

EPL Limited
(Formerly known as ESSEL
PROPACK LIMITED)



SAFETY HEALTH & ENVIRONMENT
MANUAL

Revision History

Sl. No	Page No.	Revision Details	Rev. No.	Date
1	All	First Release	--	Jul 2010
2	All	Document name and number introduced in header	01	10 th Dec 2013
	All	Document revision number and revision date introduced in footer		
	2 of 122	Revision History introduced		
	4 of 122	Included Health, Safety & Environment Policy revised on 6 th Dec 2013 with Environment aspects		
	5&6 of 122	Table of contents amended		
3	2 of 122	Revision History updated	02	16th Jan 2015
	4 of 122	Health, Safety & Environment Policy with new logo revised on 15 th Jan 2015 included		
	All	New Essel Logo incorporated		
4	2	Revision History updated	03	10 Oct 2020
	4	HMP Policy (Comprising 7 standards) included		
	All	Company Name & Logo changed		
5	45	Use of Helmets added for warehouse	04	10 Oct 2021
	52	updated Unit names and also the built up area of each unit		
	93	The Safety Committee members requirement revised as per OHSAS standard		
	45	1) Forklift - Helmet & Safety Belt 2) Printing - Gloves 4) Safety Belt in Warehouse 5) Included all new machines like LT250, LT-500 etc. 6) Cut resistant gloves to included - for slitting, blown film		
	46 & 48	Added Metal gloves requirement and specification for hand safety		
	110	Added - Half Yearly Form VIII to be furnished by bulk consumer or as per local law requirement		
	58	Added Refer MSDS as per latest revision		
90	ANNEXURE: 6- LIST OF ITEMS IN THE FIRST AID BOX Dressings should be maintained as per the requirement of the respective State Factory Rules			
	69	Speed Limit for Forklifts 1. Unloaded : 5kmph 2.Loaded : 2 Kmph		
6	1 & 4	HMP Policy changed & new logo added, HIRA updated as per current practices	--	21 Nov 2022

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

I N T R O D U C T I O N

Safety has been defined as a positive organized activity or programme based on a knowledge of the reaction between operating personnel and working environment which helps the organisation to minimize economic and sociological losses caused by accident such as injuries & health impairment to person fire, explosion and other occupational hazards. Therefore, it is essential that adequate attention is to be paid to safety at all stages such as production, process, erection, commissioning operations and shutdown/maintenance activities.

Safety and effective production go hand in hand. It is therefore very important that safety is given the utmost consideration in our day-to-day works and safety regulations are followed strictly

EP wants every employee to be safety conscious, as safety is the joint responsibility of all the employees. The unsafe act of one person may endanger not only himself but also others and the expensive Equipment.

It is essential to equip Equipment and Machinery in the plant with safety devices. Equipment together with safety devices, safety rules, procedures and various personnel protective Equipments provide safe environment. However, the success of injury / Accident prevention will depend entirely on the actions of each individual by following safe procedure in operations.

Accidents causes lose. The losses are not merely financial. There can be loss of human lives, loss of production and most importantly loss of credibility and employee's morale. Statistics however show that in almost all cases accidents are not just occurrences. They are a consequence of ignorance and indifference to safety procedures.

The possibility of fire and accident can considerably minimised by close observation of the rules and regulations applicable to each particular job. Further, it may say that the general underlying cause of accident in our process is the lack of knowledge of existing potential hazards and necessary precautionary measures. The supervisory operating personnel who generally comprise of principle technical members of operating department have responsibility for numerous aspects of safety. One of their most important functions is education of workers concerning the hazards of equipment they are operating, emergency procedures, and to ensure that operators are alert to indications of trouble, which could develop into serous mishaps. Another important duty of the operating supervisor is active cooperation with the maintenance and inspection personnel during shutdown period such as defining hot jobs areas and precautions to be taken against occurrence of any fire and accident.

A comprehensive safety programme is therefore essential in creating awareness and educating employees on all aspects of safety. EP has comprehensive safety programmes that address these two important aspects. We will call the external agency to conduct safety audits and risk assessment on a regular basis for ensuring adherence to safety measures.

This safety manual is covers most of the aspects of our safety programme and procedures. I am sure our employees will benefit from this manual. *Let's us make safety an integral part of our work culture*

HEALTH, SAFETY AND ENVIRONMENT POLICY

EPL Limited

(Formerly known as Essel Propack Limited)

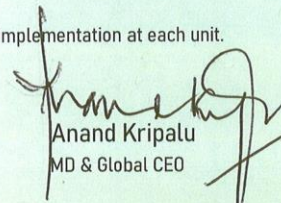


Harmonized Manufacturing Policy

EPL is a global organization that provides specialized packaging materials & solutions to the utmost satisfaction of their customers and stakeholders in various categories such as Beauty & Cosmetics, Pharma & Health, Home, Food, and Oral Care. EPL's HMP policy is integrated & has adopted commitments from all responsible, towards Product Quality, Sustainability and Employee health &, safety, Environment Protection, Energy conservation & efficiency, and Customer satisfaction. The policy will be communicated to all interested parties as relevant.

- The Organization is committed to producing safe & legally compliant products to the specified quality while meeting the needs and expectations of all interested parties.
- EPL provides its customers with timely and necessary support with ease of communication for enhancing product quality and safety.
- EPL is committed to developing and continually improving the Quality Management system to deliver products that meet customer and legal requirements.
- Health and security elements are incorporated in line with business activity. We are committed to eliminating hazards, reducing health and safety risks, preventing work-related injuries and ill-health, and maintaining facilities and processes that are safe, healthy, and environment friendly. Consultation & Participation is encouraged among employees & contractors for health & safety management reviews.
- We ensure compliance with applicable legal and other requirements related to the environment, sustainability, health & safety, energy efficiency, energy use, and energy consumption and promote culture for the same.
- The organization endeavors to reduce risk, protect the environment, and prevent pollution in its business activities. EPL ensures the conservation of natural resources by optimizing the usage of resources, minimizing the generation of waste; avoiding emissions, and adopting reduce, recycle and reuse sustainability principles wherever possible. EPL supports the design activities & procurement of energy-efficient products and services that impact energy performance ensuring the availability of information and necessary resources to achieve targets.
- Appropriate knowledge & awareness is created among all responsible for delivering the activities towards Quality, Safety, Sustainability, and environmental protection including customers, employees & suppliers.
- In all our endeavors, we strive to achieve excellence through appropriate management of associated risks to product safety, Operation, environment, employee health & safety & continually improve
- RESPONSIBILITY AND AUTHORITY:
- The MD & Global CEO has the ultimate responsibility and authority for the application of this policy.
- The overall responsibility and authority are delegated to the Global Head of Quality for effective implementation. Regional leadership teams are responsible for the dissemination and implementation of this policy in their respective region.
- The Unit Head & Unit leadership teams are responsible for effective implementation at each unit.

Date: 21 Nov 2022



Anand Kripalu
MD & Global CEO

HMP adopts relevant and updated clauses of ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 15378: 2017, ISO 22716: 2007, ISO 50001:2018, BRCGS packaging materials issue 6 & FSSC 22000 version 5.1

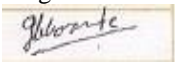


This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

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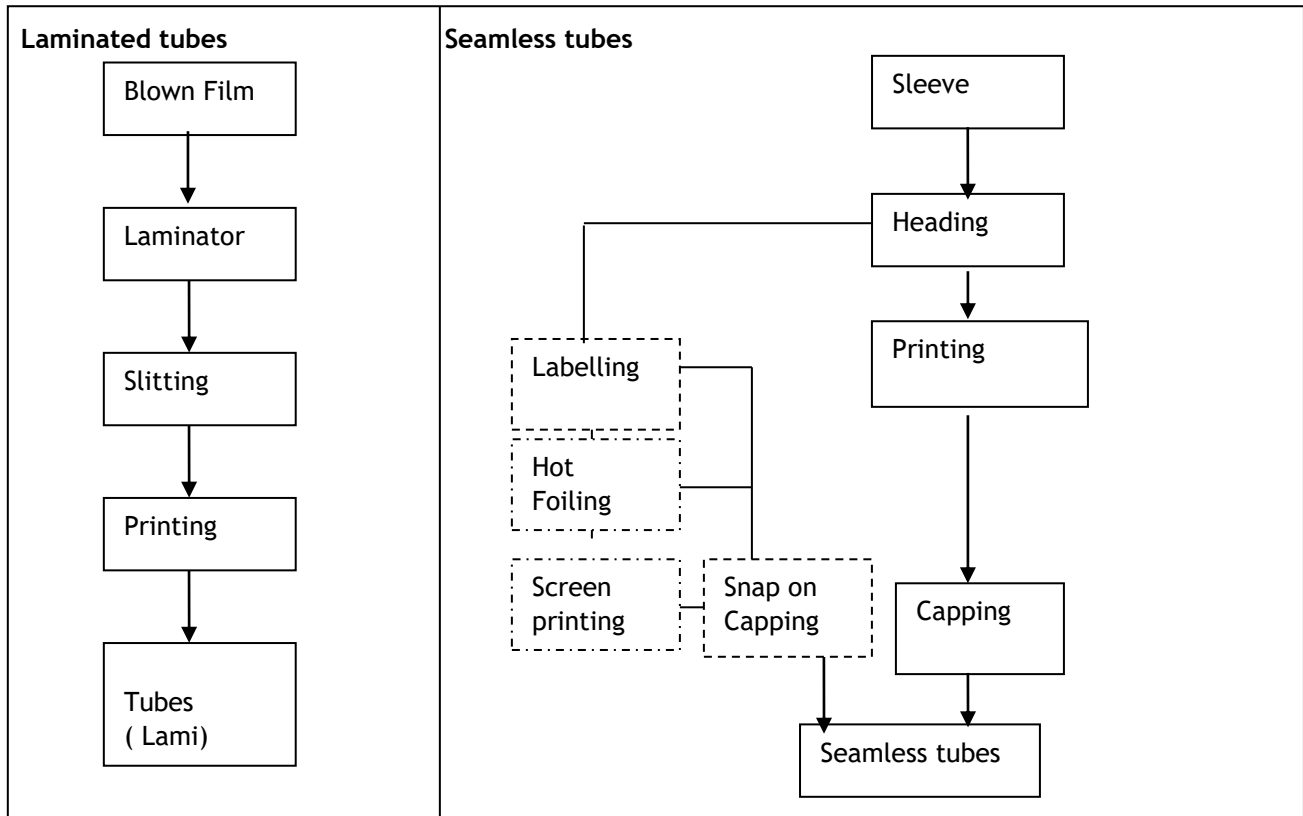
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BRIEF DESCRIPTION OF THE PROCESS

Process Flow: The process flow for manufacturing the Laminated and seamless tubes are shown below



Manufacturing Process

1. **Co-extruded Blown Films:** Blown film is the extrusion process in which the raw materials (granules) are converted in to the film stage
2. **Laminator (Flexible Laminates/Tube laminates):** Laminates of desired thicknesses are manufactured by binding blown film, al. foil and adhesive materials in the form of Jumbo reels on tandem lamination machine possessing two extruders.
3. **Slitted Machines:** These jumbo reels are slit to the required width depending upon the Tube length or Tube Diameter on slitting machines.
4. **Printing Machines:** Printing machines are the letter rotary presses are used to change the incoming Slitted web into useful products by using, UV cured inks and Nyloplates to required product design.
5. **tubing machines:** The printed reels are then converted in to tubes on HSL and LSL tube making machines.

The tubes making process involves high temperature heaters in extruders, high voltage corona treatment, toxic laminated fumes, hot die lips, high speeds, horsepower, sharp cutting dies and knives, rollers, rolling cylinders, gears and other type rapidly moving parts. The person can be injured due to improper electrical installations, and removal of safety facilities or bypass the existing safety devices.

Wherever possible, needs to interlock or safeguard the machines to protect from injury. Safety labels to be applied to all machines to indicate those points where needs the extreme care. The Continuous awareness and attention to safety can prevent an accident, which could severely injure the persons.

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Chapter - 2

ACCIDENT REPORTING AND INVESTIGATION PROCEDURE

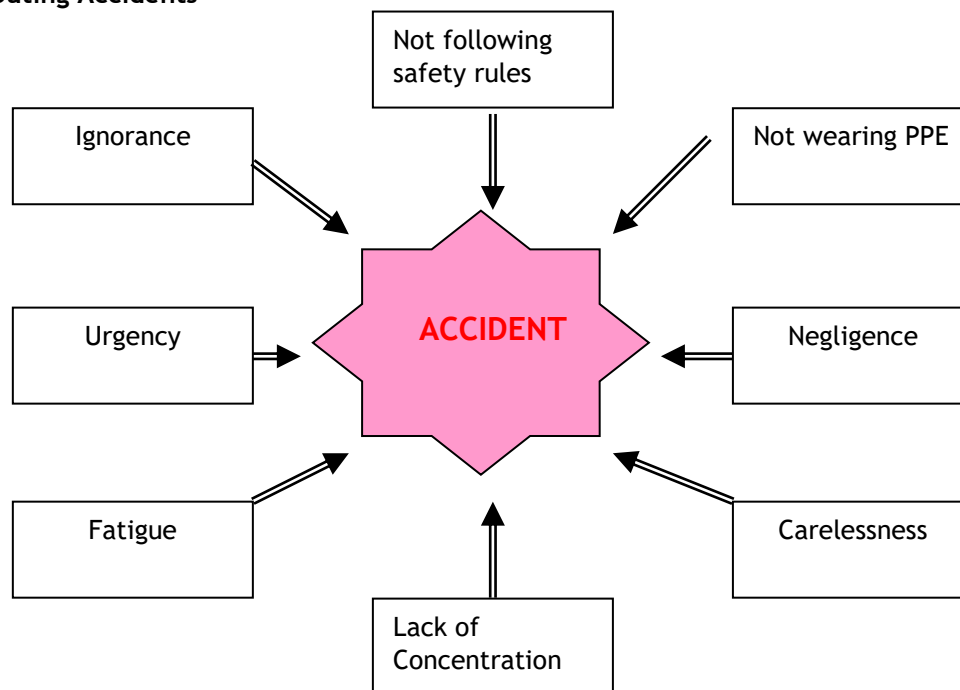
Human Life is very precious and one lost cannot be regained back. On the other hand, whenever there is a movement of the materials, accidents are bound to happen. In such cases, it is our challenge to work without accidents. We human being is working to live. However, we sometimes get hurt or lose our lives due to the work. Such accidents are contradictory to our aims. We must find causes of hazards at our job units and improve defects and deficits in order to make safe and joyful job units. This is what we call safety of job units. Most important matter is a work is not to get hurtled & not to hurt anybody.

2.1 ACCIDENT, THEIR PREVENTION AND GENERAL SAFETY PRACTICES

What is an Accident?

“Undesired event giving rise to death, ill health, injury, damage or loss”

Factors contributing Accidents



Whatever may be the area of work or type of job, but accident occurs due to the unsafe conditions, unsafe acts and natural causes (food, lighting, tom, earthquake etc). All unsafe acts and conditions can be eliminated by giving a better understanding of the common causes of accident. The following list broadly represents the principle causes of accidents.

Unsafe conditions	Unsafe acts
<ol style="list-style-type: none"> 1. Machine guards and safety devices not in place 2. Inadequate information about the process or equipment 3. Poor housekeeping 4. Inadequate illumination 5. Inadequate ventilation 6. Damaged insulation on electric line/equipment 7. Physical load on electric cables 8. Lack of warning sign 	<ol style="list-style-type: none"> 1. Using the wrong tools, materials and methods 2. Failure to isolate, tag and evacuate 3. Failure to use PPE 4. Working on the wrong equipment 5. Creating unsafe condition 6. Unscheduled work and unauthorised work 7. Taking shortcuts, casual approach to work 8. Wrong appeal, mischief and ignorant acts

plants. Statutory laws pertaining to the locations need to be adhered.

PRINCIPLES CAUSE OF ACCIDENTS

PRINCIPLE CAUSE OF ACCIDENT

i) Rules and instruction not observed

Rules and instruction are essential for smooth working and safe operations. Many accidents happen because the employees sometimes deviate from the established rules procedures. Suggestion is always welcome; but for any deviation consults your supervisor.

ii) Improper hand tools or Equipments

Know your tools and use the proper tool for the job

iii) Method not suitable

A safe workman knows the correct method of performing his job. Beware of short cuts. Take time to be safe. Lift weight correctly. If on doubt, as to how best to do a job consult your supervisor.

iv) Protective Equipment not used

Every employee must use all safeguards and protective Equipments require for his protection

v) Lack of proper inspection and maintenance

Machinery tools and all Equipments should be regularly inspected and maintained in order to by those using them. Defects if any should be immediately reported and were rectified.

vi) Contributory Negligence:

Think about the other fellow. Do not allow your carelessness or neglect to endanger somebody else.

vii) Inattention

Keep your mind actively on the job. Daydreaming, worry and horseplay have not place in any job.

viii) Mental physical condition:

Poor mental and physical condition may not allow you to be alert and can contribute to accidents.

ix) Poor judgement:

Safety is usually a matter of common sense. Use it always.

x) Wilfulness:

Intentional disregard of safe practices, company rules, instruction or welfare of fellow employees has no place in any organization.

xi) Walkways and roads

Where walkways are provided, use them instead of taking short cut. Short cuts often result in slip and falls.

xii) House keeping

A large percentage of unsafe conditions can be classified as "Poor housekeeping". A clean plant is a safe plant to work with.

xiii) Lack of communications:

Poor communications often cause accidents. You must communicate effectively with every employee connected with the job to prevent accidents.

ACCIDENT PREVENTION

General safety regulation

Adherence to set safety procedure, safety practices and follow up of self-inspection checklist is first step towards the prevention of accidents.

The Employees Safety responsibility

- Follow the instruction of your supervisor
- If you notice any unsafe condition or act bring it to the notice of your supervisor.
- Do the work only on the job assigned to you
- Before starting the work ask your supervisor of any clarification you need about the job
- Check the condition of your PPE and use them
- Do not carry loose bolts and open cutter in your pockets
- If you have problem like vertigo, giddiness etc inform your supervisor.
- Keep the work area orderly.

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- Keep the walkways clean and free off materials

- Beware of the location of fire extinguisher and how to use them
- Beware of the location of first aid kit and how to use them
- Avoid running other than during emergency escape

- Do not pretend you know when you do not know.
- Keep the gas cylinder secured
- Roll cleaning, lifting, welding etc are specialised jobs. Do not attempt these if you are not trained for them
- Follow the safety rules of the company
- Do not play mischief

2.2 ACCIDENT REPORTING AND INVESTIGATION

REPORTING ACCIDENTS

The concerned shift officer, supervisor and employees shall immediately report any incident/near miss in the relevant form and this report shall be handed over to the dept. head, safety coordinator and HRD section. The section supervisor complete a first information report and send to safety coordinator or HRD. Safety coordinator and HRD officer shall independently investigate the incident and prepare a report that includes suggestions to eliminate repetition of these incidents.

Accident/incident Report Maintenance

The safety coordinator shall maintain all accident/incident reports and these reports shall be submitted to the members of the safety committee during safety meetings.

Please ref. the format for accident reporting in chapter formats and records

ACCIDENT ANALYSIS AND INVESTIGATION

These investigations involve examination of events, which either caused or could have caused physical harm to people, damage to property, loss in process or impact on the environment.

Accident / Incident investigation procedure

- The main Objective of the investigation shall be to identify the cause of the event and to suggest corrective action to prevent recurrence
- The concerned officer and Department Manager as per the Accident/incident Investigation report form shall investigate all events, within 24 hours of the occurrence of the incident.
- The concerned manager shall implement all corrective actions
- All accidents/incident reports will be discussed
- Safety coordinator shall independently investigate all the events which have high damage potential or which result in a LTA. In such cases, the corrective action shall be agreed between the Safety coordinator and the Factory manager.
The safety coordinator shall maintain records of these investigations.
- In addition to incident investigation near misses record to be maintained using safety improvement board by safety coordinator. This will ensure the improvement in Safety Standards.

Scope of accident/incident investigation

The scope of accident/incident investigation shall be:

1. Unbiased report on the accident/incident

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2. Detailed investigation of the probable causes leading to the accident/incident.
3. A list of recommendations to prevent recurrence

Remedial follow-up and action

The unit SHE co-ordinator shall issue the action plan based on the recommendations. The action plan shall list down short and long-term measures, the possible review for risk or aspects assessment and review of operational controls. Safety coordinator shall follow up with the concerned Officer/Manager on the action plan. The investigation report and the action plan shall be discussed in weekly meetings/SHE Committee meetings.

Major Accidents / Incidents

All the major accidents foreseen and that have happened shall be written down and all the employees shall be intimated the emergency procedure in case of any major accidents. The records of these accidents and emergency procedures should be made available to all.

All major accidents and incidents shall be reported to the Factory manager by the Factory Manager, who shall in turn communicate to top management.

High potential incidents

A team led by Safety coordinator/ unit SHE co-ordinator shall investigate all high potential incidents. A time bound action plan to prevent recurrence shall come out from the investigation. This shall be discussed at the monthly/SHE committee meetings.

Accident/Incident Analysis

Accident/Incident Analysis involves the collection of statistics and methodical identification and examination of the causes and consequences of the accidents/incidents. This is the part of the overall safety management programme, which spells out its effectiveness. This analysis can help in identifying recurring problems and can be useful in motivating management.

Performance Statistics

The performance statistics shall be reported to the Factory Manager in every month on the prescribed format. In addition to this, the SHE coordinator shall report the performance of the Safety and health System each quarter to the factory manager

Occupational Injury & Illness Analysis

Analysis of such cases shall be carried out so that corrective action may be taken to prevent recurrence in the future.

Property & Equipment Damage Identification & Analysis

A team shall be nominated by the unit SHE co-ordinator to carry out an analysis for identification of the Property and Equipment damage resulting from accidents. This analysis shall be used to take preventive actions and also to quantify the damage caused due to unsafe practices.

Problem Solving Project Teams

The unit SHE co-ordinator shall nominate problem Solving Project Teams for suggesting solution to recurring problems/incidents. These reports shall be properly filed and the recommendations implemented after discussions in the Management Review Meeting/SHE Committee meetings.

Incident Analysis

All incidents shall be analysed for the causes by the Safety coordinator and action plan shall be prepared to take corrective steps for prevention of their occurrence in the future. The reports shall be submitted to the unit SHE co-ordinator.

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2.3 INCIDENT REPORTING NORMS FOR EP

Nature of accident	Shift in charge	Security	HR	Dep't. Head	Unit Head	Regional Head	RVP/Mfg Head
• Injury	Immediate	Immediate	Immediate	●	●		
- First aid	Immediate	Immediate	Immediate	●	●		
- MTC	Immediate	Immediate	Immediate	●	●	●	
- LTA	Immediate	Immediate	Immediate	●	●	●	
- Fatality	Immediate	Immediate	Immediate	●	●	●	●
• Near Miss which could have result in serious incident	Immediate	Immediate	Immediate	●	●	●	
Environ release (serious incident)	Immediate	Immediate	Immediate	●	●	●	●
Property damage	Immediate	Immediate	Immediate	●	●	●	●

Notes;

1. **Red** : First info. Repot within 4 hrs + Prelim report 24 hrs + Final report in 72 hrs
2. **Green** : Preliminary Report within 24 hrs + Final report in 72 hrs
3. **Blue** : Final Report in 72 hrs
4. First info. Report verbal / by phone. Preliminary and final reports - written / email
5. Shift supervisor will report to dept. Head/ manager, who in turn will report to Unit Head
6. Unit Head will report to next level of reporting

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Chapter - 3

RISK ASSESSMENT AND POTENTIAL HAZARDS IDENTIFICATIONS

3.1 INTRODUCTION OF GENERAL RISK ASSESSMENT

WHAT IS RISK ASSESSMENT?

A risk assessment is nothing more than a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The aim is to make sure that no one gets hurt or become ill.

The important things you need to decide are whether a hazard is significant and whether you have it covered by satisfactory precautions so that the risk is small. You need to check this when you assess the risks. For instance, electricity can kill but the risk of doing so in an office environment is remote, provided that “live” components are insulated and metal casing properly earthed. It requires you to identify significant **hazards** and the means used to control them, so that **risks** can be eliminated or reduced to the lowest reasonably practicable level.

Risk assessment asks questions like:

What would happen if there were no guard on this machine? Or
What could go wrong during this task?

Followed by:

Am I doing enough to prevent anyone from being harmed or do I need to do more?

WHAT IS THE DIFFERENCE BETWEEN HAZARD AND RISK?

In every day conversation there is a tendency to use hazard and risk interchangeably; we describe things as hazardous or risky. When assessing risks, the difference between the two terms needs to be clearly understood.

A **hazard** is defined as:

“Something with the potential to cause harm”,

Where the harm may be injury or ill health. The something could be a substance, a source of energy, a machine or a situation (such as cleaning online nip roller).

Risk is defined as:

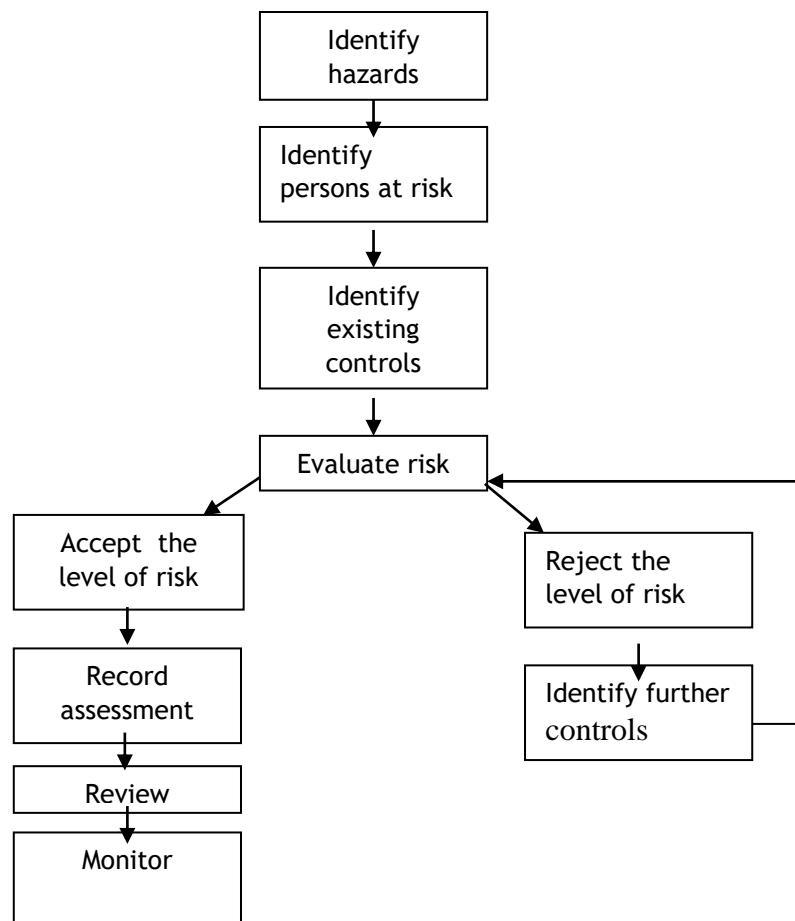
“The likelihood (chance) that the harm from a particular hazard will be realised”.

It also takes into account the severity of the hazard.

A high-risk activity is one where injury is likely to occur and if it does, the injury could be severe. A low risk activity is one where injury is unlikely to happen, but if it does, the injury will be minor.

HOW IS A GENERAL RISK ASSESSMENT CARRIED OUT?

The steps involved in a general risk assessment of an existing activity are shown in the diagram below:



STEP 1: IDENTIFY HAZARDS

Observe the activity and make a note of the things that could cause injuries or ill health. These could be things to do with the way the task is done, the tools, equipment and materials used, the environment where the work is done and how the work is organised. Do not only consider the unsafe conditions at the time but also try to identify those things that could cause injury if they were not controlled (even if they are controlled at the time). For simple activities, it may be possible to identify the hazards in one-step. Complex work may need to be considered as a series of simpler tasks in order not to overlook hazards. Ignore the trivial and concentrate on those hazards that could reasonably cause harm. Do not forget to include hazards that arise during cleaning and maintenance and if the activity is interrupted.

STEP 2: IDENTIFY PERSONS AT RISK

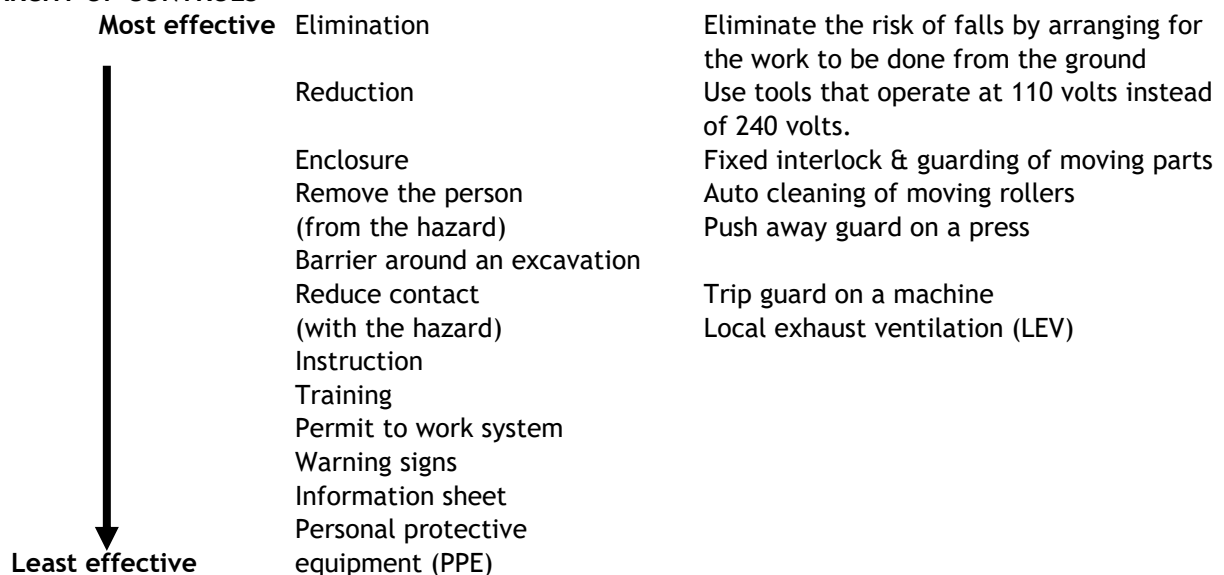
For each hazard, identify who could be injured or whose health may be at risk. You need to consider:

- Employees carrying out the task
- Inexperienced workers, helpers or trainees
- Employees nearby who could be affected
- Maintenance workers
- Cleaners
- Contractors
- Visitors

STEP 3: IDENTIFY EXISTING CONTROLS

In the context of risk assessment, the term ‘controls’ is used to describe the methods used to eliminate the risks or reduce them to the lowest reasonably practicable level. Where there is specific legislation covering a particular hazard (e.g. noise or vibration) the risk must be controlled to the level required by the legislation. In this step you should record the controls you find in place at the time of the assessment. Not all controls are as effective as each other at reducing risks and there is a preferred hierarchy that should be considered. This hierarchy is shown below with the most effective at the top and the least effective at the bottom.

HIERARCHY OF CONTROLS



STEP 4: EVALUATE THE RISKS

Having identified the hazards and the controls in place, it is now time to consider how likely it is that the persons identified as being at risk will be harmed. What you have to decide for each hazard is whether the remaining risk is HIGH, MEDIUM or LOW. This decision also takes into account the severity of the outcome if the risk were to be realised. The decision process is represented by the following relationship:

Risk = Likelihood x Severity

The calculation of risks in absolute terms involves complex mathematics and is not a requirement of the legislation. However, there are simple systems that can be used to ‘calculate’ risks and a number of these are described in table. These systems are very useful when ranking risks in order to prioritise actions. If the risk with the existing controls in place is acceptable, you can move to step 5. If the risk is unacceptable and is rejected, it will be necessary to identify further controls and then re-evaluate the risks. This loop (see diagram above) should be repeated until you are happy to accept the risk.

STEP 5: RECORD THE ASSESSMENT

All dept. head are required to carry out risk assessments. The significant findings that should be recorded are:

- The hazards
- The persons at risk
- The preventative and protective measures used to control the risks (the ‘controls’)
- Any further actions needed to control the risks (‘further controls’)

Where appropriate, risk assessments should be linked to written safe systems of work, method statements and health and safety records.

Forms for recording risk assessments should be kept as simple as possible. No single form will cover all situations and even within an organisation it may be necessary to use more than one style of form.

STEP 6: REVIEW THE ASSESSMENT

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One reason to suspect that an assessment is not accurate is if someone is injured or becomes ill from the task covered by the assessment. Therefore, whenever an accident occurs, the assessment for the task being performed at the time is reviewed. A significant change that would require an assessment to be reviewed could be:

- The introduction of a new machine or equipment
- A change to the system of work
- Moving the task to a new location
- Using a different substance
- New or amended legislation

Even if there is no reason to suspect that an assessment is no longer valid and there have been no significant changes, it is good practice to review assessments from time to time.

STEP 7: MONITOR

Although not strictly a part of the risk assessment process, monitoring is an essential part of risk management. The controls listed in a risk assessment are the measures that will eliminate risks or reduce them to acceptable levels. If these measures are not implemented, injuries and ill health will occur. The aim of monitoring is to ensure that the control measures listed in an organisation’s risk assessments are used and if they are not, why not.

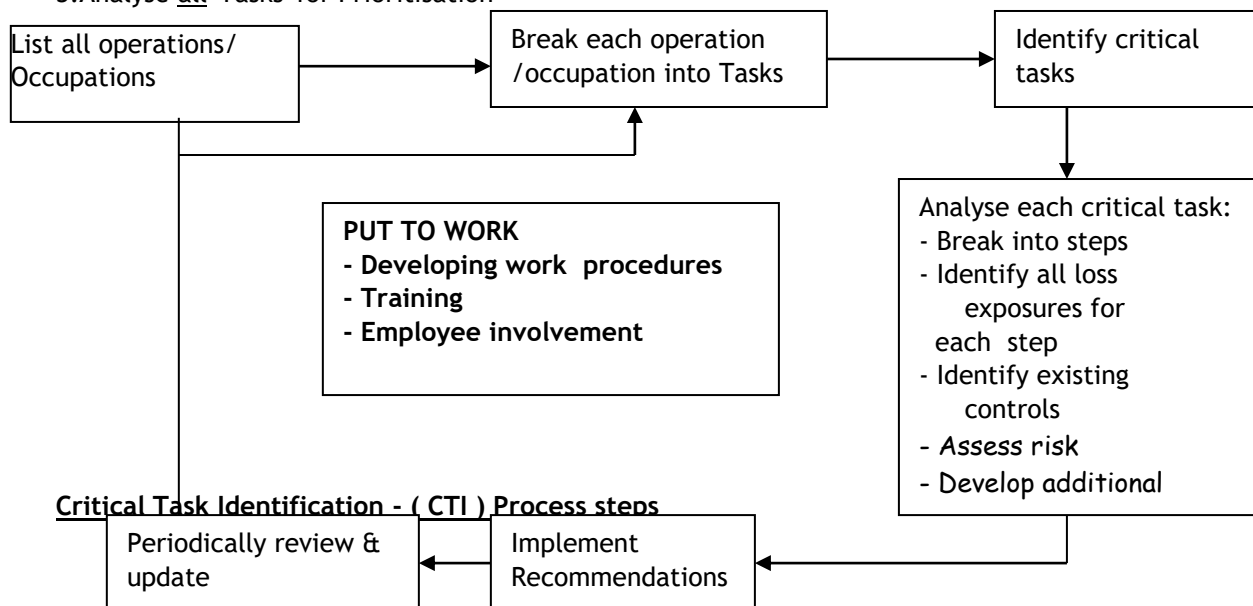
The type of monitoring required will depend on the level of risk. The greater the risk the more in-depth and formal the monitoring will need to be, with the monitoring of risk control measures forming part of a safety audit or workplace inspection. For lesser risks, informal monitoring carried out by supervisors as part of their routine duties may be adequate.

3.2. METHODOLOGY OF TASK HAZARDS ANALYSIS (THA)PROCESS

Task based approach is relates directly to the tasks that an individual employee undertakes Hazards associated with the tasks performed. The detail of critical identification (CTI) Task hazards analysis (THA) is described in examples of risk assessment process.

Steps for THA

- 1.Prepare Inventory of all 'Jobs'
2. Break job in to tasks
- 3.Analyse all 'Tasks' for Prioritisation
4. Identify critical task by CTI process
5. .Conduct Task Hazard Analysis (THA)for critical tasks



Steps.- 1 : Job Inventory of all operations

CTI (Job List) - OWN / Contractor Employees , Area / Section:

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

- Select areas to be studied
 - Assign 'champions' for each area
- List all the 'Jobs' in the area
 - Machine operator
 - Packer
 - Checker
 - Material Handler
 - Security / Gardener
- Ensure 100% coverage of all people Connected with the area

Sr.No.	Job / Occupation	ID No. of workmen associated with job

CRITICAL INDEX

- > Index Based on
- > Severity Potential (of loss / injury)
- > Probability or likelihood (of loss)
- > Frequency (of exposure to hazard which may result in the loss)

Criticality Index = Severity + Probability + Frequency

Steps2 : Task Inventory

- Divide each job into Tasks
- Typically a job will involve 5 - 10 tasks
- Tasks will have clear boundaries and clearly identifiable
- Tasks will neither be too narrow nor too broad
- Ensure both routine and non-routine tasks are identified
- Consult person concerned
- List down tasks for each job

Steps - 3 : Severity of Loss (CTI)

Severity rank	Descriptions
0	No injury : quality, production, environmental, or any other loss < Rs 10,000/-
2	Minor injury : illness without LTA, non-disruptive property damage, quality, production, environmental or other loss > Rs 10,000/- but < Rs100,000/-
4	LTA or illness without permanent disability , property damage, quality, production, environmental or other loss > Rs 100,000/- but < Rs 500,000/-
6	Fatality - Permanent disability, loss of life or body part, extensive loss of structure, equipment, material, quality, production, environmental or other loss > Rs 500.000/-

Steps. - 5 : Frequency of Exposure ranking

No. of persons performing tasks	No. of times by each person / day		
	Factor	Less than daily	Few times / day
Few	1	1	2
Moderate	1	2	3
Many	2	3	3

Steps...6 : Risk Ranking (Criticality Index)

Factor	Minimum	Maximum
Severity	0	6
Frequency	1	3
Probability	-1	+1
Total - Index	0	10

Steps...7 : CTI Ranking Score & Priority setting

Ranking score (Critical index)	Priority
0 - 4	Low
5 - 7	Medium
8 - 10	Height

Step 4 : Probability or Likelihood of occurrence (CTI)

- 1 = Low probability of loss
- 0 = Moderate probability of loss
- + 1 = High probability of loss

Do not consider existing controls at these stages
Process steps for Task Hazards Analysis

- v Select task to be analysed (From critical task list, accident & incident history and new tasks)

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

- v Break down task into sequence of steps
- v Evaluate hazards & risks in each step
- v Identify people at risk
- v Define existing control measures
- v Quantify / evaluate risk
- v Define additional control to bring down risk to an acceptable level
- v Implement control measures
- v Review

Risk Evaluation

Risk = Severity x Probability

Severity: Defines loss severity on a scale of 1 - 10. Based on loss potential assuming no controls exist (worst possible accident considered)

Consequence	Scale
Multiple Death	10
Single Death	8
Major Injury - Disability, illness, major damage	6
Loss time injury, illness, damage	4
Minor injury, minor damage	2
Delay only	1

- v Multiple death: Toxic vapour release, structure failure, fire & explosion
- v Single death: Use of 240 V hand tool, fall from height, confined space
- v Major injury: Figure & hand in moving rollers /parts ,Contact with chemicals,
- v Minor injury: Mishandling small tool/blade
- v Delay: QC issues, machine breakdown

Probability: Define probability of loss / accident on a scale of 1 - 10. Probability based on frequency of task and control measures in place. Be conservative in ranking in case of any doubt

Probability	Scale
Certain or imminent	10
Very likely	8
Likely	6
May happen	4
Unlikely	2
Very unlikely	1

- v Frequency of task
- v Skill & supervision
- v Work environment / condition of equipment
- v Quality and type of guards and interlocks
- v Type of controls: permanent/automatic or operator dependent
- v Vulnerability enhancing factors like exhaustion, distraction etc.

Factors Effecting Probability

- v **Harm is certain and imminent (10)**
 - No procedures or systems to control accidents
 - No protective guards, interlocks / PPE provided
 - Unskilled operators with no training & supervision
 - Adverse work environment / fatigue
 - Safety is not considered high priority by those involved

- v **Harm is very likely (8)**
 - Control measure depend on an individual using them on each occasion e.g. roof ladder, work procedures, use of PPE
 - Minimal training and supervision
 - One or more factor under ' Imminent' category



∨ **Harm is likely (6)**

- Control measure depend on an individual using them on each occasion e.g. work procedures, use of PPE
- Training and adequate supervision provided
- One or more factors given to 'Very likely' exist

∨ **Harm may happen (4)**

- Control measure do not depend on an individual using them on each occasion but can fail in absence of a well defined maintenance system or supervision of control measures e.g. Limit switches
- Training and adequate supervision provided
- People are often exposed to hazard

∨ **Harm is unlikely (2)**

- Control measure do not depend on an individual using them on each occasion and there is procedure to check their efficacy
- Training is provided repeatedly and regularly
- Adequate supervision provided
- Hazards are a cause of only few injuries and people are occasionally exposed to hazards

∨ **Harm is very unlikely (1)**

- Control measure do not depend on an individual using them on each occasion and they are unlikely to fail
- Training is provided repeatedly and regularly
- Adequate supervision provided
- Hazards are a rarely cause of injuries and people are rarely exposed to hazards
- There is very positive safety culture in the organization

Risk Evaluation: Priority Setting - The Severity / Likelihood Matrix

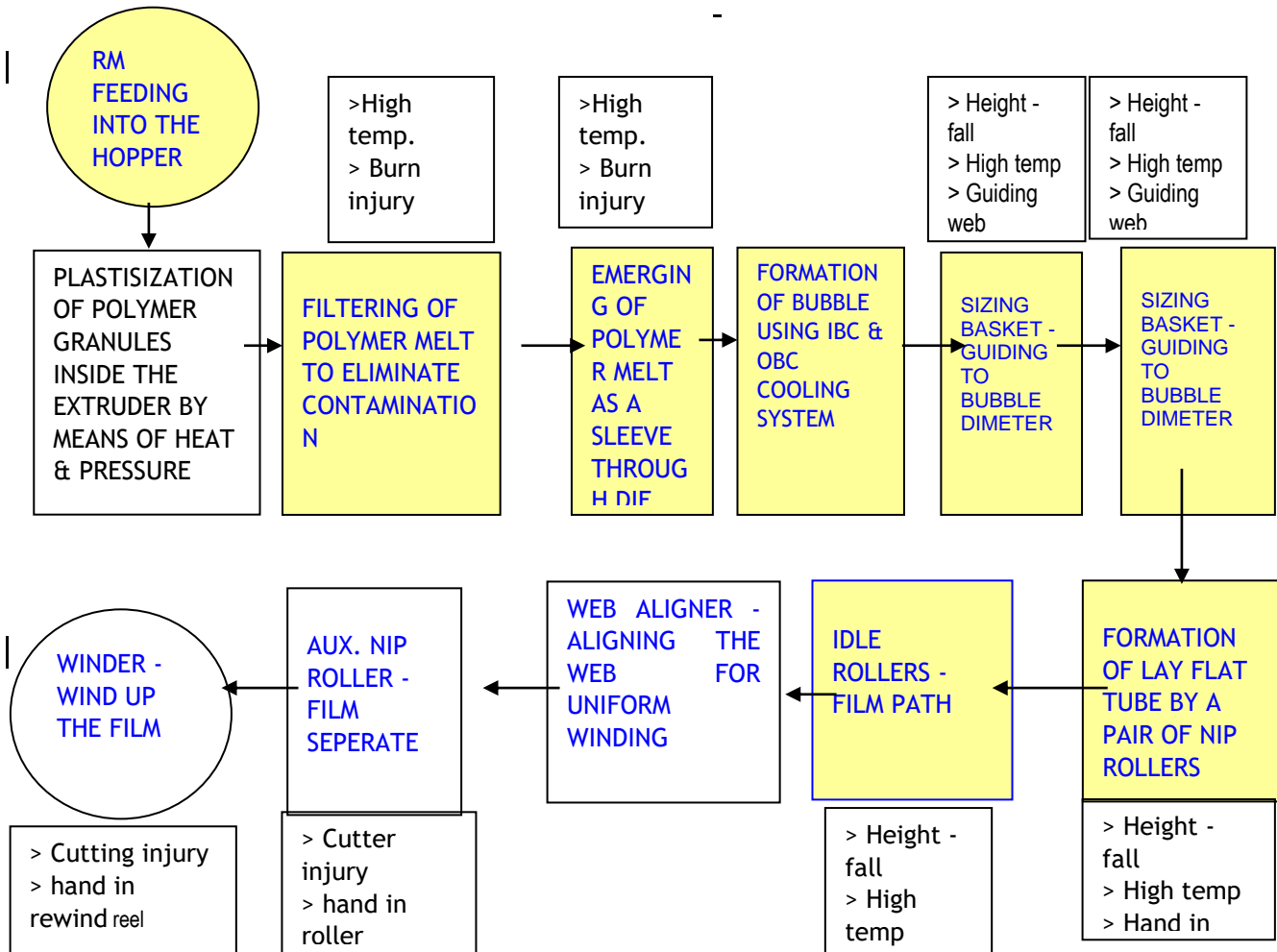
Likelihood	SEVERITY					
	Certain (10)	Very Likely (8)	Likely (6)	May Happen (4)	Unlikely (2)	Very Unlikely (1)
Certain (10)	100	80	60	40	20	10
Very Likely (8)	80	64	48	32	16	8
Likely (6)	60	48	36	24	12	6
May Happen (4)	40	32	24	16	8	4
Unlikely (2)	20	16	12	8	4	2
Very Unlikely (1)	10	8	6	4	2	1

- Risk in coloured areas is unacceptable
- Improve controls in all task steps where loss is certain / imminent
- Review controls of all task steps between the 'bold lines'

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

3.3 RISK ASSESSMENT STUDY BY THE PROCESS

A. Blown Film : Process Mapping



MAJOR OPERATIONS IN BLOWN FILMS

1. Granules feeding
2. Filter / Screen changing
3. Die lip cleaning
4. Cleaning of Nip roller
5. Tie up melt with cotton rope & Bubble lifting
6. Corona treatment
7. Working at high temperature and humidity
8. Climbing up at height
9. Tag insertions in online web
10. Packing of Roll
11. Storage of rolls

4. Critical Task Inventory (CTI)

CRITICAL TASK INVENTORY

Deptt . : Blown Film
Task : Major Hazards Operations in Blown Film

Date :
Prepared by
Reviewed by :

TASKS	LOSS EXPOSURE										RISK EVALUATION				PROGRAMME NEEDS						
	Safety Problem	Health Hazard	Damage	Fire risk	Quality	Prodn. problem	Equipment	Materials	Environment	Others	Severity	Frequency of task	Probability of accident	Critical task	Procedures	Practices	Skill training opportunities permit	Industrial hygiene	PPE	Others	
1. Granules Feeding - Get bag, tare bag by blade and put in drum.	Y	N	Y	N	Y	Y	N	Y	N	N	3	2	0	5	Y	Y	Y	N	N	Y	N
2.. Filter screen changing - Remove, clean and assembly of filter block of screen changer unit	Y	Y	N	N	Y	N	Y	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
3. Die Lip cleaning - Remove melted material and clean die lip by acid powder	Y	N	N	N	Y	N	Y	N	N	N	5	2	0	7	Y	Y	Y	N	N	Y	N
4. Cleaning of Nip Roller - Online cleaning of steel and rubber roller manually by hand	Y	N	N	N	Y	N	N	N	N	N	5	2	0	7	Y	Y	Y	N	N	Y	N
5. Tie up melt with rope & bubble lifting - Tie rope with melted web and lift the bubbles manually	Y	N	N	N	N	Y	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
6. Corona treatment - Come in contact with High voltage and oxen gas during corona setting	Y	Y	N	N	Y	N	N	N	N	N	5	2	0	7	Y	Y	Y	N	N	Y	N
7. Working at height temperature and humidity	Y	Y	N	N	Y	N	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
8. Working at height	Y	N	N	N	N	N	N	N	N	Y	4	2	0	6	Y	Y	Y	N	N	Y	N
9. Tag insertion in online web - Pasting of sticker on running web during any breakdown	Y	N	Y	N	Y	N	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
10. Packing of Rolls – Cut web and samples and covered roll with packing	Y	N	Y	N	Y	Y	N	Y	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
11. Storage of rolls – Storage of rolls on above others	Y	N	Y	N	N	Y	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

TASK HAZARDS ANALYSIS (THA)

TASK BASED RISK ASSESSMENT RECORD FORM							
Task No.& Task : 1. Granules Feeding					Date :		
Assess by :					Reviewed by :		
Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1 Lifting granules from pallet and place on drum	1. Fall of bag / Workmen	Feet injury	Safety shoes	2	4	8	Ensure proper safety shoes and support while lifting the bag from higher pallet
2. Tare bag blade and put granules in drum	1. Cutting injury, 2.Spillage of granules / Workmen	Hand Cutting minor injury	Safety shoes	4	4	16	Blade with holder and hand gloves to be provided
3. Transport and bring filled granules drum near to machines	-	-	-	2	2	4	Ensure proper trolley / pallet truck wheels to eliminate fall of drum from trolley
4. Pickup suction pipe and put in drum	-	-	-	2	2	4	

TASK BASED RISK ASSESSMENT RECORD FORM							
Task : 2. Filter / Screen Changing					Date :		
Assess by :					Reviewed by :		
Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1. Dismantling of screen changing unit and remove filter block from screen changing handle	1. High temp. Burn injury 2.Slippage of tools/ spanner Operator	Burn / Hand injury	Safety shoes, Hand gloves	6	4	24	Proper insulated hand tools and heat resistance gloves to be provided. Ensure proper training .
2. Cleaning of screen changer unit and filter block manually	1. High temp. Burn injury / Operator	Burn / Hand injury	Safety shoes, Hand gloves	4	4	16	Proper hand gloves to be provided. Ensure proper training .
3. Assembly of screen changer unit after cleaning	1. High temp. Burn injury 2.Slippage of tools/ spanner Operator	Burn / Hand injury	Safety shoes, Hand gloves	6	4	24	Proper insulated hand tools and heat resistance gloves to be provided. Ensure proper training .
4. Checking gap adjustment of seUnit Headent block	1. High temp. Burn injury 2.Slippage of tools/ spanner Operator	Burn / Hand injury	Safety shoes, Hand gloves	6	4	24	Ensure proper training .

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TASK BASED RISK ASSESSMENT RECORD FORM

Task : 3.Die Lip cleaning

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1. Remove melted materials from die lip by using brass strip	1. High temperature Burn injury 2.Melted material hit to body Operator	Burn / Hand, head injury	Safety shoes, hand gloves	6	4	24	Helmet and Proper tools to be provided. Ensure proper training.
2. Clean die lip by applying satiric acid	1. High temperature Burn injury 2.Melted material hit to body Operator	Burn / Hand, head injury	Safety shoes	6	4	24	Helmet and Proper tools to be provided. Ensure proper training.
3. Clean the die clip with scratch manually	1. High temperature Burn injury 2.Melted material hit to body Operator	Burn / Hand, head injury	Safety shoes	6	4	24	Helmet and Proper tools to be provided. Ensure proper training.

TASK BASED RISK ASSESSMENT RECORD FORM

Task : 4.Cleaning of Nip Roller

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1. Cleaning of running Nip roller with cotton piece by IPA	1. Hand in roller / Operator	Fatality due to hand in roller	Hand gloves, cotton cloth, training	8	4	32	Explore online auto roll cleaning mechanism. Ensure proper training
2. Cleaning of running roller with cotton piece by scotch barite & soap solution	1. Hand in roller / Operator	Fatality due to hand in roller	Hand gloves, cotton cloth, training	8	4	32	Explore online auto roll cleaning mechanism. Ensure proper training

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TASK BASED RISK ASSESSMENT RECORD FORM

Task : 7.Tag insertion in online web **Date** :

Assess by : **Reviewed by** :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
Identify the defective moving web	-	-	-	-	-	-	
Pickup tag and putting on moving web to identify the defective web	1. Hand in moving web / Workmen	Hand in roll major hand injury	Training	10	4	40	Auto tagging system

TASK BASED RISK ASSESSMENT RECORD FORM

Task : 8.Working at height **Date** :

Assess by : **Reviewed by** :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
Climb up for bubble lifting and nip roller tension setting	1. Fall from height 2. Slippage in roller Operator / Workmen	Fall - Fatal injury	Safety shoes,	8	2	16	Cross railing, safety belt, and guard at rotating part open area to be provided.
Climb up for setting web guide	1. Fall from height Operator / Workmen	Fall - Fatal injury	Safety shoes,	8	2	16	Cross railing, safety belt, emergency stop to be provided.
Climb up for corona setting	1. Fall from height Operator / Workmen	Fall - Fatal injury	Safety shoes,				Cross railing, safety belt, guard at rotating part open are to be provided.
Climb up to Haul - off unit for web tension checking	1. Fall from height Operator / Workmen	Fall - Fatal injury	Safety shoes,				Cross railing, safety belt, to be provided. Explore cooling possibility

TASK BASED RISK ASSESSMENT RECORD FORM

Task : 9.Packing of rolls

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1. Cutting rejected web and sample by blade	1. Cutting injury / Workmen	Minor hand injury	Safety shoes, training	4	4	16	Blade with holder and gloves to be provided.
2. Manually wrap/ coat web with plastic film and tapping	-	-	-	1	4	4	-
3. Unload roll from unwinder	-	-	-	1	4	4	-
4. Replace air shaft by axially air shaft	1. Fall of air shaft / Workmen	Minor hand injury	Safety shoes	2	4	8	Ensure proper gripping & hold of shaft in trolley.
5. Handle and weighing of rolls	-	-	Safety shoes	2	4	8	

TASK BASED RISK ASSESSMENT RECORD FORM

Task : 10.Storage of rolls

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1. Take rolls and bring in web store area	1. Hit the forklift to person / Workmen outside the door	Body injury	Safety shoes, t	4	4	16	Horn ,light and indication to forklift when come near to door to be provided..
2. Put wooden plate above earlier roll and put roll on wooden plate	1.Fall of rolls / Workmen	Major near miss	Safety shoes	1	4	4	Proper racking system for storage the rolls to be provided.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

1. Summary of Hazards in Blown Film

HAZARD	THOSE AT RISK	IS THE RISK ADEQUATELY CONTROLLED?	RESIDUAL RISK	WHAT FURTHER ACTION IS REQUIRED TO CONTROL RISK?
<i>List hazards here.</i>	<i>Person at risk</i>	<i>Existing</i>	<i>High, medium, low</i>	<i>List the risks which are not adequately controlled and the actions proposed where it is reasonably practicable to do more.</i>
Work at height - Fall (climbing to height)	Operator / Workmen	Climbing at height	Medium	cross railing, Guards and helmet to be provided
Contact Hazards - Cutting film by cutter	Operator / Workmen	-	Low	Holder to cutter, training
Trapping Hazards - Hand in Nip Rollers during cleaning	Operator / Workmen	-	High	Auto cleaning Mechanism , training
Stability Hazards - Forklift impact to person at door	Operator / Workmen	-	Medium	Indicator Light to Forklift which can be visible to person at other side of door
Thermal Hazards - Die lip cleaning from hot surface(burn)	Operator / Workmen	Safety shoes, gloves	Medium	Goggles, helmet and heat resistance tools, training
Stacking / Storing Hazards - insecure storage / stacking	Operator / Workmen	Safety shoes,	High	New secure racking system for stacking and storage jumbo
Temperature Hazard - Working at high temperature	Operator / Workmen	-	High	Air cooling system

Action Plan

Hazard	Action Required	Target Date	Assessors Name Date Completed
Work at height - Fall (climbing to height)	Cross rail to existing rail, Safety belt to be provided		
Contact Hazards - Cutting film by cutter	Blade with holder to be provided		
Trapping Hazards - Hand in Nip Rollers during cleaning	Explore the possibility of auto cleaning mechanism		
Stability Hazards - Forklift impact to person at door	Indicator Light to Forklift which can be visible to person at other side of door		
Thermal Hazards - Die lip cleaning from hot surface(burn)	Goggles, helmet and heat resistance tools to be provided, training		
Stacking / Storing Hazards - insecure storage / stacking	New secure racking system for stacking and storage jumbo		
Temperature Hazard - Working at high temperature	Ventilation system at top and explore the possibility of air cooling system		

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

2. Laminator

Summary of Hazards in Laminator

HAZARD	THOSE AT RISK	IS THE RISK ADEQUATELY CONTROLLED?	RESIDUAL RISK	WHAT FURTHER ACTION IS REQUIRED TO CONTROL RISK?
<i>List hazards here.</i>	<i>Person at risk</i>	<i>Existing</i>	<i>High, medium, low</i>	<i>List the risks which are not adequately controlled and the actions proposed where it is reasonably practicable to do more.</i>
Impact Hazards - Falling Rolls from unwinder/rewinder	Operator / Workmen	Roll locking toggle, safety shoes	Medium	Interlock sensor, locking/unlocking indicator, training
Contact Hazards - Cutting film / foil by cutter	Operator / Workmen	-	Low	Holder to cutter, training
Trapping Hazards - Hand in Rollers during cleaning	Operator / Workmen	-	High	Auto cleaning Mechanism, training
Storage energy hazards - Load carried by crane	Operator / Workmen	-	Low	-
Thermal Hazards - Die lip cleaning from hot surface (burn)	Operator / Workmen	Safety shoes, gloves	Medium	Goggles, helmet and heat resistance tools, training
Fumes Hazards - Polymer fumes	Operator / Workmen	Exhaust fan	High	Mask, Blower in place of exhaust fan
Impact Hazards - Falling Rolls from unwinder/rewinder				

3. SLITTING

HAZARD	THOSE AT RISK	IS THE RISK ADEQUATELY CONTROLLED?	RESIDUAL RISK	WHAT FURTHER ACTION IS REQUIRED TO CONTROL RISK?
Impact Hazards - Falling Jumbo from unwinder	Operator / Workmen	Roll locking toggle, safety shoes	Medium	Interlock sensor, locking/unlocking indicator, training
Contact Hazards - Cutting film / foil by cutter	Operator / Workmen	-	Low	Holder to cutter, training
Trapping Hazards - Hand in cutters during changeover	Operator / Workmen	-	Medium	Interlock and guard
Storage energy hazards - Load carried by crane	Operator / Workmen	-	Low	-
Stacking / Storing Hazards - insecure storage / stack	Operator / Workmen	Safety shoes,	High	New secure racking system for stacking and storage jumbo
Manual handling - Lifting and handling of rolls (Back pain)	Operator / Workmen	-	High	Manipulator - roll lifting and handling device

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

4. Printing

1. Job Inventory / List of operations

NO.	JOB TITLE/ OPERATION	Responsibility
J1	Laminated pallet handling	
J2	Roll loading	
J3	Roll changeover	
J4	Roll end detector setting	
J5	BST web guide setting	
J6	Corona setting	
J7	Nip roller setting	
J8	Print unit cleaning	
J9	Ink flow setting and shade matching	
J10	Form roller setting	
J11	Manual web guide setting	
J12	Flexo unit setting	
J13	print stoppage identification device setting	
J14	Blade setting for slitting web at multiple track	
J15	UV lamp (air cooling) checking)	
J16	Lamp changing 4.8 & 8.4 kw	
J17	Registration setting	
J18	Printed roll unloading	
J19	Printed roll palletizing	
J20	Product changeover	
J21	Nyloplates making	
J22	Nyloplates mounting	
J23	Shaft loading	
J24	Ink mixing	

THA - Printing

List all tasks or activities normally done or that might be done by a person in this occupation	Loss Exposures								Risk Evaluation				Programme							
Needs																				
List all tasks or activities normally done or that might be done by a person in this occupation	Safety	Health	Fire/Elect risk	Quality	Prod Problems	Equipment	Materials	Environment	Other	Severity	Freq of Task	Prob of Accident	Critical Task	Procedures	Practices	Skill Training	Special/Rules Permit	Inds Hyg Revive	PPE	Others
Laminated pallet handlig - Brining roll pallets from slitting or web store to near the machine	Y	N	N	Y	N	N	Y	N	N	2	2	0	4	Y	N	Y	N	N	Y	N
Roll loading - Manual lifting of roll & loading on buffer stand of unwinder	Y	Y	N	N	N	N	N	N	N	4	2	0	6	Y	N	Y	N	N	Y	N
Roll changeover - Remove core, push new roll from tand, locate end of two webs at joing table, cut both webs and joined webs by tapes	Y	N	N	N	Y	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
Roll end detector setting - Wrap laminates on core and sensor setting	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
BST web guide setting - from control panel	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Corona treater setting - amphere setting by adjusting knob / exhaust of corona	Y	Y	N	N	N	N	N	N	N	4	2	0	6	Y	N	Y	N	N	Y	N
Nip roller setting - Placing carbon paper over laminate, engage nip roller to make impression and setting uniform pressure on laminate	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Ink Unit cleaning - remove old ink and clean unit by uv wash and cotton	Y	N	Y	Y	N	N	N	N	N	3	2	0	5	Y	N	Y	N	N	Y	N
Ink flow setting and shade matching - Ink flow setting by adjusting knob, shade matching by setting and adjusting ink duct and ink flow	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Form roller setting - contacting form roller to print image by mechanical adjustment	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Manual web guide setting - Place roll on unwinder and setting the web at centre by adjusting knob	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Flexo unit setting - Setting uniform varnish on laminates by adjusting pressure	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
print stoppage identification device setting - on the PLC touch screen	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Blade setting for slitting web at multiple track-insert blade in laminate,checking width and setting web guide at centre	Y	N	N	Y	N	N	N	N	N	3	2	0	5	Y	N	Y	N	N	Y	N
UV lamp (air cooling) checking - checking uv lamp life and proper functioning	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Lamp changing 4.8 & 8.4 kw - Remove old lamp by disconnecting the connection and put the new lamp	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Registration setting - setting by mechanical adjustment	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Printed roll unloading - stop rewinder stand, cut web and push roll on buffer stand, put new core and paste web with core by tape	Y	N	N	Y	N	N	N	N	N	3	2	0	5	Y	N	Y	N	N	Y	N
Printed roll palletzing - take roll on pallet, pelletizing and strapping by nylon strip	Y	N	N	N	N	N	N	N	N	4	2	0	6	Y	N	Y	Y	N	Y	N
Product changeover-Remove all old cylinders & ink from tray and place all new one	Y	N	N	Y	N	Y	N	N	N	3	1	0	4	Y	N	Y	N	N	Y	N
Nylopalte making - Makig nylopalet from negative in plate making machine	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	N	Y	N	N	Y	N
Nylopalte mounting - Nyloplate mounting on cylinder by using tape, cutter and soldering rod	Y	Y	N	Y	N	N	N	N	N	3	3	0	6	Y	N	Y	N	N	Y	N
Shaft loading - Put shaft inside cylinder and fix it by mechanical adjustment	Y	N	N	Y	N	Y	N	N	N	3	1	0	4	Y	N	Y	N	N	Y	N
Ink mixing - manually	Y	N	N	Y	N	N	N	N	N	3	3	0	6	Y	N	Y	N	N	Y	N
Breaking of web from accumulator	Y	N	N	N	Y	N	N	N	N	3	3	0	6	Y	N	Y	N	N	Y	N

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Roll Loading on Buffer stand of Unwinder (PRT) **Date :**

Assess by : **Reviewed by :**

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Remove roll packing by cutting packing by blade	1)Cutting injury ,Loading workmen	Minor injury	1) Safety shoes provided.	2	4	8	1) Ensure proper blade with holder to be used
2) Manually lift roll from pallet and put on buffer unwinder stand	1) roll fall on feet 2)Backpain,Loading workmen	Major injury	1) Work by trained person with work permit only 2) provided Safety shoes	4	4	16	1) Roll lifting device to be used 2) Ensure Proper PEE at Each day before start of Job.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Roll changeover / Splicing (PRT)

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Release the air from unwinder shaft by toggle switch	-	-	1) Work by trained person 2) Ensure proper air pressure	2	2	4	-
2) Cut end of the completed roll (first roll)	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
3) Remove the core & reaming laminates of the first roll	1)Hand injury .Operator	Minor injury	1) Work by trained person 2) Ensure proper air pressure	2	2	4	-
4) Push laminated roll to unwinder shaft from buffer stand and lock unwinder holder	-	-	-	2	2	4	-
5) Take starting end of the laminated roll (second roll) straight to the splice table, lock splice table break to hold second web of second roll	-	-	-	2	2	4	-
6) Cut both the laminates	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
7) Joining both the webs by tape	-	-	-	2	2	4	-

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Corona Treatment (PRT)

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Rotate the knob clockwise or anticlockwise to increase or decrease the ampere	-	-	-	2	2	4	-
2) Exhaust of corona - oxen gas	1)Health problem - operator / environment	Major	1) Work by trained person with work permit only 2) Work under strict supervision	8	2	16	1)Ensure proper exhaust 2) Ensure Proper PEE 3) Safety Briefing and training

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Printed roll palletzing (PRT)

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Edit and cut the printed web by blade	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
2) Lift roll from rewinder stand and put on pallet	1) roll fall on feet 2) Backpain, Loading workmen	Major injury	1) Work by trained person with work permit only 2) provided Safety shoes	4	4	16	1) Roll lifting device to be used 2) Ensure Proper PEE at Each day before start of Job.
4) Stacking rolls on pallet, packing with polythene and nylon strip	1) Hand injury, packer	Minor injury	1) Work by trained person with work permit only 2) provided	5	2	10	1)Ensure proper nylon stripping tools 2) Ensure Proper PEE

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Nylopalte mounting (PRT)

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Cut tape and put on cylinder	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
2) Mount the Nyloplates properly on centre	-	-	-	2	2	4	-
3) Remove the eye mark on Nyloplates my soldering bit	1)Hand injury .2) Electrical shock (Contractor person)	Major injury	1) Work by trained person 2) provided Safety shoes	8	2	16	1)Ensure proper soldering iron and tools 2) Ensure Proper PEE 3) gloves to be used

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Ink mixing

Date :

Assess by :

Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Pick up required different ink and put in one pot	-	-	-	2	2	4	-
2) Mixing the ink manually by knife	1)Fatigue to hand - operator	Minor injury	1) Work by trained person 2) provided Safety shoes	8	2	16	1) Proper mixing equipments to be used 2)Work by trained person 3) Gloves to be used

Summary and action plan

HAZARD	THOSE AT RISK	IS THE RISK ADEQUATELY CONTROLLED?	RESIDUAL RISK	WHAT FURTHER ACTION IS REQUIRED TO CONTROL RISK?
Contact Hazards - Cutting Laminates / tape	Operator / Workmen	-	Low	Holder to cutter ,training
Trapping Hazards - Hand in print unit	Operator / Workmen	-	Low	Plate cover to ink try
Laminates broken Hazards - Breaking of laminates	Operator / Workmen	-	Low	-
Fire and explosive hazards - Ink explosion	Operator / Workmen	-	Low	-
Manual handling - Lifting and handling of rolls (back pain)	Operator / Workmen	Safety shoes,	High	Manipulator - roll lifting and handling device

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Tubing List of Task / operations

Sr. No.	Task / operation descriptions
1	Reel loading on unwinder stand
2	Joining the web by tape
3	Trimming unit setting
4	Camber Roller
5	AMS cutting unit
6	AMS Sealing unit
7	Transfer unit
8	Bucket conveyor
9	Rounding Unit
10	EUB & THT Conveyors
11	THT Extruder
12	THT
13	CCM
14	Rail bowl
15	Autopacker

CTI – Tubing

List all tasks or activities normally done or that might be done by a person in this occupation	Safety	Health	Fire/Elect risk	Quality	Prod Problems	Equipment	Materials	Environment	Other	Severity	Freq of Task	Prob of Accident	Critical Task	Procedures	Practices	Skill Training	Special/Rules Permit	Inds Hyg Revive	PPE	Others
Roll loading - Manual lifting of roll & loading on buffer stand of unwinder	Y	Y	N	N	N	N	N	N	N	4	2	0	6	Y	N	Y	N	N	Y	N
Roll changeover - Remove core, push new roll from tand, locate end of two webs at joing table, cut both webs and joined webs by tapes	Y	N	N	N	Y	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	Y	N
Trimming unit setting	Y	N	N	Y	Y	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
Camber Roller	Y	N	N	Y	Y	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
AMS cutting unit	Y	N	N	Y	Y	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
AMS Sealing unit	Y	Y	N	Y	Y	N	N	N	N	4	2	0	6	Y	Y	Y	N	N	N	N
Transfer unit	Y	N	N	Y	Y	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
Bucket conveyor	Y	N	N	N	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
Rounding Unit	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
EUB & THT Conveyors	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
THT Extruder	Y	Y	N	Y	Y	N	Y	N	N	5	2	0	7	Y	Y	Y	N	N	N	N
THT	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
CCM	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
Rail bowl	Y	N	N	Y	N	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N
Autopacker	Y	N	N	N	Y	N	N	N	N	2	1	0	3	Y	Y	Y	N	N	N	N

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Roll Loading on Unwinder
Assess by :

Date :
Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Pick up roll from pallet to unwinder stand	1)Fall injury / Back pain, Loading workmen	Minor injury	Safety shoes	2	4	8	1) Ensure use of proper PPE, Training and awareness 2) Use of suitable roll handling & lifting device
2) Loading roll in unwinder stand	1)Fall injury / Back pain,	Major injury	Safety shoes, Training	4	4	16	1) Ensure use of proper PPE, Training and awareness 2) Use of suitable roll handling

TASK BASED RISK ASSESSMENT RECORD FORM

Task : Roll changeover / Splicing
Assess by :

Date :
Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Release the air from unwinder shaft by toggle switch	-	-	1) Work by trained person 2) Ensure proper air pressure	2	2	4	1)Ensure proper skill training and awareness
2) Cut end of the completed roll (first roll)	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
3) Remove the core & reaming laminates of the first roll	1)Hand injury .Operator	Minor injury	1) Work by trained person 2) Ensure proper air pressure	2	2	4	1)Ensure proper skill training and awareness
4) Push laminated roll to unwinder shaft from buffer stand and lock unwinder holder	-	-	-	2	2	4	1)Ensure proper skill training and awareness
5) Take starting end of the laminated roll (second roll) straight to the splice table, lock splice table break to hold second web of second roll	-	-	-	2	2	4	1)Ensure proper skill training and awareness
6) Cut both the laminates	1)Cutting injury, operator	Minor injury	-	2	4	8	1) Ensure proper blade with holder to be used
7) Joining both the webs by tape	-	-	-	2	2	4	1)Ensure proper skill training and awareness

TASK BASED RISK ASSESSMENT RECORD FORM

Task : **AMS sealing unit**
Assess by :

Date :
Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Putting the hand in online machine for setting	1)Finger injury / Machine operator	Minor injury	Skill operator, training & awareness	2	4	8	1) Ensure proper Training and awareness 2) Use of interlock (light certain)
2) Standing, near HF bar, checking and setting online machine	1)Finger injury / Health problem Machine operator	Minor injury	Skill operator, training & awareness	2	4	8	1) Ensure proper Training and awareness 2) Use of interlock (light certain)

TASK BASED RISK ASSESSMENT RECORD FORM

Task : **THT Extruder**
Assess by :

Date :
Reviewed by :

Sequence of Basic Steps	Hazards & Persons at risk	Potential harm	Existing Controls & safe procedures	Evaluation of risk			Actions & additional Controls
				S	L	R	
1) Standing near the extruder for setting & chnageover	1)Burn injury / Machine operator	Major injury	Skill operator, training & awareness	5	4	20	1) Suitable moveable guard to be provided 2) Training & awareness
2) Dosing and donought weight setting	1)Burn injury / Machine operator	Minor injury	Skill operator, training & awareness	2	4	8	1) Suitable moveable guard to be provided 2) Training & awareness

Summary of Hazards in Tubing and actions to control

HAZARD	THOSE AT RISK	IS THE RISK ADEQUATELY CONTROLLED ?	RESIDUAL RISK	WHAT FURTHER ACTION IS REQUIRED TO CONTROL RISK?
<i>hazards list</i>	<i>Person at risk</i>	<i>Existing</i>	<i>High, medium, low</i>	<i>List the risks which are not adequately controlled and the actions proposed where it is reasonably practicable to do more.</i>
Reel loading :Impact Hazards - Falling Rolls on feet and back pain problem	Machine Operator	Safety shoes	Medium	1. Suitable handling and lifting device 2. Ensure proper training and awareness
Web Joining :Contact Hazards - Cutting film / web by naked blade	Machine Operator	-	Low	1. Use of proper blade with holder 2. Ensure proper training and awareness
Trimming unit setting :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	-	Low	1. Ensure proper safety guard 2. Ensure proper training and awareness
Camber Roller : Trapping Hazards - Hand in moving parts of running machine	Machine Operator	-	Medium	1. Use of proper safety guard 2. Ensure proper training and awareness
AMS cutting Unit :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	Interlock	Low	1. Ensure interlock and guard 2. Ensure proper training and awareness
AMS Sealing unit :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	-	Medium	1. Light curtain interlock 2. Ensure proper training and awareness
Transfer unit :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	-	Medium	1. Suitable safety guard 2. Ensure proper training and awareness
Bucket conveyor : Trapping Hazards - Hand in moving parts of running machine	Machine Operator	Guards	Low	1.Ensure free walkways and guards 2. Ensure training & awareness
Rounding Unit :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	-	Medium	1. Ensure proper stand for standing 2. Ensure proper training and awareness
EUB & THT Conveyors :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	Guards	Low	1. Ensure proper stand for standing 2. Ensure proper training and awareness
THT Extruder :Thermal Hazards - Working near THT extruder	Machine Operator	Safety shoes	High	1. Movable guard to be used 2.PPE Gloves and goggle to used 3. Ensure proper training and awareness
THT :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	Interlocks	Low	1. Ensure all interlock safety doors working properly 2. Ensure proper training and awareness
CCM :Trapping Hazards - Hand in moving parts of running machine	Machine Operator	Interlocks	Low	1. Ensure all interlock safety doors working properly 2. Ensure proper training and awareness
Rail Bowl :Falls / Slippage Hazards - Fall or slippage during handling the lifting rail bowl	Machine Operator	-	Medium	1. Suitable handling and lifting device 2. Ensure proper training and awareness
Auto packer :Impact Hazards - Hand in belt of autopacer	Machine Operator	-	Low	1. Suitable acrylic guard to be used on control panel 2. Light certain interlock to be used 3.Ensure proper training and awareness

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Why Hazards Analysis

- Increase awareness of process and workplace hazards
- Provide opportunity to identify and control process and workplace hazards and helps in taking Protective / preventative measures
- Can lead to increase productivity
- Prevent occupational injury or illness

Hazards Types

Hazard Type	General Description of Hazard Type
Impact	Person can strike an object or be struck by a moving or flying or falling object.
Penetration	Person can strike, be struck by, or fall upon an object or tool that would break the skin.
Crush or pinch	An object(s) or machine may crush or pinch a body or body part.
Harmful Dust	Presence of dust that may cause irritation, or breathing or vision difficulty. May also have ignition potential.
Chemical	Exposure from spills, splashing, or other contact with chemical substances or harmful dusts that could cause illness, irritation, burns, asphyxiation, breathing or vision difficulty, or other toxic health effects. May also have ignition potential.
Heat	Exposure to radiant heat sources, splashes or spills of hot material, or work in hot environments.
Light (optical) Radiation	Exposure to strong light sources, glare, or intense light exposure which is a by-product of a process.
Electrical Contact	Exposure to contact with or proximity to live or potentially live electrical objects.
Ergonomic hazards	Repetitive movements, awkward postures, vibration, heavy lifting, etc.
Environmental hazards	Conditions in the work place that could cause discomfort or negative health effects.

3.4 GENERAL HAZARDS PROXIMATE CAUSES AND ACTIONS

Considering the different kinds of jobs carried out at our process on routing and non-routing basis, the hazards are has been classified in to 6 categories.

- A. Electrical Shocks
- B. Fire Hazard
- C. Injuries from machines tools /parts in motion
- D. Hand tool injury
- E. Injuries from falling objects
- F. Fall from height

Causes and action required have been identified for each of the hazard and out in tabulated form.

A Electrical Shocks

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. Leakage of current, arching between terminal 2. Leakage from metallic enclosure 3. Loose connection and improper joints 4. Bad contacts 5. Overheating of contacts and moving parts causing spark 6. Inadequate fuse rating 7. Wrong cable size 8. Overheated transformers 9. Spark due to built up static electrical charges 10. Earth protection not done 11. Earth protection not inspected 12. Cable damage during excavation traffic movements 13. Portable tools not earthed 14. Safety gadgets not used 15. Damaged insulation 	<ul style="list-style-type: none"> • Regards all electrical equipment as potential dangerous • Ensure cable termination on the metallic enclosure does not touch enclosure body • Preferably use lug joints even for temporary connection • Cable not moving electrical parts shall be periodically inspected for overheating / melting of cables. • Only standard and rated capacity fuses and cables shall be used for particular circuit • Be sure that the circuit breaker is open before attempting to draw out from their enclosure • inspect all electrical extension before placing the equipment service. Avoid wrapping cords around any part of the body • While testing or checking use one hand only. Most dangerous shocks are from hand to hand • Electrical connection for all portable hands tools and temporary connection should through a three pin socket • Ground all electrical power tools • Do not use water to extinguish fire on live circuits. Use only CO2 extinguishers. It is mandatory to use rubber sheets / day boards / electrical resistance shoe / rubber (electrical) hand gloves while working on high voltage equipment.

B. Fire Hazard

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. Open flames, sparks, heated metal parts 2. Working with in the rage of flammability of the flammable materials. 3. Carrying out the hot work without checking for fire hazards. 4. Flammable dust and particles not cleaned 5. Usage of flammable materials for maintenance work requiring welding and gas cutting 6. Incomplete cleaning and drying of lubricants from equipment's / components before cutting and welding work 7. Storage of flammable materials in work area 8. Poor housekeeping 9. poor cable joints 10. Under capacity cables 11. Fail to earth the electrical tools 12. In sufficient ventilation 13. Work areas not covered properly 14. Leaving burning matchsticks and cotton without quenching the fire 15. Creating any spark in the explosive mixture area. 	<ul style="list-style-type: none"> • When welding cutting work has to be done related containers of the flammable gas the main isolation have to be checked. No work shall be done if the passing in the isolation valves is suspected. • Lubricant parts to be cleaned and dried before doing welding / cutting works • Cables joints and termination, earthling of portable electric tools, welding machines etc to be properly checked • Whenever cable trenches are passing near by the hot work, such areas to be properly covered • Overhead welding and cutting jobs o be properly covered to avoid fall of hot metal and sparks • Safety clearance required for hot work in confined place, work on equipment involving flammable materials.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

C. Injury from Machine tools / Machinery in motion

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. Contact with projection on work or stock and projecting screws 2. Flying metal chips 3. Use of hand for holding emery against the work 4. Attempting to remove chips or turning by bare hands 5. Contact with rotating parts of the job 6. Catching of loose clothing in moving parts 7. Insecurely clamped jobs 8. Slipping or falling against revolving work 9. Unwired, oily and uneven floor. Bad housekeeping 10. Splashing of cutting oil 11. Jamming tool or job 12. Removal of protective guards from machines 13. Cleaning of rollers in running conditions 	<ul style="list-style-type: none"> • For maintenance and repair power switch to be disconnected and padlocked in off position • Operator shall not be allowed to work with long sleeves • For the job involving flying of particles sparks or excessive light , required eye protection shall be used • Manual adjustment and gauging (calliper) should not be permitted on moving machinery • Person should be used brushes or tools for cleaning purpose when equipment is in motion. Use auto cleaning motorised mechanism • Appropriate safety gadgets such as goggles, shield and apron etc shall be used depending upon the nature of the job involved • Supervising personnel shall ensure that guards provided on motor pulley, belts gears etc are in place after maintenance

D. Hand tools Injury

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. usage of wrong tools 2. Worn out tools 3. Hammer, loose handle , damaged anvil 4. Hacksaw : stiffness of blade in frame direction of cutting teeth 5. Ring and box spanner : Grip on the nut, using screw drivers in gap while loosening / tighten the nuts 6. Pipe wrenches : Grip on the pipe fulcrum pin 7. Screw spanners : Grip on the nut 8. Screw drivers : Damage or bent points 9. Oily and greasy tools 10. Tools not properly gripped 11. Oily and grease hands 12. Inadequate lighting 13. Using hand grip for holding jobs etc and using tools to open , cut etc in the vicinity 	<ul style="list-style-type: none"> • Regular examination of tools and repair / replace defective tools • Take appropriate tools for require jobs • Make it habit to carry tool box to work place • Don't use defective worn out tools • Before starting the work ensure all the required tools are available or not • Whenever any hand tools are damaged or cut inform the concerned person and explain the reason for such damage • This will prevent the recurrence of the incidents • Keep the hands dry before gripping the tools • Keep the usable tools and damaged tools separately • Do not use tools of non-standard makes

E. Injury from falling Objects

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. Throwing the material/ objects/tools from the top 2. Carrying out elevated jobs without coordinating of the are at the ground level 3. Carrying out the civil jobs without proper covering to avoid fall of materials 4. Open grills platforms not covered while carrying out maintenance work 5. Shifting of structural materials equipment without proper tools and tackles 6. Object properly not tied while raising or lowering 7. Falling of hot metal pieces while doing cutting work 8. Falling of hand tools 9. Failure of lifting tackles/ accessories 	<ul style="list-style-type: none"> • No materials or objects shall be thrown from elevations • Whenever are works taken up elevator places, sufficient area at the elevation below or at the ground level shall be cordoned off to restrict the movement of personnel and to avoid injuries • Open grill platform surrounding the jobs should be properly covered with sheets or planks • Proper tools and tackles shall be used for shifting of materials. And the materials shall be properly secured to the lifting tackles • Lifting tackles shall be properly inspected and ensured for safe used • While doing welding work it should be ensured that end of the electrodes are not thrown from the elevations • While cutting the supports / portion of the lines it should be ensured that connected lines and equipment's and properly secured by separate means •The personal moving in the plant area shall necessarily wear the safety helmet. • Always 1.5M away from cg of roll while lifting the roll by hoist

F. Fall from Heights

Proximate Causes	Action required
<ol style="list-style-type: none"> 1. Improper Access 2. Unguarded openings 3. Unsupported ladder 4. Fail to provide additional person to hold the ladder 5. Standing on rails 6. Climbing up and down without proper grip 7. Slippery walkways, holds ladder rungs 8. Warn out foot ware 9. Walking on beam, channels, parapet walls, pipelines 10. Running and hurried movement on walkways and stairs 11. Moving in dark areas 	<ul style="list-style-type: none"> • Ladder shall be supported at the top and placed on firm base • Whenever supporting of ladder is not possible a person has to be provided to hold the ladder • Whenever handgrip is required to climb the ladder, required tools shall be lifted separately. • Shoes shall be of non -slippery type • Avoid adventurous climbing up or down • Keep the work area clean always and wipe dry any liquid spillage • Avoid applying heavy hand force, pulling or applying leverage from elevated unguarded areas.

PERSONAL PROTECTIVE EQUIPMENT

Accidents can be avoided in 2 ways. By eliminating or reducing the hazards and by providing the personal protective equipment and ensuring their usage by concerned personnel.

Our endeavour should be to eliminate hazards but it may not be possible in all cases and hence the necessity arises for providing personal protective equipment's as a second line of defence. It is very necessary that the selection of the protective equipment is proper. Most of the injuries can be eliminated or minimised by utilising right type of equipment required for the jobs.

4.1 PPE IDENTIFICATION AND SELECTION STANDARD PROCEDURE

This standard describes the actions to be taken in the identification of PPE needs and ensuring that appropriate PPE are provided and used at all EP units. The standard covers PPE requirement for all personnel at all the units of EP and includes permanent, temporary, casuals, contractors and all types of visitors.

PROCEDURE FOR PPE SELECTION

PPE need analysis

The Safety Co-ordinator shall be responsible for undertaking a "need analysis" for PPE at unit. These requirements shall be defined for the following categories:

- PPE to be used by all across the unit e.g. uniform, shoes etc.
- PPE to be used for access into a specific area e.g. hearing protection in the DG room, shop floor, compressor room where the mandate is more than 85dB, plague share (at end of cycle-noise level is more).
- PPE to be used for carrying out specific tasks e.g. welding, handling of solvents, working at height etc.

PPE needs shall be identified through:

- Relevant legal and company standards e.g. vessel entry, working on fragile roof, electrical standards etc.
- MSDS and other information provided by material suppliers.
- Risk analysis studies e.g. HAZOP, Task based risk analysis, Location risk analysis, and Equipment risk analysis.
- Carrying out exposure studies e.g. noise level etc.

4.2 PPE MATRIX (REQUIREMENT OF PPEs)

Dep't. Head with line supervisor and outside experts as relevant will prepare a matrix clearly indicating PPE requirement along with their specifications for the three categories (refer below PPE matrix).

PPE Matrix - Some of the identified minimum PPE Requirements

Dep't. / Machine	Safety shoes	Hand Gloves	Ear Plug	Ear muff	Goggles	Mask	Face shield	Safety belt	Helmet
Blown Film	/	/	/	X	/	X	X	X	/
Laminator	/	/	/	x	/	/	X	x	/
Slitting	/	/	/	X	x	X	X	x	/
Printing	/	/	/	x	x	X	X	x	X
Mini Tube line machines	/	X	/	X	x	X	X	x	X
Hawk Line machines	/	X	/	x	x	X	X	x	X
HSL machine	/	/	/	x	x	X	X	x	X
Ultra machine	/	X	/	x	x	X	X	x	X
LT 250/500 Tubing machine	/	X	/	x	x	X	X	x	X
Seamless Co-Extruder machine	/	/	/	X	x	X	X	x	X
TET's	/	/	/	X	x	X	X	x	X
Seamless printing machine	/	X	/	X	x	X	X	x	X
Screen Printing Machine	/	X	/	X	x	X	X	x	X
Offline capping machine	/	X	/	X	x	X	X	x	X
Labelling Machine	/	X	/	X	x	X	X	x	X
Hot Foiling Machine	/	X	/	X	x	X	X	x	X
Utility - Mechanical (DG set & compressor room)	/	X	/	/	x	X	X	x	X
Utility - Electrical	/	/	X	X	x	X	X	x	X
Welding , Grinding cutting & Fabrication	/	/	/	X	/	X	/	x	/
Forklift	/	X	X	X	x	X	X	/	/
Warehouse & store	/	X	X	X	x	X	X	x	/

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Procurement of PPE

- The users shall provide to the purchase / stores detailed specifications of the PPE along with the approved suppliers as well as the minimum stock quantity and expected consumption pattern.
- Stores shall be responsible for ensuring minimum stock levels. SHE Co-ordinator shall assist purchase in checking the quality of PPE procured.

Training & Awareness

- PPE needs shall be included in the standard operating procedures (SOP) for all the tasks.
- Section heads / officers shall be responsible for explaining use of 'task specific' PPE while inducting employees and carrying out skill development programme. Safety shall be inherent to all induction and skill development training programmes.
- Use of 'general' and 'area' specific PPE shall be explained to visitors and other employees at the time of induction.
- For 'general' and 'area' specific PPE, adequate pictorial signage with instruction both in English and local vernaculars shall be displayed.
- 'Task' specific PPE requirement shall be included in all the SOP display boards.

Audits

- All managers and officers shall carry out safety audits as per the audit matrix prepared by the units. In these audits, specific comments shall be made on use of PPE.
- Section heads shall take appropriate preventive / corrective actions based on audit findings within their area of control.
- SHE Co-ordinator shall be responsible for collating monthly audit data and clearly highlighting effectiveness of PPE usage and areas of improvement. These will be discussed in the safety meeting by the Unit Head and preventive / corrective actions shall be taken as required. SHE Co-ordinator shall also carry out PPE audits, at least once in a month, to check availability (both quality and quantity) at department level and in the stores. Actions shall be taken as appropriate.

4.3 GUIDELINES FOR PPE SELECTIONS

No	Body part	PPE	Typical use	Summary of Specification
1	Head	Safety Helmet	Risk of being struck on the head (falling objects, projectiles etc.) or striking head against something (while working in confined space, low ceiling, projecting rods, fall etc.). Typical usage: -Work at height above 6'. -New building construction -Working below Moving / lifting heavy equipment at a distance of 1.5 M from periphery. -Driving Forklift -Vessel entry e.g. in water tank	Industrial safety helmet IS 2925-1984.

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No	Body part	PPE	Typical use	Summary of Specification
2.	Face & Eyes	Face Shield	Risk of contact with Chemical or hot material which may harm face and eyes e.g. molted polymers	<ol style="list-style-type: none"> 1. Eye shield with chemical resistant acrylic visor (sizes 14.5 x 6 and 14.5 x 8) 2. Eye shield with chemical resistant acrylic visor & extra brow guard and chin guard (sizes 14.5 x 6 and 14.5 x 8)
3	Face & Eyes	Welding helmet & face-shield	Exposed to welding sparks	IS : 1179 - 1967 Welder's Helmet with Face Shield. Accommodates standard 4 ¼" x 3 ¼" welders lens
4	Eye	Safety goggles	Risk o impact by flying particles e.g. during chipping, grinding	1. BIS 5983-1980 safety goggles protected impact resistant lens in lightweight graphite polymer frame. Tested and approved by CLI.
5	Eyes	Safety goggles with side safety Shield.	Exposed to minor splash risk e.g. Chemical analysis in QA lab.	1. Safety side shield to be worn with normal spectacles to provide additional side protection against chemical splash.
6	Hearing protection	Ear plugs (Ear plug reducing noise level up min 25 Db)	Exposure to noise levels above 85dB e.g. Blown film, Laminator, Hawk machines & DG	<ol style="list-style-type: none"> 1. Bilsom foam ear plugs MLEP-C for single use. 2. Reusable ear plugs for multiple use. Approval CE EN 352- Model No. SE1361.
7	Hearing protection	Ear muffs (Ear plug reducing noise level up min 35 dB)	Long term exposure to high noise levels e.g. DG set operators and exposure above 85 Db	1. Dielectric earmuff. Approved by Defence Bio-Engineering & Electro medical Labour
8	Breathing protection	Specialised dust masks	Exposure to particulate matter which is harmful either due to chemical properties e.g.in laminator process exposed to fumes above permissible limits.	1. Disposable mask. Conform to EN 149 FFP1 standard for non-toxic solid and liquid vapours in concentration up to 4 x UEL
9	Hand	Gloves	Risk of contact with toxic or corrosive material e.g. operating valves or handling containers of solvents of MEK ,Toluene , etc.	<ol style="list-style-type: none"> 1. Standard PVC rubber glove for acid / alkali / solvents. 2. Rubber glove For acid / alkali 3. Chemi-Pro rubber/ neoprene glove for acid / alkali (better life and grip than PVC or rubber glove). 4. Glove for highly toxic chemicals (check for specific chemical before use)
10	Hand	Electrical gloves	Exposure to electrical voltage while working in substation	electrical resistance to 11KV,

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

No	Body part	PPE	Typical use	Summary of Specification
11	Hand	Hot duty gloves	During blown film setting operation, cleaning operation.	1. Non-asbestos glove in place of asbestos glove. Chrome leather glove
12	Hand	Metal gloves	Gallus Printing chamber unit cleaning Slitting & Blown film operations	1. High strength polyethylene fibres and stainless steel wire 2. Level 55 cut resistant standard
13	Feet	Steel toe - leather safety shoe with anti-skid soles.	Risk of heavy material falling on the foot e.g. maintenance work, project activity, lifting of heavy material like drums/ bags etc. TO BE USED IN ALL PLACES INSIDE FACTORY(MANDEATORY FOR SHOP FLOOR).	Upper: Cow corrected grin leather Toe: steel toe as by BIS Inner liner: Black Nafa foam with ankle padding Sole: S-28 PU sole
14	Feet	Shoes for electricians - sole with special insulation properties	Exposure to live electrical circuits.	Shoe with electrical resistance to 22KV, leather upper and OU sole
15	Body	Rubber / PVC apron	Risk of small chemical spills in the front part of body e.g. handling small containers toluene ,MEK,diesel etc.	1. Chemical protective apron made of TYVEK C (size 24" x 36" and 24" x 48") 2. PVC bib type apron
16	Full Body	Full PVC suits	Risk of contact with large quantity of corrosive material e.g. during loading or unloading of toluene ,MEK,diesel etc.	1. Full body protective suit consisting of pant, coat and hood and made of TYVEK-C 2. Full body PVC suit with hood (but has less life than the above TYVEK suit).
17	Fall from Height	Safety harness (safety belts)	Work at height above 2 meter.	1. Full body safety harness consisting of: Safety harness model made of polyamide webbing and attached to 11 MM nylon rope with energy absorber polyamide tape. Approval EN 361. 2. Half body safety harness type 2 with single or double rope. BIS : 3521 : 1983
18	Fall from height	Rope ladder	For getting down into pits / tank where a rigid ladder cannot be provided	Rope ladder with nylon rope and aluminium rung 1 foot apart

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

4.4 HEARING CONSERVATION STANDARD GUIDELINES

All employees will be protected against the detrimental effects of excessive noise exposure. Feasible administration or engineering controls shall be utilized when employees are subjected to sound level exceeding those listed in table. If such controls fail to reduce sound below the level of table, personnel protective equipment's shall be provided and used to reduce exposure to within permissible levels. In all case where these noise exposure exceed the valves shown, a continuing, effective hearing conservation programme shall be administrated.

Hearing protectors shall be made available to all employees exposed at or above the action level. These protectors shall be capable of attending noise level to at least a time-weighted average Of 90dba. The safety coordinator offers a choice of protectors from a variety of suitable types.

Permissible Noise exposure

Duration per day (Hrs)	Sound Level slow response (Dab)
8 Hrs	90
6 Hrs	92
4 Hrs	95
3 Hrs	97
2 Hrs	100
1 - ½ Hrs	102
1 Hr	105
½ Hr	110
¼ Hr or less	115

Machines	Sound level	Protective equipment
Blown film machines - RH3	90 dB	Ear Plug
Laminator -	90 dB	Ear Plug
Slitting	80 dB	Ear Plug
Printing machine	70 dB	Ear Plug
Major Tubing machine - USHL / HSL	85 dB	Ear Plug
Mini tubing machine	80 dB	Ear Plug
Hawk Line machines	90 dB	Ear Plug
Air compressor	90 dB	Ear Plug
DG Set	90 dB	Ear Plug

For hearing conservation, every unit needs to refer their respective country/location laws for validating the same.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

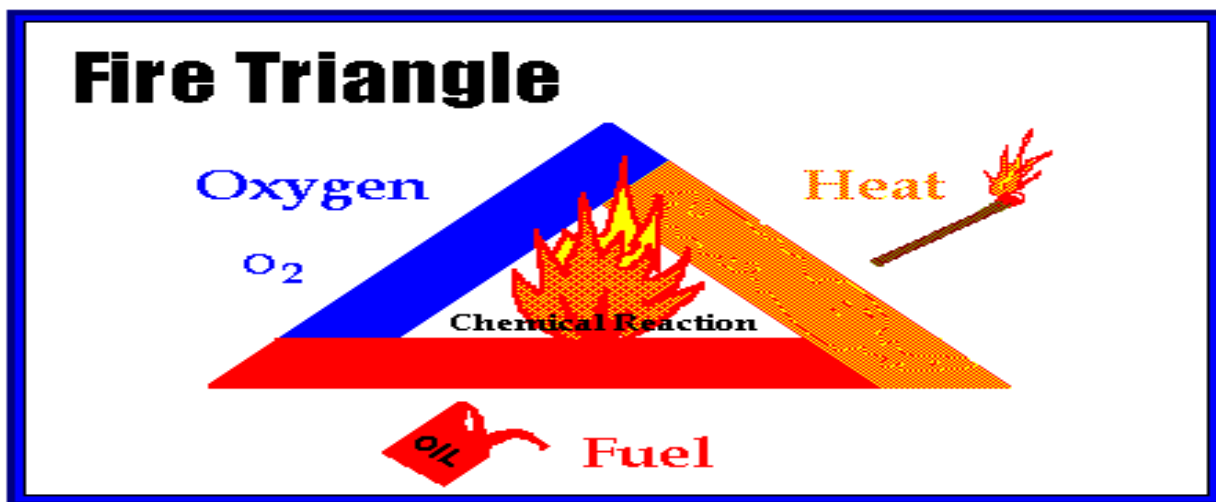
FIRE SAFETY AND FIRE FIGHTING EQUIPMENTS

Introduction

Fire is the result of a chemical chain reaction between oxygen in the atmosphere and the combustible material (fuel) in the presence of heat at the required temp.

The following four factors are essential for combustion.

1. Flammable materials (Fuel)
2. Oxidizing agent (Oxygen)
3. Ignition source (Heat)
4. Chemical chain reaction.



If one or more of these factors may be limited, the fire can be extinguished .The methods of extinguishing fire may therefore be classified as follows,

- a) Starvation(Limitation or removal of fuel)
- b) Smothering (Limitation or removal of oxygen)
- c) Cooling (Limitation or removal of heat)
- d) Inhibiting(Checking or stopping the exothermic reaction of substances containing oxygen)

5.1 CLASSIFICATION OF FIRE:

Class A- Fires of combustible organic materials such wood, paper, textiles etc.

Class A fires are the most common and the most effective extinguishing Agent is generally water in the form of a jet or spray.

Class B-These are fires of flammable liquids or liquefiable solids such as petroleum, alcohol, oil, tar etc

Class C- Fires of flammable gases or liquefiable gases such as propane, LPG, ,acetylene etc.

Class D-Fires of combustible metals and their alloys such as magnesium, aluminum, lithium. Zinc etc

5.2 GUIDELINES FOR SELCTION OF FIRE FIGHTING EQUIPMESNTS

NORMS FOR FIRE FIGHTING EQUIPMENTS BASED ON(NBC)NATIONAL BUILDING STANDARD OF INDIA 2005, IS : 2190-1992

Based on the type of manufacturing, industries have been classified as LOW, MEDIUM and HIGH hazards occupancies. Since we are in the plastic goods manufacturing, we fall under “MODERATE HAZARD OCCUPANCY”. In this we are at “SUB-DIVISION G-2” This Subdivision shall include any building in which the contents or industrial process or operation conducted therein are liable to give rise to a fire which will burn the moderate rapidity or result in the other hazardous situation and may give off a considerable volume of smoke, but from which neither toxic fumes nor explosion are to be feared in the event of fire.

Sr.No.	Type of building Occupancy (Build up area)	Type of installation						Water supply in Ltr		Pump capacity in Ltr / min
		Fire Extinguisher	Hose Reel	Yard Hydrant	Automatic Sprinkler System	Manual operated Electric fire alarm system	Automatic detection and alarm system	Underground static water storage tank	Terrace tank	At the terrace tank level with minimum pressure of 2 kg/cm ²
1	up to 100 m ²	R	R	NR	R	NR	NR	NR	10000	450
2	> 100 m ² and up 500 m ²	R	R	NR	R	NR	NR	NR	10000	900
3	> 500 m ² and up 1000 m ²	R	R	R	R	R	R	75000	20000	900
4	> 1000 m ²	R	R	R	R	R	R	100000	20000	900

R = Required NR = Not Required

Identified the firefighting equipment's requirement of some of the plants based on size

Based on this NBC IS : 2190-1992. The following are the requirement

Plants	Build UP Area Sq.Mtrs	Type of installation						Water supply in Ltr	Pump capacity in Ltr / min
		Fire Extinguisher	Down Comer	Yard Hydrant	Automatic Sprinkler System	Manual operated Electric fire alarm system	Automatic detection and alarm system		
Vasind	12605	R	R	R	R	R	R	100000	900
Wada	21170.646	R	R	R	R	R	R	100000	900
Vapi	15000	R	R	R	R	R	R	100000	900
Goa	7289.18	R	R	R	R	R	R	100000	900
Nalagarh	8502.06	R	R	R	R	R	R	100000	900
Assam	6832.6	R	R	R	R	R	R	100000	900
EPDN	9325	R	R	R	R	R	R	100000	900
Poland	10,000	R	R	R	R	R	R	100000	900
EPGL	7225	R	R	R	R	R	R	100000	900
Egypt	2546	R	R	R	R	R	R	100000	900

Based on the country and location the above norms will be changed, hence every units needs to refer to their country norms and validate the same.

FIRE EXTINGUISHER : A fire extinguisher is an active fire protection device used to extinguish or control small fires, often in emergency situations. Typically, a fire extinguisher consists of a handheld cylindrical pressure vessel containing an agent which can be discharged to extinguish a fire.

There are three type of fire extinguisher
 Fire Extinguisher identification signs are small signs designed to be mounted near a fire extinguisher, in order to draw attention to the extinguisher's location. Fire extinguisher signs are mounted above or to the side
 Of the extinguisher.



HOSE REEL : A hose reel is a length of hollow plastic or rubber with a nozzle on one end that connects to a water supply. Hose reels are used to move water from one place to another. **Fire hose reels** are located to provide a reasonably accessible and controlled supply of water to combat a potential fire risk.

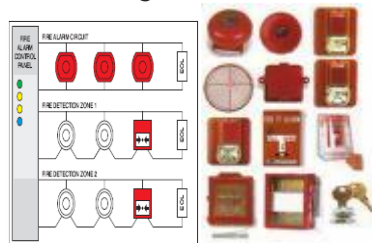
The three main factors to remember when choosing a hose reel are the size, shape, and type of hose that you are using.



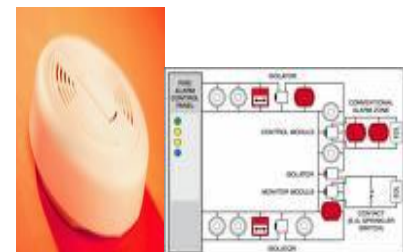
YARD HYDRANTS : **Yard hydrants** which provide water to various locations in the farm **yard**. A **yard hydrant** that facilitates the evacuation of water from therein. The wall **hydrant** has a standpipe having a drain port wherein the standpipe is coupled



MANUAL FIRE ALARM SYSTEM : A conventional fire alarm system normally consists of a control panel linked to a number of lines of fire detectors and manual call points, normally called detection zones, and a number of sounder or alarm circuits. A simple system is shown in Figure



AUTOMATIC DETECTION & FIRE ALARM SYSTEM : **Smoke Alarm**...also often known as smoke detectors, these devices are one of the best early-warning devices of a fire. They are designed to sense low levels of smoke and sound an alarm.



Fire detection and alarm system:

The plant should be adequately covered with manual call point in the shop floor and Smoke and heat detector in offices and packing material storage area.

The Distance between two call point in shop floor and open area should be not more than 15M.

Substation, Offices, computer room, Chemical stores and warehouses should be covered with heat and smoke detector. The distance between two detectors should be not more than 7.5 M and height not more than 10.5M.

The detectors and Manual call points should be connected to central control panel with zone wise cards and a output with flasher and alarm located at central security gate.

5.3 TYPE OF FIRE FIGHTING SYTEMS

There are mainly two types of fire extinguishing system,

- 1) Fixed Firefighting system,
- 2) Portable Firefighting system.

1) Fixed firefighting system consists of

- a) Hydrant system
- b) Sprinkler system.

a) Hydrant system

As the process comes under ordinary hazard the distance between two hydrant posts should be 45M with height 1M above ground.

Separate hydrants are required to be provided for protection of following

- i) Basement,
- ii) Upper floors
- iii) Tank farms
- iv) Open storage such as scarp yard.

If any position of a building is more than 45M from an external hydrant, additional internal hydrant system must be provided.

The system should be automatic with one main pump and one stand by pump capable of delivering pressure of 3.5/5.25 kg/cm² at most remote/highest hydrants.

Quantity of water to be reserved will be equivalent to 2 hour of firefighting.

b) Sprinkler system.

The high fire hazards area such as LPG storage and packing material storage area.

2) Portable firefighting system.

The portable fire extinguisher are deployed according to their suitability for class A,B,C,D fires ,size of the risk ,nature of occupancy .



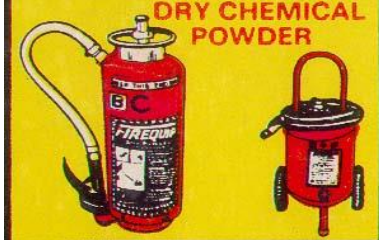

The details are given in table below for ordinary hazard occupancy. Standard norms for requirement of fire extinguisher of building height 1.5mts as per IS 2190

Class of fire	Number, Capacity & type of fire extinguisher.	Floor area Sq M(for stack of 1.5mheight).	No of extinguisher Required in compartment	Travel distance M
A (all polymer, corrugated boxes, Bopp tape, Labells and PVC stickers, wooden pallets, plastic pallets, paper cores stores)	2*9ltrs water type	600	2	25
B Solvents, Varnish, Ink, Toluene, ISP, MEK , Diesel ,Petrol, Oil & Lub	2*9 ltrs foam extinguisher.	600	4	15
C LPG storage	1*10kg DCP/9kg CO2	100	2	10

Type of Fire Extinguishers and their usage

Type of fire extinguisher	Principal extinguishing agent	Method of operation	Suitability on different classes of fire			
			Organic materials (wood, paper, cloth, plastic, etc.)	Flammable Liquids (Petrol, Paints, solvents etc.)	Flammable gases (LPG, Acetylene, etc.)	Combustible Metals (e.g. Magnesium, Sodium etc.)

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 <p>SODA ACID (WATER)</p>	<p>Liquid Soda Solution / water</p>	<p>Strike the plunger knob and direct the jet at the base of the fire</p>	<p>Yes</p>	<p>No</p>	<p>No</p>	<p>No</p>
 <p>FOAM</p>	<p>Chemical Foam</p>	<p>Pull the handle and turn right, invert for operation</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>No</p>
 <p>DRY CHEMICAL POWDER</p>	<p>Dry Chemical Powder</p>	<p>Remove the safety clip, strike the knob and direct the discharge at base of fire</p>	<p>No</p>	<p>Yes</p>	<p>Yes</p>	<p>Yes</p>
 <p>CARBON DIOXIDE</p>	<p>Carbon Dioxide Gas</p>	<p>Remove the locking pin, unscrew the valve and direct discharge at base of fire</p>	<p>No</p>	<p>Yes</p>	<p>Yes</p>	<p>No</p>

How to use Fire fighting Equipments: P.A.S.S. Method

P A S S

Pull the Pin at the top of the extinguisher. The pin releases a locking mechanism and will allow you to discharge the extinguisher.

Aim at the base of the fire, not the flames. This is important - in order to put out the fire, you must extinguish the fuel.

Squeeze the lever slowly. This will release the extinguishing agent in the extinguisher. If the handle is released, the discharge will stop.

Sweep from side to side. Using a sweeping motion, move the fire extinguisher back and forth until the fire is completely out. Operate the extinguisher from a safe distance, several feet away, and then move towards the fire once it starts to diminish. Be sure to read the instructions on your fire extinguisher - different fire extinguishers recommend operating them from different distances. Remember: Aim at the base of the fire, not at the flames!!!!



<p>Pull the pin This will allow you to squeeze the handle in order to discharge the extinguisher</p>	<p>Aim at the base of the fire Aiming at the middle will do no good. The agent will pass through the flames</p>	<p>Squeeze the handle This will release the pressurized extinguishing agent</p>	<p>Sweep side to side Cover the entire area that is on fire. Continue until fire is extinguished. Keep an eye on the area for re-lighting.</p>
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USE OF FIRE EXTINGUISHERS

- Useful only in INITIAL STAGES of Fire
 - TRAINING in choice and use essential
 - Correct CHOICE of Extinguisher
- Class A- solids : Use Water
 Class B- liquids : Use Foam, CO₂, DCP, Halon ((indoors only)
 Class C- Electric : Use CO₂, DCP, Halon

5.4 REQUIREMENT OF EXTINGUISHING MEDIA W.R.T. MATERIALS

BASIC FIRE FIGHTING CONCEPTS

- For Low Flash Point Liquids use of water would be effective if the flame front is displaced - other media are preferred
- For Flammable Gases cut off the supply

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

- For liquids with flash point 38 - 100 deg.C water would be most effective as it would basically stop vapor generation
- For liquids with flash point > 100 deg.C water might get trapped below liquid surface and a steam explosion may ensue - water can be used to keep surroundings cool

List of some of the materials their Flash points and suggested Fire fighting media on basis of MSDS (Refer MSDS revision for latest specification)

Materials	Flash point	Hazards	Suggested Fire Extinguishing Media
LDPE (Exxon ESCORENE)	> 340 ° C (Est.)	Low Hazards- Flammable or burn when heating upon at or above flash point temperature. Flammable or toxic gases will be form upon decomposition. Static discharge	Water
LLDPE 218N (Sabic India) Linear low density polyethylene	> 300° c (428 ° F) for bitumen and > 340° c (644 ° F) for polyethylen e film	Not flammable, but does consists of hydrocarbons and can form flammable mixtures and can burn if heated to temperature of or above 300 c (570 f).In the heated state the products can give off fumes.	Water fog , Dry Chemical, foam, CO2
ExxonMobil HDPE (Pellets) - This is a polymer substance	-	Low hazard. Material can form flammable mixtures or can burn only upon heating to temperature at or above flash point. Decomposes. Flammable/toxic gases will form upon decomposition	Use water spray to cool fire exposed surface and to protect personnel block the supply to the fire
LD151BW	-	Polymer can burn when ignited (exposed to an external heat source). During a fire, the polymer will melt and may generate drops that could propagate the fire. Toxic gases will form upon combustion. Flammable/toxic gases will form upon decomposition. Product can accumulate electrostatic charges when rubbed, chafed, or abraded.	Water, Foam, Dry Chemical, CO2
ESCOR 5000 - Acrylic polymer	> 340 ° C (Est.)	Low Hazards- Flammable or burn when heating upon at or above flash point temperature. Flammable or toxic gases will be form upon decomposition. Static discharge	Water
DuPont - Nucrel® 30707	NE	Acrylic acid polymer resin is not considered hazardous materials. As with hot materials, care should be taken to protect the hands and other exposed parts of the body when handling molten polymer. At recommended processing temperature small amount of f	Water, Foam, Dry Chemical, CO2

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DuPont - BYN024 (bynel resin)	NE	The solid polymer can be combustion gives carbon dioxide and water. Incomplete combustion gives in addition carbon monoxide , Organic acids, aldehydes and alcohols	Water, Foam, Dry Chemical, CO2
DuPont - Nucrel (NUC003)	NE	The solid polymer can be combustion gives carbon dioxide and water. Incomplete combustion gives in addition carbon monoxide , Organic acids, aldehydes and alcohols	Water, Foam, Dry Chemical, CO2
EVAL TM RESIN L101A, L1011B (Kuraray co. ltd. Japan)	288° c	Toxic gases (CO) MAY FORM WHEN BURNED WITHOUT SUFFICIENT OXYGEN	Water, Dry Chemical Powder, CO2
ULTZEX 4020I	200° c (392 F) or higher	Can burn in a fire. Slippery, can cause falls if walked on. This materials does not ignite easily, but will burn if involved in fire. Products of combustion includes irritating and poisonous gases	Water fog , Dry Chemical, foam, CO2
Polybatch 8000 RC White	> 400° F,	If a fire should occur, toxic fumes and gases may be emitted, Wear	water, CO2, or dry chemicals
MICA G-782	NA		Water fog , Dry Chemical, foam, CO2
CONOO 01 - CANPOL (Dupont)	-	Unusual fire, explosion hazards - The solid polymer can be combusted only with difficulty. An electrostatic charge can potentially build up when pouring pellets. Grounding of equipment is recommended. Hazardous gases/vapors produced in fire area carbon	Water , Dry Chemical, foam, CO2
SARFIL Polyester Film, Type TF, HF, WF, WS ,EW, COC1 (Al . Foil)	NA	The film can pick up strong static charge during processing. Discharge into dust solvent laden air may cause a flash fire or explosion	CO2 - water on complete combustion and in addition to this co, organic acids, alcohol and aldehyde are the products on complete combustion

Polyopylene - PP Reliance	NA	Repol resin are combustible materials - Molten. Polypropylene tends to flow or drip and will propagate fire. Failure of malfunctioning of temperature control system on processing equipment's such as extruder may create explosion hazards	Water fog , Dry Chemical, foam, CO2
LLDPE 218N (Sabic India) Linear low density polyethylene	NA	Flammable	Water fog , Dry Chemical, or CO2
REMAFIN - PE12073 White 25 kg (Clariant)- Master batch	NA	Non hazardous	Water spray jet, Dry powder, foam, CO2
ADMER NF528H	200° c (392 F) or higher	This material does not ignite easily, but will burn if involved in fire. Products of combustion includes irritating and poisonous gases	Water fog , Dry Chemical, foam, CO2
PE J4F061 G Red	NA		Water spray , Dry powder, foam, CO2
Polyethylene - Reliance	NA	Repol resin are combustible materials - Molten. Polypropylene tends to flow or drip and will propagate fire. Failure of malfunctioning of temperature control system on processing equipment's such as extruder may create explosion hazards	Water , Dry Chemical, foam, CO2
VENLON POLYESTER (PET) POLYETHYLENE TER PHTHALATE - FILM	NA	The film can pick up strong static charge during processing. Discharge into dust solvent laden air may cause a flash fire or explosion	CO2 - water on complete combustion and in addition to this co, organic acids, alcohol and aldehyde are the products on complete combustion
Colgate Red - 12MR03921Y (SICPA)	NA	Fire may produce dense smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not allow run off from wire fighting to enter drains or watercourses.	Alcohol resistance foam, co2, powder, water spray. Not to be used water jet
UV 161 RANGE OF INKS	> 170 deg c (closed cup)	Thermal decomposition products may include nitrogen, Sulphur and toxic oxides of carbon	Foam, asphyxiator, dry chemicals
UV INK	> 282 deg F		Foam, asphyxiator, dry chemicals

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

U0710SRUV Varnish	> 100 deg c		dry powder, foam, co2
WESSCO 37.263.02	> 100 deg c	Fire may produce dense smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not allow run off from wire fighting to enter drains or watercourses.	
TOKA INKS	160 - 180 ° c		Foam, asphyxiator, dry chemical
UV wash UP Liquid	> 50 ° C	None prevent exposure to heat or source of ignition	
Ethyl Acetate	12.8 ° c	Flammable	
Methyl Ethyl Ketone	-6 ° C	Highly flammable and flames traverse velocity of MEK vapors is very high. Hence all care should be taken to prevent leakage of vapors into atmosphere	Use foam , do not use just water, cut off source of vapor or liquid, Erect barriers between flame path if established
MICA G-782	NA	Material will not burn until water has boiled away. For extinguishing solid residue,	water fog, foam, co2 or dry chemical
Lamitube	> 100 ° C	CO2,CO, Flammable hydrocarbons, Fumes	water spray, dry chemicals, foam

Gas Cylinder safety

Dos

- Look for next date of test, which is marked on a metal ring inserted between the valve and the neck of the cylinder, and if the date is over, do not accept the cylinder
 - Always keep LPG and other liquefiable gas cylinder in an upright position and see that they cannot be knocked over
 - Secure the cylinders used in horizontal position so that they cannot roll
 - Store the cylinders in a cool, dry and well ventilated place under cover and away from open flames or any other potential source of heat
 - Storage area for gas cylinders should be easily accessible
 - Keep the empty cylinders segregated from the filled cylinders
 - If a cylinder containing flammable gas is leaking isolate the cylinder and switch off all the source of ignition nearby only if they are easily accessible otherwise leave the area immediately. Mark the area by warning signs.
 - Notify the supplier immediately in case of a leak
 - Use trolleys and cradles for transportation of cylinders
 - Handle the cylinders carefully
- Secure the protective valve caps when the cylinder is to be transported

Don'ts

- Do not slide or drop the cylinders
- Do not store the cylinders in direct sunlight
- Do not, in any condition, repair the cylinder yourself
- Do not lift the cylinder by its cap

Smoking

Careless discarded cigarettes and stick are major source of fire. Hence it is essential to stop the smoking inside the premises or built up as separate smoking zone. No smoking area should be marked with conspicuous sign and their exclusively use rigid enforced. Carrying of smoking materials of any kind and also the lighting of cutting torches with match sticks shall be prohibited

Chapter – 6

SAFETY IN OPERATION AND MAINTENANCE

General Control

The unit has, based on the significant OHS risks and significant environmental aspects, documented procedures and work instructions where required. Specific operating criteria are also mentioned in the procedures, where appropriate. The guiding principle has been to ensure compliance with the organisational SHE policy, objectives and targets. The unit SHE co-ordinator shall periodically review these procedures and work instructions.

Engineering Control

Engineering controls provide an excellent pro-active method of ensuring safety and eliminating or reducing environmental aspects at their source. The two principal areas related to operational control are Equipment Design and Process Installations

Equipment Design Considerations

The Factory Manager shall fully comply with the corporate policy on rising of Capital Proposals. The safety and environmental aspects shall be given due consideration by filling up the SHE checklist for each Capital Proposal. The unit Factory Manager may recommend hazard studies, if need be during implementation.

Process Installations

All process changes, new or modified processes shall be subjected to trials by the respective manages to demonstrate safe operation before commercial production commences.

Procurement of Materials

The material procurement as per the guidelines shall be in line with the corporate policy on procurement and shall lay emphasis on safety and environment related issues.

6.1 ELECTRICAL SAFETY

Electrical safety is a versatile energy but it has to be safely used, failure to take precaution against electrical hazards may result in injuries or property damage or both. Control of electrical hazards is neither difficult nor very expensive but ignoring them may lead to serious accident.

Guidelines on Electric safety

- All electric parts should confirm to IS specifications
- Installation of Earth trip device at main distribution board
- Earth all power equipment
- Ensure independent earthing connections to all electrical construction equipment” Ensure that all extension boards have proper earthing connection of suitable rating and only three pin metal clad industrial type sockets are mounted on the board
- Do not draw power by insertion of wires in the socket
- For electric hand tools metal clad three pin plug tops are used
- Never use earth as neutral
- Use of only three core flexible wire of proper rating for electrical hand tools
- Ensure that flexible wires and power cables are properly insulated and are laid in the marked corridor so that the same are not damaged due to construction activities and movement of machinery in the vicinity
- All cable terminations are properly tightened
- Junction box or plug and socket couplings only are used for joining cables
- Ensure installation of distribution boards in a covered place to avoid dust and rain water entry. Always put Warning signs at the location
- We should ensure that at least one electrical engineer in the Unit should have valid wireman’s license.
- Only authorised person whose list is displayed at the entrance of Switch yard, MCC, PCC, DG, transformer yard, substations, set will be authorised to enter the same.

Do’s

- Only qualified person should undertake electrical repair.
- Treat the all circuit as live, unless ensured after testing to be dead.
- Ensure that extension cord is free from cuts, damaged insulation links or joints.
- Check that the pin of the sockets is not loose.
- Ensure the easy access to put off the supply.
- Use switches which clearly indicate “on” or ‘off” and of appropriate amperage.
- Frequently check the value of electrical parameters like voltage.
- Get the equipment, circuit breakers check periodically by competent person
- While using any portable electrical equipment ensure that it is properly earthed, there is no leakage of current through the body of the equipment, cable is reinforced where it enters the plug with stout rubber tubing and there is no strain on wire.
- Use work permit in the flammable area of atmosphere.
- Identified the electrical hazards and report them immediately.
- In case of short circuit of fire put off the main switches immediately.
- Know the first aid procedure.

Don’ts

- Don’t have any unsafe temporary connection naked joints/ wiring.
- Don’t work wet on electrical equipment.
- Don’t use trial and error methods with electrical circuit.
- Fuses are saviours, don’t tamper with them
- Don’t replace a blown fuse unless the fault is detected and rectified.
- Don’t just operate any switch unless you know the consequences.
- Don’t over load an electric point
- Don’t use water for extinguishing the electrical fire, use dry sand, CO2 or DCP extinguishers.
- Don’t crowd things near electrical mains / switches
- In case of lighting don’t stand beside or rest against tall structure.
- Don’t take short cut, follow safe procedure.

Broad recommendation to avoid Electrical Hazards

1. Engineering department is responsible for installation, attention, maintenance and upkeep of all equipment's, distribution and utilisation of electric power.
2. The Engineering department must test annually all earth connection on plant and equipment has and maintain proper record.
3. Be sure that all the switches have been made off and the fuses have been withdrawn before starting work on any wiring of equipment or overhead lines. Wherever power is supplied from more than one source, be sure that the supply is made off from all the sources and check that the right switches are made off.
4. Use of temporary wiring should be avoided.
5. The Engineering department must inspect at regular intervals all portable and temporary installed electrical equipment has and check for earth when a connection is made.
6. Whenever water is used for washing floor or any equipment's protection of electrical equipment must be assured from splashing of water on them.
7. Engineering department must carry out regular inspection and tightening up of all current carrying and earthing connections on motor and other plant equipment that might possible be subjected to vibration and record maintained.
8. In extinguishing fire in electrical equipment, the best practice is first to shut off the current, and if the fire continue, use extinguishers having non-conducting extinguishing materials, such as CO₂ and dry chemical powder.
9. It is necessary to tag out electrical switches for starting of electrical equipment's.
10. While working on a power transformer make sure that it is isolated completely and the stored energy is discharged.
11. Wherever required the employees should wear proper personal protective equipment is on all jobs. Gloves, rubber mat etc must be inspected for punctures or other defects before their use each time.
12. Do not attempt to free someone who comes in contact with live conductors with bare hands. Try to shut off the current, if not possible, put on rubber gloves or thick fold of dry clothing before attempting to release the victim. Use dry stick to take out the live wire from body.
13. Have identification of power source & destinations on Electrical panels & machines panels.

6.2 SHUTDOWN MAINTENANCE SAFETY

All the electric equipment's on which the maintenance to be done or which acts as prim over for equipment under maintenance should be positively isolated and fuse should be removed to avoid accidental operation of equipment's. The push button starter of the equipment may also be tagged with safety instruction.

No Uninsulated wire should be used for temporary connection during shutdown.

The maintenance job on equipment / machine should be started only after ensuring that the equipment have been properly isolated, blinded, flushed , tagged and all safety precautions have been taken to avoid any accident during maintenance . It is also to be ensured that all permits are taken and precautions mention in the permit is strictly observed. Only standard tools should be used to carry out maintenance job. PPE as relevant should be used during maintenance.

Check for all the fire fighting and safety equipment and replace the used of defective equipment's. Do the maintenance work of firefighting and safety equipment's? If there is any hot work, have to be done. Proper precaution should be taken and if necessary. Display necessary instruction boards on various locations. Ensure that the person working there are using PPEs. Ensure that the working condition are safe.

6.3 LOCKOUT/TAGOUT

Whenever there is any maintenance work on a machine, then that particular machine should be isolated by an authorised person by removing the fuses and a danger board should be put on the respective feeder with a tag, signed by the Shift officer. Whenever there is any maintenance work in machine, then that particular machine should be isolated by a authorised person by removing the fuses and a danger board should be displayed on the respective feeder with tag signed by the authorised person.

- All statutory approval from local electricity board / electrical inspector should be obtained. All statutory approval from local electricity board / electrical inspector should be obtained, wherever necessary.
- Regular annual inspection should be conducted from electrical inspector and transformer oil testing should be carried out yearly. Regular annual inspection should be conducted through Competent person and transformer oil testing should be carried out annually

The power of machine cannot be turned on after Lockout / Tag out be used, and it is very Clear for everybody to know who locks the power (See the below picture)



Sometimes, miscommunication can cause accident;

- ♦ Lockout / tag out is one kind of good device for keeping safety when doing maintenance, repairing, adjustment and inspection;
- ♦ This device can lock energy like electric energy, pneumatic energy, and so on



Standard operating procedure

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

- All the critical should have SOP and same should be displayed near the respective location in vernacular language. All the processes should have SOP and same should be displayed near the respective location.
- The SOP should be in standard format as in annexure.

6.3 MACHINES INTERLOCKS AND GUARDS

Safety must be the primary concern for all those who operate, maintain, or service machines and their components. Moving machine in operation constitute hazards which cannot always be eliminated by design measures. All person must aware of these hazards and exercise caution in area in which machinery is running

Rotary Equipments and MACHINES

1. All exposed moving parts of machinery must be provided with guards to be avoid accidental contact with them. A moving part of an overhead shaft or belt drive must be safe by position.
2. No person is allowed to work on machine unless he has been sufficiently trained to work on the class of machine. A person while being trained must be fully appraised the dangers arising in connection with such as machine and instructed the precaution to be taken.
3. Every machine must be provided with efficient starting and stopping devices to be conveniently operated by the operator. Adequate space must be provided between two machines.
4. No adjustment , repair cleaning etc. to be carried out on a machine until it is stopped and disconnected from the sources of power. In case of belt driven machines, the belt must be shifted / removed.
5. Machine operator should never wear loose clothing which are liable to be caught by moving parts.

Machine guard

Any barrier or device constructed to prevent a person or its clothing coming into contact with dangerous moving parts of machinery is know as guard.

Interlock guard

A barrier which prevents access to the dangerous parts expect when those parts at rest and prevent the machinery from being operated until the barrier is in enclosed position

Type of guards

1. Fixed guards
2. Openable guards
3. Guarding safety devices (safely mat, light curtains, Limit switches, magnetic sensors,)

Function of machine guard

The basic purpose of machine guard is to prevent the persons from following types of injuries

- i. Struck against (Sharp corners, points, heated parts)
- ii. Caught in between (moving parts, rollers etc)
- iii. Struck by (Flying parts, pieces)
- iv. Electric shock (Contact with electric parts such as heaters)

Some of the typical areas to be guarded are

- . Moving parts like nip rollers, levers, chains, gears and sprockets etc
- . Heated zone like die lip, extruder heaters etc
- . Electric control switchgear / circuits, contact with which while in operation can cause electrocution

Selection criteria for interlocks

The selection of the safety devices depends on the functional requirements and hazards associated with dangerous moving parts. The Fixed guards to be provided to all moving parts, if not possible then openable guards to be provided with interlocks.

Some of the identified minimum requirements of safety guards and interlocks

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

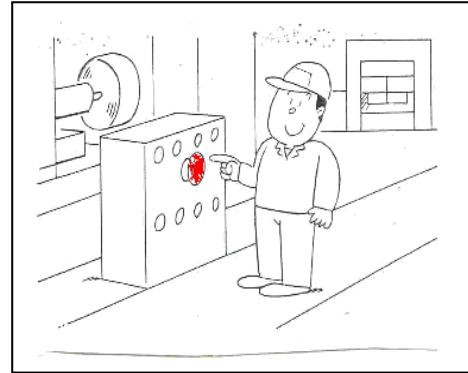
Machines	Location	Guard	Interlock	light curtain	Rubber Mat	Emergency cords
Blown Film	Extruders	✓				
	Die unit	✓				
	Haul off unit	✓				
	Nip Roller	✓				
	Web guide	✓				
	Corona treatment	✓				
	SFA Winder					✓
Laminator	Main Unwinder		✓			
	AC1	✓				
	Laminator s/C#1	✓	✓			
	AC2	✓	✓			
	Laminator s/C#2	✓				
	Rewinder			✓		✓
Slitting	Die unit s		✓			
Printing	Accumulator	✓				
	Print unit	✓				
	Corona	✓				
	UV Lamp	✓				
HSL	AMS	✓	✓			
	THT	✓	✓			
	UEB1	✓	✓			
	CCM	✓	✓			
	Auto packer	✓				
	Top Seal	✓	✓			
LSL /Hawk	LTM	✓	✓			
	TET	✓	✓			
	Take off unit	✓	✓			
	Cutting unit		✓			
LT/Mini	Accumulator	✓				
	AMS			✓		
	TET		✓			
	Cutting unit		✓			
	L-Pac Auto packer	✓	✓			
Brayer	Extruder Heaters	✓				
	Haul off unit	✓				
	Cutting unit		✓			
TET	Extruder	✓				
	Door		✓			
Hinter Kopf	Take off unit	✓				

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Machine interlocks testing needs to done once in a year and signed record to be maintained. Machine interlocks testing needs to done once in a month and signed record to be maintained

EMERGENCY STOP BUTTON

Emergency stop button self-explanatory, helps in emergency. Emergency buttons are installed on all equipment and are used when it is necessary to stop equipment for unusual reasons. The emergency stop button is always being in red colour. It is always located in a place that makes it easy to reach. For emergency we have to press red button. After releasing the button, machine operation will start.



RUBBER MAT

All electrical distribution panels should have rubber mats for prevention of any electrical shock during working.

The operation if any abnormal condition is observed by operator. This is operated by standing on the mat.

LIGHT CURTAIN

It is a safety device which is used to prevent anybody entering the machine from any side, or to prevent any unauthorized entry into the machine. And also for some of the operations man entry can be restricted by activating the light curtain. These safety light curtains are effective for operation and Slide inching operation. Also some of the process operations it can be activated using the selector button. This is operated/sensed by human entry or hand entry

Material safety data sheet (MSDS)

- The MSDS of all polymers, inks and chemicals should be available and precautions specified should be explained to all concerns in simple language.

Plant inspection checklist

- All the critical installation, instruments, guards, interlocks should have plant inspection checklist
- The frequency should be defined in unit specific conditions and should be carried out periodically

Access control system

- Every employees and contractors should have photo identity card, which the person should displayed while in factory premises.
- All vehicles coming in the factory should be properly checked and internal travel rule (eg 10kmh speed) should be explained in the gate.
- All safety related critical material (PPE, Portable tools, electrical equipment, lifting tools and tackles should be certified before use for safe use by maintenance person.
- Visitors coming in the factory should be given visitor gate pass defined for respective locations.

SAFETY IN MATERIAL HANDLING

Many accidents are caused while handling the materials. The unsafe condition that can be present during material handling and the unsafe acts like to committed etc are details here.

7.1 Manual Handling

Injuries caused by manual handling are many and varied. fall, cuts, etc result from the failure to use protective appliances, falls results from the non-observance of good housekeeping rule, wrong method of carrying / securing of materials.

There are six well-known principles of manual handling to avoid any possible injuries.

1. Correct grip : A full palm grip not only makes for security, it enables arms to be kept straight and permits the load to be distributed over the whole of the body.

2. Arms close to the body : When lifting or carrying, keeping of the arms close to the body is of vital importance. The whole body can thus be employed to carry the load and the framework can support more weight without additional stress. In the absence of mechanical aids, carrying on the back or shoulder is the best procedure. If the objects must be supported by the arms in front of the body, the arms must be kept straight and as close to the body as possible.

3. Chin in : Slightly elongating the neck and tucking in the chin locks the vertebrae and prevents injury. Direction of the movement is controlled by the position of the head in relation to the body. With the head and body in proper line any action can be done in proper fashion. Breathing during efforts is also facilitated by this position.

4. Flat back : In conjunction with next principle, this position provides a definite mechanical advantages that reduces the work done to an absolute minimum, and even heavy jobs can be done in safe and easy fashion.

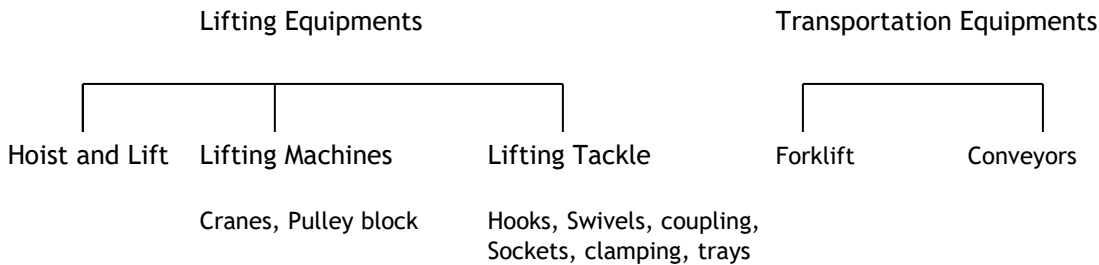
5. Foot position : When performing any action the body needs to be balanced, the position must be comfortable, the ability to move must be facilitated. Placing the feet hip-width apart gives a large base, and provides greater balance in lateral direction. Putting one foot forward and to the side of an object to be moved gives an even bigger base and balance in all directions. Most important, the knees can now be bent to lower the body vertically, allowing the back to be kept flat and in fact, permitting all other principles to be employed in proper fashion.

6. Use of body weight : All movements should be done ballistic ally. This means that strongest muscles are employed to overcome the inertia of the object, then they relax and permit the momentum of the object to complete the work. Employing movement, to allow the body weight to be used to the best advantage in such action, results in heavy loads being moved with minimum amount of effort and least possibility of cumulative strain. This is efficient work.

7.2 Mechanical handling and Lifting

The Mechanical lifting tools and tackles are classified as follows.

Mechanical Material Handling



Check list for Crane operator

<ul style="list-style-type: none"> • Broken strands on the hoist cable • Wrought edge of the cable grooved in the drum • Excessive wear on the break shoe • Broken or cracked rails on the runway • Misalignment of rails • Failure of limit switch 	<ul style="list-style-type: none"> • Mechanical parts loosened due to vibration • Excessive arching of current shoe. • Bearing • Lubrication • See that hoist brakes are in order or not • Condition of all pivot pins
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Cranes and Lifting Equipments

1. A crane or lifting equipment must not be used unless all cranes and lifting machinery must be checked and surveyed at least once in a year. All other inspection necessitated by mishap or breakdown will be carried out in accordance with the code of inspection regulation and a certificate specifying the permissible safe working load and the period covered by the certificate will be issued. Any defects or mishap, however small must be reported.
2. No lift may be attempted to exceed the safe working load specified on the certificate without authorisation.
3. The safe working load must be plainly marked on all cranes and lifting machinery, except in cases of variable load.
4. If there is a power failure during the operation of an electric crane, the control should be thrown to the off position. The area below the suspended load should be cordoned off.
5. Loads should not be carried over the head of other employee.
6. Before lifting an unloaded overhead crane, the hooks and slings should be raised to a height above all fixed moving objects.
7. Before starting any crane operation, the operator should check the above checklist.

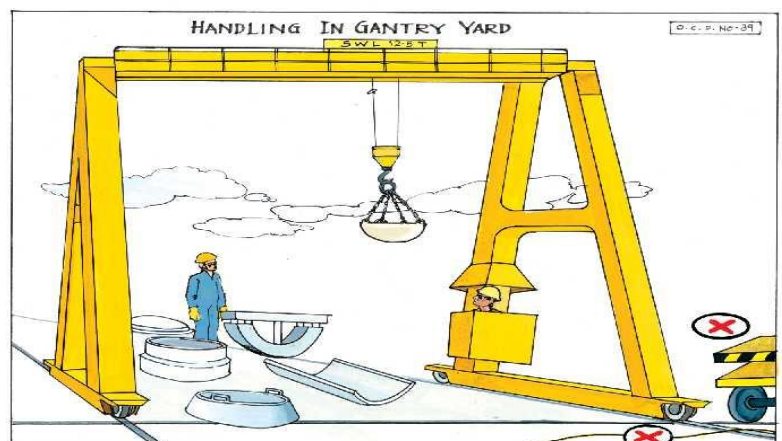
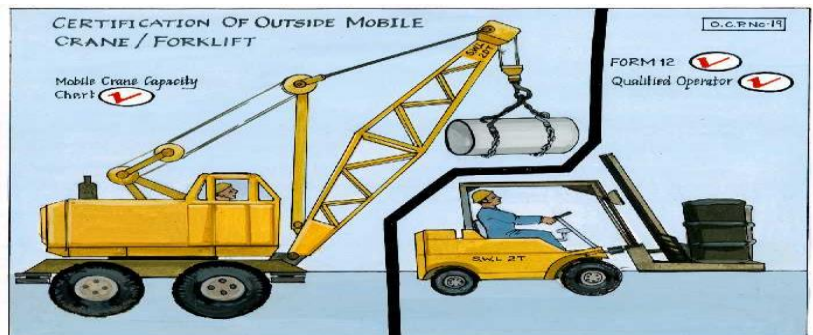
Material Handling By using Cranes, Lifting Tackles and Chain Pulley Blocks

Do's

- Mark the equipment with the maximum working load in Kgs / tonnes. In case of mobile cranes safe load at various angles should also be indicated
- Crane should not be overloaded - crane operator should be the final authority on these matters
- Load should be raised and lowered smoothly, without any jerks
- no person, other than crane operator, should approach near the operating area irrespective of his work
- Cranes should never be used for lifting or lowering persons
- Only a qualified person should communicate to the crane operator by means of hand signals to undertake the lifting or lowering of load
- Before leaving an unloaded crane the hooks and slings should be raised to a height which will clear all fixed and moving object
- Driver of the crane should check all controls before commencing work
- Ensure all guards are in position
- All electrical and mechanical safety devices (limit switches) should be checked for proper functioning before commencing operation
- All controls should be in off position before switching the main switch off
- Shut off the engine when cleaning, adjusting or lubricating the machine
- Keep the crane boom length as short as possible for maximum lifting capacity and greater safety
- Always keep the boom at least 6 ft from overhead wires

Don'ts

- Cranes should never be loaded beyond the certified safe limit of the crane
- Material hoist should never lift or lower persons
- Crane operator shall never take off his hands or feet from the controls while the crane or hoist is in operation
- Hoisting cable should not be slung around a load and used as a sling
- Nobody should work on the wheel track of an overhead crane while the crane is in operation
- No working should be done with the boom too close to the vertical
- Load should not be swung over ground crew
- Do not move the crane with boom at very high angle, especially on uneven terrain
- Do not leave the cabin with engine running or load in the air
- Never get on or off a machine in motion



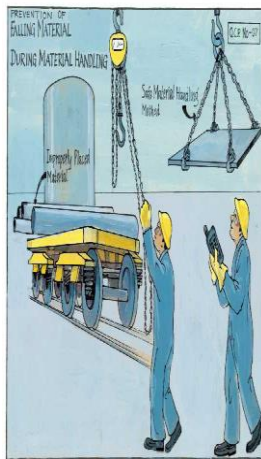
Chain Pulley Blocks

Do's

- Ensure proper maintenance and keep a record of the same
- Inspect daily, before start of work, and record in daily Inspection register
- Guard all the rotating parts of the machinery
- Maintain all the test certificates of all the lifting machinery
- Mark the safe working load on the lifting machinery
- Before lifting the load, ensure proper anchoring of the winch and the pulley
- Warn the persons in the vicinity before lifting the load
- Use of PPE must be mandatory
- Ensure proper illumination of the work area
- Only one person should give signals to the operator of the lifting machinery

Don'ts

- Do not attach lifting device to the floor grill, working platform or guard rail
- Do not allow anybody to stand under the load being lifted
- Never allow any person to ride on the load being lifted



Ropes and Chains

Do's

- Tag chains with maximum working load and the date of last testing
- The factor of safety in case of chains should not be less than six
- Provide suitable thimbles for eye splices and hooks
- Visually inspect the wire ropes for any defects like kinks, snapped wires, rusting etc. before using them
- fastening of the wire rope
- Apply fresh lubricant to the chain as and when required
- Store them away from corrosive atmosphere and moisture
- When using fiber ropes prefer the use of manila ropes
- For permanent rope connection employ splices and not knots
- When cutting a manila rope sizing the yarn should be applied on the side of intended cut
- Inspect the ropes before and after use

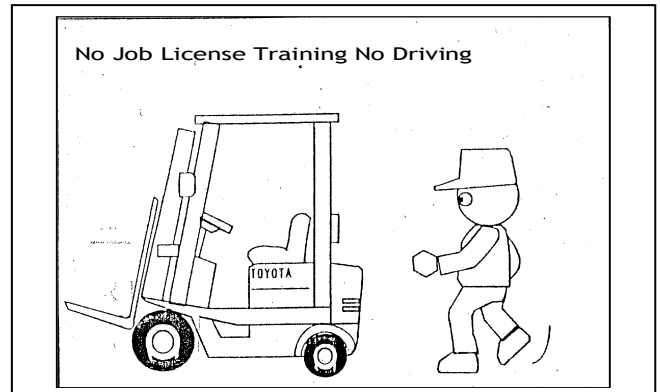
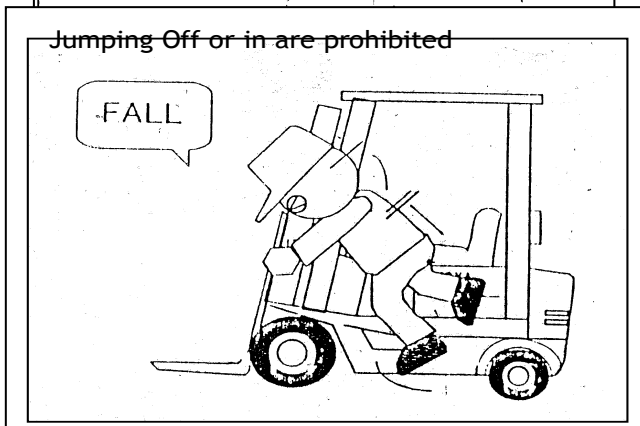
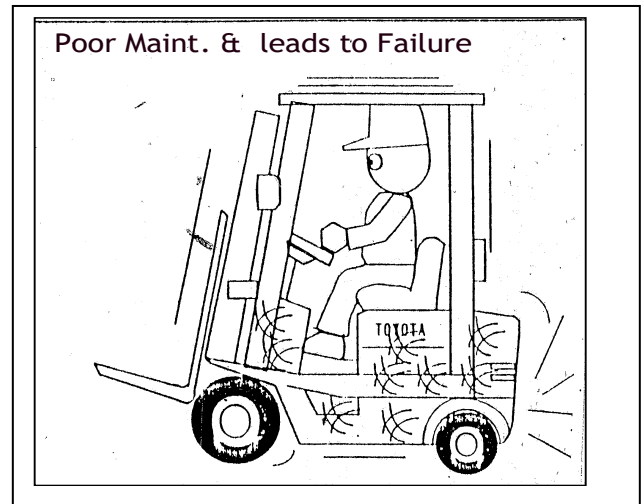
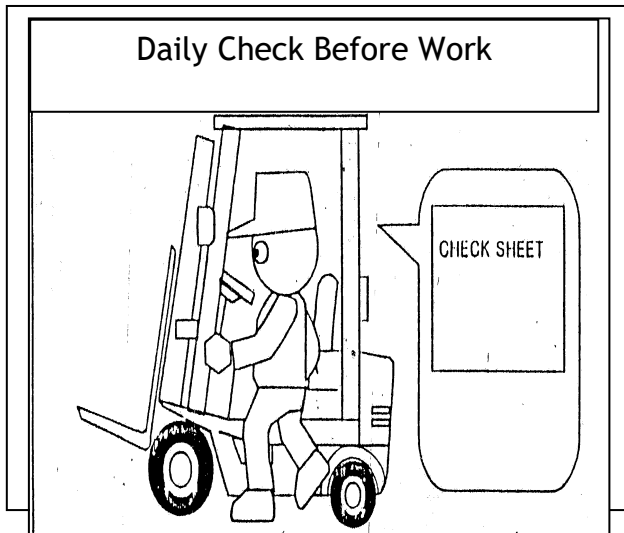
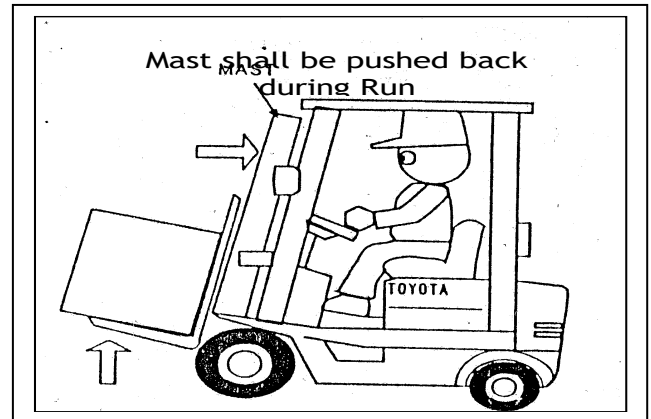
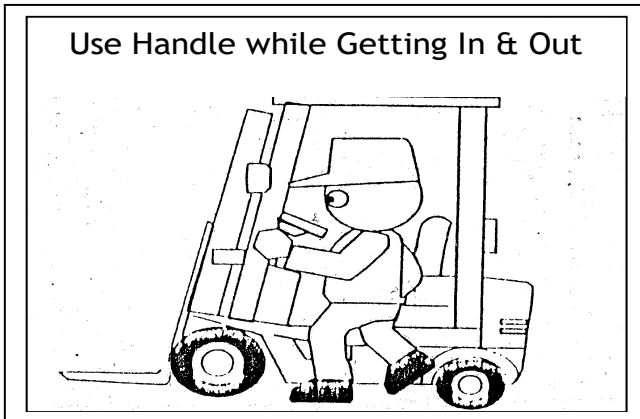
Don'ts

- Do not drag manila or fiber ropes on ground or any rough surface. Employ a trolley or coil and lift by two persons
- Do not expose the fiber or manila ropes to corrosive atmosphere
- Do not use wet manila ropes. First dry them.

Forklift Safety

The following items shall be checked daily by the forklift operator

- Battery plug connection
- Battery charger
- Brakes
- Lights
- Horn
- Steering
- Tires
- Hydraulic controls
- other conditions



Speed Limit for Forklifts : Unloaded : 5 Kmph & Loaded : 2 Kmph

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

SAFETY IN PLANT EQUIPMENTS AND TESTING

8.1 PRESSURE VESSEL

Any vessel subjected to or operated greater than the atmospheric pressure is a pressure vessel. A pressure vessel may be used for containing, storing, and distributing, transferring, distilling, processing or otherwise handling gas or liquid under pressure greater than atmospheric and includes any pipeline fitting or other equipment attached or used in connection therewith.

Any pressure vessel in the factory shall be

- Properly designed on sound engineering practice (As per standard)
- Fitted with a suitable safety valve or other effective pressure relieving device to ensure that maximum permissible working pressure (MPWP) of the pressure vessel shall not be exceeded. An additional device shall be set to discharge at a pressure not more than 5% in excess of the maximum working pressure.
- A suitable pressure gauge with a dial range not less than 1.5 times the maximum
- Working pressure (MWP), designed to show at all times the correct internal pressure and marked with a prominent red mark at the MPWP of the pressure vessel.
- A suitable nipple and globe valve for connecting test pressure gauge for checking of the accuracy of the pressure gauge referred to above.
- A suitable valve or valves for isolating pressure vessel or plant or supply of pressure and stop valve or valves shall be located close to the pressure vessel and shall be easily accessible.
- A suitable drain cock or valve at the lowest part of the pressure vessel.

8.2 TESTING AND EXAMINATION OF PRESSURE VESSEL

- No pressure vessel shall be taken into use unless it has been hydraulically tested by a competent person at a pressure at least 1.3 times the designed pressure. If a previously used pressure vessel has remained isolated or idle for a period exceeding 2 months or which has undergone alterations or repairs, it shall not be taken into use unless it has been thoroughly examined by a competent person externally and internally, if practicable and hydraulically tested at a pressure which shall be 1.5 times the MWP.
- Certificate from the maker or component person, specifying the designed pressure or MWP and stating the nature of the tests to which the pressure vessel and its fittings have been subjected, shall be obtained before using the pressure vessel. Details of certificate shall be prominently marked on the pressure vessel.
- Pressure vessel in service shall be examined by a competent person externally - once in 6 months. Internally once in 12 months. When internal examination is not possible, this examination may be replaced by hydraulic test - carried out once in 24 months. Further in case of pressure vessels in continuous process and cannot be frequently opened the period of examination may be extended up to 4 years (Non-destructive test like ultrasonic test for metal thickness or other defects of all parts)

All records pertaining to tests and examination of pressure vessels shall be maintained properly at all times. And component persons making such reports shall, within 7 days of completion of such test and examinations, send to the inspector a copy of the report.

8.3 SAFETY PRECAUTION IN AIR COMPRESSOR

AIR COMPRESSOR

The following attachment on compressed air system or shall always be kept and maintained in working order.

1. Safety valve adjusted at designed or actual sae working pressure
2. Drain valve for condensate
3. Loop provided on pipeline to allow for the expansion and contraction

SAFETY PRECAUTIONS

1. All moving parts of the air compressor shall be securely guarded.
2. Air compressor shall be equipped with :
 - a)Auto stop air compressing operation before the discharge
 - b)Pressure exceeds the allowable minimum and bypass
3. Filters for air intake for air compressor shall be cleaned regularly and they shall be kept where air is free from any flammable or toxic gas/fumes.
4. Pressure gauge for indicating air pressure on compressor shall be kept in working order.
5. When starting the air compressor drain cock on the compressor cylinders and in the pipe leading to the air receiving tank shall be kept open.
6. Safety valves and oil separators shall be cleaned regularly.
7. Periodic inspection(internal & external) of air receiving tank to be carried out.
8. Hydro test for air receiving tank shall be carried out once in 5 years.

Explosion in serous nature cannot be ruled out in the working of a compressor when the condensate is not drained regularly. Hence daily blow down (draining) of the condensate should be an important part of the preventative maintenance. In compressed air receiver, the moisture being drawn in with air, condensate and the entry of oil, grease etc from the compressor unit in to the receiver vessel cannot be ruled out. This oil traces (hydrocarbon) has a tendency to collect over the water condensate and thus can be easily drained off. If this is neglected, owing to the high temperature hydrocarbons can form explosive mixture. The feeding of excess oil shall be avoided. The inside of the air receiver tank shall be cleaned properly to remove oil, carbon, water and other substances regularly, apart from its daily blown.

8.4 SAFETY RULES FOR WELDING /ELERICAL JOBS

1. As for as possible, DC generator set shall be used instead of AC transformer set.
2. Use of AC transformer set shall be banned for welding jobs inside vessel (both open & close top type)
3. Contractor shall get his welding set certified by company's engineering department before starting work.
4. These certificate shall have to renewed every two months
5. A copy of the certificate shall have be displayed on respective welding set.
6. Only cable in good condition and insulated holders shall be used
7. The welder shall wear quality insulated welding gloves and black glasses while at work
8. The length of the supply cable to welding set shall not exceed 3 meters and the welding set body shall be properly earthed by two separate earthling wires of size not less than 12 SWG or 14 SWG copper running along the cable.
9. A fire charged fire extinguisher shall be carried with each welding set
10. The contractor shall ensure that all portable power tools used by his workmen are rated for 50 volts AC or 110 volts ac with secondary of transformer centre topped and earthed.
11. Contractor shall provide the suitable for operating the above tools from 240 volts supply.
12. The transformer shall be fed through an armoured or flexible cable of not more than 2 meters length with a 3 pin metal clad plug, properly earthed

13. Workmen of the contractor engaged in carrying out any electrical work shall be supervised by a person holding supervisory licence issued by the local electricity board.

OXYGEN / ACETYLENE WELDING AND CUTTING PROCEDURE

1. Only trained employees , whose regular duties include welding and cutting to perform this work
2. Adjustment or repair of gauges, valves, accessories or safety devices by unqualified person is prohibited.
3. Acetylene must not be used for welding or cutting at pressure exceed 15 PSIG.
4. Acetylene cylinder valves not be opened more than one full turn and the wrench to be left on the valve stem so that the valve can be closed quickly if necessary.
5. Oxygen cylinder valves will be opened fully and made hand tight against the back seat. This takes the high range cylinder pressure off the packing.
6. Fire extinguishers to be easily accessible to all employees performing welding or cutting operations.
7. Screen or shield to be used for the protection of person.

8.5 INSPECTION AND TESTING

Sr.No.	Equipment descriptions	Inspection and testing	Frequency
1	Pressure Vessel	Hydro test	24 Months
		Non-destructive testing	4 Years
		Routing PM	As and when reqd.
2	DG Set	Routing PM	As and when reqd
		Oil & Filter change	As and when reqd
		Aquatics checking with DB meter in mid-day and mid night	6 Months
		AVR - Auto voltage regulator check	3 Month
		Radiator water check	Every month
3	Hoist , Cranes and other lifting devices	Routing checklist of operator ref in safety in material handling chapter	Daily before use
		Inspection chain, pulley and crane	1 months
		3 rd party validation	3 Month
4	Forklift	Routing checklist of operator ref in safety in material handling chapter	Daily before use
5	Fire Alarm		Every month
6	Fire Extinguisher		Every month
7	Welding ,Grinding & cutting		As and when reqd before start the work
8	Earth pit	For transformer	3month
		Machine and controls	Every month
		Office, Air conditioned and server room	As and when reqd.

PERMIT TO WORK SYSTEM AND PROCEDURE

9.1 WORK PERMIT

Introduction

Permit-to-work forms an essential part of safety systems of work for various types of hazardous jobs. Permits to work are documents, which provide the record of a systematic approach to ensuring safety in such tasks. A permit to works gives formal authority to carry out a plant procedure. It is designed to protect personnel, plant and the public from hazardous areas or activities it forms an essential part of work for various types of high-risk tasks such as entry into moving machinery, confined spaces, working with high voltage electricity, hot work and working at height

This is a document, which clearly specifies the work to be done and the precautions to be taken. It allows the work to start only after the safe procedures have been defined and they provide a clear record that all foreseeable hazards have been considered and necessary precautions have been undertaken. It ensures contractors activities / temporary work is permitted & being monitored under strict supervision & with safety standards

Objective

To ensure proper authorization of work that has been designated as requiring the raising of a permit.

To clearly communicate to people carrying out the work the exact identity, nature and extent of the task, the hazards involved any limitations on the extent of work, and the time during which the task may be carried out.

To ensure the right people are allotted the job and specify the precautions to be taken and ensure that these are implemented.

To ensure that the person in-charge of a plant or an installation, and those operating the plant or equipment are fully aware of the work being done their.

To provide a system of continues control and also a formal record.

To provide a procedure for occasions when work has to be suspended.

To provide for cross-referencing of permits for work activities that may interact with other activities related to the same equipment / location.

To provide a formal handbook procedure to ensure that the part of the plant affected by the task in safe condition and ready for reuse.

Procedures for issuing and validating the work permit.

In order to ensure that the work permit system is followed in totality it was found necessary to identify the routine jobs which do not require work permit. It is implied that for any other work not identified in the list of jobs not requiring a work permit the work permit system will be followed.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

The following are the jobs which do not require work permit

- On line setting and adjustment on packing /sealing machines
- Cleaning and housekeeping of machines without exposing rotating parts and electrical.
- Regular plant operational jobs.
- Alignment of flat conveyor belts
- Regular minor shift maintenance of static equipment's
- Die changing.
- Lubrication of equipment without exposing rotating parts or without climbing to heights.
- Work shop operations of turning / drilling grinding when being carried out by trained persons.
- Moving of light equipment.

ISSUING, AUTHORIZATION & ACCEPTANCE

The permit to work is to be prepared by the person getting the job done. He will emphasize on the following points

- a. hazards involved in the job
- b. decide precautions to be undertaken, e.g. the suitability of the person allotted for job, Isolation, blanking, drawing & cordoning of the area
- c. The issue of PPE and the correct usage.
- d. He will obtain the authorization as per guidelines set for the work permits.

All permits to work except for work involving working at height and confined space work is to be authorized & issued by Shift officer. Work at height & confined space work can only be authorized by department manager / project engineer.

The permit should be issued to & received by the personnel executing the work and plant operator or in-charge of the area where the work is being undertaken. In case of contractor executed jobs, contractor's supervisor should receive the permit. Contents of the work permit including work procedures and safety precautions should be discussed and explained to the personnel receiving the permit.

General guidelines for work permit system.

1. Shift officer is the sole authority for authorizing the work permit for normal operations & Project Work within the Building and any extension required would be authorized by Shift officer.
2. All Major Project works outside the plant building would be authorized / Extended by Project Engineer or Factory manager. If the project work is being extended after 5-00 PM this has to be revalidated by the shift officer.
3. For jobs at heights and confined space entry Dept. Manager /Factory manager has to authorize the permit and it would not be extended after 5.00 p.m. in normal circumstances.
4. The issue of PPE/Safety instruction & Precaution has to be undertaken by the initiator.
5. In cases of isolation the shift officer will depute an electrician who will isolate and sign the in the work permit mentioning the time the shift officer will authorize the work permit.
6. After the job is completed the person executing the job will sign for re fitting of the guards and area cleaned this will be countersigned by the shift officer.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

7. Trial energization will be done after the shift officer authorizes on the work permit mentioning the time.
8. After completion of the job the permit will be returned to the shift officer and it will be filed.
9. The work permit will be handed over from one shift officer to another during the shift change. A work permit automatically void at the end of a shift the person executing the job or the contractor supervisor has to get the work permit revalidated by the Shift officer taking over the shift.
10. Normal work permit system
 - a. There will be two copies of each work permit
 - b. After authorization Pink copy shall be taken along with the person executing the job, he will use the same copy to get authorization for trial energization, re-energization. This copy will be returned to the shift officer after the completion of the job who will file the same , The green copy will be with the operator
11. For jobs that are extending beyond one day the person executing the job will take the signature of the initiator and the signature of the shift officer. A work permit may be revalidated only Three times.
12. List of safety precautions to be taken is mentioned on the work permit. Fill the relevant part and strike out whichever in not applicable. If it is felt that some additional precautions are needed, those shall be clearly specified in the permit.
13. No one person can sign for both the issuer and the acceptor.
14. Work should not start before the issue of a work permit. Similarly operational activities should not start unless the permit is returned to the production department after completion of the job.
15. It is understood that whenever a work permit is issued the acceptor starts the job only after understanding the instructions in the permit.
16. It is the responsibility of the person executing the job / or the unit supervisor to ensure that the safety precautions as decided in the work permit to be taken are strictly followed. He will also stop the work if any condition prevailing at the time of issue of the work permit has adversely changed and approach the initiator.
17. Before returning of the permit, both the acceptor and the initiator/shift officer should satisfy himself or herself that the unit in safe condition, all guards are in place and the house keeping is good.
18. In case of "EMERGENCY", all work permits stand cancelled.

Permit to work - Process steps

1. Define the job - Initiator
2. Assess risks and hazards by initiator / safety coordinator
3. Identify control measures
4. Implement control measures
5. Check for cross reference with interacting activities
6. Complete the permit to work form and authorize work
7. Carry out task in accordance with define procedures and control measures
8. Work completion and handling over of equipment
9. Physical inspection
10. Sign off to terminate the permit
11. Store the work permit for record

9.2 WORK PERMIT AUTHORISATION LIMIT & VALIDITY

Type of work permit	Authority Limits	Validity
General Work Permit	All Managers All Supervisors	The work permit will valid up to 6 pm normally. The permit must be revalidated by the issuing authority for work beyond this period. If work is incomplete and has to be continued on the next day the work permit has to be revalidated on the next day before restarting work. Permits issued in 2nd and night shift will be valid only up to the end of the shift.
Hot jobs welding, grinding and cutting	Engineering Managers Departmental Manager	The work permit will valid up to 6 pm normally. The permit must be revalidated by the issuing authority for work beyond this period. If work is incomplete and has to be continued on the next day the work permit has to be revalidated on the next day before restarting work
Working at height	Engineering Manager Departmental Manager	The work permit will valid up to 6 pm normally. The permit must be revalidated by the issuing authority for work beyond this period. If work is incomplete and has to be continued on the next day the work permit has to be revalidated on the next day before restarting work
Evacuation	Engineering Manager Departmental Manager	The work permit will valid up to 6 pm normally. The permit must be revalidated by the issuing authority for work beyond this period. If work is incomplete and has to be continued on the next day the work permit has to be revalidated on the next day before restarting work
Installation and dismantling of the machine	Engineering Manager Departmental Manager	The work permit will valid up to 6 pm normally. The permit must be revalidated by the issuing authority for work beyond this period. If work is incomplete and has to be continued on the next day the work permit has to be revalidated on the next day before restarting work

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Chapter – 10

EMERGENCY MANAGEMENT PLAN

EMERGENCY RESPONSE PROCEDURE

OBJECTIVES

The objectives of this emergency plan are:

1. To protect people, plant, property and environment.
2. To provide immediate assistance to the injured.
3. To co-ordinate action on-unit and off-unit.
4. To bring back normalcy as soon as possible.

This chapter gives contingency plans for possible emergencies in the factory. An emergency plan is an integral part of the SHE management systems of all EP factories, including new units that are being set up. It is also required to audit emergency preparedness by an auditor (preferably SHE personnel) from another factory

DEFINITIONS

Emergency is defined as an event that affects or threatens to affect either a large number of personnel, or persons beyond the boundaries of the factory. An event that will cause extensive damage to plant, property and environment is also considered an emergency.

Emergency alarm is the wailing sound produced by a large siren / bell located in the Factory to declare an emergency.

Emergency control centre is the point from which the emergency controller directs the actions and movement of personnel and equipment during an emergency.

Emergency controller (EC) is a person who assumes absolute control of the factory and determines the actions necessary to control the emergency.

Incident controller (IC) is the person who goes to the scene of emergency and supervises the actions taken at the incident to overcome the emergency

Emergency control team is the designated group of managers, officers, staff and practical advisors who assist the emergency controller. The team consists of three groups:

- **Control Centre team**, which will operate from the emergency control centre.
- **Incident Control team** that remains at the unit of incident to bring the event under control.
- **Assembly point team** that guides non-essential personnel at emergency assembly points.

Emergency assembly point is a place containing or adjacent to a place containing an internal telephone, where people can assemble and wait in a group to receive instructions from the Emergency Controller.

First aid station is the location where injured persons will be taken for receiving first aid and sent for further treatment if required.

POSSIBLE EMERGENCIES

(Factory team has to identify the possible emergencies)

Some of the possible emergency situations are:

- Fire
- Natural calamities- earthquake, flood, storm , landslides, forest fire and lightning
- Social calamities - riots, vandalism , bomb threats

Mitigation procedures for the above emergency situations are covered in the following section.

EMERGENCY MITIGATION PROCEDURES

A. FIRE: ACTION IN CASE OF FIRE

1. On noticing a fire, shout FIRE, FIRE loudly.
2. Immediately on hearing the shouts, ascertain the location and nature of the fire. Ring up the gate lodge and inform them about the same.
3. Until further help comes, check the nature of the fire, pick the appropriate extinguishers and try to put out the fire.
4. On hearing about the fire:
5. The Security Guard will blow the fire siren if not done already.
6. Immediately start the fire pump.
7. Other security guards will rush to the unit of the fire and connect the hose pipes to the nearest hydrant and keep it ready for use as soon as the fire pump starts.
8. On hearing the fire siren :
9. The emergency procedure will be set into operation. Security Supervisor/Guard will rush to the fire pump station to start the pump and ensure that the discharged header is pressurized.
10. The Emergency Controller and the Incident Controller will have the security Supervisor/ Guards to assist them to fight the fire. In addition, the Emergency Controller will send a team of trained personnel from the people available on unit and carry out the following:
 - a) If people are entrapped, guide them to safety and rescue any one who may get injured/trapped.
 - b) Connect the fire hoses & nozzles to the hydrant landings near the unit of the fire. If it is an oil fire connect the foam making attachment to the hose. If it is an electrical fire will switch off the mains supply to the affected department after getting the message from Emergency Controller.
 - c) Fight the fire with appropriate fire extinguishers. Use the hydrant system as soon as the header is pressurized.
11. In case the Emergency Controller feels necessary he will call the nearest Fire Brigade and other help. The Control Panel Operators will concentrate on their respective departments to ensure that there are no adverse effects on the process and to take care of process abnormalities.

SPECIFIC FIRES AND HOW TO FIGHT THEM

Before using any fire fighting means be absolutely sure about type and source of fire else it can result in further issues. Clear off surrounding material from the area of fire since these can catch and spread the fire. Do not use wet extinguishers for electrical fires. These can lead to electrical shock and death. Use sand to collect liquids and dispose off safely. Always direct fire fighting water, liquid, powder or gas at the base of the fire. Do not assume fire is out at first glance, check thoroughly before giving all clear.

PLASTICS AND PAPER

Plastics and paper include material such as Polymer, corrugated boxes etc used in our factory. These can result in A type fire, which can be easily put off by Water or Water CO2 fire Extinguisher. However even after flames disappear from such fires smouldering remains can re-ignite. Carefully lift and probe the leftover from the fire and put off all embers. Thoroughly drench all material with large amounts of water. Dangerous fumes may be given off from plastic fires. Use nose mask.

HIGH SPEED DIESEL / GREASE OR OIL FIRES

Since oil is lighter than water it floats on top and continues to burn hence water cannot be used to put off this fire. Use Foam or DCP extinguisher to fight HSD fires. They will cut off oxygen supply by coating the surface and prevent spread of fire. If there are more tanks of HSD / oil nearby get them away from the fire. In case of very big tanks continuously keep them cool by drenching with water else, they may explode.

ELECTRICAL FIRES

These can develop as a result of short circuit or improper wiring etc. As soon as fire is noticed, first put off the main switch to isolate power supply. Do not ever use any wet type of extinguisher or water for such fires since one can get a fatal shock in such a case. Use DCP or CO₂ fire extinguisher.

B. NATURAL CALAMITIES

(Preparedness for natural calamities like, earthquake.

EARTHQUAKE: EMERGENCY HANDLING PROCEDURE

Instructions to employees on how to respond when a quack hits the unit

- The moment the slightest tremors are felt, in the form of rumblings/vibrations on floor/walls/roof, all employees in the factory building to collect at the open unit designated as fire assembly point, exiting through the designated exits and the Emergency exits.
- The designated person to immediately inform fire brigade /police and to liaise between Departments.
- Electrician to immediately shut off power at main distribution board.
- A quick roll calls to be arranged at the assembly point by the authorised person.
- The duration of the quake is not predictable, and the intensity varies. Nobody to re-enter the building before the incident controller gives a clearance.
- The incident controller (as designated) to immediately inform the designated emergency controller. Uhf sets to be used if the telecommunication system fails.
- Emergency controller/deputy to activate emergency control centre and take over-all charge of the emergency.

END OF EMERGENCY

The emergency team to address the following:

- The team can order the workers to go back into the factory to resume normal operations after fully convincing themselves that the tremors/quake has stopped and that nothing of any consequence has taken place to the building structure/machinery/electrical installations etc. An “all clear” signal needs to be given after thoroughly assessing the situation.

FLOODS: EMERGENCY HANDLING PROCEDURE

Govt. does resort to flood prevention strategies, like construction of dams, dykes etc. but as an individual one must be aware of the following, which could save your property or life.

- Be aware of the local flood history, and when evacuation is required, be aware of the nearest safe location.
- Listen to the local radio for information/flood warning.
- Move fuel, chemicals, hazardous waste to high, secure places.
- Protect/relocate equipment and stocks to safer places.
- As a preparation for evacuation, turn off electricity, water, gas pipelines. Keep sandbags ready to prevent flooding of low lying areas.

AFTER THE FLOOD

- Do not switch on electricity until safety checked.
- Beware of snakes, scorpions that may have moved to dry areas in your house.
- Ensure thorough clean-up of any contaminated material.

C. GENERAL RULES DURING EMERGENCIES

1. EMERGENCY SIREN

Emergency siren is sounded to declare emergency situation.

Emergency alarm: Pulsed siren

All clear: Single long siren

(Mention the locations of emergency alarm and hooters in this section and procedure applicable to the unit)

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

2. EMERGENCY EVACUATION PROCEDURE

1. On hearing emergency siren carry out emergency shutdown procedure.
2. Leave the building by the safest route
3. Go to designated assembly point Assemble at the designated assembly point.
4. Under no circumstances any person except authorised persons involved in the fire fighting /rescue operation, crisis management team members and wardens, should leave the assembly point during the emergency.
5. If any person is away from his section at the time of emergency, he/she must leave that place after hearing emergency siren and rush to the designated assembly point.
*In case there is an obstruction on the road or a person is unable to walk he/she can go to the nearest assembly point and report to warden of that zone who will in turn inform to the emergency controller accordingly.
6. After hearing all clear siren leave the assembly point and go to your work place.

3. ORDER OF PRIORITY IN CASE OF EMERGENCY

- i. Protect people.
- ii. Protect environment
- iii. Protect plant and property
- iv. Bring the incident under control

4. DO'S AND DON'TS:

DO'S

- All vehicles should be parked at the side of the road leaving the keys in ignition.
- All departmental officers to take a head count of all the people on duty.
- People away from the work place to return to their departments and report to their respective officers.
- Emergency team should come into action
- All employees should move to nearest assembly points
- Emergency/Fire exits should be used.
- Evacuate the work place as soon as you hear the emergency siren.

Don'ts

- Vehicle should be restricted to enter the unit.
- Internal telephones to be used only in emergency.
- All incoming/outgoing calls not connected with the emergency will not be permitted.
- People not trained in emergency to move away from the incident point.
- Personnel in the other departments to remain at their workplace unless asked to

D. EMERGENCY TEAM AND SERVICES - ROLES, RESPONSIBILITIES AND AUTHORITIES.

1. ACTIONS BY PERSONS NOTICING THE EMERGENCY

- a. Actuate emergency siren.
- b. Inform Shift in charge.
- c. Dial internal telephones and give the details of emergency to the security officer.

2. ACTION BY SECURITY IN-CHARGE

- a. Actuate the Emergency siren, if not done already.
- b. Send one guard to start the fire pump - Fire Pump House.
- c. Attend to incoming phones.
- d. Await instructions from the Emergency controller.
- e. If the fire is reported rush to the scene of incident with fire hoses and fight fire under the guidance of incident controller. However one guard should remain at the gate.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

f. Keep the main gate open, but stop incoming traffic and keep the gate clear for movement of emergency vehicles. A guard should be deputed for this purpose.

3. ACTIONS BY THE SHIFT SUPERVISOR

On hearing Emergency siren Shift Officer/ Supervisor shall take following actions:

- a. Ring up security and find out the cause of siren. If phone is not working send running messenger at the gate.
- b. Guide personnel in the incident control room.
- c. If the emergency controller declares the major emergency, then shift officer/supervisor should be prepared to take following actions as per advice of emergency controller:
 - Head count of personnel.
 - Safe stoppage of plant if advised by the emergency controller.
 - Evacuation of personnel if advised by emergency controller, officer concerned should advice personnel about safe route for escape.
 - Assist emergency controller in any other way as required by him.

4. ACTION BY EMERGENCY CONTROL TEAM:

Members of the emergency control centre team will report to the emergency control Centre and assist and support the emergency controller in his duties. If safe to do so, the designated first aide will go to the Incident control room

5. ACTION BY EMERGENCY CONTROLLER

Shift Officer will act as the Emergency Controller, till the designated person relieves him.

On hearing emergency siren, the Emergency Controller shall take the following actions:

- a. Contact Gate lodge on phone or rush to the Gate lodge to find the reason of the siren.
- b. Rush to the unit of incident for evaluation.
- c. If after assessment, Emergency Controller feels that it is a major emergency, he shall take the following actions:
 - Come back to the emergency control centre.
 - Inform police and fire brigade.
 - Ask assembly points to take a head count, shut down plants and give advice for safe evacuation.
 - Keep in touch with the incident controller.
 - Meet outside emergency services on arrival at unit and guide them.
 - Arrange for treatment of any casualties.

6. ACTIONS BY ESSENTIAL PERSONNEL:

During an Emergency, packers, checkers, Operators have to participate in handling the emergency.

- a. In case of any emergency situation, personnel in the concerned department should assist the incident controller to handle the emergency.
- b. Operators of each plant should keep a watch on plant operations during an emergency. They should take emergency shutdown of their plant when advised by their plant officer or the emergency controller.
- c. People trained in fire fighting and first aid should report to emergency controller if he makes such a request through the Shift Officer. Emergency controller should specify the number of helpers required while making a request.

7. ACTION BY VISITORS

Infrequent visitors are registered on each visit and given a visitor's pass, which includes an emergency action statement. The responsibility for visitors in emergency situations rests with the person being visited.

8. ACTION NON-ESSENTIAL PERSONNEL

Those persons at unit who are not involved in handling emergency are required to wait in the assembly point for further instructions from emergency controller.

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

9. RESPONSIBILITIES OF EMERGENCY CONTROLLER

Immediately on being aware of the emergency, the EC will proceed to the emergency control centre. On arrival he will: Relieve the IC of responsibility of overall main control.

- a. On declaration of a major emergency, ensure that the outside emergency services are called in and where required that nearby firms are informed.
- b. Ensure that key personnel are called in.
- c. Exercise direct operational control of those parts of the works outside the affected area.
- d. Maintain a selective continuous review of possible developments and assess these to determine most probable course of events.
- e. Direct the shutting down and evacuation of plants in consultation with the IC and the key personnel.
- f. Ensure that casualties are receiving adequate attention. Arrange for additional help if required. Ensure that relatives are advised.
- g. Liaise with Fire Brigade and Police Services.
- h. Ensure the accounting of personnel.
- i. Control traffic movement within the works.
- j. Arrange chronological record of the emergency to be maintained.
- k. When the emergency is prolonged arrange for the relief of the personnel and the provision of catering facilities.

WHO IS THE EMERGENCY CONTROLLER?

Emergency controller will be one of the following in the order mentioned below:

1. Factory Manager
2. HR Manager
3. Engineering Manager
4. Shift supervisor

10. RESPONSIBILITIES OF EMERGENCY CONTROL TEAM

An emergency control team has been identified to handle a major emergency. The team has been divided into groups as shown below.

As soon as emergency is identified, actions are initiated as described above. Once the emergency control team has assembled, following actions will be initiated.

TEAM I: External Communication Team

1. The Factory Manager (Alternative: HR Manager)
2. HR Manager (Alternative: Engineering Manager)

Communication Centre is located at the Factory Manager's Office in the Factory.

The team members will collect at the factory Manager's office, immediately after hearing the siren.

- a. Emergency Controller will assess the situation after getting details from the Incident Controller and take the following actions:
 - Check that Production Manager /Maintenance manager/Pears Production officer is available to take over as Incident Controller. If Production Manager is not available Maintenance manager will take over as Incident Controller etc.
 - Check that other members of the Emergency control team are available to take up their respective responsibilities.
 - Meet media/other people coming at unit from outside.
- b. External Communication team shall be in constant touch with emergency Controller. The team will contact following persons and give updated information.

LOCAL

- Fire Brigade
- Hospital

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

- Police
- Factory Inspectorate
- District officials
- Environmental officials

TEAM II: Control Centre Team

1. Production Manager. (Alt: Maintenance manager)
2. Maintenance manager. (Alt: Shift in charge)
3. Shift supervisor (Alt: Security Officer)

Control Centre team shall be overall in charge of all the activities at unit during an emergency. Incident Controller shall head the team and each member of the team will have a specific function to assist Incident Controller.

In daytime, the members should rush to the Emergency control centre immediately after hearing emergency siren. In night-time Production manager/Maintenance manager will be informed to proceed to factory.

a. Shift Officer (Alt.: Security Supervisor)

Shift officer will take initial charge as Incident controller, till any other person in order of priority given above relieves him.

Immediately after taking charge of Incident Controller, Shift Officer will take following actions:

- Make an assessment of the incident and activate the emergency plan if it is a major emergency situation.
- Inform assembly points, Factory Manager, Police and fire Brigade.
- Continue functioning as Emergency Controller till relieved as mentioned above. If not relieved in time Shift Officer will also inform Factory Inspectorate

b. Production Manager (Alt.: Maintenance manager)

Production Manager will take over as Incident Controller from Shift Officer. In his absence, Maintenance manager shall take over as Incident Controller.

- Incident controller will ensure that all members of his team have been informed to collect at incident control Centre. He will then proceed to Incident Control Centre to take charge.
- After first hand assessment of situation he will give necessary instruction to the emergency control team. He will maintain logbook of all the activities.
- He will keep in touch with External communication team.
- He will insure that information is sent to outside emergency services. (Police and Fire Brigade)
- He will depute people to:

- Attend to telephone
- Keep in touch with assembly points.
- Communicate with assembly point.
- Meet outside emergency services.
- Enforce proper flow of traffic and security.
- Arrange for Medical aid.

c. Maintenance manager (Alt.: Shift supervisor)

- Communication with Incident Controller
- Communication with Police / Fire brigade
- Communication with assembly points
- Check that roll call leaders at assembly points have been able to account for all personnel.

d. Safety coordinator /Security Supervisor

Responsibilities:

- Meeting and guiding outside emergency services.
- Ensuring free flow of traffic
- Transportation

Team III: Assembly Point Team

Assembly Point Room:

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

Personnel Officer

Personnel Staff

On hearing Emergency Siren, assembly point team will proceed to the designated assembly point.

Responsibility:

- Contact gate lodge by Phone or by running messenger.
- Keep in touch with Emergency Controller.
- Guide people collected at the assembly point.

If advised by Emergency Controller take a head count, arrange to shut down plant and evacuate personnel.

E. TRAINING AND SKILL DEVELOPMENT

Employees need to be aware of the emergency plan available at the unit. They will need to clearly understand their roles and responsibilities during an emergency. The success of an emergency plan depends largely on the level of awareness of the plan by the employees, for, their response directly is based on the awareness level. Employees need to be aware of the basic contents of the plan, the evacuation procedures, the unit assembly points, handling of fire fighting equipment and also administering first aid. Units will need to have a clear training plan for their employees and also check their level of understanding.

Training:

Employees - Emergency plan & drill

Contractors - Evacuation procedure, Assembly point

Emergency control team - Role play

Skill development:

Fire fighters -minimum x persons per shift

First-aiders -minimum x persons per shift

F. REHEARSAL AND EMERGENCY DRILL

Emergency plans will need to be practiced and rehearsed through mock drills. The entire activity will need to be documented in the emergency drill log. What went right, and the area for improvement will need to be analysed, and gaps adequately addressed. It would be a good practice to shoot the entire mock drill on a video for better learning to take place. Practice certainly is needed to enable employees cope and respond appropriately during an emergency.

Emergency Drill:

Twice in a year

G. LEARNING FROM EMERGENCY SITUATIONS

At the end of the emergency it will be useful for the emergency control team to meet and take stock of the situation. It is also recommended that a section of the employees are included. The employees will need to be thanked for the efforts taken on their part during the emergency.

Typically, learning on what went right during the emergency and the areas of concern will need to be discussed. Points on scope for improvement to be documented and Action with responsibilities and time frame assigned

ANNEXURES: The following annexure to be maintained by respective units

ANNEXURE: 1 - UNIT LAYOUT, ASSEMBLY POINTS AND LOCATION OF HAZARDOUS MATERIALS STORAGE .This is specific to the unit (A sample layout is given in the next below)



ANNEXURE: 2 - LIST OF FIRST-AIDERS AND FIRST AID FACILITY

THIS IS SPECIFIC TO THE UNIT

(List should include T.No., Name , Department , Shift)

ANNEXURE: 3 - LIST OF FIRE FIGHTERS

THIS IS SPECIFIC TO THE UNIT*(List should include T.No, Name, Department, and Shift)*

ANNEXURE: 4-LIST OF HARDWARE, FIRE FIGHTING EQUIPMENT AND PPE

Some of the identified hardware are:

1. Siren/ Internal Public address system
2. Fire alarms/Manual call points
3. Emergency lights
4. Smoke detectors
5. Ambulance / vehicle
6. Emergency control centre with telephone
7. Assembly points
8. PPE - Mask/ face shield / fire suits/breathing apparatus
9. First aid room
10. Access control - Head count /muster roll
11. Pictorial display/ Instruction boards- at entry points
12. Power back up
13. Emergency staircase
14. Emergency doors
15. Fire Hydrant - sand water bucket

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

16. Fire extinguishers

Fire fighting equipment

1. Fire Hydrant - t
2. Fire extinguishers

(List the fire fighting equipment with location)

Some of the identified PPE are:

1. PVC Suit
2. Rubber Gloves
3. Gum boots
4. Safety Goggles
5. Cotton Nose mask

ANNEXURE: 5 : EMERGENCY SIREN, WARNING, ALARM LOCATION

This is specific to the unit

ANNEXURE: 6- LIST OF ITEMS IN THE FIRST AID BOX Dressings ANNEXURE: 6- LIST OF ITEMS IN THE FIRST AID BOX Dressings should be maintained as per the requirement of the respective State Factory Rules

ANNEXURE: 7- EMERGENCY CONTROL ROOM

Location of Emergency control room: *This is specific to unit*

Some of the identified items for control room are:

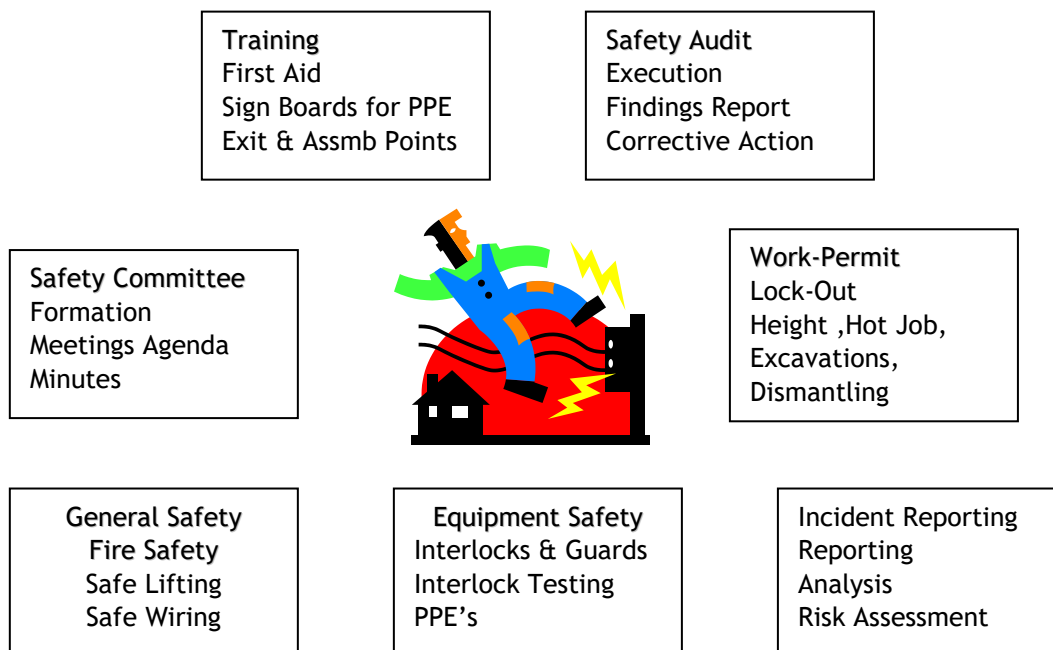
1. External Telephone lines and a list of relevant telephone numbers.
2. Internal telephone lines and a list of telephone of emergency assembly point.
3. List of emergency control team, who must be called in, showing addresses and telephone numbers.
4. Emergency Lighting.
5. Copy of Emergency plan.
6. List of persons trained in first aid and fire fighting
7. List of safety cabinets and their contents and locations.
8. Battery operated torches.
9. Manila rope.
10. Detailed Unit plan.
11. First -Aid box
12. MSDS for all the hazardous chemicals used in the unit.

ANNEXURE: 8- IMPORTANT TELEPHONE NUMBERS

Chapter - 11

SAFETY RESPONSIBILITIES AND AWARENESS

Safety Road Map



Structure and Responsibility

The overall responsibility for implementing and maintaining the standards of SHE policy throughout the unit lies with the Factory Manager. Communication of roles and responsibilities shall be done by this document, training and as and when required.

The Factory manager will be responsible for:

- Ensuring the implementation of the OHS and Environment Management system.
- Ensuring that all products and process in place are operating in an environmentally sound manner.
- Ensuring that the plant operations remain within the approved documented criteria.
- Ensuring a high level of safety and environmental consciousness at all levels through regular SHE Committee meetings, audio-visual Communication etc.
- Participating and co-ordinating periodic audits including Annual Environment Audit and Annual Safety Audit.
- Providing necessary follow-up on implementation of the entire audit recommendation and SHE Committee recommendation using well-documented means.
- Providing such evidence as may be required to assure that the organisational policy for process safety is being implemented.
- Ensuring that the HR Manager reports all relevant experience of ill health or dangerous occurrence to the concerned Management Committee Member.

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Individual SHE Responsibilities

Area	Responsibility
Disaster Control Management	
- Internal	HR
- External	HR
Environment	HR /Engineering
- Water Pollution,	HR /Engineering
- Air Pollution	HR /Engineering
Fire Fighting Services	HR /Engineering
Electrical Installations	Engineering
Pressure Vessels Lifting Tackles	Engineering
Occupational Health and Hygiene	HR
Training	HR
Management of Contractors	HR
Factory Inspectorate Clearances	HR
Licenses and Permits Renewal	HR

1. Within each unit the HR or Engineering person is responsible for the implementation and performance of the unit's OH&S management system.
2. Each unit must nominate a competent person(s) to co-ordinate the overall implementation of the unit's OH&S management system. This person must have access to the most senior person within the unit.
3. Each unit must define, document and communicate individual roles, responsibilities and authorities for the implementation, control and improvement of the management system and provide adequate resources.
4. Each unit must establish access to a source of competent expert advice on occupational health, occupational safety and process safety matters.

Safety Committee

While Unit Head will overall responsibility, employees participation is to be also encouraged through formation of safety committee. Safety committee consists of members drawn within the unit at all levels. The Safety Committee shall consist of equal number of representatives of the management and the employees, and the minimum number of representatives shall be not less than six

- Terms of the committee is for 2 years.
- The committee meets at least once in every three months

General agenda points of the Safety committee include..

- Review of safe work practice
- Employee safety and health concern
- Occurrence of hazardous conditions/practices and recommended
- Corrective actions
- Safety and health inspection
- Accident investigation review
- Accident prevention programme review
- Safety training

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Management Review

The factory management will carry out an annual documented review of the management system to ensure its continuing suitability and effectiveness for meeting our policies and objectives, and aim for continual improvement. Where appropriate, changes in the system, policy or objectives will be made.

These reviews will include the entire unit organisation, and will take account of changing circumstances, concerns of relevant interested parties, the results of management system audits and commitments to continual improvement, pollution prevention and legal compliance.

The Factory Manager shall be the Chairman and the SHE coordinator shall be the secretary for the meeting. The meeting shall include all managers and the safety coordinator.

The agenda for discussion shall be as follows -

- Minutes of previous meeting
- Policy Review
- Legislative Update
- Progress towards achievement of objectives and targets
- SHE statistics
- The effectiveness of the performance monitoring and measurement systems
- The adequacy and effectiveness of the emergency procedures
- Corrective actions carried out since the last review
- Recorded instances of the ineffectiveness of the system
- The results of any management systems audits
- Any possible actions to generate continual improvement.

The SHE Coordinator shall prepare the action plan based on the discussions in the meeting. The action plan shall be specify the responsibilities and time scales and the Factory Manager shall approve it.

Awareness programme

To increase the awareness and involvement of employees regarding safety, periodic programmes like slogan competition, symbol competition, safety work instruction competition are conducted. The winners are awarded prizes and certificates. Details of such activities are also too reported occasionally to “EP Post “for coverage.

Safety posters to be displayed at various locations need to be changed after certain period of times.

To increase the general awareness of all the employees on the safety and health, safety bulletin / notice boards to be displayed at defined location

The following information to be displayed from time to time on these notice boards.

- Minutes of the safety committee meeting
- Safety related information from newspapers and magazine cuttings
- Details of safety related activities in the factory
- EP safety policy and general safety rules
- Posters / literatures on safety
- Emergency telephone numbers
- Statistics data in the form of safety triangle
- Circular and notices

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Group meeting

1. A duly appointed safety committee is instituted with adequate representation of all section heads, officers and workmen.
2. Personal manager / supervisor acts as the secretary of the committee. He ensures that meeting are convened on schedule and minutes are displayed on boards and are also circulated to all concern.
3. Safety issues raised during the meeting are addressed by preparing a time bound action plan. A monthly review on the progress of implementation is too maintained.

Objectives and Targets

The unit has established objectives and targets based on the SHE policy and significant OHS risks. The objectives set out how the policy will be achieved while the targets are measurable and achievable. The objectives and targets shall be quarterly reviewed by the Factory manager to assess performance, to consider changes in OHS risks, technological advances and legislation and to meet new EPL / company SHE standards.

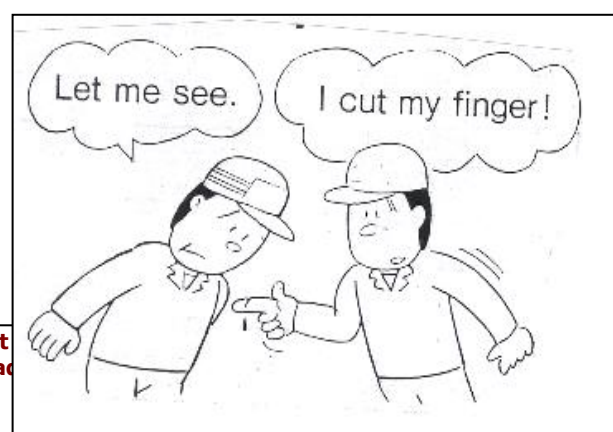
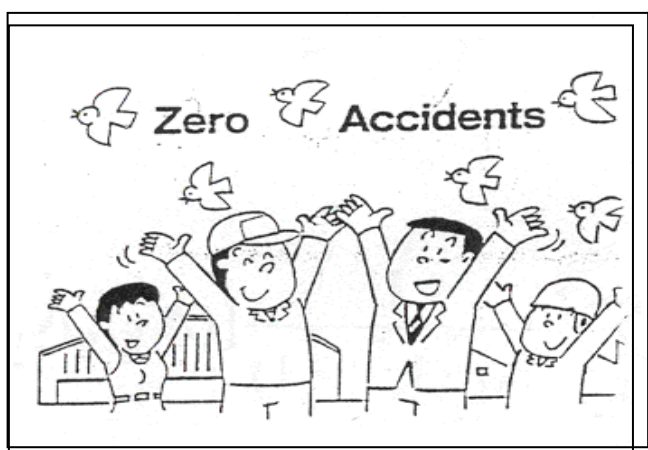
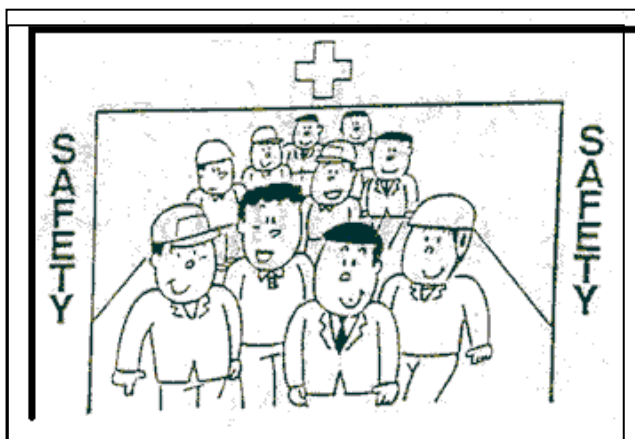
SHE Management Programme

In order to ensure that targets are met, formal management programs have been documented by the organisation. These programs define the means by which targets shall be achieved, responsibilities and the time-scales for achievement.

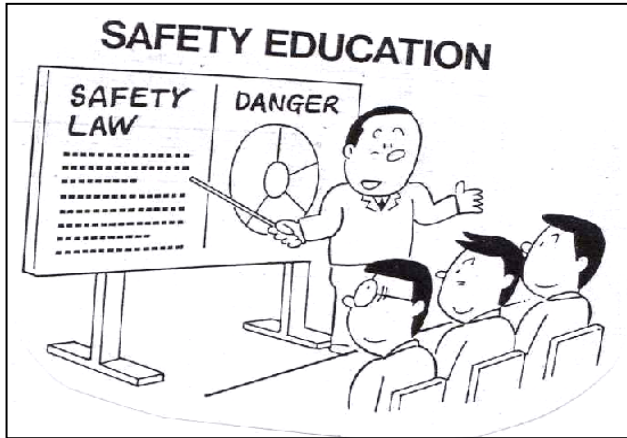
The unit SHE co-ordinator(s) shall be responsible for quarterly review and monitoring of progress. The management program shall be changed when objectives and targets are added or amended and when progress towards targets is unlikely to be met.

Safety suggestion scheme

An employee noticing a potential hazard or any aspects that is likely source of ill health will have to bring the matter to the attention of their supervisor or HR dept. The HR dept. / Engg dept. pays due attention to the observation and conducts a detailed review. Corrective action to be taken as required.



This policy outlines the basic parameters that needs to be met plants. Statutory laws pertaining to the locations need to be ad



This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

SAFETY TRAINING AND COMMUNICATION

Training

EP believes that there is a need for all employees to be trained in the matters of occupational health & safety and environment care, the implication of these on the factory environment and the vital role they play in incident/accident prevention. Therefore, continuous efforts shall be made to communicate the OHS and EC norms to the employees through formal and informal training.

1. Within each unit, all individuals working for that organisation must be given relevant OH&S training or information, as appropriate. This training or information must be proportionate to their OH&S responsibilities, abilities, literacy and the OH&S risks associated with their work, including emergency preparedness.
2. Specific individual or group training needs must be periodically assessed to ensure that each individual or group is competent to perform their role within the organisation's OH&S management system.
3. Training programmes must make clear the importance of effective OH&S management to EPL as a global company.
4. Training shall cover contractor's employee as well.
5. Safety induction training & ongoing safety events / audits shall ensure participation of all kind of workers

Induction and General Awareness Training

All new incumbents whether on permanent or temporary jobs shall be imparted orientation training within two days of their joining. No new incumbent will be permitted to work inside the factory until he has undergone the orientation training. The induction programme for new staff includes an introduction of the factory, its OHS and objectives, the significant OHS risks, the requirements of the SHE management system, and the responsibilities of staff in achieving these requirements.

All employees who are taken on permanent jobs shall be imparted a SHE Awareness Training before they are assigned any jobs.

Specific Training

All the incumbents shall be given on the job training and shall be put under the charge of a trained senior employee till he achieves proficiency in the job and associated SHE aspects. The concerned senior employee who will personally confirm the training being imparted will closely supervise the job training. The concerned supervisor/shift officer will satisfy himself through a feedback system. This will be followed by a personal interview to determine the job training. The shift officer after confirming his satisfaction will record his observation in writing in a prescribed format (observation so recorded shall be sent to Personnel Dept. for record) and will place him to carry out his job independently. In case the shift officer is not satisfied with the progress made by the trainee he may extend his training to a suitable period.

In case of jobs requiring special skills and expertise or having a significant influence on the organisational OHS and environmental performance, on the job training under some senior employee and supervisor will be given. The job will be carried out only after the employee has been declared fit for the job after a formal interview and test being conducted by the departmental manager. Observation of the Department Manager shall be recorded in prescribed format, which shall be sent to Personnel department for records.

The Departmental Manager shall maintain a record of such employees who have been trained for such special purpose.

Refresher Training

The training needs of employees in different areas shall be reviewed on periodical basis, updated in the prescribed format and refresher courses shall be arranged as and when required. The refresher training shall also be conducted on the basis of critical SHE issues for the factory and lessons learnt by the factory

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

or parent organisation. This will be co-ordinated by the HR Manager.

Training Records

Personnel department will maintain training records of all individuals which shall be kept in his service records containing the basic qualifications of the employee, his experience, training and review of training imparted or proposed to be imparted to the employee.

Induction and Training System for Contract Labour

All contractors who are required to carry out jobs inside the factory shall be given a formal SHE awareness training. This training will also be arranged for the unit supervisor(s) of the respective contractors. The unit supervisor(s) will be given in writing the safety precautions to be taken by them and their employees while they are on the job inside the factory. The contractor or his unit supervisor will be responsible for imparting training to their employees who are required to carry out the jobs inside the factory. Any violation of SHE procedures will be dealt with severely.

Communication

The organisation recognises the importance of good communications between the various levels and functions of the company and with interested parties.

Internal

The HR Manager will be responsible for communication within the company, in addition to the monthly performance report sent to Factory Manager.

External

The Factory Manager shall be responsible for all communication with local authorities and interested parties. The Factory manager shall receive all such inquiries and complaints, and shall conduct the investigation with the department manager. The department manager shall be responsible for implementing the recommendations in the agreed timescales and for achieving the desired results. All external communications shall be recorded and documented in the prescribed log by SHE Coordinator. The factory manager shall review the system periodically to ensure adequacy.

Each unit must establish and maintain a system for receiving, documenting and responding to relevant communication from external interested parties.

Documentation

The Organisation has to establish and maintained a SHE Management Manual (this document) which describes: -

- the policies and how this relates to objectives, targets and the management programme;
- organisational roles and responsibilities;
- how the system elements interact

The HR Manager shall maintain all statutory documentation, while the unit SHE co-ordinator(s) shall maintain all critical documents related to SHE.

The recommended documentation is as follows -

- Occupational Health records
- Training records
- Legal Register and Register of Significant OHS Risks & Environmental Aspects
- Standard Operating Procedures and Work Instructions related to significant OH&S and Environment risks
- Discharge consent limits and relevant company Standards or guidelines

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- Quantities and consignment notes for waste (hazardous and non-hazardous) together with details of the waste registration system
- A unit plan indicating the location of hazardous waste and hazardous raw material/product storage area
- Utility consumption e.g. Water, fuels & electricity etc
- Water balance
- A register of past accidental discharges to the environment
- Incident investigations report and follow up actions
- Complaints from the community plus any formal warnings/prosecution from the authorities
- Records of any internal inspections together with those carried out by the authorities plus corrective actions taken
- Audit reports or reviews
- Action plans resulting from audits
- Information on factory performance indicators
- A register of past and current land use indicating any activities that could cause potential soil contamination problems
- Risk assessment studies

Document and Data Control

This document is a part of the official SHE management system. A numbered, controlled copy of this Management Manual, which will be maintained by the Factory manager, is issued to the concerned persons. They are responsible for its safekeeping, and for ensuring it is updated when revisions are issued. Amendments to unnumbered copies will not be issued.

Any changes to specific sections of this manual, prior to the annual review, shall be issued to the department managers. They shall be responsible for ensuring that all departmental copies are updated.

The Factory manager is responsible for periodic review and revision of this manual and the unit SHE coordinators are responsible for periodic review and updating procedures and work instructions. The department managers shall be responsible for document control in consult with the SHE Coordinator.

Each organisation must establish and maintain systems for the management of all statutory and other critical documents and data relating to its OH&S management system.

Records and Records Management

All records related to the SHE management system shall be maintained by the respective department managers/officers. These shall include occupational health & safety / environmental records, results of audits and performance reviews and management system reviews. The system for record management and record control shall be similar to document control.

Records will be safely stored for the relevant period in the concerned departments.

Sr no	RECORDS	Retention period	Applicable legislation	Responsibility
1	Accident /incident investigation report	Permanent	internal	HR
2	Planned Inspection & Maintenance record	3 months	Internal	Engineering
3	Safety permit record for maintenance	1 months	Internal	Engineering / HR
4	Environment monitoring	1 year	Internal	HR

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	records			
5	MSDS records	3 years	Internal	QC
6	Safety committee meeting records			HR
7	Monthly report	1 year	internal	HR

IMPORTANCE OF SAFETY AND ENSURING SAFETY:-

Importance of Labour safety:-

Important matter at a job unit is to ensure safety of workers and safety is an issue, which on to priority should be given in all aspects. Any hazards at a job unit will lower efficiency of work, even if it was a minor scratch on a finger and will deteriorate the working system itself. Much more in case of a serious hazard, it will not only become a problem for himself but also give trouble to his family and the company. There we always need to keep our minds intense not to create any hazards and work with safety first in mind.

Importance of Ensuring physical safety:-

Any hazards have causes and such causes are consisted of physical cause and human cause. Physical causes include not only equipment, machines and tools but also inflammables, explosives, gas, electricity and vapour which will be hazardous to men and more in broader sense, working environment, as well. If these are in incomplete conditions, hazards caused by physical cause may easily occur. On the other hand, human causes include errors in operation, unfamiliar work, dangerous action or carelessness, which become causes of hazards. A hazard often occurs such a physical defect is combined with a human defect and it said that there are very few hazards which cannot be completely prevented. Any physical causes can be managed by men and we must try our best to ensure safety and prevent hazards.

Therefore, it becomes necessary to ensure safety of a job unit by understanding setting standards of equipment safety, concept of safety measures and usage standards as well as eliminating hazard causes by checking safety of new equipment and improving Works.

SAFETY AUDIT

Safety Audit is an important tool for identifying failing standards, area of risks or vulnerability hazards accident potential in proposed and existing plants and processes, for determining the actions necessary to remove hazards before personal injury or damage occur.

The loss potential, in the industry is always high and is not restricted only to large scale incidents like accidents, fires, spillage of hazardous chemical, explosions, toxic gas release etc. but minor issues like failure or damage to cables of instrument or equipment may lead to lengthy down time of plant, resulting in heavy financial loss. Also loss potential is not concerned with the production.

AUDIT OBJECTIVES

- To carry out a systematic and critical appraisal of all potential hazards associated with the manufacturing activities of the company. It includes plant, people, services and operations.
- To ensure that safety systems provided in the company are in accordance with company's written safety policies rules, procedures and objectives.
- To determine the effectiveness of the safety program and degree of compliance.

The following actions are to be planned for conducting the Audit.

1. To examine and evaluate the accident prevention measures.
2. To analyse the safety procedures, systems and practices.
3. To observe the working conditions and operating methods, including storage/handling of raw materials/finished products.
4. To pinpoint occupational health hazards.
5. To check the adequacy of fire fighting arrangement.
6. To study waste disposal arrangements.
7. To comment upon various statutory compliance.

AUDIT GOALS:

Audit is to be designed to achieve the following goals,

- To provide the auditee with an opportunity to assess its own safety system standard and identify areas for improvement.
- To determine the conformity of the implemented occupational Safety & Health system with specified requirements and identify areas for improvement.
- To meet statutory & regulatory requirements.
- All manufacturing operations.
- Safety systems provided in the plants.

TYPES OF RECORDS TO BE EXAMINED DURING SAFETY AUDIT

1. Safety policy
2. Training record on safety, fire and first - Aid.
3. Reports of plant safety inspections.
4. Accident investigations reports.
5. Accidents Statistics and Analysis (including near misses).
6. Test reports of testing and examinations of pressure vessels, Tanks and lifting equipment is from competent person.
7. Safe operating procedures (SOPs) for various operations.
8. Copies of work permit forms.
9. Records of monitoring of flammable and Explosive substances at workplace.
10. Maintenance and testing records of fire detection and fire fighting equipment.
11. Medical reports of employees.

12. Material Safety Data Sheets.

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13. On unit emergency plans and record of Mock Drills.
14. Record of Hazardous waste disposal.
15. Housekeeping inspection record.
16. Minutes of central safety committee meeting.
17. Plan approval from statutory authorities.
18. Plant shut down procedures.
19. Annual safety budget.
20. Recommendations of previous safety Audits & their compliance.

SHE Management System Audits

The unit shall conduct half yearly audits to verify whether the system -

- Confirms to the planned arrangements as outlined in this manual and to internal EPL / company standards
- Has been properly implemented and maintained
- Is effective in meeting the organisational policy and objectives

An independent team, nominated by the Factory Manager or consisting of EPL auditors, shall conduct the audit as per the SHE guidelines and the recommendations shall be communicated to all managers by the SHE Coordinator. The management program shall then be amended to include actions arising from audit recommendations.

Safety audits acts as a check to ensure adherence to satisfy the procedure .Safety audits enables reassessment of existing practices and improvement wherever required.

Safety audits address the following areas in general.

- Safety audit checklist (Ref. format)
- Statutory licence checks
- Hazards materials receipt, storage , issue and disposal
- Electrical Installation
- Process equipment's & piping
- System procedure and documentation
- Fire fighting and safety equipment's
- Personal protection
- Training

Guidelines for Safety audit : The following are the guidelines for conducting the intercompany safety audit

Sl.No	Scorecard Questions	Question to	Look At	Look For	Deciding factors
A	SYSTEM				
1	Are you aware of EP safety system	Interview various	Employees at various levels of the unit	Awareness of the EP safety system	All levels are to be aware of safety
2	Till what level of your employees aware of this system	Unit Head	Safety manual	Awareness at various levels of employees	Interview employees to verify the actual level of awareness
3	Do you feel the system is adequately covered for		Safety manual		
4	Guidelines to ensure accident free operation	Unit Head		Adequacy in terms of guidelines	Verify the adequacy and understanding through interviews

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5	Reporting system	Unit Head		Adequacy in terms of reporting system	Verify the adequacy and understanding through interviews
B	SAFETY COMMITTEE				
1	Have you formed a safety committee	UNIT HEAD	Safety records	Safety committee formation	Verify with the names mentioned in the committee list if they are aware of their nomination to the committee.
2	Does this committee have a fixed agenda	Unit Head	Safety committee	Defined agenda for the safety committee	Verify the awareness of the committee about the defined agenda
3	How many times this committee has met in the last six months	Unit Head / Committee members	Safety committee meeting minutes	Frequency of meeting	All meetings are to be properly minuted with actionable points and follow ups
4	Till what level the charter of the safety committee is known in your unit	Interview various	Safety committee charter	Awareness of the charter at various levels	All levels are to be aware of the safety committee charter
5	How many recommendations the committee has proposed in the last three months	Committee members	Safety committee meeting minutes	Recommendations made by the committee on safety improvements	Safety committee is to discuss safety incidents and related issues and come out with recommendations that are implemented in the unit
C	TRAINING				
1	How many employees are trained in First aid in%	Unit HR	Safety training records	Training on first aid	Sample 3 names from the list of trained personnel and cross verify
2	Is there a system in place to ensure that at least one of them is available in the plant always	Safety committee	Job allocation sheets (personnel shift records)	Presence of at least one First aid trained person at any time in the plant	There should be a conscious method of ensuring that at least one first aider is available in the plant always
3	Do you have a work permit system to carry out hazardous work in the factory premises	Safety committee	Safety procedures	Definition of hazardous work and also work permit system for hazardous work	All hazardous work are to be carried out only with a valid genuine permit, approved appropriately
4	How often do you feel it is implemented in%	Safety committee	Work permits	Records indicating execution of hazardous work vs no of times it was done with a	Verify through interviews that hazardous work is always done with a proper work permit

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				proper work permit	
5	Who authorizes the work permit	Safety committee	Work permits	Authorization - responsibility identification and practice	All work permits are to be properly authorized by the designated authority
6	Do you have safety training for your employees	Unit HR	Training plan	Safety training programs	All employees to undergo at least 1 training in safety in a year. Cross verify the training undergone with the employees
7	How many non-safe work practices/observations were brought to your notice in the last 3 months	UNIT HEAD / Committee members	Safety incidence reports	No of safety violations / observations in the last 3 months	All safety incidences - big or small are to be recorded
8	Have all been corrected	Committee members	Safety incidence reports	Corrections of safety violations reported	All safety incidences need to be reviewed and corrective action to be implemented. Verify records of a few samples.
9	As a unit manager do you believe adequate safety practices are being followed	Unit Head			Interview the UNIT HEAD and ensure how he believes that the safety practices are being followed
10	Do you have a safety incident report	Unit Head / Committee members	Safety records	Safety incidence reporting	All incidents are to be recorded formally
11	Does it adequately cover the cause and prevention of the incidents	Unit Head / Committee members	Safety incidence reports	Root cause analysis and preventive action identification	All safety incidents are to be reviewed critically to identify the root cause and take corrective and/or preventive action
12	How many safety incidents have happened in the past 6 months	Committee members	Safety incidence reports	No of incidences in the past 6 months	Look at records for the past 6 months and see at what frequency it has happened
13	Do you have a system of communicating the incidence	Committee members	Safety communication methods	Timely communication to all employees, management and other units. Also look for the medium of	All information is to be shared in a timely fashion. Information received from other units are to be reviewed and actions taken based on that also

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				transmission of information	
13a	To all employees				
13b	To the management				
13c	Among the group companies				
13d	Have you used the intranet for posting safety incidence				
14	Do you have emergency lighting system	Committee members	Facility tour	Emergency lights at vantage points	Emergency lights are to be in working condition. Check 2 or 3 lights physically
15	Have you clearly earmarked emergency Assembly point	Committee members	Facility map	Identification of emergency assembly area	Physical availability of the EA area. Employees to be aware of the EA area. Check with 4 employees at random.
16	Do you have firefighting/Hydrant systems	Committee members	Facility tour	Fire hydrant system	Awareness of the fire hydrant points for the trained fire fighters
17	Is it periodically checked and kept in serviceable conditions	Committee members	Fire hydrant system	Periodic maintenance and check records	FH systems to be in working conditions always
18	What is the frequency of testing it in a year	Committee members	Fire hydrant system	Testing and maintenance frequency - procedures	Testing & maintenance records - to match with the procedures
19	Do you have safety signs displayed in the plant	Committee members	Plant Floor	Safety signs posted at various locations	Awareness of the employees about the safety posters and their meanings
20	Have you provided necessary PPE (Personal protective Equipment) wherever conditions called for	Committee members	PPE requirements	Definition of PPE usage and actual usage in the plant	PPE to be worn wherever it is specified. Verify with 6 employees to see the awareness of them in PPE usage
21	Do you have safety audit system	Committee members	Safety procedures	Safety audit procedures	Audit plan, execution, identification of violations and CAPA plan and implementation to be clearly available
22	What is the frequency of the audit in a year	Committee members	Safety audit procedures	Annual frequency of audit	Audit plan to be in line with the specified frequency.
23	What is the audit noncompliance closing period	Committee members	Safety audit procedures	Non-compliance closing period - specification	NCs to be closed as per the specified closing period

This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

24	Is this communicated for learning to all employees		Safety audit non compliances	Communication of NCs to all personnel in the organisation	All NCs are to be communicated properly to enhance the level of awareness in safety
----	--	--	------------------------------	---	---

PERFORMANCE MEASUREMENT AND MONITORING

The Individual unit shall monitor and measure on a regular basis, the key characteristics of its operations and activities that can have a significant impact on occupational health & safety and the environment. This shall include the recording of information to track performance, relevant operational controls, conformance with the organisational SHE objectives and targets, and compliance with legislation and internal EP standards. The unit shall track performance by measuring the following KPIs -OHS

- Number of occupational injuries and illnesses
- Types of occupational injuries and illnesses
- Lost Time Accidents
- Medical Treatment Cases
- First Aid Cases and Near misses

Safety principle Responsibility Matrix

Safety Principle	Operators	Supervisors	Section Head
All injuries and occupational illnesses are preventable	Report all near misses and incidents/illnesses to line superior	Capture near misses/incidents/illnesses. Participate in investigation. Execute corrective action to avoid recurrence	Investigate captured near misses/incidents/illnesses involving concerned parties. Arrive on root cause and corrective action. Review execution and recurrence
All operational exposures can be safe guarded	Report all operational exposures	Capture operational exposures and execute corrective action	Provide resources for safe guarding action and Review implementation
Safety evaluation of all business processes is vital	Participate in risk assessment	Carry out risk assessment (CTI/THA) of all new operations & equipment and implement control measures	Identify team for risk assessment of all new operations & equipment. Provide resources for implementation of control measures. Review periodically
Working safely is a condition of employment	Work safely to avoid SHE violation. Report SHE violations	Work safely to avoid SHE violations. Capture SHE violations. Participate in investigation	Demonstrate safe way of working to avoid SHE violations.
Training all employees to work safely is essential	Participate in training programs	Help Section head in identifying training needs. Prepare training modules and impart training	Identify training needs with line officers. Prepare training schedule and review implementation and effectiveness of training
Management audits are a must	Participate in management audits and follow audit recommendations	Participate/organize/do safety audits. Implement audit recommendations	Participate/organize/carry out safety audits. Provide resources to implement audit recommendations. Review implementation
Employee involvement is essential	Participate in all safety initiatives like safety communications, safety suggestion scheme, SAM etc	Disseminate all standards & schemes through toolbox. Carry out CTI, THA etc involving all	Positive assurance on dissemination of schemes and standards. Review team based safety initiatives
All deficiencies must be reported and corrected promptly	Report all deficiencies and suggest corrective action	Capture deficiencies and take corrective action	Ensure availability resources for corrective action. Review implementation

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Safety cost you nothing

Success Criteria and KPIs for Safety Principles

Safety Principle	Success Criteria	KPI	Target	Achieved
1. All injuries and occupational illnesses are preventable	All near misses and incidents/illnesses gets reported	1. Near miss		
		2. Near miss investigation report action points closure		
		3 Percentage of repeated injury		
		4 Percentage of repeated illness		
		5 Accident investigation report action points closure		
2. All operational exposures can be safe guarded	Robust system to capture operational exposures and safe guard them	6 Statutory compliance		
		7 Mandate for all changes		
3. Safety evaluation of all business processes is vital	No trial / new process gets started without safety evaluation	8. % compliance		
		9. Safety contacts		
		10 Safety contact action points mitigation		
4. Working safely is a condition of employment	All employees contract include this	11. All workmen given written consent		
		12. All new employees are covered		
		13. All contractual employees are covered		
		14. No of SHE violation		
5. Training all employees to work safely is essential	All employees are formally trained on safety	15. Training man days		
		16. Training man days per employee		
		17. Percentage employees trained		
		18. Identification of key area with required skill		
		19. Percentage compliance for key areas		
6. Management audits are a must	Behavioral audit by all officers & Managers	20. No of audits per managers		
		21. Action point mitigation		
		22. No of unsafe act per audit hours		
7. Employee involvement is essential	All employees take part in safety initiatives	23. No of safety kaizens		
8. All deficiencies must be reported and corrected promptly	System to capture deficiencies and mitigate			

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Performance scoreboard: The performance can be measured by auditing and filling the following sheet

Sl. No	Documents	Y	N
	SYSTEM		
1	Are you aware of EP safety system		
2	Till what level of your employees aware of this system		
3	Do you feel the system is adequately covered for		
4	Guidelines to ensure accident free operation		
5	Reporting system		
	SAFETY COMMITTEE		
1	Have you formed a safety committee		
2	Does this committee have a fixed agenda		
3	How many times this committee has met in the last six months		
4	Till what level the charter of the safety committee is known in your unit		
5	How many recommendations the committee has proposed in the last three months		
	TRAINING		
1	How many employees are trained in First aid in%		
2	Is there a system in place to ensure that at least one of them is available in the plant always		
3	Do you have a work permit system to carry out hazardous work in the factory premises		
4	How often do you feel it is implemented in%		
5	Who authorizes the work permit		
6	Do you have safety training for your employees		
7	How many non-safe work practices/observations were brought to your notice in the last 3 months		
8	Have all been corrected		
9	As a unit manager do you believe adequate safety practices are being followed		
10	Do you have a safety incident report		
11	Does it adequately cover the cause and prevention of the incidents		
12	How many safety incidents have happened in the past 6 months		
13	Do you have a system of communicating the incidence		
	a)To all employees		
	b)To the management		
14	Among the group companies		
15	Have you used the intranet for posting safety incidence		

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16	Do you have emergency lighting system		
17	Have you clearly earmarked emergency Assembly point		
18	Do you have firefighting/Hydrant systems		
19	Is it periodically checked and kept in serviceable conditions		
20	What is the frequency of testing it in a year		
21	Do you have safety signs displayed in the plant		
22	Have you provided necessary PPE (Personal protective Equipment) wherever conditions called for		
23	Do you have safety audit system		
24	What is the frequency of the audit in a year		
25	What is the audit noncompliance closing period		
26	Is this communicated for learning		
27	To all employees		
28	To the management		
29	Among the group companies		
30	Have you used the intranet for posting safety incidence		

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LEGAL AND OTHER REQUIREMENTS FOR OPERATIONS (Example India)

All appropriate legislative, regulatory, policy requirements and codes, which are relevant to the OHS risks of its operation and environmental aspects of its activities, products and services, will be recorded. The HR Manager shall keep the Register of Legislation and master copies of all relevant legislation and other requirements. These will be updated annually and as required.

As part of SHE management, the organisation shall ensure that:

- The unit SHE co-ordinators, will conduct periodic audits to verify compliance with legislative and regulatory requirements. The responsibility for ensuring compliance and implementing recommendations of the audits shall rest with the departmental managers.
- Annual improvement targets are set at the beginning of each year, and are part of the objectives of respective department head / manager.
- A well-documented system of monitoring waste disposal (both hazardous & non-hazardous) exists. The quantities and relevant documentation for disposal of hazardous waste with details of any waste registration scheme shall be recorded.
- The credentials of any third party waste disposal company should be checked along with occasional inspection of landfill unit that may be employed for ultimate disposal.
- Documentation of waste generation shall be the responsibility of the Factory manager, while all other documentation shall be the responsibility of the Commercial manager.

SPME OF LEGAL SAFETY, HEALTH & ENVIRONMENT REGULATIONS APPLICABLE

Sr. No	APPLICABLE ACT	DOCUMENTS REQUIRED / FULFILLED	Status	Res .	AMENDMENTS / UPDATE
1	The Factories Act, 1948 (Amended in 1976 and 1987)	(a) Application for Licence / renewal of licence of a factory - Form 3 (b) Report of accident by Manager - Form 24 (c) Notice of Dangerous occurrence - Form 24A (d) Annual Return - Form 27 (e) Register of Accidents and Dangerous Occurrences (f) Stability Certificate (g) Occupational Safety & Health Audit (IS 14489:1998) through a auditor recognised by Chief Inspector once in 3 years			
2	Hazardous Wastes (Management & Handling) rules, 1989	(a) Application for Authorisation / Renewal / Storage of Hazardous wastes. (b) Hazardous Waste Manifest Form-9. (c) Maintaining of Records of hazardous waste at Facility in Form - 3 (d) Submission of returns regarding disposal of Hazardous waste- Form 4 (e) Marking of Hazardous Waste Containers - Form 8 (f) Transport Emergency (TREM) Card - Form 10. (g) Form for Filling Returns of Auction/ Sale of Non-Ferrous			
3	The Manufacture, Storage & Import of Hazardous chemicals rules, 1989.	(a) Hazardous chemicals identification as per Schedule 1, 2 & 3. (b) Material Safety Data Sheet - As per Schedule 17.			

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4	The Environment (Protection) Rules, 1986	(a) Environmental Audit Report in Form- V (b) Limits of Noise for DG sets. (d) Ambient Air quality standards in respect of Noise. (Schedule- III) (e) National Ambient Air quality standards (Schedule - VII) (f) Emission Limits for DG sets.			
5	The Central Motor Vehicle Rules, 1989	(a) Emergency Information panel with Hazards Chemical code on the Vehicle. (b) Checking of vehicle as per the requirements of this rule. (c) TREM Card is with the Driver of the Vehicle.			
6	Noise Pollution (Regulation & Control) Rules, 2000.	Ambient Air Quality Standards in Respect of Noise - Schedule.			
7	The Air (Prevention & Control of Pollution) Act 1981	Consent for Emission under section 21 in Form-A			
8	The Environment (Protection) Act.1986.	Standards for Effluent discharge, DG set emissions etc.			
9	The Water (Prevention and Control of Pollution) Rules. 1975	Consent Application Form C.			
10	Indian Explosive Act, 1984				
11	Indian Explosive Rules, 1983				
12	Gas Cylinder Rules, 1981	Only Commercial LPG being used for canteen and total weight < 100 Kg Periodical examination and testing of LPG manifold line connected to canteen			
13	The Indian Electricity Act, 1910				
14	The Indian Electricity Rules, 1956				
15	Batteries (Management and Handling) Rules, 2001.	Half Yearly Form VIII to be furnished by bulk consumer			
16	National Building Code of India 2016 Part – IV “Fire & Life Safety”	No Objection Certificate from State Fire & Emergency Dept.			

Each unit must identify the local compliance requirement develop a plan which will ensure full compliance with local standards within a reasonable and defined timescale.

ABBREVIATION, TERMS AND DEFINATIONS

Abbreviation:

SHE	: Safety, Health & Environment
HS	: Occupational Health & Safety
PPE	: Personal Protective equipment
OSHA	: Occupational Safety & Health Administration
CTI	: Critical task inventory
THA	: Task Hazards Analysis
LTA	: Lost time accident
FAC	: First aid case
AR	: Accident Reporting
OH	: Occupational health
IS	: Indian Standard
MSDS	: Material safety data sheet
FE	: Fire extinguisher
PTW	: Permit to work

Definitions

ACCIDENT

An unplanned and undesired event that results in harm (death, ill health, damage and injury or loss)

INCIDENT:

An unplanned and undesired event that could have resulted in harm (near miss)

LOSS / HARM:

Injury, death, damage to property, products, environment capacity loss, increased liabilities etc.

ACCIDENT (INCIDENT) INVESTIGATION

A systematic search and inquiry for factual information on the extent and nature of a specific loss, the related events, the substandard practices and conditions which influenced the events, the basic causes and the management action to prevent or control future occurrences.

ACCIDENT (INCIDENT) REPORT

A written summary describing the accident, presenting an analysis of causes and suggestions for remedial action, and documenting actions taken as preventive or control measures.

ACCIDENT ANALYSIS

Study of accident experience through compilation of related facts and information about the nature of injuries or damage, and the causal factors. The purpose is to define trends and problem areas and to identify the critical safety problems as a basis for programme objectives and activities. Analyses usually include frequency of occurrence, severity, nature of injury/damage, part of body injured, part of equipment or material damaged, agency of the accident, substandard practices and conditions, job factors and personal factors.

ALL-INJURY ACCIDENT

All injury accidents which result in a fatality, lost time accident (LTA), restricted work case (RWC), medical treatment case (MTC) and first aid case (FAC).

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AUDIT

A systematic examination to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve the organizations' policy and objectives. In terms of management system, audit is a systematic evaluation of a management system to establish its compliance with a defined standard. The auditors must not work for that part of the organisation, which is being assessed and must have been trained in the use of the auditing protocol, which has been approved by the organisation commissioning the auditing programme.

BASIC CAUSES

The job and personal factors, such as inadequate engineering, lack of knowledge or skill, etc., from which the immediate acts and/or conditions originate. Basic causes may also be referred to as underlying, root or real causes, systems defects or contributing causes. Basic causes are most frequently the result of an inadequate safety system, inadequate system standards, and/or inadequate compliance with standards.

FATALITY

Any occupational injury/ illness which results from exposure to an occupational health & safety hazard(s), in the course of one's employment, and which results in death. The fatalities can be classified in three categories:

FIRST AID CASES (FAC)

First Aid Cases are minor occupational injuries, for example small scratches, cuts, minor burns etc., which require only first aid treatment and can therefore be adequately treated by a fully qualified first aider. In some cases, the first aid treatment may be administered by a medical doctor or a registered professional medical person for example, where the injured person visits the occupational health facility rather than seeks the help of his/her own local first aider. These cases must also be classified as First Aid Cases. First Aid Cases where a single dose of medication is given by a medical doctor or a registered professional medical person to treat the occupational injury e.g. tetanus immunization, must remain classified as First Aid Cases.

[A single dose is the quantity to be taken at one time.] .If a FAC becomes an LTA then it must not be recorded as an FAC as well.

HAZARD

A condition, property or situation with the potential for loss. Loss can involve human injury, ill health, damage to property, damage to the environment and other forms of accidental loss.

IMMEDIATE CAUSES

The substandard acts/practices or conditions which directly contribute to the occurrence of an accident/incident. Frequently referred to as unsafe acts or conditions

LOST TIME (INJURY) ACCIDENT

Injury incidents which result in a person being unable to work his/her next shift (does not able to report duty within 48hrs) must be classified as lost time accidents (including fatalities).

NEAR MISS

An unplanned single event, without loss, that has the potential to result in fatality injury, damage to property and/or another form of accidental loss.

NON-CONFORMANCE

Any deviation from procedures, work instructions, specifications, operating criteria, applicable legislation or internal EPL standards, etc., that could either directly or indirectly lead to a significant occupational health and safety incident.

OCCUPATIONAL ILLNESS

An occupational illness is any medical disorder, not resulting from an occupational injury, caused solely (Occupational Disease) or in part (Occupational Work Related Illness) by exposure to an occupational health Hazard, in the course of one's employment. The basic difference between an occupational injury and an occupational illness is the single incident concept. If an occupational illness arises from an occupational injury then the classification remains an occupational injury e.g. subsequent infection following an accidental cut or puncture wound. Occupational Illness Cases must be classified as Fatality, Lost Time Cases, Restricted Workday Cases or Treatment Cases. Occupational illnesses, including those, which are chronic and/or recur, must be recorded once in the period during which the condition was first diagnosed.

OCCUPATIONAL INJURY

An occupational injury is an unplanned single event, which results from/leads to exposure to an occupational health & safety hazard(s), in the course of one's employment, and which results in personal harm. Where a person suffers clinical symptoms e.g. back pain, after undertaking a task, but where there is:

- no significant risk of injury associated with the task i.e. adequate control measures are defined and have been implemented in full, and
- the person has a history of such clinical symptoms, and then this event should be classified as a work related occupational illness rather than an occupational injury.

OCCUPATIONAL HEALTH

The promotion and maintenance of the physical, mental and social wellbeing of workers in all occupations through the identification, evaluation and control of occupational health hazards.

OCCUPATIONAL HYGIENE

Occupational hygiene is the science of anticipation, recognition, evaluation and control of hazards arising in or from the workplace and which could impair the health and wellbeing of worker, also taking into account the possible impact on the surrounding communities and the general environment.

OCCUPATIONAL SAFETY

The promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations through the identification, evaluation and control of occupational safety hazards.

RISK

Risk is a function of the probability of contact with (or exposure to) a "hazard", Multiplied by the likely severity of the consequences of that contact or exposure.

RISK ASSESSMENT

The overall process of estimating the magnitude of risk and deciding whether the risk is acceptable.

SIGNIFICANT RISK

A "significant risk" is one where additional control measures are required to either eliminate or reduce the risk of loss to a level, which is comparable with other accepted business risks.

Chapter -17

FORMS AND FORMATS

17.1 ACCIDENT / INCIDENT REPORT
NEAR-MISS [NO INJURY INCIDENT] / FIRST AID CASES [FAC] / MEDICAL TREATMENT CASES [MTC] /
RESTRICTED WORK CASES [RTC]
 (Please J mark as appropriate)

NEAR - MISS		FAC		MTC		RTC	
		DATE OF INCIDENT					
		TIME OF INCIDENT					
1	Name of the person/s involved						
2	Department			2A)Location			
3	INCIDENT	a	Fire/Explosion	h	Spillage		
		b	Mechanical failure	i	Hand in machine (roller)		
		c	Burn	j	Electrical Failure		
		d	Structure collapse	k	Gas Leak		
		e	Loss of control	l	Exposure to Live electrical conductor		
		f	Fall	m	Exposure to chemical		
		g	Vehicular incident	n	Others		
4	DESCRIPTION OF THE EVENT						
5	PROBABLE CAUSE OF OCCURRENCE						
6	WHAT IS BEING DONE TO PREVENT THE RECURRENCE?						
7	THE TIME FRAME TO IMPLEMENT THE ACTIONS STATED IN 6.						
8	a) WITNESS OF INCIDENT						
b) WAS THE PERSON WEARING REQUIRED PPE.							
c) WAS THE PERSON DOING HIS REGULAR JOB							
d) WHO GAVE THE FIRST AID.							
SIGNED BY							
DEPARTMENT MANAGER :							
Date :							

Definitions:-

- . Near Miss - Incident having potential to cause injury, Property damage.
- . First Aid Cases [FAC] are the occupational injuries where simple First Aid is Required
- . Medical Treatment cases [MTC] - Occupational injuries, not resulting in lost time [LTA]

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17.2 ACCIDENT INVESTIGATION REPORT

IDENTIFYING INFORMATION

1. Company :		2. Department:	
3. Location of Incident:		4. Date of Incident :	6. Date of Report:
INJURY OR ILLNESS PROPERTY DAMAGE		OTHER INCIDENTS :	
7. Name of injured person :		14. Property Damage :	18. Nature of Incident :
8. Part of Body:	9. Days Lost :	15. Nature of Damage :	19. Incident Cost, if applicable
10. Nature of Injury or illness :		16. Cost Estimated Actual	20. Person Reporting Incident :
11. Object/Equipment/ Substance inflicting harm		17. Object/Equipment/Substance	21. Object/Equip/Substance Related
12. Occupation :	13. Experience	22. Person with most control of item	22. Person with most control item

RISK

Evaluation of loss Potential if not Corrected.	24. Loss Severity Potential	25. Probability of Occurrences
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DESCRIPTION

26. Describe how the event occurred.

CAUSE ANALYSIS

27. Immediate causes:
28. Basic causes :

ACTION PLAN

29. Remedial Actions: What has and/or should be done to control the causes?		
2. Sensitize others regarding PPE compliance		
30. Signature of Investigator	31. Date	32. Follow-up: Circle for temp. Solution, sign & date when complete 1. 2

17.3 NEAR MISS REPORT

REF #:			
WORKER DETAILS		IMPROVEMENT CONTENTS	
TM #	TM Name	Name of the Incharge	
		POTENTIAL HAZARD	<u>FREQUENCY LEVEL</u> eg: once a day, once a week, once a month, many times
DEPARTMENT			<u>SEVERITY LEVEL</u> eg: First Aid, Absence from duty
<u>IN WHICH JOB ?</u>			
		NATURE OF WORK:-	
		Routine Work, Trouble Shooting, Repair, Arrangement, Cleaning, Handling,. Walking, Others	
<u>WHILE DOING WHAT ?</u>		<u>SKETCH</u>	
<u>WHAT COULD HAPPEN ?</u>		<u>IMPROVEMENT CONTENTS</u>	
<u>WHAT IS UNSAFE</u>		IMPROVEMENT COMPLETED BY (DATE)	S.ENG
		Comment of HOD	
			H.O.D
ROUTING:- Worker → AE/SE → H.O.D → All Divisions Heads(TO PREVENT ACCIDENT)			
CC: HR for information			

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17.4 GENERAL SAFETY CHECKLIST

Department : _____

Auditor : _____

Date of Audit : _____

Audited : _____

Sr	ACTIVITY	YES	NO	Remark
A	WORK DISCIPLINE			
1	Are shirt tucked in side the trouser ?			
2	Are people wearing shoes / safety shoes (as applicable)			
3	Using of ear plug above 85 dB, is it being followed ?.			
4	Are people using gloves while working on hot surface ?			
5	Is ladder being used while working at height above 05 feet?.			
6	Are people using safety belt while working at height. ?			
7	Observe people for using appropriate tools for appropriate work .			
8	Are people quartering the area while doing maintenance work on machine?			
9	Mains / Electrical supply to be disconnected and caution board to be put while working on line.			
10	Observe machine surrounding is clear for free movement.			
11	Are people using welding goggle while doing welding work?			
12	Waste disposal timing ,is it followed			
13	Are packers & engineers using proper cutter for cutting laminate and tapes?			
14	Equipment/Area is to be Checked for spillage of caps and granules on floor.No spillage permitted.			

B	EQUIPMENT / AREA	YES	NO	Remark
1	Light intensity (Min 225 lux)			
2	Noise level (Permissible 85 dB), if more, ear plug must be used.			
3	Floor should be Dry not Oily.			
4	Emergency stop of machine should be in working condition.			
5	Ensure all safety switches are in working condition and not by-passed. Check as per attached checklist.			
6	Ensure all machine doors are closed when it is in running condition.			
7	Safety guards should be available and fixed on the machines.			
8	Observe for any un-safe practices, like a) In LSL, putting hands to remove the unsealed tube from mandrel b) Removing the tube between overhead conveyor and elevator. c) In HSL line, Picking up tube from bucket. d) Climbing on TET to clear cap rail.			

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	e) Keeping sharp tools in pocket.			
9	Check no inflammable material kept on machine.			
10	Ensure all pathways clear from obstacles.			
11	Ensure Emergency Exit access is clear			
12	Ensure Fire Extinguishers are easily available & accessible			
13	Proper earthing of electrical equipment			
14	Loose wires & improper jointing with the electrical cables			
C	AWARENESS			
1	Check whether the importance of safety is known to the people.			
2	All personal working in the area should be aware of emergency Exit points.			
3	Awareness of emergency assembly point.			
4	All personnel should know operation of Fire Extinguisher			
5	What is safety committee? Who are the members in your unit?			
6	Check if people have attended any training programme on Safety in last six month?			
7	ARE THE PEOPLE AWARE OF THE INCIDENT / ACCIDENT REPORTING SYSTEM?			
8	Do people know about the Work permit system?			
9	Are the people aware about the safe practice on road?			
10	Are the people aware of the safe practices during driving vehicle?			
11	Possession of a valid vehicle licence?			
12	Knowledge of awareness of hazardous material being used and handled by people working in the department.			
13	Do you know in case of accident what to do such as First aid, calling Doctor, Ambulance, hospital, Police etc. ?			
14	Are people aware about safe lifting?			
D	SAFETY PRACTICE			
1	Availability of safety qualified person in every shift.			
2	Availability of First aid attendant in every shift.			

Signature of Auditee

Signature of Auditor



17.5 SAFE WORK PERMIT

Date :	Time :	Department / Location :
--------	--------	-------------------------

Nature of Work Line breaking for Confined space entry Lockout / Tag out
 Hot Work Hazardous material Other(s) _____

IN CASE OF EMERGENCY CONTACT SECURITY / SAFETY COORDINATOR

Description of work to be done :

Special Safety instruction, if any

Safety equipment and requirement

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Safety Glasses | <input type="checkbox"/> Dust masks | <input type="checkbox"/> Safety harness / lifeline | <input type="checkbox"/> Fire extinguisher |
| <input type="checkbox"/> Goggles | <input type="checkbox"/> Respirator | <input type="checkbox"/> Scaffolds | <input type="checkbox"/> Locks / tags |
| <input type="checkbox"/> Face Shield | <input type="checkbox"/> ½ face cartridge | <input type="checkbox"/> Force ventilation | <input type="checkbox"/> Other (list attached) |
| <input type="checkbox"/> Hard hats | <input type="checkbox"/> Full face cartridge | <input type="checkbox"/> Warning signs | |
| <input type="checkbox"/> Bump caps | <input type="checkbox"/> Supplied air | <input type="checkbox"/> Barricades | |
| <input type="checkbox"/> Ear plug / muffs | <input type="checkbox"/> Self contained | <input type="checkbox"/> Barrier tape | |

Contactor

Name	Phone No.
1.	
2.	

<p>Head of Department</p> <p>I have reviewed the area and have thoroughly checked the points given in the checklist. I have given the work crew instruction on how to do the job safety.</p> <p>Signature : Date : Time :</p>	<p>Authorised Signatory</p> <p>I have reviewed the area and equipment . They are safe for the work described above. I have reviewed the safety equipment and checklist with the work crew and I approved this permit</p> <p>Signature : Date : Time :</p>
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<p>Work crew</p> <p>I have been appraised of all related Hazards of this work and have no further question</p>	Name	Signature

Work completed at time :	Authorised Signatory (work completed)
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Work permit extension (Max. for the running week)

Date						
Sign.						

Note :

- This work permit should be accompanied with the corresponding check-list mentioned in the Nature of work (please see over leaf)
- One copy of the work permit should be posted at the job unit.

HOT WORK	Y	N	NA	CONFINED SPACE ENTRY	Y	N	NA
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This policy outlines the basic parameters that needs to be met from safety, health & environment stand point in all plants. Statutory laws pertaining to the locations need to be adhered.

1	Have all flammable or combustibles been removed from unit (at least 6 meters away)? Has floor been swept clear of all combustibles			1	Has all piping been isolate by discount blank or double block and bleed and locked and tagged ?		
2	Has Processing of flammable materials in area been stopped?			2	Has all electrical equipment associated with the vessel been locked and tagged out ?		
3	If pipeline containing flammable materials run through the area, have they been verified to be leak free and are they protected from potential impact.			3	Is vessel clean and free of hazardous residue?		
4	Is a wire extinguisher available and ready? Installed fire extinguisher not considered adequate?			4	If not, have appropriate . safeguards been taken assure safety entry?		
5	Has a fire watch been assigned? A fire watch must be assigned for 30 minutes after hot work is completed.			5	Has vessel been mechanically ventilated adequately prior to entry?		
6	If sparks fall to lower levels, has adequate protection been provided? Has fire watch been assigned at lower level?			6	Has a portable blower bee installed to continuously ventilate the vessel during entry?		
7	Has the work and adjacent areas been isolated with warning tapes and barricades?			7	Is a ladder inside the vessel and secured?		
8	Have contractors and visitors, been advised how to handle emergency situations?			8	Is cover secured open?		
9	Has a combustibles and gas meter test been conducted at several location on pipes vessels (high & low) and does it indicate a safe condition at all places? Any deviation from 0% LEL must be investigated and eliminated. No work will be attempted until this is done.			9	Has a watch person is assigned and person proper instruction ? Name _____		
10	All the load cells have been isolated within 3 meters of work unit. If it is between 3 to 6 meters, earthling electrode been places close to welding point.			10	If welding or cutting is to be performed, has a local exhaust been providing to remove all fumes within one foot of work?		
	LOCKOUT / TAGOUT			11	Are all electrical tools plugged in to a ground fault circuit interrupter or are they low voltage (less then 24v).		
1	Have electrical power sources been identified and disconnected with appropriate locks and tags applied and system tried?			1	Are all gas hoses in a good condition and tester for leaks? (close discharge valves, pressure hose , observe pressure).		
2	Are all isolation switches with approved lockout facilities ?			2	Does the meter have valid calibration sticker?		

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3	Have miscellaneous power sources been identified, deactivated and locked and tagged - Pneumatic - Hydraulic - Mechanical motion - Thermal - Potential pressure - Potential gravity			1 4	Has an oxygen and combustible gas test been made inside the space at several locations (high & low) and shows no combustible reading or any deviation from 21% oxygen or LEL must be investigated and eliminate . No work will be attempted until this is done.		
4	Are there circumstances in the course of the job where it is absolutely necessary to energise machines with their guards removed or trouble shot energized electrical apparatus, if yes, have special instruction been given.			1 5	Have instruction been given to watch person to abort the entry if signs symptoms of exposure occur and/or the oxygen level drops to 19.5% or rises to 23.5%		
LINE BREAKING FOR HAZARDOUS MATERAILS							
1	Have all associate pumps and compressor been locked and tagged ?			4	Have nearest eyewash and safety shower been located and test to be working properly?		
2	Has the line between washes out (acids, bases, solvents & chemicals) ? Workers must be wearing complete personal protective equipment (goggle, face shields, rubber gloves / suit), when line is being broken ?			5	Have the line been isolated upstream and/or down stream by double block & bleed. If only single block valve is available, has the valve been verified to be holding?		
3	Has MSDS of material been consulted ?			6	Have are been isolated with warming tape or barricades ?		

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