style-type: none"> • Warning signs • Proper ventilation • Self-contained breathing apparatus or appropriate PPE
Heat stress	Boilers, Digesters	<ul style="list-style-type: none"> • Encourage breaks or appropriate work rest cycle • Proper training

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C) Chemical Hazards:

Chemical hazards are more dangerous than other hazards and it results major loss of lives and infrastructure. While processing of pulp and paper many chemicals are used in high quantities in intensive manner and those chemicals should be used in a proper manner otherwise it turns to be major hazard. Table shows the chemicals hazards in pulp and paper industry:

S.No	Chemical Name	Exposure Limit	Impacts	Mitigation Measures
1	Chlorine dioxide	0.3 mg/m ³ or 0.1 ppm	<ul style="list-style-type: none"> • Causes Irritation • Explosion • Toxic in nature 	<ul style="list-style-type: none"> • Storage containers should be kept at the lowest possible temperature. • Efficient ventilation should be provided in buildings if ClO₂ is handled. • Usage of proper personal protective equipment like face masks, Gloves etc., • Aqueous ClO₂ should be stored separately and also keep it away from organic matter and reducing agents like Sulphur and chlorides. • No electrical wiring in the area. • No water pipes • Automatic lifting of sodium chlorate bags
2	Chlorine	1.0 ppm	<ul style="list-style-type: none"> • Corrosive • Explosive • Toxic • Intensify fire (Oxidizer) • Carcinogen • Damage skin and eye 	<ul style="list-style-type: none"> • Use self-contained breathing apparatus and appropriate PPE. • Storage area should be separate and must be maintained in controlled temperature. • Avoid usage of flammable and combustible materials in Chlorine storage area. • Propagate the usage of appropriate fire fighting equipment. • Chlorine sensors should be installed.
2	Hydrogen Peroxide	1.0 ppm	<ul style="list-style-type: none"> • Corrosive • Causes irritation • Carcinogens • Non-combustible but may contribute to the 	<ul style="list-style-type: none"> • Store it in a cool and well-ventilated place. • Keep it away from incompatible substances like organic materials. • Provide proper fire frightening measures.

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			combustion when it interacts with other substances and causes violent and explosive reactions	
3	Sodium Chlorate (NaClO ₃)	10 mg/m ³	<ul style="list-style-type: none"> • Toxic in nature • Combustible • Explosive 	<ul style="list-style-type: none"> • Usage of fire extinguishers • Maintaining good housekeeping practices • Usage of proper PPE
4	Conc. Sulphuric acid (H ₂ SO ₄)	1.0 mg/m ³	<ul style="list-style-type: none"> • Corrosive • Highly Reactive • Explosive • Irritant • Toxic in nature 	<ul style="list-style-type: none"> • Store in a metallic or coated fibre board drum using a strong polyethylene inner package and container should be locked and dry. • Avoid addition of water to this product. • Wear suitable respiratory equipment (a self-contained breathing equipment) and face shield.
5	Caustic Soda Or Sodium Hydroxide (NaOH)	2.0 mg/m ³	<ul style="list-style-type: none"> • Severe eye burns and skin irritation • Reactive • Explosive • Corrosive 	<ul style="list-style-type: none"> • Usage of proper PPE like gloves, face masks etc. • Storage containers should be dry, cool and keep it in a well-ventilated area. • Avoid usage of combustible materials in nearby storage area. • Use suitable fire extinguisher agent (do not use water).
6	Hydrochloric acid (HCl)	0.3 ppm or 0.45 mg/m ³	<ul style="list-style-type: none"> • Very Toxic • Irritant • Strongly Corrosive • Reactive • Carcinogen effect 	<ul style="list-style-type: none"> • Never add water to this product • Container should be tightly closed, well-ventilated and keep it in cool. • Wear proper PPE.

Source: Material Safety Data Sheet

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Disaster management plan

A disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins. **(VULNERABILITY+ HAZARD) / CAPACITY = DISASTER.**

A disaster occurs when a hazard impacts on vulnerable people. The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster.

Types of Disaster

- Man-made disaster (On site and Off site)
- Natural Disaster

Description of disasters

A) Man-Made disasters

Probable disasters that can occur On-site are as follows:

- Plant failure
- Rupture or damage of the line, vessel or tank
- Excessive leakage of flammable material

Probable disasters that can occur Off-site are as follows:

- Exposure to pollutants released from offsite/ storage/related activities
- Contamination due to accidental releases or normal release in combination with natural hazard
- Deposition of toxic pollutants in vegetation / other sinks and possible sudden releases due to accidental occurrences

B) Natural Disasters

- Cyclone
- Earthquake
- Flood
- Fire

Emergency preparedness plan for natural and man-made disasters

A) Emergency Planning for Disaster Due to Fire

The pulp and paper industry has been experiencing problems with fire for a long time. Some of the parts in pulp and paper industry are most prone to fire such as flash driers, Slab presses, IR-Drier, filters, packaging yard, paper storage area, Coal or rice husk storage yard, electrical rooms and transformer area etc. and the provisions have to made to control the same primarily. A small spark

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of fire may result into loss of machines and the damage by fire may cause high economic losses and loss of life. This type of losses can be avoided by preventing and controlling the fire instantly for which fire-fighting group is established which keeps in readiness, the following types of equipment and arrangements.

- CO₂ extinguishers
- Dry powder chemical extinguishers
- Foam extinguishers
- 80 mm spray hoses
- Fire brigade
- Fire hydrant
- Protocol (chemical to combat oil fires).

In order to avoid fire in cable galleries, all the power and control cables of FRLS type (Fire Resistant Low Smoke) will be used.

B) Inspection

Fire alarm panel (electrical) will cover the entire plant. The inspection group inspects/ will periodically inspect fire extinguishers in fire stations and machines and other places. The company has displayed emergency telephone number boards at vital points. The Company regularly carries out general inspection for fire.

C) Fire Fighting with Water

Adequate and reliable arrangement is required for fighting the fire with water such as:

1. Provision for Fire brigade and Fire hydrant.
2. Arrangement of pipelines along and around all vulnerable areas.
3. Provision of valves at appropriate points to enable supply of water at the required place/area or divert the same to another direction/pipe line.
4. Provision of overhead tanks which will be providing water during power failure and it would work by the gravitational force.

D) Sources of Water for Fire Fighting

The following two sources of water have been considered for fire fighting:

- Overhead Tank
- Raw Water Reservoir

E) Fire Fighting with Fire Extinguishers

To deal with fire – other than carbonaceous fires, which can be dealt with by water – suitable fire extinguishers are required to do the job effectively. It is therefore, necessary to keep adequate number of extinguishers in readiness at easily approachable places.

- Further, other spray groups from the system will be diverted to the spot.
 - In case of fire in the belt, belt will be cut near the burning portion to save the remaining parts.
 - After extinguishing the fire, the area will be well prepared for reuse.
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- Foam or water or Dry powder or wet chemical fire fighting system will be provided to control fire from the paper storage yard. CO₂ is not suitable to suppress fire due to paper.
- Fire should be suppressed in initial stage itself otherwise it may become uncontrollable so automatic fire fighting system should be provided.

General Emergency preparedness plan for all man-made disasters pertaining to pulp and paper industry

A) Alarm System

A siren has been provided under the control of Security office in the plant premises to give warning. In case of emergencies this is used on the instructions to shift in charge that is positioned round the clock. The warning signal for emergency is as follows:

- Emergency Siren: Waxing and waning sound for 3 minutes.
- All clear signal: Continuous siren for one minute

B) Communication

Walkies & Talkies are located at strategic locations; internal telephone system EPBX with external P & T telephones are provided.

C) First Aid

A first aid centre with adequate facilities is provided. It is being/ will be maintained round the clock by a compounder cum dresser and a doctor. An ambulance is also provided at site to carry affected people to hospital.

D) Security

The security requirements of the company premises are/ will be taken care of by CSO assisted by a fire in charge. The team, apart from the normal security functions manages/ will manage the role required during a disaster management operation as a part of the crisis control team.

E) Safety

The safety wing led by a Safety Manager meets/ will meet the requirement of emergencies round the clock. The required safety appliances are being/ will be distributed at different locations of the plant to meet any eventualities. Poster/placards reflecting safety awareness are being/ will be placed at different locations in the plant area.

F) Evacuation Procedure

As the major hazard is only due to fire, which has more or less localized impact no mass evacuation procedures are required. Evacuation would involve only the people working very close to the fire area.

G) Emergency Control Centre

The ECC is always ready for operation and provided with the equipment and supplies necessary things during the emergency such as:

- Updated copies of the On-site Disaster Management Plan.
 - Emergency telephone numbers.
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- The names, phone number, and address of external agencies, response organizations and neighboring facilities.
- The adequate number of telephone (more than two).
- Emergency lights, Clocks, Personal protective equipment.
- List of fire extinguishers with their type no. and location, capacity, etc.
- Safety helmets – List of quantity & location.
- Status boards/message board.
- Material safety data sheets for chemicals handled at the facility.
- Several maps of the facility including drainage system for surrounding area showing:
 - Areas where hazardous materials are stored.
 - Plot plans of storage tanks, routes of pipelines, all water permanent lines etc.
 - The locations where personal protective equipment is stored.
 - The position of pumping stations and other water sources.
 - Roads and plant entrances.
 - Assembly areas & layout of Hydrant lines.

H) Duties and Responsibility of Key Personnel of Environmental Management Cell

S.No.	Name of person responsible	Duties and responsibilities
1.	Site Main Controller	<ul style="list-style-type: none"> • To co-ordinate with external and internal coordinator and give some necessary instructions. • To put the disaster control plan into action. • To mobilize help from outside agencies to ensure supply of firefighting equipment. • In case of disaster of high magnitude, the chief controller will inform district magistrate, local police station, and district health authorities for additional help and evacuation. • Continuous review and assess possible developments to determine the most probable course of events. • Direct the shutting down of plants and their evacuation in consultation with the incident controller and key personnel.
2.	Incident Controller	<ul style="list-style-type: none"> • Direct the shutting down and evacuation of the plant areas likely to be affected. • Rescue and fire- fighting operations, until the arrival of the fire brigade, when he/she should hand over control to a senior fire officer. • Search for casualties. • Evacuation of non-essential workers to assembly area.

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		<ul style="list-style-type: none"> • Brief the site main controller and keep him informed of developments.
3.	Distillery Manager	<ul style="list-style-type: none"> • Mobilize the fire-fighting operation and coordinate with external fire tenders/fire- fighting equipment. • The maintenance squad will isolate the hazardous area, and plug the leak.
4.	Security Officer	<ul style="list-style-type: none"> • To coordinate fire-fighting operation and replenish the fire-fighting equipment. • To rescue the injured persons. • To provide first aid/medical assistance. • Remove tank lorry/other vehicles to safe location.
5.	Maintenance Manager	<ul style="list-style-type: none"> • Maintenance squad will plug the leak, isolate the hazardous area and ensure the safety of the remaining part of the factory. • The team will mobilize any repair work on an emergency basis.
6.	Shift In charge after office hours	<ul style="list-style-type: none"> • Will establish the emergency control center. • Mobilize all coordinators assembled at the Emergency Control center and put the disaster control plan into action. • Mobilize the fire- fighting operations. • Mobilize help from ambulance services and hospitals for medical assistance. • Mobilize help from the outside agencies for fire fighting. • Inform the police and request to control traffic and maintain law and order. • Inform site controller, incident controller and appraise the situation. • Direct the shutting down of plants and their evacuation. • Give adequate attention to the casualties and send them to hospital.

(I) Communication Equipment and Alarm Systems

This kind of equipment is absolutely vital for notifying accident; make the emergency known both inside and outside of the facility, and coordinating, the response actions among the various groups involved in response operations.

Sirens

These are audible alarm systems commonly used in facilities. In case of any emergency siren will be operated short intermittently for 1.5 minutes.

An alarm does more than just emergency warning. It also instructs people to carry out specific assignments, such as reach to assembly point for further instructions and actions or carry out protective measures; this can be achieved only if the people are familiar with the alarm systems and are trained to respond to it.

(K) Personal Protective Equipment

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This equipment is used mainly for three reasons; to protect personnel from a hazard while performing rescue/accident control operations, to do maintenance and repair work under hazardous conditions, and for escape purposes. The list of Personal Protective Equipment provided at the facility and their locations are available in ECC.

Effective command and control accomplish these functions necessitates personal trained in this on-site Disaster Management Plan with adequate facilities and equipment to carry out their duties and functions.

7.3.5 Procedure for Testing & Updating the Plan

Simulated emergency preparedness exercises and mock fire-fighting exercises including mutual aid scheme resources and in conservation with district emergency authority to be carried out time to time.

Disclosure of Information to Worker and Public Awareness System Anticipated

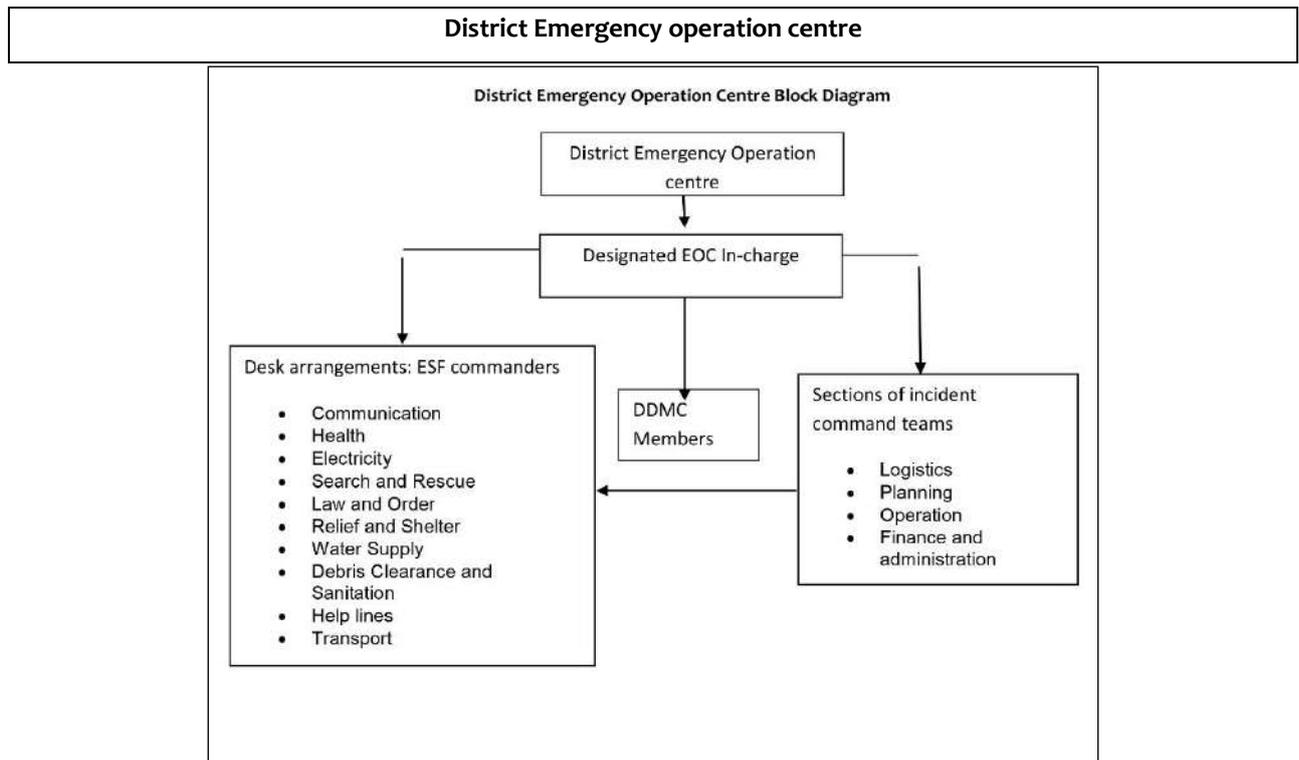
- Safety awareness among workers by conserving various training programs and Seminars, competition, slogans etc.
- Practical exercise.
- Distribution and practices of safety Instructions.
- Safety Quiz contests.
- Display of Safety Posters & Safety Slogans.
- Developing Safety Instructions for every Job and ensuring these instructions/booklets or manuals by the workers.

Emergency preparedness Plan for natural disasters pertaining to Bijnor District

Earthquake: -

From NIDM profile of Uttar Pradesh, it is seen that UP is broadly divided in to three Earth quake Risk Zones-High Damage Risk Zone-IV, Moderate Damage Risk Zone III and Low Damage Risk Zone II. Bijnor lies in Zone IV as per the data given in the profile. The district emergency operation team and its activities during emergency are presented in a diagram and given below:

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The adverse effects of disasters can be minimised if mitigation policies, plans, and projects are undertaken. Keeping in view the hazard and vulnerability profile of the district the following mitigation actions would be taken to mitigate the impacts of various hazards.

Action Plan for Earthquake Mitigation

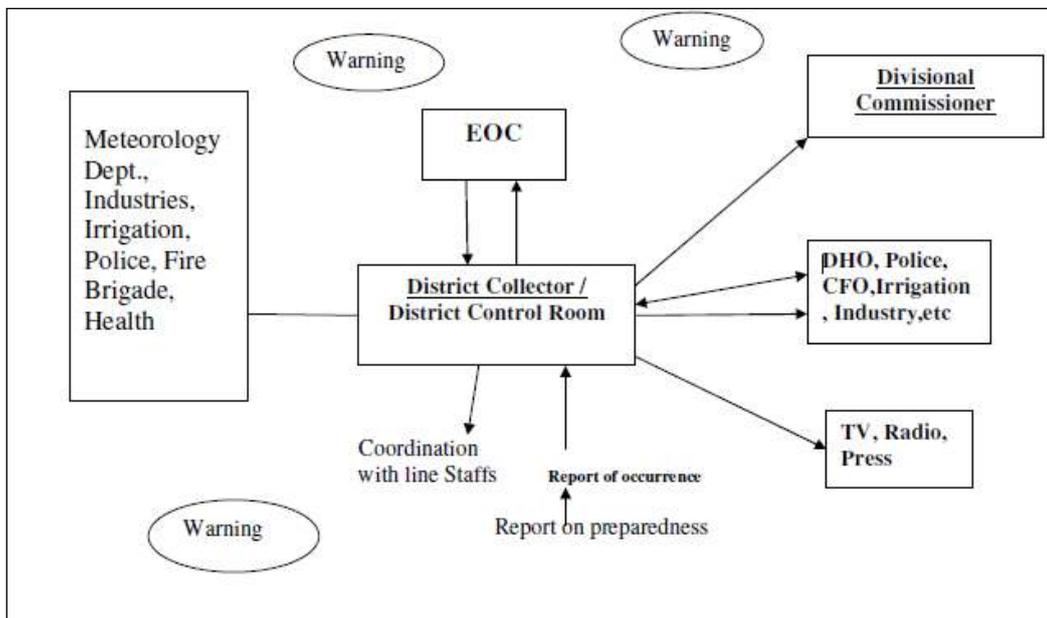
- Revision and adoption of model building bye-laws for construction both in urban and rural area.
- Wide dissemination of earthquake-resistant building codes, the National Building Code 2005, and other safety codes.
- Training of trainers in professional and technical institutions.
- Launching demonstration projects to disseminate earthquake-resistant techniques.
- Launching public awareness campaigns on seismic safety and risk reduction and sensitising all stakeholders to earthquake mitigation.
- Establishing appropriate mechanisms for compliance review of all construction designs submitted to ULBs.
- Undertaking mandatory technical audits of structural designs of major projects by the respective competent authorities.
- Developing an inventory of the existing built environment.
- Assessing the seismic risk and vulnerability of the existing built environment by carrying out structural safety audits of all critical lifeline structures.
- Developing seismic strengthening and retrofitting standards and guidelines for existing critical lifeline structures.

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- Preparation of DM plans by schools, hospitals, main buildings visited by large number of public etc., and carrying out mock drills for enhancing preparedness.
- Preparing community and village level DM plans, with specific reference to management of earthquakes.
- Carrying out the vulnerability assessment of earthquake-prone areas and creating an inventory of resources for effective response.
- Introducing earthquake safety education in schools, colleges and universities and conducting mock drills in these institutions.
- Preparing an action plan for the up gradation of the capabilities of the IMD and BIS with clear roadmaps and milestones.
- Strengthening the medical preparedness for effective earthquake response, etc.
- Enforcement and monitoring of compliance of earthquake-resistant building codes, town planning bye-laws and other safety regulations.

Response Structure during Warning Stage

At district level, before the occurrence of disaster and immediately after disaster the district administration will activate the district control room so that proper information will be provided to the concerned authorities. The structure is given below:



Employees Information

During an emergency, employees would be warned by raising siren in specific pattern. Employees are given training on escape routes, taking shelter, protecting from toxic effects. Employees are provided with information related to fire hazards, and first aid measures. The key personnel and essential employees are given training in responding to emergency (emergency response). Essential personnel list and their contact numbers are given below:

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Official personnel involved with their contact numbers

S. No.	Name	Designation	Contact Information
1.	Mr. Sandeep jain	MD	9837067240
2.	Mr. P.K. Rajput	Executive director	9927026846
3.	Mr. M.P. Verma	G.M.	9837001301
4.	Mr. Anant Vats	Company Secretary	9927866766
5.	Mr. Vimal Chandoaula	Personal Manager	9639684638
6.	Mr. Rajkumar Tyagi	Mechanical Engineer	7534000119
7.	Mr. Yasveer Singh	Production Manager	9319610838
8.	Mr. Suhail Siddiqi	Dy.GM CRP	8445589855
9.	Mr. Yadav	Dy.GM Power Plant	7465004007
10.	Mr. Rais Ahmad	In charge quality control lab	9639684638

Co-ordination with Local Authorities

Keeping in view the nature of emergency, two levels of co-ordination are proposed. In case of an On-site Emergency, resources within the organization would be mobilized and, in the event of an extreme emergency, local authority's help would be sought.

In the event of an emergency developing into an off-site emergency, local authorities and District Emergency Authority would be appraised and under his supervision, the Off-site Disaster Management Plan would be exercised.

Emergency contact numbers of authorities outside plant premises

S. No	Authority	Contact. No
1	District Collector	9454417570
2	Superintendent of police	9454400254
3	S D M	9454416896
4	Dy S P	9454401025
5	Circle Officer	945440153
6	Deputy Director of Factory	9411225474
7	Kotavali	9454403132
8	Fire Station	101, 9454418355
9	Nearest Police Station	9454403132
10	Medical Aid	108, 102, 7839788043
11	Evacuation Information, Transport	9454457871

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Occupational Health and Safety Hazards identification and risk assessment

Work place plays a vital role in people lives, since most of workers spend at least eight hours a day in the work place. Therefore, work environment should be safe and healthy. Some of the occupational hazards and its mitigation measures are listed below.

Type of Hazard	Work place	Effects		Mitigation Measures	Exposure Limit
		Acute Exposure	Chronic Exposure		
Noise	<ul style="list-style-type: none"> Paper machine Boiler Recovery 	<ul style="list-style-type: none"> Irritation Raised Blood pressure Accelerating Heartbeat Headache 	<ul style="list-style-type: none"> Temporary or Permanent hearing impairment. Affects Immune system 	<ul style="list-style-type: none"> Usage of Ear Plugs Administrative Controls 	<ul style="list-style-type: none"> 85 dB(A)
Heat	<ul style="list-style-type: none"> Pulp Cooking Pulping Recovery Paper drying Chemical	<ul style="list-style-type: none"> Increased Irritability Loss of ability to do skilled tasks Dizziness Feeling Faint 	<ul style="list-style-type: none"> Heart stroke Heat cramps Sleeping illness 	<ul style="list-style-type: none"> Work rests Cold water baths Electrolyte supply to the workers 	-
Dust	Raw material handling, transportation and storage	<ul style="list-style-type: none"> Irritation of eyes, nose Coughing Sneezing Hay fever 	<ul style="list-style-type: none"> Asthma Irritational Lung Diseases Carcinogen 	<ul style="list-style-type: none"> Proper nose and face masks. Dust control systems Water sprinkling 	<ul style="list-style-type: none"> Suspended Particulate matter 500 µg/m³ for 24 hours Respirable Particulate matter 150 µg/m³ for 24 hours
Chlorine Dioxide	<ul style="list-style-type: none"> Bleaching 	<ul style="list-style-type: none"> Causes Irritation Explosion Toxic in nature 		<ul style="list-style-type: none"> Mandatory the usage of Proper PPE Workers should Properly have trained MSDS of chemicals should follow 	<ul style="list-style-type: none"> 0.1 ppm
Chlorine	<ul style="list-style-type: none"> Bleaching 	<ul style="list-style-type: none"> Explosive Toxic Damage Skin and Eye 		<ul style="list-style-type: none"> Mandatory the usage of Proper PPE Workers should be trained properly. MSDS of chemicals should follow 	<ul style="list-style-type: none"> 1.0 ppm
Hydrogen Peroxide	<ul style="list-style-type: none"> Bleaching 	<ul style="list-style-type: none"> Causes Irritation 		<ul style="list-style-type: none"> Store in a cool and well-ventilated areas 	<ul style="list-style-type: none"> 1.0 ppm
Sodium Chlorate	<ul style="list-style-type: none"> Used to produce Chlorine Dioxide 	<ul style="list-style-type: none"> Toxic Explosive 		<ul style="list-style-type: none"> Usage of proper PPE Usage of fire extinguishers 	<ul style="list-style-type: none"> 10.0 mg/m³

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Conc.Sulphuric Acid	<ul style="list-style-type: none"> • Used to produce Chlorine Dioxide • Splitting of tail oil • pH adjustments 	<ul style="list-style-type: none"> • Corrosive • Irritant • Toxic in nature • Burns 	<ul style="list-style-type: none"> • Wear a suitable respiratory equipment (a self-contained breathing equipment) 	• 1.0 mg/m ³	
Caustic Soda Or Sodium Hydroxide (NaOH)	<ul style="list-style-type: none"> • Pulp Cooking • Pulp Bleaching 	<ul style="list-style-type: none"> • Irritation • Toxic • Explosive 	<ul style="list-style-type: none"> • Avoid incompatible substances • Use suitable fire extinguisher system 	• 2.0 mg/m ³	
Hydro Chloric Acid	<ul style="list-style-type: none"> • Pulp Bleaching 	<ul style="list-style-type: none"> • Very Toxic • Irritant • Corrosive • Carcinogen 	<ul style="list-style-type: none"> • Wear proper PPE • Never add water to it • Store in properly ventilated area 	• 0.45 mg/m ³	
Mechanical	<ul style="list-style-type: none"> • Storage area • Rotating equipment's • Nip points • Falling and Tumbling objects • Handling of Paper rolls, Raw material, Chemicals 	<ul style="list-style-type: none"> • Injuries 	<ul style="list-style-type: none"> • Usage of Proper PPE • Machine Guarding • Usage of ropes (Working in heights) • Proper training to the workers • Good house keeping 	2.0 mg/m ³	
Vibration	<ul style="list-style-type: none"> • Pulp Machine, Paper Machine 	<ul style="list-style-type: none"> • IRRITATION 	<ul style="list-style-type: none"> • HAVS (Hand Arm Vibration Syndrome) • Sleeping sickness 	<ul style="list-style-type: none"> • Keeping tools well maintained • Grip the tools as lightly as possible • Use gloves (That should cover fingers) • Administrative Controls 	-
Emergency situations	<ul style="list-style-type: none"> • Breakdown of Air Pollution Control Equipment • Leakage of Chemicals • Unexpected Fire 	<ul style="list-style-type: none"> • Un healthy to workers • Irritation to workers • Injuries • Loss of lives 	<ul style="list-style-type: none"> • Regular Maintenance • Automatic control systems • Usage of Standby equipment. 	-	

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Occupational Health Surveillance

In paper plant, the occupational health surveillance of the employee is/will be done on a regular basis and records of the same are/will be maintained as per the Factories Act.

A. List of Equipment for Occupational Health Monitoring

ECG	Audiometric device
Glucometer	Chest X Ray
Laryngoscope	Complete Medical Laboratory Set up
Suction Machine	D.C. Shock and Cardiac Monitor
Autoclave	Endoscopic Ear & Throat
Sterilizer	Urine Analyzer
Spirometer	TMT

Pre Placement and Periodical Health Status

Pre /post-employment checkup will be carried out and following tests will be conducted:

Chest x rays	SGOT and SGPT
Vision testing (Far and Near vision, color vision and any other ocular defect)	Urine (Routine and Microscopic)
ECG	Complete physical examination
Haemogram (examination of the blood)	Post employment occupational health check up such as lung function, audiometry, spirometry, CBC, Blood Sugar, Lipid Profile etc.
Blood Sugar Fasting	Medical records of each employee will be maintained separately and will be updated as per finding during monitoring

A. Frequency of Medical Examination

- Yearly

B. Personal Protective Equipment

S. No.	Personal Protective Equipment	Quantity
1.	Safety Goggles	75
2.	Safety Hand Gloves for Electrical use	16
3.	Safety Hand Gloves for Chemical use	20
4.	Safety Helmets	50
5.	Chlorine Safety Kit	02 sets
6.	Breathing Apparatus(BA) Set with O ₂ – Chlorine Area	02
7.	Safety Shoes	30
8.	Eye Shower	10
9.	Noise Protector	04
10.	Welding Glass	10

Implementation of OHS standards as per OSHAS/USEPA

The overall objective of the company is to provide a system that is capable of delivering healthy and safe workplace. Following measures have been adopted for implementation of OHS standards.

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- Well-equipped Occupational Health Centre with adequate paramedical staff
- Routine and special investigation related to occupational health
- Health surveillance and maintenance of health record
- Rules and procedure for effective implementation of Safety Health and Environment policy and made to know all employees
- Round the clock ambulance facility
- Sufficient number of first aid boxes
- Formulation of OHS implementation team/ cell
- Risk assessment of each and every activity
- Implementation of OHS management program
- Displaying the safety and health policy and instructions at various locations
- Display of safe operating procedure (SOP) at various locations
- Job safety analysis
- Carry out daily plant safety inspection by internal safety department
- Monthly safety meeting of all employees & workers to discuss last month accident if any, reason and corrective measures taken.
- Ensure use of PPEs according to the job like helmet, safety shoes, goggle, dust mask, ear plug and hand gloves etc.
- Display Material Safety Data Sheet (MSDS) for use of every hazardous substance
- Implement the recommendations of HAZOP (Hazard and operability study) for examination of problems in existing process / operation that may represent risks to personnel or equipment
- Periodic safety audits both internal and external, review and implementation of recommendations.

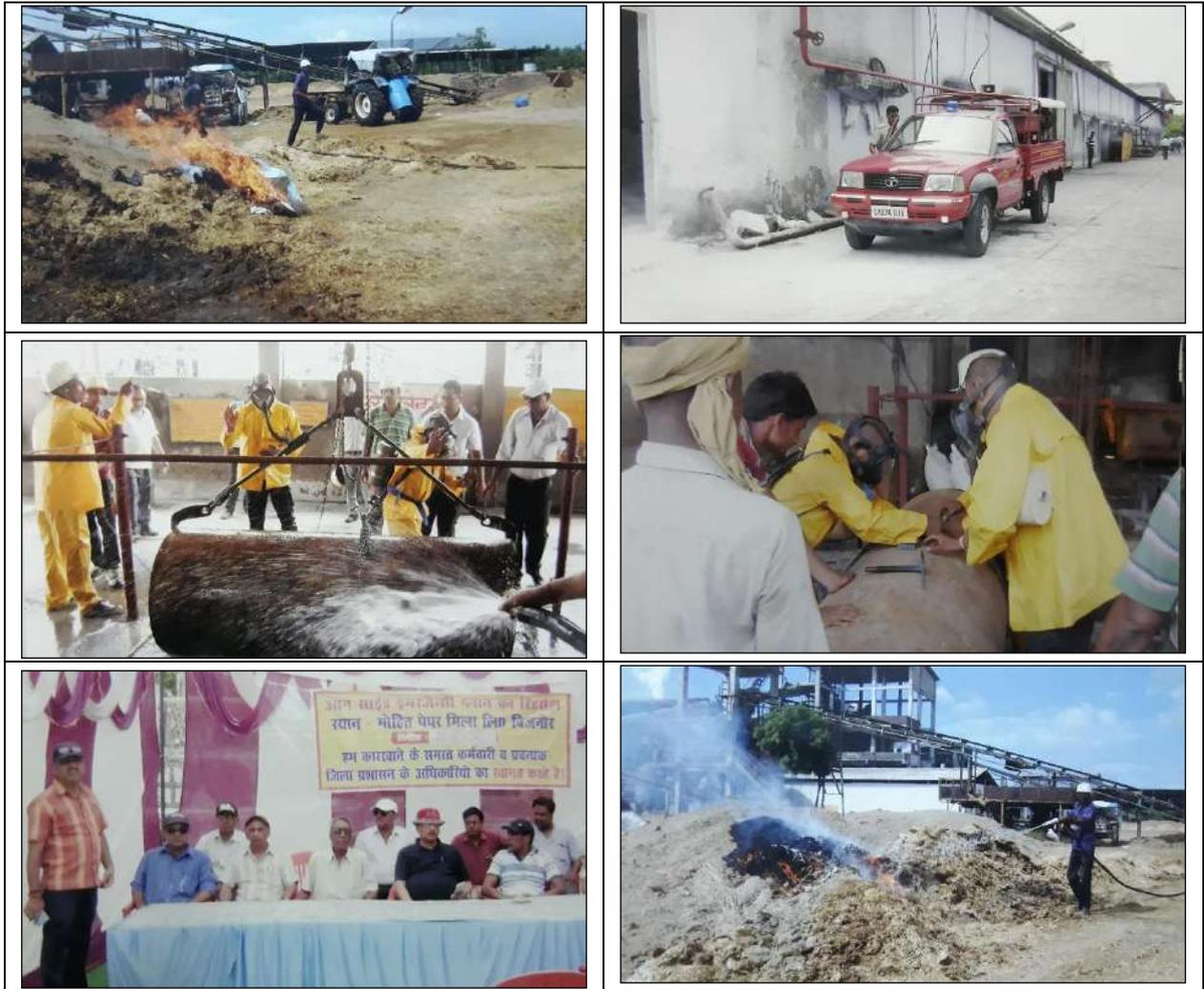
Safety Committee

A safety committee is formed and manned by equal participation from management and workers with the following functions:

- a) Accident prevention and control including ensuring the use of safety appliances
- b) Publicity, propaganda, education and training
- c) Assisting and cooperating with the management in achieving the aims and objectives outlined in the “Health and Safety Policy” of the occupier
- d) Carrying out health and safety surveys for identifying unsafe working condition/practices, which causes accident

Photographs showing mock drills/ training conducted within plant premises for employees:

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Plan and Fund allocation for Occupational and Safety Hazards

Plan and fund allocation to ensure the occupational health and safety of all contracts and sub-contract workers is given in Table below.

Fund allocation for Occupational and Safety Hazards

Particular	Amount(Lakhs)
Estimated Expenses on employee's health check-up	3 lakhs
Doctor fees, medicines, ambulance	7 lakhs
Total safety Budget	10 lakhs

Conclusion

The hazard identification and risk assessment procedure has analyzed the possible hazards and mitigation measures pertaining to emergency situations and disaster. The Company has well designed plan regarding safety procedures and it has the capability to deal with any kind of emergency situation.

