DRAFT STUDY MATERIAL

STORE KEEPER

**(Qualification Pack: Ref.Id.AMH/Q0501)
Sector: Apparel, Made-ups & Home Furnishing**

(Grade XII)

**एन सी ई आर टी
NCERT**

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Preface

Vocational Education is a dynamic and evolving field, and ensuring that every student has access to quality learning materials is of paramount importance. The journey of the PSS Central Institute of Vocational Education (PSSCIVE) toward producing comprehensive and inclusive study material is rigorous and time-consuming, requiring thorough research, expert consultation, and publication by the National Council of Educational Research and Training (NCERT). However, the absence of finalized study material should not impede the educational progress of our students. In response to this necessity, we present the draft study material, a provisional yet comprehensive guide, designed to bridge the gap between teaching and learning, until the official version of the study material is made available by the NCERT. The draft study material provides a structured and accessible set of materials for teachers and students to utilize in the interim period. The content is aligned with the prescribed curriculum to ensure that students remain on track with their learning objectives.

The contents of the modules are curated to provide continuity in education and maintain the momentum of teaching-learning in vocational education. It encompasses essential concepts and skills aligned with the curriculum and educational standards. We extend our gratitude to the academicians, vocational educators, subject matter experts, industry experts, academic consultants, and all other people who contributed their expertise and insights to the creation of the draft study material.

Teachers are encouraged to use the draft modules of the study material as a guide and supplement their teaching with additional resources and activities that cater to their students' unique learning styles and needs. Collaboration and feedback are vital; therefore, we welcome suggestions for improvement, especially by the teachers, in improving upon the content of the study material.

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Module 1	**Inspection and Checking of Materials as per Specifications and Upkeep of Stock Updates**

Module Overview

A store plays a big role in the apparel manufacturing industry, as well as in all other industries. Store department ensures uninterrupted supply of materials to various production and service departments of the organisation.

The store keeping department is one of the most important and responsible departments in any apparel production chain. All the processes of apparel production can be done smoothly only if store inventory analysis is accurate. All the materialsmust be properly inspected before outsourcing and distributing for apparel manufacturing. Proper recordsmustbe maintained for rejected and damaged materials in an inventory. The industry can not maintain its finances without proper maintenance, inspection, and checking. Store department takes the responsibility of sending damaged material back to the vendors. Store keeping department must be properly equipped with computer facilities and members of that department including the store keeper should have knowledge of computer and calculation for proper maintenance of inventory. They must be proficient in oral communication to maintain communication between departments.

Learning Outcomes
After completing this module, you will be able to: • Need of inspection of products • To maintain the record of damaged material. • To make arrangement for sending damaged material to vendors • Knowledge of computer and calculation skills • Communication and decision making related to material issue, receipt, inspection and checking
Module Structure
Session-1   Inspection of products in store department
Session-2   Managing rejected and damaged material

Session-3	Returning damaged material to vendors
Session-4	Knowledge of computer and calculation skills
Session-5	Communication and decision making related to material issue, receipt, inspection and checking

Session 1: Inspection of Products in Store Department

Inspection of products is very important for quality products in the apparel sector. It is impossible to achieve desirable quality without checking various parameters of material. Therefore, it is necessary to assure the right quality of material through inspection. It helps to reduce scrap lossesand defective work.

It is necessary to analyse the type of test required for that particular product or material. Identification of the right test for inspection of material requires sorting of raw material received from vendors or suppliers.

The raw materials used in apparel production can be categorised intovarious sections namely,fabric, trims and accessories, packaging material, chemicals, spare parts of machinery, and tools required for production.

These materials are received from various vendors and suppliers. Whenever any apparel production unit places an order for fabrics, trims, accessories, etc. from its vendors, a copy of the purchase order sent to the store department. This is done so that the store department can make necessary arrangements for the receipt, unloading, and storage of the material. After receiving the material, the store keeper tallies and verifies the quantity and quality againstthe purchase order, dispatch form, and post all entries in records. The supply of the material is also physically verified for size, quality, quantity, and appearance.

Receiving material is the primary responsibility of a store which must beperformed very carefully. It involves a series of operations such asmaterial unloading, it's checking, and inspection, related documentation, etc.

Following are the materials stored in a store:

Packing Material

Stationary, bags, cartons, polybags, brand tags and labels.

Chemicals

Various chemicals required for finishing, sizing, stain removal etc.

Spare Parts and Tools

Frames, needles, bobbins, belts, various attachments for sewing, embroidery etc.

Threads

Sewing threads, embroidery threads etc.

Fabrics

Main fabric, lining, inter lining etc.

Trims and Accessories

Lace, buttons, fasteners, zipper etc.

Fig.: 1.1 Material stored in a store department

Inspection of all the above mentioned stored materials is the responsibility of a storekeeper. A storekeeper inspects and quality checks each material that is stored in the store department. He performs this inspection either himself or with the help of the quality department.

TEST OUTCOME AND APPLICABILITY FOR PRODUCTS OR MATERIALS RECEIVED

For quality assurance,after receiving the raw material and sorting them, the second most importantaspect is testing of material. The quality of a product or process is checked before it is used on a large scale. Each material sample is transferred to the testing lab according to the required test. Quality of the material and its performanceare the key factors for the production. Specific methods, protocols, and standards adopted to check the properties of a material are called testing. It can be divided primarily into two types:

- Regular process testing

- Quality assurance testing

Routine testing takes place to streamline the daily process. Quality assurance testing helps the process or product in the long run to establish credibility. Testing can also be defined as the procedures adopted to determine a product's suitability and quality.

Testing methods

Testing is done primarily to test the quality and there are different ways to carry out a test. There are different test methods, standards,and instruments that may be adopted to test a single criteria. Manynational and international organisations have also established standards for textile testing. A few standards for textile testing are as follows:

- IS- Indian Standards

- AATCC - American Association of Textile Chemists and Colourists

- BSI - British Standards Institute

- ISO - International Organization for Standardization

- ASTM - American Society for Testing and Materials

- ANSI - American National Standards Institute

The availability of various test methods and standards makesstandardisation of the testing methods or procedures an important step while testing material.

TYPES OF TEST REQUIRED IN STORE DEPARTMENT

Fabric, threads, buttons, trims, accessories, zippers, needles, spare parts of the machine, chemicals, etc. are the raw materials in the apparel industrywhich are received from vendors. The quality of a final garment depends on the quality of raw material.The right quality of garment cannot be achieved even by using advanced technology and outstanding manufacturing if the raw material is defective and damaged. Therefore, before apparel production, testing and inspection of material is very important.Initially, after receiving any material, store department must perform checking, stamping, punching, stickering, sealing, taggingetc. according to acceptance level provided for right quality and quantity. Results of inspection and test results are verified according to the given protocol and clearance is given to stock the material.

There are various tests which are conducted in the store department during an inspection of material.Following are some tests that are usually done for material in a store department:

1. Sewing thread testing

Sewing thread plays a major role in the productionand quality of garments. Normally, sewing thread in the needle moves at a speed of 140-160km per hour during the running of sewing machines and affect the strength of the sewing thread. For this reason,requisition made based on technical requirements such as type of fabric, thickness of fabric, and the quality and strength of the thread need to be checked in the store department based on purchase order details like ticket number, shade number and ply before it is issued to other departments.

For testing of sewing thread quality, the following parametersneed to be checked:

- Thread count/ ticket number,
- Thread elongation,
- Number of twists per inch,
- Thread ply,

- Shade Number

The following properties are inspected to determine the sew-ability of the thread:

- Imperfections of thread,

- Finishing of thread,

- Thread Package density,

- Color of thread,

- Winding of thread.

2. Visual testing and grading of fabric

This is the most common test for deciding whether the fabric lot should be accepted or not and it is based on visual inspection. The rolls of the fabric are inspected on the table or on a fabric checking machine which is specially equipped with the appropriate type and intensity of light. The fabric is passed on the table or machineat a slow speed and the store keeper or/and fabric checkerexamines the fabric visually for weaving and stain related defects.

A certain number of points are allocated, depending on the dimension, severity, and nature of the faults, for a single metre of the fabric being inspected. Various standard grading systemsare available for fabric inspection.In the apparel industry, a four-point system is majorly used, for example, in which the inspector allocates a maximum of four points to an individual metre inspectedaccording to predefined criteria. These points arecounted over the roll length. The rolls of the fabric are randomly selected from the whole fabric lot and total points and total length inspected is calculated. The results are then expressed in points per 100 square units (square yards or square meters) or per 100 linear units (meters or yards) of fabric. The acceptance and rejection decisionsaremade based on the pre-settled mutual understanding between the supplier and the customer. Let's say,if the supplier agreed to provide fabric at 15 points per 100 linear metres but after the inspectionchecker observed 20 points per 100 linear metres ,this would result in the rejection of the lot.Usually, fabric is checked by fabric checking machine. It has two rollers and one slant light board. The checkerloadsfabric roll on one roller and can easily find defects on light boards. The other roller winds the roll on the other side.
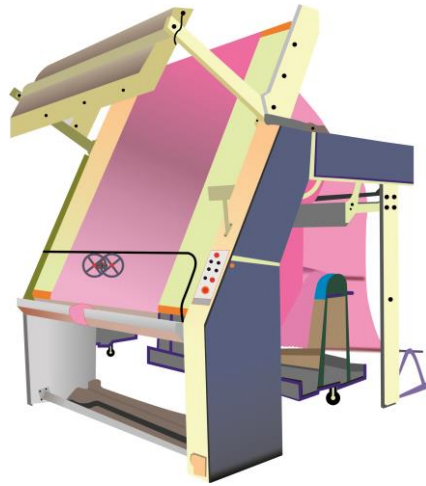
Fig.: 1.2 Fabric Checking Machine

3. Fabric colourtesting

The standard method of testing fabric colour is to check the colour of the fabric againsta specified company's colour code as described by the buyer. Once the colour has been approved, then the whole fabric lot is dyed. The fabric lot is inspected for colour and shade variations from the approved colour.
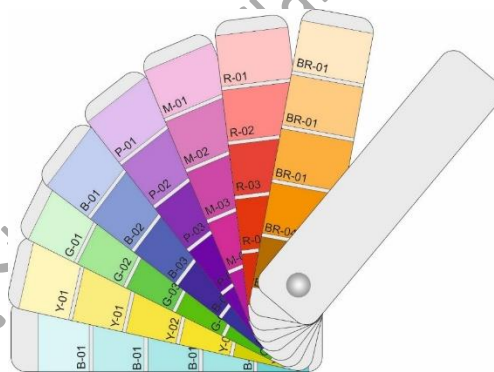
Fig.: 1.3 Colour shade card with codes

4. Fabric weight testing/ Grams Per Square Metre (GSM)

Fabric mass per unit area is a very important consideration in the selection of fabric for a particular end-use. Fabric weight gives the idea of fabric geometry, such as the thickness and compactness of the yarn.Fabric weight is directly proportional to fabric thickness.As the GSM increases, the thickness of the fabric also increases.An instrument used to measure this property of fabric is GSM cutter. A piece of fabric is cutusing this instrument and the GSM is calculated using a GSM weighing balance.

(a)   **(b)**
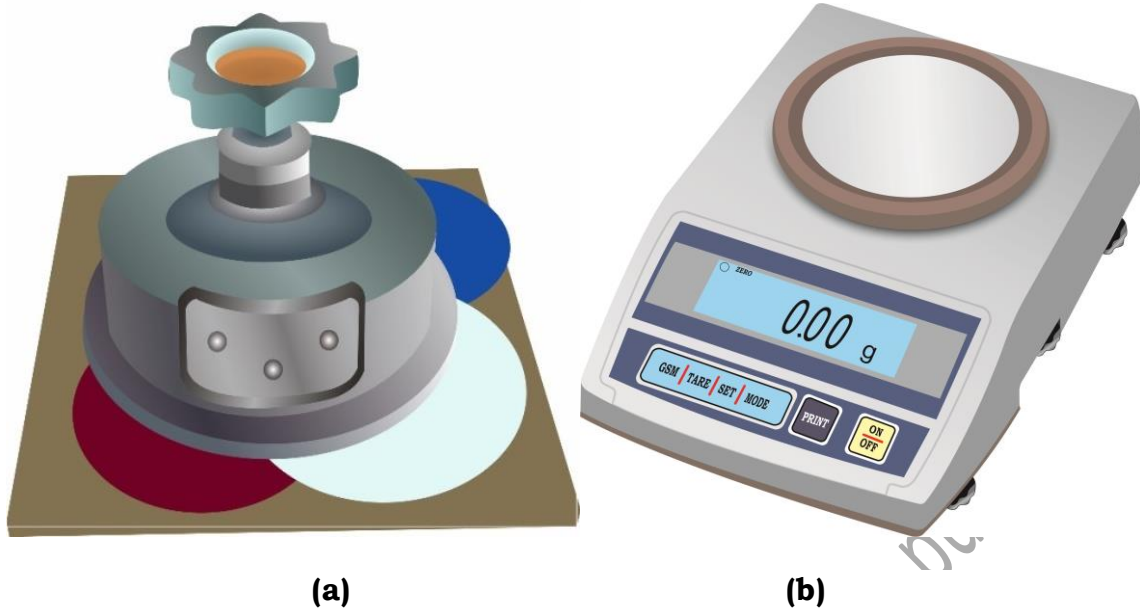
Fig.: 1.4 (a & B) GSMcutter and weighing balance

5. Zipper testing

Zipper should be checked for the following:

- Dimension**:**tape width, tape extensions, and overall useable length of zipper should all be as specified in the specification sheet.

- Top and bottom stoppers should be fastened securely. Stoppers can be made of plastic or metal and can have different colours as per specifications. This must be inspected while inspecting the zipper.

- A puller or pull tab should be affixed firmly to the slider body.

- Sliders should ride freely .

- The zipper should have an auto lock slider if specified or required.

- Zipper tape should be uniform in colour.

- Zipper should be well-matched with garment design.

- Zipper should be azo-free, nickel-free, non-magnetic, and non-toxic.

- Zipper should have colour fastness properties.

- Zipper should not deform under pressing and ironing.

- Zipper teeth should be smooth.
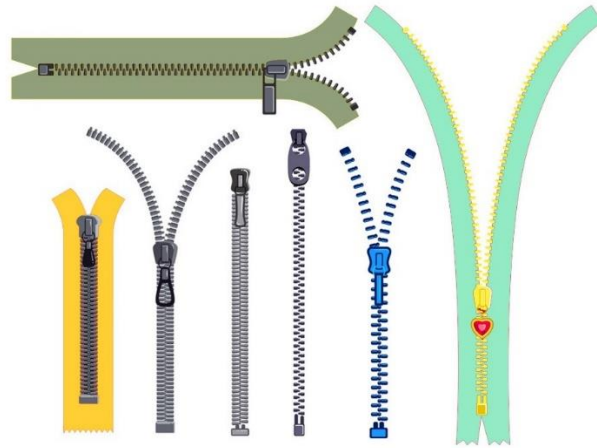
Fig.: 1.5 Different types of Zipper

6. Buttonsand fastenerstesting

Buttonsand fasteners should be checked for the following:

- Buttons and fasteners must match the specifications in the spec sheet.

- Holes of buttonsand fasteners should be large, clean, and free from flash so that theydo not cut the thread.

- Buttonsand fasteners should be able to withstand laundering, dry cleaning, and pressing without any change or deforms.

- Buttons and fasteners shade should be within tolerance and should not bleed.

- The button size should be as specified.

Fig.: 1.6 Different types of Buttons
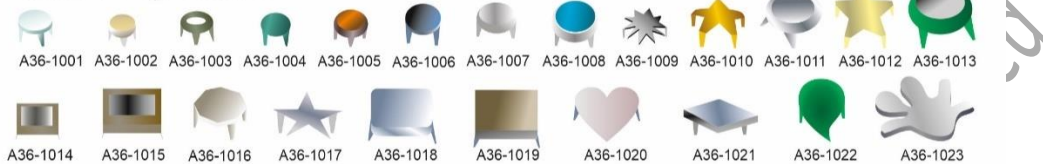
Fig.: 1.7 Different types of Fasteners

7. Testing of machine spare parts and tools

Tools that are in working condition need to be checked in their respective machines before giving clearance for acceptable quality. Materials, equipment, and tools are stored separately correctly by class and category.

Needlesshould be available on every production floor in the apparel industry. Needles are used for sewing, embroidery, knitting, and many other purposes in the apparel industry. Quality of needle such as needlepoint, needle no., needle hole, and metal should be checked in store to ensure product and customer safety. During checking of the needle in-store,needle status can be marked as "B" for Broken and "W" for Worn/Twisted/Crooked/Bent needles. Similarly, for other spare parts, the storekeepermarks, segregates, and inspects all the parts.

Moreover, rejected spare parts must not be stored for a long duration. Hence, it is the duty of the storekeeper to get rid of rejected and damaged spare parts. Every organisation sets a Standard Working Procedure (SWP) for this

work. The store keeper must follow appropriate disposal procedure for such material.

8. Chemicalstesting

All information about chemicals and agents received in the store departmentis checked by the store keeper for complete details given in the purchase order such as chemical's complete name, company, packaging and, storing details, etc.. A storekeeper must ensure that when chemicals are received, there should be no spillage and the chemicals must be in proper packaging. All chemicals and agents should be stored on the rack, above the floor area with demarcations.

Activities

Activity 1: Identify and categoriseall receivedmaterialindifferent categories.Identify the required tests for inspectionof the material for quality.

Materials Required:

1. Writing material
2. A4 size sheets
3. Received raw material (Example: Thread, Fabric, buttons, zippers)
4. Boxes for allotment of raw materials

Procedure:

1. Separate and segregate the thread, fabric, trims and accessories, etc. from the allotted raw materials.
2. Put the separated items into relevant boxes with labels.
3. Determinethe necessary test for inspectingthe categorised raw materials.

Check Your Progress

A. Fill in the blanks

1. _____system is most popular for testing fabric defects.
2. The zipper slider should be _____ securely.
3. As the GSM increases, the thickness of the fabric_____.

4. Button and fasteners shade should be within _____ limit.

5. In four-point system, results are expressed in points per _____ of fabric.

B. Multiple Choice Questions

1. Full form of AATCC -

a) Australian Association of Textile Chemists and Colourists

b) American Association of Textile Chemists and Colourists

c) All Apparel and Textile Chemists and Colourists

d) None of these

2. Needle Status could be marked as "W" for:

a) Bent

b) Twisted

c) Crooked

d) All of the above

3. For fabric inspection, more than one standard grading system exists. The most popular is,

a) ten-point system

b) four-point system

c) two-point system

d) All (a), (b) and (c)

4. A common approach used to determine fabric weight

a) Grams Per Square Meter

b) fabric tensile tester

c) fabric denier

d) All (a), (b) and (c)

C. Short Answer Questions

1. Why is fabric weight tested in the store department?

2. What are the types of consumer goods?

3. What do you need to check for the zippers received in the store?

4. What do you need to check for the buttonsreceived in the store?

D. Long Answer Questions

1. Define raw material and also explain the different types of raw material?

2. What are the objectives and responsibilities of the store department?

3. List down the test used for checking the quality of raw material in an apparel industry?.

4. Which are the important points to be considered while allocating a test for checking the quality of raw material before giving clearance? Explain.

Session 2: Managing Rejected and Damaged Material

A store plays a dynamic role in apparel production or any operation of a company. The store department is in direct contact with other departments for their day-to-day activities. The main aim of any store department is to ensure the smooth flow of production without any interruption. Effective storekeeping can only be maintained when the proper records for rejected and damaged material is up-to-date. It is indispensable to the control of material cost therefore,a store departmentis often equated directly with money, as capital is blocked in inventories.

STEPS AND PROCESSES FOR MATERIAL STORAGE, INSPECTION, ISSUE, AND INVENTORY

Raw material received in a store refers to the process of ordering, sorting, storage, inspection, and the management of material. The store has to provide adequate and proper storage and preservation of the items according to their requirements and maintain the account for them. Store maintains the complete record including damage and discarded material, to meet the demands of the consuming departments by properly issuing and accounting for the consumption.

A store keeper must keep following points in mind while storing material in the store:

- Prioritise the location and accessibility of all the material according to their requirement.

- Avoid placing materials on the floor and gain productive space by introducing multi-level racks. Provide a place for each tool and work item.

- The floor plan and layout of the store should be properly planned and pasted on the display board.

- All material should be optimised and unwanted material must be discarded from time to time as per SOP(Standard Operating Procedures) set by organisation.

- All received material must be labelled again according to the store layout and placement of the racks.

- Expiration dates of chemicals and other items have to be properly tracked.

- The use of the latest technology always helps to maintain clarity with other departments as well.

- Fewer, shorter, and more efficient transport and handling operations should be used.

  - Provide containers for operation outputs and inputs.

  - Use mobile storage.

  - Clear and mark passageways.

- Fewer and more efficient lifting operations should be used instead of manual lifting.

  - Move materials and perform tasks at working heights.

  - Don't lift loads higher than necessary.

  - Make lifting more efficient and safer.

  - Use personal protective equipment while lifting/ handling material.

- The roles and responsibilities of staff must be correctly assigned.

- Inspectionof the materials is frequently required in a store.

  - Check the condition of the consignment of the materials.

  - Quality must be verified and tallied with the purchase order and trim cards.

  - Send the material for testing if required for quality check.

- Notify the merchandising and production departments of the material's receipt.

TYPES OF PACKAGE DAMAGES

Many times when raw material is received in the store department, thestore personnels likely experience the stinging disappointment when a fabric roll is damped or chemicals bottles are spillage or machines parts company ordered finally arrives damaged. The storekeeper should examine all the items and their packaging for any damages.

All packaging material such as carton board, poly bags, papers, etc. plays an important role in packaging, but carton board is the most important

packaging material used mainly for primary packaging. The major requirement of packaging is to protect the product from various physical hazards. There are various points to be checked for quality of packing when received in store:

- Fabric rolls should be tightly rolled and free from dust and moisture.

- Check for spillage while receiving chemicals and agents.

- Machine partsand other tools must be properly wrapped in bubbled sheets with other packaging material.

- Complete item details, whether fragile or notmustbe mentioned on top of the box or roll and must be clearly visible.

TYPES OF PACKAGE FORMS

The packaging material used in the apparel sector should be clear, width and length must be appropriateaccording to the PO(Purchase Order)and the weight of the packaging material should be checked. Various package forms used in apparel products are as follows:

- Bags: Polybags

- Boxes: Corrugated boxes

- Cartons

- Crates

- Twine

- Wrappers

- Adhesives

RECORDING DISCREPANCY RELATED TO MATERIAL RECEIVED FROM SUPPLIERS

The store department receives the materials supplied by the vendor. The quantity is verified and tallied with the purchase order. The receipt of the materials is recorded on the specially intended receipt with all specifications such as the name of the vendor and the purchase order number into a computer or register. The store department also keeps records of any

discrepancy, damaged condition of the material, or inferiority of the materials. The store department immediatelyinforms about the receipt of the materials to the purchasing department. Usually, a copy of the receipt is sent to the purchase department. The staff of purchase department keeps track of all the receipts through the computer.

The incoming material received in store if require any quality control or inspection, are sent for testing. The inspection team verifies that the incoming materials fulfill the standard quality as stated in the purchase order. It may involve visual, physical or chemical testing. The decision of acceptance or rejection of the material may be made based on either sample testing or testing of the entire lot.

A store keeper prepares a report of the inspection. The report along with the test certificate and the recommended acceptance or rejection should be sent to the purchase department. Based on the recommendations made by the purchase department after inspection, the store department organises for the separation and segregation of the rejected raw materials. The rejected material is reported to the purchase and accounts department. If the defects are within the established tolerance limits, they may be accepted because returning to the vendor may interrupt the production schedule. However, the vendor should be informed about this and if possible, the credit should be claimed from the vendor. In some cases when the supplier or vendor is nominated by the buyer, tolerance and approval depends on the buyer.

The receiving function is usually routine work of the store, but sometimes it is kept independent of the purchase department. However, it is necessary to treat the store department as a secondary function of the purchasedepartment due to the following reasons:

1) Priorto the settlement of the bills, the purchase department verifies that the consignment is as per the purchase order in all respects. This can be verified only with the help of the store department.

2) If thematerials received are in defective and in damaged condition, the store must have first-hand prompt information and evidence about this so that it can initiate immediate legal action against the vendor or the carrier. Store departments can also take necessary action for tapping the substitute sources of the supply tofulfill urgent requirement of materials.

3) In the case of short shipment from the suppliers, the rush orders can be managed so that the work stoppages caused by the lack of materials can be eliminated.

Activities

Activity 1: Identify different types of defects related to materials.

MaterialsRequired:

1. Writing material

2. A4 size sheets

3. Received goods

4. Purchase order receipt

Procedure:

1. Visit an apparel industry.

2. Ask for some received material and purchase order.

3. Identify the packaging defects in the received material.

4. Put the damaged items into separate boxes.

5. Give complete details of damage on return receipt with evidence.

Check Your Progress

A. Fill in the blanks:

1. The place where the raw material is kept is called _____.

2. Floor plan and _____ of the store should be properly planned.

3. In-store _____ dates of chemicals and other items have to be properly tracked.

4. Fewer and more efficient lifting operations should be used instead of _____lifting.

B. Multiple-choice questions:

1. Types of package forms are

a) Cartons

b) PVC sheets

c) Wrappers

d) All of the above

2. The quantity of received material is verified and tallied with

a) Purchase order

b) Receive receipt

c) Inspection report

d) None of the above

3. Most of the damage on an inbound load is due to

a) Poor quality packaging material

b) Improper sealing

c) Compression based

d) None of these

4. Store department is a secondary function of

a) Purchase department

b) Production department

c) Sales department

d) Testing department

C. Short answer questions:

1. What are the various forms of packaging used for raw material?

2. Explain the type of packaging damages in the apparel industry related to raw material?

3. Explain briefly how to assess received material in store before further storage and distribution?

D. Long answer questions:

1. What is the role of packaging in the apparel industry and how does it affect production?

2. How to evaluate steps and processes for material storage, inspection, issuing, and inventory in the store department?

3. How to maintain records and discrepancies related to material received from suppliers in the store?

Session 3: Returning Damaged Material to Vendors

All raw material orders pass through a lengthy and unique process in many ways before ultimate delivery. In apparel production industry, the order is placed with the vendors against various purchases and received by the store department via road, or rail, or air, or sea as per the order terms. In case the material supplied is found damaged at the time of receiving, the store department has to make arrangements to send back that damaged material to the vendors. The following procedure will be followed in case of discrepancy or part supply or rejection:

(a) In case the material received is different from the ordered material, the material will be rejected.

(b) The material can be rejected if it is different from the approved sample issued by the purchase department. The decision of acceptance or rejection of the material will then be made based on the approved sample.

(c) If the supply is rejected in part or bulk supplied by the vendor, the reasons for rejection will be recorded by the storekeeper as proof.

(d) In case of minor deviations, the inspector will prepare a report indicating the deviations observed. This shall be examined by a committee of officers. The results generated by the committee could either be to accept the item if no work is required, or it could also be returned for correction and return within the agreed period of time, or the supplier can arrange for rectification.

SENDING MATERIALS DETECTED WITH DISCREPANCY BACK TO THE VENDOR

Before final rejection following various points are considered:

- **Receipt of material**

Receiving of goods should be done very carefully and quickly. A storekeeper must have numeracy skills to handle the goods carefully. Once the material is received in store, it is inspected by the store keeper according to guidelines given in the P.O.. When the goods arrive, they should be perfect in all aspects, like the seal should not be broken, and the carton should not be torn or leaking etc.. He/she must know the consequences of inaccurate and incorrect records of receiving and dispatching goods.

- **Criteria for inspection- P.O, quality, quantity etc.**

The store keeper checks all material against the purchase order. All received material is counted and quality is truly checked visually or by testing machines and verified by team of experts. If required, a sample is sent to third party lab for testing.

The following steps and procedures are performed by the store department:

1. Visual inspection for damage to the container or carton at the time it is offloaded from the carter truck.

2. Verify the number of packages listed on the material bill.

3. Make all entries into the system/ register throughout the receiving and delivery process.

4. If visible damage is apparent, conduct a more thorough inspection of the contents of the packages to look for obvious damage to the item in the carton or container.

- **Conditions for rejection**

  In case received material are not in conformity with the specifications and requirements ordered in the purchase order shall be rejected by the inspecting officer.

  Various reasons for rejection of material are as follows:

  1. Material rejection due to damaged condition of the receivedmaterial.

  2. Material rejection during testing by Q.C. department.

  3. Not upto to given standards.

  4. Incomplete item and missing items.

  5. Improper labelling and packaging .

  6. Issue in payment option.

- **Categorisation of rejected material- to be sent back, to be rectified, to be verified etc.**

  In case the received material is not upto the mark,it is sent back to the supplier, but in other case materials are also rejected due to their non-compliance withthe specifications, the supplier has made wrong supplies, guarantee certificates, or necessary test certificates have not been well-found, etc.. All these rejections are recorded and intimated to the purchase department to arrange for rectification and verification

from the supplier. The store department records the reason for such a rejection on the inspection report. Further purchase department shall immediately take up the matter with the firm based on the report. But if the rejection is only due to incomplete documentation, the purchase department arranges all the required documents to the store department to enable them to account for the material and issue the same to other departments.

- **Communication between the storekeeper and vendor for rejection**

In all cases, once the inspection is completed, after careful check of the receipt against not only the invoice but also the purchase order and inspection report (IR) the following procedure should be followed:

1. Listing out the discrepancies.

2. Notify to concerned purchase officer (copies marked to Stores, Accounts)

3. Purchase department instructs the vendor to collect the rejected material from thestore department within a particular period of time according to the company policy from the date of intimation to the vendor and acknowledgment for receipt of rejected material shall be obtained by the store.

4. The store department can dispose off rejected materials when the vendor is unable to collect the material within specified time period.

- **Arrangement of dispatch from the store for rejected material**

In case of short or defective supply, the store department forwards the report to the purchase department and they take necessary action, to obtain replacement of items or cancellation of order or recovery of the amount paid if any, etc.. The damaged and rejected material is labeled and stored in a separate area from the accepted or other material in the store department until it is returned to the suppliers. All this material is handed over to the supplier or dispatched to the firm. The rejected materials are accounted in the register for discrepancies which is maintained by the store department.

All freight and packaging etc. related expenditure to transfer the damaged and rejected material back to the supplier is recovered from the supplier. The removal of all rejected material isdone within a stipulated period. In case the supplier denies to accept rejected material. then appropriate action for their disposal should be taken through auction or other ways with approval of the competent authority.

- **Register for Dispatch of stores**

At times, the stores have to dispatch various items. All the dispatches that are being done have to be recorded in the dispatch register. All details related to the supplier, reference of dispatch, item quantity, mode of dispatch, freight and other charges paid, etc. are recorded in the dispatch register,which serves as a complete record for the dispatch of all types of material – be it for repair, or rejection, or otherwise.

- **Cost of Materials returned to vendors**

The cost of returned material may be recorded at the invoice price or in accordance with the method adopted for pricing material issues. The cost of material returned at the invoice price is not realistic as the price per unit granted by the vendor on the return of materials cannot be the same as the original invoice cost.

Before recording, all necessary adjustments for discount, freight, carriage inward, etc. should be made to arrive at the same. Hence, returns of material should be valued according to the method adopted for pricing out material issues and must be entered in the issued column in the store ledger.

- **Material Receipt Book**

It is the prime book used for store accounting and keeps a date-wise record of the materials received in the store. The following information is recorded in Material Receipt Book:

1. Name and address of the supplier.

2. Mode of transport.

3. Daily Receipt Voucher Number (D.R.V. Number) and date.

4. Stock Ledger Folio.

5. Vehicle Number.

6. Carrier's Note Number, date and number of packages.

7. Brief description of materials.

- **Rejection Note**

A rejection note is an official document that is used to record rejected material. The specimen of the rejection note is given below:

XYZ CO. LTD.
REJECTION NOTE

TO BE RETURNED TO:	FORWARDING NOTE NO. .... DATE.		SERIAL NO. .... DATE.	
	MODE OF TRANSPORTATION		P.O. NO. .... DATE.	
S.NO.	IDENTIFICATION NO.	QUANTITY	REASON FOR REJECTION	RETURNED/KEEP IN SUSPENSE

DATE. ....

1. ....
2. ....
3. ....

INSPECTION OFFICERS

Fig.: 1.8 Rejection Note

FOLLOWING UP WITH THE VENDOR TO RESOLVE THE DISCREPANCY IN TECHNICAL/COMMERCIAL TERMS

When the company decides to return the rejected or damaged material to vendors, the store and purchase department need to handle ambiguity and balance tasks at once, quickly shifting from one situation or task to another for uninterrupted production of apparel or goods. Also, they need to provide technical assistance to the vendors in case of any discrepancy faced by them during return of rejected material. This helps vendors to analyse the cause of rejected material and help for future enhancements and integrations planned.

This supports the process of return and controls to ensure data accuracy and integrity.

Store supports the vendor managers to clarify all technical issues and information. They provide support in terms of making recommendations about additional add-on features and corrections in the same material. They assist identification of actual and potential problems and provide analysis for the vendor's maintenance team. Store and purchase department are required to handle all correspondence and requests from each vendor and maintain a request log to ensure all information is submitted timely to each vendor.

In case of a troublesome return, the store and purchase department needs to gather additional information that is requested from the vendors (i.e., item billing, receiving the receipt, consent to treat forms, etc.). The store keeper is required to reconcile monthly account inventory for each vendor and provide a report to their supervisor. Also, to ensure if the vendor and their inventory numbers match after the return of rejection items and contact vendors directly to resolve discrepancies. For a smooth and quick process of return and receiving back the material, excellent verbal and written communication skills are required between the store and the vendor representative. They should have the ability to communicate clearly and professionally.

Major disputes that occur are often related to invoice between the vendor and purchase unit. Disputes are often an obstacle that a business faces now and then. There are many other disputes like quality disputes, invoice disputes, delivery disputes, administration disputes, and many more. Out of all these invoices disagreement occurs more commonly. Small businesses mostly depend on the cash flow generated from their invoices, so a disputed invoice can block the business processes.

An invoice dispute occurs when a client refuses to pay the quoted amount to the vendor in case the material is rejected. The discrepancy may be because of one of the following causes:

- Date error
- Time
- Quantity
- Pricing
- Item discrepancies and others

To resolve these disputes, the store department needs follow-up:

- **Notifying the vendor:**

The store or purchase team needs to notify the vendor about the invoice difference. As per the invoice law in most countries, the vendor must be notified of the discrepancy before receiving the invoice. The store department should notify vendors through an email with the invoice attached to the vendor with the reasons for rejecting the payment for the invoice.

- **Invoice treatment:**

In invoice treatment, the store and purchase team needs to correct and finalise the invoice.The store attaches the invoice with a return letter stating the reason for return and the rectification expected from the vendor's side. There are many invoicing mistakes that the store and purchase team should avoid before sending them to their vendors. They should include all expenses for returning the material as per their policies.

Activities

Activity-1: Identify the damaged material and prepare a report on sending damage material back to the vendor.

Materials Required:

1. Writing material
2. Received material
3. Boxes and labels for discrimination of damaged material.

Procedure:

1. In a group of 4 students separate the damage material from the allotted material.
2. Note all the relevant details of damage material, include reason for rejection and etc.
3. Make a report for returning damaged material according.

Check Your Progress

A. Fill in the Blanks:

1. In case the material received is different from the ordered material, the material will be _____ .

2. In case of minor deviations, the _____ will prepare a report indicating the deviations observed.

3. Receiving of goods should be done very _____ .

4. Make all entries into the _____ tracking system, which will track the item throughout the receiving and delivery process.

5. Material reject during testing by _____ .

B. Multiple choice questions:

1. The material can be rejected if it is different.

   a. "as per samples" issued by purchase

   b. Poor quality of material

   c. Variance in quantity

   d. All of above

2. Supply is rejected in part or bulk supplied by the vendor, reasons for rejection will be recorded by

   a. Purchase department

   b. Store department

   c. Production department

   d. None of these

3. The final decision of accepting and rejecting of material is taken by

   a. Committee of officers

   b. Production department

   c. Store department

   d. Purchase department

4. In case of damaged material returning all expenditure freight and packaging etc. related to transfer damaged and rejected material back to supplier incurred shall be recovered from

   a. Own store finances

   b. Supplier

   c. Manger of the department

   d. None of these

C. State whether the following are True or False:

1. If received material is not upto to given standards it can be rejected.

2. In case of short or defective supply, sore department forwards the report to Production department.

3. All the dispatches that are being done shall have to be recorded in the dispatch register.

4. Sellers or vendors should also consider the company's right to dispose off the rejected material.

D. Short answer type question:

1. What are the various reasons for rejection of material at the time of receiving the material in the store?

2. What treatment is required on the invoice at time of returning damaged goods?

3. Make a sample rejection note.

4. What are the various entries of material receipt book used for store accounting?

E. Long answer type question

1. What is the complete procedure to send materials detected with a discrepancy back to the vendor?

2. Write in detail the complete procedure to follow-up with the vendor to resolve the discrepancy in technical/commercial terms?

3. What communication is formally required between a storekeeper and a vendor at time of rejection of material?

4. What is the criteria of inspection of any received material in the store department?

Session: 4   Knowledge of Computer and Calculation Skills

At present,computer knowledge is required in every field to maintain the proper record of stock. A computer serves an important role in inventory and quality control as both jobs require accurate records.For maintaining records knowledge of computer is essential and computer makes the job easier. The use of various softwares makes the lengthy calculation easier, faster and less time-consuming.

They may be able to assist an organisation by improving their understanding of how to manage product ranges, cash flow, and budget allocation difficulties.Through the accessibility of innovative computing services, a supervisor can circulate plan of operation easily and more effectively.

A person who is working in the store keeping department especially the store keeper must have an understanding of word processing, spreadsheets,vendor management e-tools,along with an ability to interact with vendors. He must be aware about the implementation of all computer and mathematical calculations related task.

KNOWLEDGE ABOUT BASIC MATHEMATICAL CALCULATIONS AND COMMON FORMULAS RELATED TO MATERIAL QUALITY AND QUANTITY

The basic understanding of mathematical calculations is necessary for profitable operations and accurate record keeping. A store keepermust know how to perform basicmathematical calculations such as addition, subtraction, multiplication, division, rounding off and use of percentages and fractions. If the store keeper and other store staff are not good at understanding mathematical calculations, then the company should arrange training sessions related to basic mathematical calculations and common formulas related to material quality and quantity.

Following are few basic testing and mathematical calculation knowledge required in a store department:

To check the quality of raw material, knowledge of some basic fabric testing (GSM, thread count) and their calculations need to be checked by the store keeper.

1. GSM:

Fabric GSM means the weight of fabric in grams in per square meter area. **GSM** (Gram per square meter) is an important parameter in the textile sector. Fabric with higher GSM is heavier as compared to a fabric with lower GSM value.

Fabric construction of any material depends on the following parameters:

1. EPI (Ends per inch –warp)

2. PPI (Picks per inch – weft)

3. Warp count

4. Weft count

5. Fabric width (in inches)

Formulato calculate GSM:

$$\frac{EPI \times PPI}{Warp\ Count \times Weft\ Count} \times Fabric\ Width \quad Or \quad \frac{EPI \times PPI}{Warp\ Count \times Weft\ Count} \times Fabric\ Width$$

GSM can also be calculated using a GSM cutter and a GSM weigh balance. For this, a sample of fabric is cut using a GSM cutter and it is weighed on a GSM weigh balance.

GSM CUTTER
FABRIC
GSM PAD

Fig.: 1.9 GSM Cutter

2. Thread count:

Thread count is the number of threads or yarns woven together in a square inch. It is calculated by counting the lengthwise (warp) yarns, and then the width-wise (weft) yarns. For counting the thread or yarns,a pick glass is used.

Formula to calculate thread count:

Thread Count = No. of warp yarns (per sq. inch) + No. of Weft Yarns (per sq. inch)

For example: A fabric with 100 warp threads and 100 weft threads is said to have a thread count of 200). The higher the thread count the finer the fabric.

120 + 140 = 260 Thread Count

120 Thread

One Inch Of Weft Threads

140 Thread

One Inch Of Warp Threads
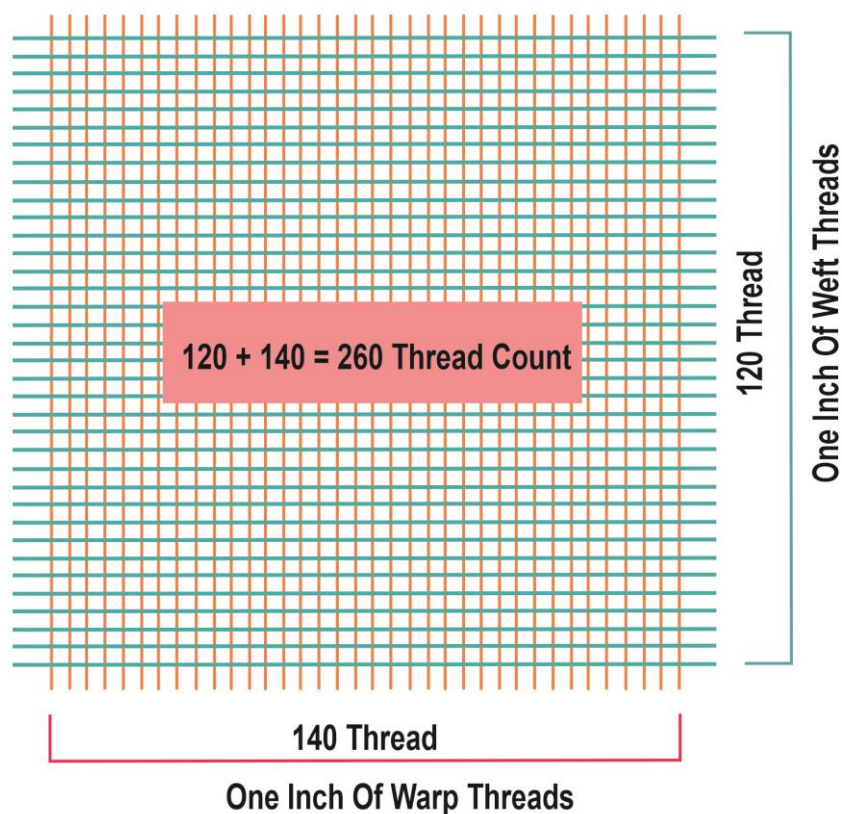
Fig.: 1.10 Thread Count

DAY TO DAY UPDATE OF STOCK

For companies with a huge volume of inventories, an efficient inventory management softwareis essential. It becomes difficult to handle a large volume of inventories through registers or spreadsheets. In the present scenario,inventory management softwareshave become an essential need of any organisation to enhance the visual clarityand to give an easy

understanding of the product or material details. Through the use of these software one can keep a track of all the material and product detailing. For example Goods Receipt Note software (GRN)is used to record receipt of goods/items at stores. Marginal Revenue (MR)is the increase in revenue that results from the sale of one additional unit of output.

Some key benefits of inventory softwares are as follows:

These software are capable of maintaininge-detailing of all the material and/or products. The softwares are user friendly and easy to handle work. They help any organisation to save money and time that cost a lot in commercial production. Live location tracking, allows a smart scheduling and gives a real time update of the stock. Ultimately the use of these management softwares work as booster for business that can reward a business in endless ways. These softwares are used for various purposes:

1. Purchase Management

- For making purchase request andrate comparison and the purchase order

2. Good Receipt Note

In GRN entry three levels are available, all level operations are handled through softwares. After finishing all levels the purchased items are added in stock summary report. These levels include:

- GRN Entry
- GRN Inspection
- GRN Confirmation

3) Stores Management

- In Store Management inward and outward flow of items are traced.

4) Multiple Branch Management

- A category wise report is generated to track the purchased amount of each item category for each department.
- Most importantly, the store keeper can set the minimum and maximum stock level for items of regular use. If minimum stock level reaches it shows the alert in reorder report. If maximum stock level is reached,the store keepper stops making further purchase against that item.

- A transfer note can be created for transferring of material from one branch to another branch.

- The items which are not used for a long time can be traced in dead stock report.

5) Vendor Management

- All rates can be compared between two or three suppliers for finalising the purchase order under rate comparison.

Activities

Activity 1: Practice basic mathematical calculations and common formula related to material.

Materials Required:

1. Writing material

2. Received material

3. Swatches of raw material for physical testing

Procedure :

1. In a group of 4 students, using allotted raw material samples and relevant testing equipments for testing, test the samples for various parameters such as thread count, GSM.

2. Take 10 readings for each test.

3. Take average of all readings in formula to get the result.

4. Report the result in a written report.

Check Your Progress

A. Write full forms of :

1. GSM

2. PPI

3. EPI

4. GRN

B. Multiple choice questions:

1. Key benefits of inventory softwares are:

   a. Maintain e detailing

   b. Save money and time

   c. Booster for business

   d. All of above

2. In Stock Summary report manager can track

   a. Total Amount Closing stock

   b. Individual items Price

   c. Date wise transactions

   d. All of above

C. Short answer type questions:

1. What are the various reasons for rejection of material at time of receiving the material in the store?

2. What is the formula for testing GSM raw material?

3. What compulsory entries are added in making a Good Receipt Note.

4. What do you understand by Multiple Branch Management?

5. What is the role of vendor management in stock updates?

D. Long answer type questions:

1. What is the role of knowledge of computer and calculations during inspection and checking of materials?

2. What are the key benefits of inventory softwares used in industries?

Session: 5   Communication and Decision Makingrelated to Material Issue, Receipt, Inspection and Checking

Communication and decision makingplays an important role in smooth operations in an organisation.A storekeeper deals with different departments of the apparel manufacturing unit along with ouside vendors and suppliers. For smooth flow of production a storekeeper is required to communicate effectively with all the departments, vendors and suppliers. He is also required to make decision for material receipt, issue, inspection and checking. Therefore, a storekeeper must have knowledge of communication and decision making.

SEEKING CLARIFICATION FROM THE CONCERNED SUPERVISOR WHEN IN DOUBT REGARDING THE ISSUING AND RECEIVING OF MATERIALS

At times, when working in any organisation, co-workers need more clarity about the operation. Sometimes employees need to follow vague, unclear, or non-specific instructions. These unclear instructions can be confusing and can result in errors, miscommunications, and low team morale which ultimately work adversely for the growth of any organisation.

In any organisation, while receiving the material there must be clear communication between co-workers and their supervisor. The store keeper should notify the supervisor if hehas any concerns about the quantity or quality of received material. Cycle counting is a common practice in logistics that counts a subset of items in a warehouse each day. This allows a manager to discover incorrect inventory records. The store keeper who is assigned for this job should get the clarification (knowledge of cycle counting and inventory management strategies) related to cycling counting before starting it. Receiving inventory is a very crucial process in any industry.To make it smooth, clear communication is required. Team members should have discussions between all members like associated risks with the sourcing of materials or holding the line on the cost of services and how to create a report of received material.

SEEKING CLARIFICATION

If the employee has any confusion at any point, then it is very important to seek clarification with the respective supervisor and get the right direction and clear their doubts in their communication before starting the given task. This is part of being an assertive communicator and it helps to ensure that all fully understand what is required.This helps to resolve miscommunication between the people involved in a meeting, project, or scope of work. Clarification helps boost communication, team effectiveness, and organisational culture.

Communication is a crucial element in the success of business operations. When it comes to internal communication within an organization, the biggest challengeis communicating with top-level management.

Various communication tools used in business are available which saves time, energy, and money, it may still be necessary to learn how to communicate effectively with the supervisor. Some points to be considered while communicating with the supervisor at work are as follows:

1. Stay on the same page.

2. Think ahead and offer solutions to problems.

3. Offer suggestions that produce results.

4. Communicate effectively at work.

5. Communicate on a personal level.

6. Ask for feedback or help.

7. Offer your help on projects.

8. Be accountable.

9. Don't complain behind their back.

NEED TO CLARIFY

If the instructions are vague or need more details from anyone on the team, one should not hesitate to ask. It is very important to get clarification about the work before it starts. There are a few reasons and examples as to why one needs to be prepared to clarify when they are asked to do something:

1. **To avoid conflict in the workplace**

   Most of the time conflicts occur at the workplace when one is agreeing to something or he or she is not sure about something. Most of the time this

results in misunderstandings. When accepting projects or tasks, it is important that each member of the team understands their job and the impact of their involvement, as well as how their actions affect other people's tasks and what exactly is required from them.

2. **To prevent being overworked or underworked**

   The more occupied one gets into their role, the more tasks and projects are assigned to that person. When the immediate manager, supervisor, or team leader gives something to do in addition to with current workload, always remember to clarify with the manager. In that case, one should conduct a task audit and set priorities according to the requirement of work and instructions given by the manager.

   If that additional task would compromise one's work at hand, then the employee should ask to move the timeline for completion of work. If the new task is urgent and must be done on a fixed date, then one must get permission from the supervisor to delay current tasks to a later date. Otherwise, one must ask somebody else to do it or delegate it to others.

3. **To ensure everyone in the team are on the same page**

   When meeting for a team project, the most important part is the sharing of ideas and asking questions. Mutual discussion in the team shows whether everyone in the team understands their role or that they understand their goals. Clarifying not only makes sure that the team is on the same page, but it also helps to set the right expectations.

4. **To prevent assumptions that may result in poor performance**

   When a team manager or other person makes decisions based on assumptions or executes tasks without clear direction, it often results in inefficiency and project failure. Before accepting any projects or tasks, it is necessary to understand what is expected from the task.

FOLLOWING THE ORGANISATION'S RULE-BASED DECISION-MAKING PROCESS FOR THE MATERIALS RECEIVED AND ISSUED

Or effective management of store, store keeping requires effective communication and agreements between the leaders of the logistics processes. Traditionally, decision making in inventory management was based on approaches conditioned only by cost or sales volume. These

methods are essentially overcome by others that consider multiple criteria, involving several areas of the companies and taking into account the opinions of the stakeholders involved in decision making. Rule-based decision-making is often referred to as procedure-based decision making. It is found to be more effective when materials are received and issued as compared to the traditional decision-making process. The rule-based method involves identifying the situation encountered and remembering or looking up in a manual the rule or procedure that applies. This process can involve more sensible effort.

IMPLEMENTING ACTIONS AND/ OR RESPONSE

The final step in the decision-making process is to implement the decision. To implement any decision, all members must act on it, keep track of it, and determine how well all employees have followed the decision.

The initial steps of the decision-making process;planning, innovation, and decision, focus is on creating clarity for an outcome that will be achieved in the future. Whereas, at the time of the managing step, the focus moves from clarifying needs/desires and decision alternatives to the implementation of the decision, generating the intended results from the previous steps of the process.

Decision implementation requires managing the consequences of these networks of related decisions to achieve our desired purpose or intent, individually or as part of an organisation.

Decision implementation: Managing consequences

All decisions lead to two types of consequences: actions or tasks that result from the chosen solution alternatives and guiding requirements that can lead to follow-on decisions needed to implement the current decision. If a decision is not implemented and that is already resourced, funded and acted upon, then it is important to work over it again and plan new strategies for the success of that decision.

Making guidelines and requirements leads to additional decisions that can be made in conjunction with the major decision-making process. Before focusing on tasks, the manager needs to address the risks and opportunities of the selected solutions.

Addressing the risks and opportunities during decision implementation

Risk of any task and opportunities can be handled in three possible ways, and the tasks need to be appropriate for the chosen risk mitigation or opportunity acceleration approach:

1. **Monitoring Actions:** One must define a task that will help to monitor the situation for some suggestion that the risk or opportunity is about to occur or has occurred. After a risk becomes a reality, new decisions and actions will likely be required if the situation and facts supporting the original decision alternative have changed. All stages of actions can be monitored to trigger conditional actions.

2. **Preventative or Acceleration Actions:** One mustdefine a task that would help prevent risk or accelerate an opportunity.

3. **Conditional Actions:** One mustdefine a task that will be roughly put in place in advance to deal with a risk or new opportunities dynamically.

For more impactful and high probability risks, it may be obligatory to have all three types of actions in place to raise the probability of decision implementation success.

Activities

Activity 1: Mock practice oral communication with supervisors, colleagues and juniors for receiving material from a vendor.

Materials Required:

1. Writing material

Procedure:

1. Among your classmates, categorise 3 different groups of supervisors, colleagues and juniors.

2. Identify your role according to your group and plan your work accordingly.

3. Communicate with other groups for necessary actions.

4. Students in juniors groupmust clarify their doubts with students in groups of colleagues and supervisor.

Check Your Progress

A. Fill in the blanks:

1. _____ isone of the effective communication skills that contribute to organisational success.

2. The _____can be put to an end by talking them over.

3. Most of the time _____occur at the workplace when one is agreeing to something or he or she is not sure about something.

4. Set target that enables success for the chosen solution is called_____.

B. Multiple choice questions:

1. Oral communication develops a high level of understanding and transparency as it is.

   a. Problem solving

   b. Time saving

   c. Interpersonal

   d. All of above

2. Defining a task that will be roughly put in place in advance to deal with a risk or new opportunities dynamically is a part of:

   a. Monitoring actions

   b. Conditional actions

   c. Preventative actions

   d. Acceleration actions

3. Capture the date when the task was completed is called.

   a. Actual completion date

   b. Desired completion date

   c. Status

   d. None of these

4. _____ is the final step of the formal decision process.

    a. Decision making

    b. Planning

    c. Evaluation

    d. None of above

C. Short answer type questions:

1. What are the various advantages of oral communication?

2. What are the good communication skills for an organisation?

3. Why one needs to clarify at the workplace when one is not agreeing to something?

4. How to prevent being overworked or underworked?

5. Make a report of task completion in tabular form.

D. Long answer type questions:

1. What are the effective communication skills that contribute to organisational success?

2. Explain in detail what is the role of oral communication in a decision-making process?

3. What are the various advantages and limitations of oral communication?

4. How to communicate with superiors, colleagues, and juniors appropriately?

5. How to manage the consequences that the manger faces at the time of decision implementation?

Module 2	**Managing Housekeeping of Store Premises and Store Items**

Module Overview

In an apparel manufacturing unit, fabric, raw materials, and consumables are stored in the store department. This is the first step in the material management system and plays a very crucial part in any organisation. Despite this, it is the most neglected area of any organisation. In order to reduce wastage and increase the profitability of the organisation, store needs to be given importance and managed professionally. Wastage in form of damaged raw materials and excess inventory is majorly attributed to poor housekeeping. Most of the apparel manufacturing units belong to small or middle scale level. The management is still operating them with the old school of thought and are not ready to invest in modern inventory management systems. For the industries belonging to this sector, poor inventory management is the main root cause of decrease in profitability and lossof competitive edge in the global scenario. With the advent of new scientific approaches to inventory management, the need of the hour for this sector is to adopt these measures at the earliest. Despite the high risk and hazards that are associated with the textile industry in comparison to other industries, little importance is given by the management to alleviating the issue. As a result, the workers in these industries are exposed to life threatening hazards in form of exposing to chemicals, risk of injuries etc. Besides the poor storage mechanism of storing raw material, pests are the other major source of damage to the raw material. Effective storage conditions and pest control measures should be implemented to ensure increase in profitability.

Learning Outcomes
After completing this module, you will be able to:
• Good housekeeping in respective area of the store
• To ensure proper storage of material
• To arrange dyes and chemicals as per housekeeping norms
• Learn to maintain schedule for preserving storage items
• Periodic stock checking of material

Module Structure	
Session-1	Good housekeeping in respective area of the store
Session-2	Ensuring proper storage of material
Session-3	Arranging dyes and chemicals as per housekeeping norms
Session-4	Maintaining schedule for preserving storage items
Session-5	Periodic stock checking of material

Session: 1   Good Housekeeping in Respective Area of the Store

Proper cleaning of the storage area in factory, good housekeeping

Housekeeping is not just 'cleanliness'. It is the systematic ongoing process of making a workplace neat and clean so that everything present is orderly kept, is easily accountable and traceable. Periodic "panic" cleanups are costly and ineffective in reducing incidents and are not good housekeeping practice. Poor housekeeping can lead to tripping over loose items lying on the floor, hitting against protruding or poorly stacked items, etc. Another aspect of good housekeeping is keeping the working area free of safety hazards.

The standard of an ideal housekeeping

- **Cleanliness**:

    Cleanliness in a store means cleaning and guarantees that all working areas, storage areas and material handling equipment are kept clean and in well-functioning condition. This is closely linked to industrial safety. Floors must be kept free of slip and trip hazards and waste materials such as paper, cardboard etc..Any other combustible material must also be removed from the store area. It is also of importance that store materials are not obstructing aisles, stairs, fire exits or fire equipment. Besides safety, cleanliness also provides a big boost to the image of the company. Following are the main responsibilities that should be looked after:

    1. Ground to be free of litter and dirt.

    2. All the storage areas and racks have to be kept clean.

    3. The stocked material needs to be cleaned and free of dirt.

    4. Furniture and fixtures should be free of dust.

    5. Emergency door should always be kept open.

6. Emergency evacuation plan should be displayed in designated area and should be in local language.

- **Orderliness**:

Materials should not be accumulated in and around storage areas where they could cause tripping, fire, explosion or bio hazards. Unused materials and material handling equipment should be kept away from aisles. Cluttered aisles can lead to situations where workers may be face issues reaching out or bending at unusual angles to pick up material thus reducing their efficiency and/or injuring their back. Cluttered aisles can also result in hindrance to free movement of material handling equipment. Guide the flow of traffic through aisles and empty spaces. Floor labels are an important mechanism to direct the movement of material handling equipment in a store. A store is the space for storage of materials; therefore, space management is very important to its functioning. By planning the storage, design and movement in an efficient manner any available space can be used effectively without affecting accessibility, safety and inventory control. Precious floor space can be effectively used with the help of shelving and racking. Simply stated, the effective measures to achieve the best are:

i.   Storage and handling equipment should be appropriately located.

ii. Store items must be properly stacked and labelled

iii. Use bins to store small parts

iv. All PPE must be kept in designated places.

(a)   (b)   (c)
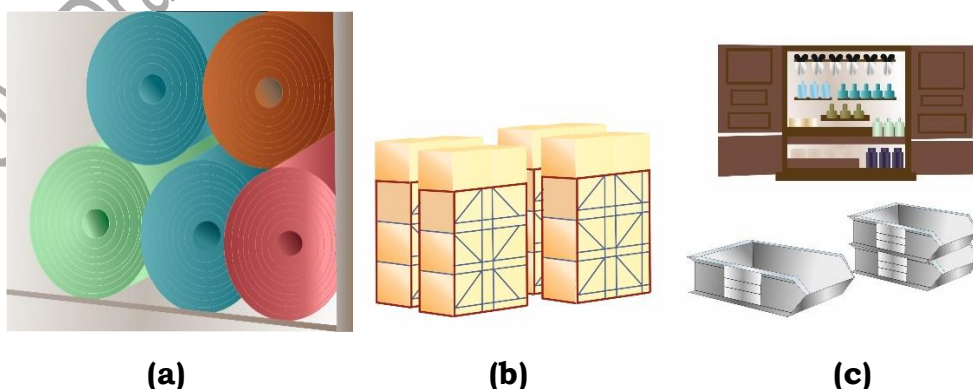
Fig.: 2.1 (a,b & c) Orderly arrangement of material in a store

- **Sanitation**:

In order to ensure that the store department is a safe place to work, it has become of utmost importance to maintain the highest standard of sanitization. Store cleaning plays an important role in sanitation as liquids and spills, if left unattended, can cause damage to products or result in injuries to employees. Every product that enters or leaves the store department should be thoroughly inspected for pest infestation, dead or live rodents. Any damaged products should be inspected for pest infestations. Set up a quarantine space, where the damaged or infested products are kept till, they are returned to the seller. Material handling equipment must be sanitised once a day. Pest control in the store must be carried out once a month. Simply put,

i.   Rejected stock items must be properly disposed off, after proper accounting.

ii.   Storage area should be protected from pest infestation and regularly fumigated.

- **Safety:**

  Store not only holds stock but also a number of hazards. Therefore, the company's management should be actively involved in building a healthy workplace environment. Safety in the store management goes a long waytowardss safeguarding the health and lives of the employees. Apparel companies that give priority to their employee health and safety are always in forefront of investing money in buying and upkeep of emergency equipment such as alarms, fire extinguishers, emergency lights, etc. It is always beneficial for the company to demonstrate that it cares about the welfare of it's employees. This further reduces fear in the minds of workers about workplace accidents and hence increases their productivity. The investment also boosts the image of the company in the eyes of the buyers and also reduces the insurance cost of the company. Proper training to employees should be given on regular basis to train and practice emergency procedures and all emergency equipment should be professionally checked at least once a year. Following are some safety measures that are required in a store department:

i.   All areas must be free of any safety hazard.

ii.   Chemicals and other flammable materials to be stored in designated and isolated sections.

iii. Store departmentmust be provided with safety facilities like fire extinguishers, fire alarms, fire exits, etc.

iv. Furniture and fixtures should be free of dust.

v. Emergency door should always be kept open.

vi. Emergency evacuation plan should be displayed in designated area and should be in local language.

vii. All PPE should be kept at a designated place.

viii. A store keeper must attend training sessions for fire fighting, first aid, use of PPE etc. regularly.
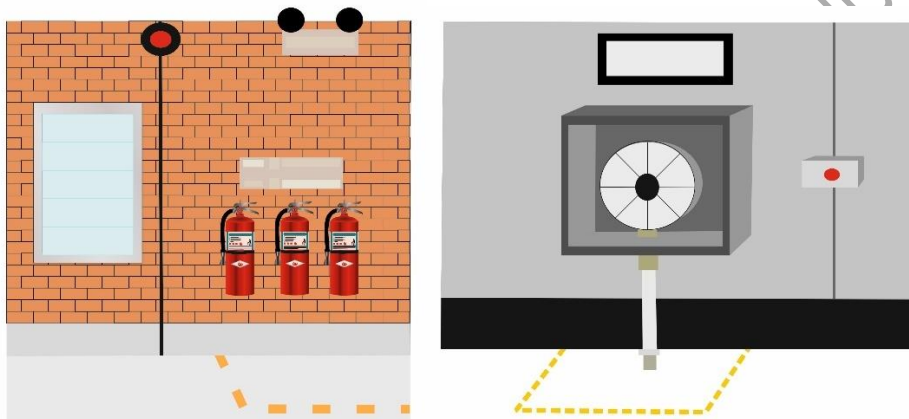
Fig.: 2.2 Safety arrangement in a store department

• **Maintenance**

Implementing good housekeeping practices will have a meaningful impact in terms of improved working conditions, increased workplace safety, and raised productivity. It also helps the company stay in compliance with health and safety regulations. Failing to adhere with the health and safety regulationswill not only result in the employee's health and lives being in danger, but also will result in the company failing a check by the inspector of health and safety department, resulting in serious financial implications. Cost efficient and ease to implement simple good practicesin apparel industrycan do wonders in achieving the above goals. Following are some measures for maintain a store:

i. When needed, production accessories and chemicals inventory must be made available.

ii. Consumption of inventory must always be monitored and accounted for.

iii. All safety and transporting equipment must be periodically checked and preventive maintenance done.

PROPER CLEANING OF THE STORAGE AREA IN FACTORY

For efficient housekeeping, warehouse needs both regular cleaning as well as deep cleaning.

Deep Cleaning

With time the flooring of the warehouse maybe covered with oil and grease stain and the material handling equipment may gather dirt and stain, this will result in the loss of efficiency and can be safety hazard. A deep cleaning will take several hours to complete and will require heavy duty cleaning equipment and strong solvent based cleaning agent. This type cleaning can be done either with the help of outside professional agencies or by in-house personnel. In the case of the latter scenario one employee should be designated to a particular area of the warehouse and should be made accountable for it. The employee should be provided with all the necessary cleaning agent and equipment and should thoroughly clean all the surfaces areas in the assigned designated area.

Regular Cleaning

In between scheduled deep cleaning, periodic regular cleaning of the respective work area will be the responsibility of each employee. They should ensure that before the end of the day work, they clean their work area. The warehouse cleaning incorporates various steps viz.

- **Formulate a Cleaning Schedule**: The store being a vast and open area has the risk of getting dirty easily. Simultaneously balancing the resources and time in a most efficient manner is the key to a good and smooth cleaning process. An effective cleaning schedule with a checklist should be made and it should be adhered to. For example, the storage shelfs can be a major area for dust accumulation which can in turn damage or spoil the material, so it should be ensured that they are cleaned once a fortnight.

- **Empty the Bins Regularly**: Lot of waste or discarded packaging material such as cardboards, bubble wrap, paper etc. is associated with the warehouse. In order for proper disposal of these items number of recycle bins should be present at regular spacing so the employees dispose these wastes in the bins and not on the floor. Care should be taken that these bins are regularly empties out and not let it overflow.

- **Regularly Turn Over the Inventory**: Slow moving stock besides using storage space and being a financial burden on the operation of the company, is also prone to accumulation of dust that can damage it and can be cause problem for the surrounding area. So it should be ensured that the stock is updated all the time so that no dust accumulation can take place.

- **Do Floor Labelling**: Floor labelling is the most cost-effective way of organising the store. In addition to this, it also facilitates the allocation of areas for cleaning as it can be easily designated and identified by an employee.

Fabric is the most important factorin any garment and therefore the basic raw material for an apparel manufacturer. It is the correct choice of fabric that provides the tone to any product. The quality of fabric not only has an important impact on the quality of the product, but also affects the smoothness of the production process. The selection of fabric for a particular garment is a very difficult task for the apparel manufacturers.Therefore, the quality of the finished garment produced is majorly dependent on the quality of fabric used. As a result, housekeeping in the fabric storage section is of utmost importance. Fabric must be stored in good condition and should be consistent in appearance. A reliable fabric storage system maintains an ideal enviornment for the stored fabric and also facilitates tracking of fabric that is issued for production.
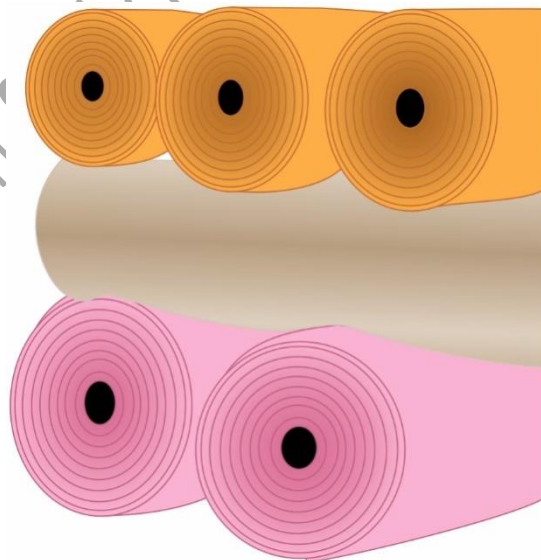
Fig.: 2.3 Fabric stored in a store department

The fabric storage sequence should ensure the following:

- Fabric should be stored on a rack or shelf and shouldn't be kept on floor.

- Proper identification and storage of fabric with respect to width, type of fabric, batch number, style, lot and color.

- Concept of Bin Card system should be adopted which helps in the easy compilation of stock-in-hand and also eases the process of ordering fabric.

- The fabric roll should be kept in lying down position, instead of standing up.

- To maintain traceability, in case a complaint is received from the buyer regarding a garment lot, record of fabric rolls that are used for garment production must be maintained.

- Fabric rollsmust be transported from store to production area on trolleys or rolling carts

- Rejected fabric should always be kept separate with markings in the red zone.

- The store should be free of areas with direct sunlight or chance of rainwater seepage.
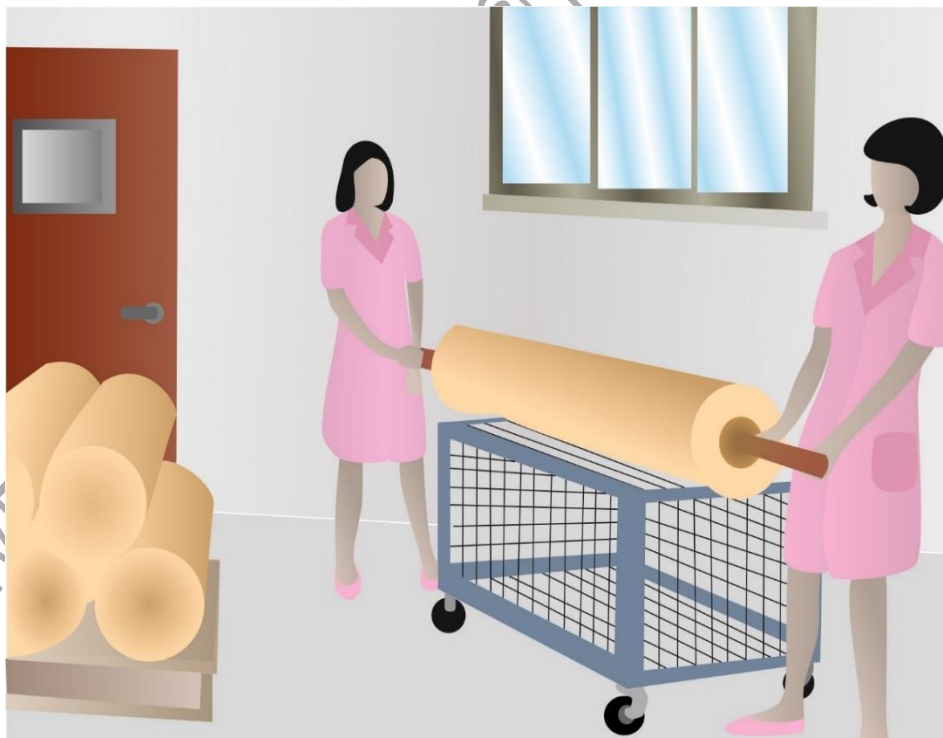
Fig.: 2.4 Correct arrangement and transportation of fabric in a store department

The benefits of incorporating the above sequences are as follows:

- Fabric damage will be substantially reduced which will help in cost reduction.

- Consistency in the garments in terms of fabric quality and color is ensuredbecause same batch fabric is used to manufacture them.

- Productivity is increased due to the reduction in downtime for searching fabric in the store.

- Accident risk is reduced and the working space is increased as the floor is kept clear of materials.

Some of the measures that need to be taken to implement the above are as follows:

- Availability of sufficient racks should be ensured, so that all the fabric rolls lying on the floor can be adjusted on the racks.

- Storage capacity of the store can also be increased by using multilevel shelves in the store.

- Strong lot/batch traceability mechanism must be put in place through strong record-keeping methods.

- Adequate training needs to be given to staff so that they can clearly understand the labelling process.

- It is important to implement consistent labelling system.

Trims, such as sewing thread, buttons, zipper, lace, etc. also form an important component of any garment. It should also be stored in a proper manner and under suitable conditions to maintain its usability .

Trims storage should ensure the following:

- Segregate with proper labelling old and current stock of garment trims (Figure 2.6)
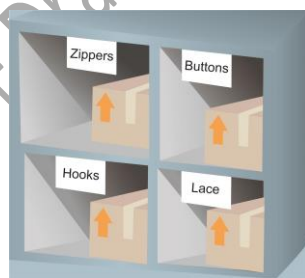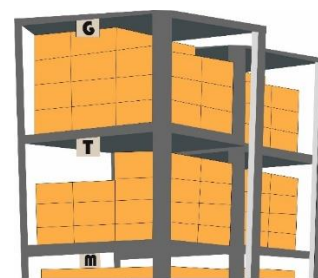
(a)   (b)

Fig.: 2.5 (a & b) Arrangement of trims in a store department

- Build a racking system for trims and put boards at both ends of each rack for identification by using logical identification marks like an alphabet, number, or combination of both on eachrow

- Redundant stocks of trims should be disposed off.

- Trims should be classified by item type and must be properly labelled.
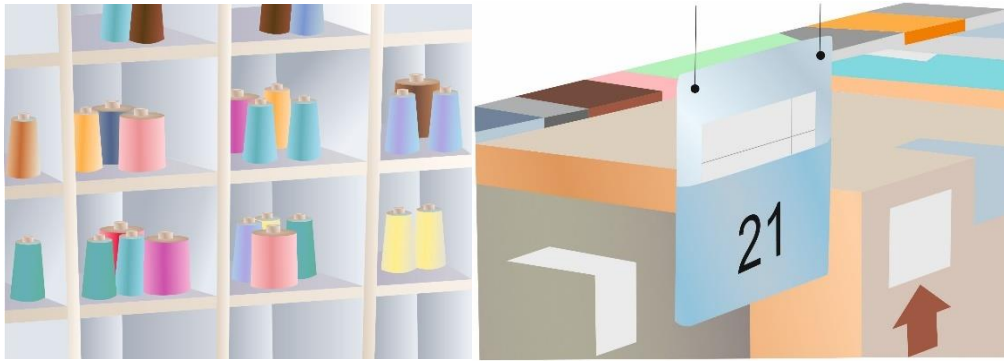
Fig.: 2.6 (a & b) Classification and labelling of stored trims

- The practice of using and displaying bin cards for all trims again helps in smoothing the process of stock-taking and ordering material.

- Stocks of trims that are frequently used must be stored in easily accessible location.

The garment industry is not as **chemical** intensive as many other industries. Irrespective of the quantity used, most of the chemical used in various process of apparel industry are potential hazard to workers and the enviornment. Beside chemicals that are used during the production process, there are other type of chemicals that are present usually in any apparel manufacturing company,such as:

- Chemicals used for maintenance purposes such as machine oil, effluent treatment chemicals, etc.

- Chemicals used for fuels.

- Finishing chemicals

- Stain removal chemical

- Washing and dyeing chemicals

Due to the hazardous nature of these chemicals for humans and the enviornment, utmost care should be taken during handling and storage. Some of the SOPs which should be adhered to are as follows:

- Only certain trained workers, who are aware about the chemicals, should be made responsible for receiving and handling the chemical.

- The chemicals should be stored in specially constructed designated areas

- The storage area shouldn't receive direct sunlight, and should be in a secluded area of the factory away from emergency exits or emergency gathering point.

- The flooring of the storage area should be such that it should be resistant to the chemical that is going to be stored there.

- Adequate mechanical ventilation in form of an industrial mechanical exhaust fan should be present in the storage area to prevent the accumulation of chemical fumes.

- Proper firefighting equipment should be provided inside and on the periphery of the storage area.

- The chemical storage shed should be under lock and key after working hours.

- Smoking and welding, torch cutting should not be permitted in the vicinity of the chemical storage shed.

- Chemicals that are incompatible, should not be stored in the vicinity of each other. For example flammable chemicals and oxidiser or corrosive chemicals should not be stored near each other.

- Fire and explosion proof lighting should be installed inside the storage area.

- Absorbent material, protective eye gear, and suitable hand gloves should be readily available near the storage area to tackle any chemical spill or leakage.

TECHNICAL APPROACH OF ESTIMATING AND MINIMISING WASTES RELATED TO MATERIAL RECEIVING, HANDLING AND STORAGE

Positive evolution in the apparel industry has been distinctively visible over the years as the requirements of end users have also seen drastic shift along with the availability of new technologies. The end user of today have become more demanding with respect to comfortability, fashion, color, price, and ease in availability which is further accentuated by the availability of more options. Apparel manufacturers are being compelled to upgrade their current systems in order to keep pace with the market scenario to fulfil orders whilesimultaneously improving quality and reducing costs. Lean is a management technique that can be defined as the systematic method of identifying and eliminating the wastes generated during the process through continuous improvement. This type of manufacturing lays emphasis on bringing in the right things, to the right place,atthe right time in order to

attain the perfect flow of work and in the process, minimise waste and be flexible for change (Just-In-Time (JIT)). Put in simpler terms lean manufacturing is systematic approach to minimise wastage during the manufacturing process while productivity remains unchanged. In the apparel industry all production departments along with the stores are the source of waste generation of various kinds. Some of the common types of waste are leftover small quantities of fabric rolls, chemicals, packaging materials, etc. of different lot number or batch number. So, the apparel industry should emphasis on the measures to reduce these wastages to increase profitability.

What is waste? Waste is anything that does not add value for the customer i.e. anything that the customer is not willing to pay for. This can be anything related to time, resources, labor, money etc. Some of the most common causes of waste prevalent in the apparel industry are as follows:

- **Defects:** inspecting, repairing and replacing defective pieces leads to loss of time and effort.

- **Overproduction:** it occurs when production exceeds demand. This is the most widespread problem faced by the apparel industry. Excess inventory will involve extra labor, time, storage space and still not generate value.

- **Waiting:** as it necessitates waiting for the next production step or interruptions in production. Due to absence of instruction, raw materials or due to machine breakdown workers remain idle and hence lot of productive time is lost. All shipments/ orders have pre-determined timelines, which creates extra pressure on production and finance.

- **Transportation:** shifting materials from one place to another also results in waste of time.

- **Inventory:** more than required raw material, excess stock of finished goods or work in process stock requires storage space and increases the inventory cost, which directly impacts cost of production.

- **Motion:** because this entails people or equipment to move more than is required to perform processing.

- **Over-processing:** putting more effort and time than that is required on a piece of garment due to poor tools or product design, which decreases productivity.

Following are waste produced by the store department-
- Packaging waste of received goods.

- Empty bottles of chemicals

- Waste/degraded fabric

- Extra/wrong fabric supplies

- Broken needles, buttons or worn out trims

- Worn out machine parts

- Expired items like chemicals and PPE

Benefits of Managing Waste

Due to the high growth rate of the world population and increase in consumption of products, we have reached to an alarming level of waste generation. As a result, we are running out space to dispose it off. We need to manage the waste generation. Following are some benefits of managing waste:

- Conservation of resources and energy

- Increase in the productivity

- Pollution reduction

Prevention or minimisation of waste is a better option than waste treatment because of the following:

- Reduction in waste quantities

- Reduction in consumption of raw material and hence cost

- Reduction in waste treatment

- Increase in process efficiency

- Increase in efficiency of the employee

The waste generated in the store can be minimised in the following ways:

1. **Efficient Inventory Management**

   Efforts should be made to prevent unnecessary accumulation of raw materials, work-in-process materials and finished goods. Just-in-Time (JIT) system ensures that companies limit the duration of materials spend on the production floor or the finished goods in the warehouse. Raw materials are ordered when and in what quantity they are required.

2. **Reuse**

Reusable materials, such as trims, accessories, etc., after the completion of an order should be returned to the store for later use, in a new order. In the store these should be stored in a properly marked and designated area for future use. Fabric scraps or unusable parts of the clothing are to be sold to a recycler, so that it can be recycled into waste fibre to be used in mattresses, pillow, seat stuffing etc. Furthermore small lots of leftover trims and accessories like button, zipper, etc. are sold to small garment accessory sellersfrom time to time.

3. Establish a Preventive Maintenance Schedule

Like any other production department in a manufacturing unit, the store should also have a preventive maintenance schedule not only for their material handling equipment such as trolleys, hoists, etc., but also for their weighing scales which are the heart of any store's operation. A preventive maintenance schedule for the store's humidification plant is also of utmost importance as yarn needs to be stored at a certain minimal temperature and humidity to keep it usable. It is more beneficial to control the costs to prevent a breakdown instead of reacting to a breakdown later. An unexpected breakdown may result in hampered store operations, resulting in an increase in downtime in production area or may result in damage to the stored raw materials, thus resulting in increase in wastage.

4. Label and Organise the Store Property

Proper attention should be given to the fact that the stores are organised and well-marked. The raw materials and other inventory should be stored in a proper manner to avoid them getting damaged, resulting in increase in wastage. The inventory, tools and other items that are required by production department should be stored in an organised manner with proper marking, so that the time taken to issue them to the concerned department is within acceptable limits. Faded or outdated markings need to be replaced to avoid any incorrect shipment of finished goods or increase time to search for the items when indented.

5. Solid Waste Reduction

Solid waste is the second largest category of waste in the textile or apparel industry after liquid waste. There are number of ways through

which solid waste can be minimised. Following are some ways to minimise waste:

- Reduction in packaging material is done by smart and improved purchasing practices such as ordering out raw materials in bulk or returnable intermediate bulk containers thus reducing the chances of spillage, storage space and handling cost.

- Purchasing chemicals in returnable drums.

- Purchasing yarn in reusable plastic cones instead of one time use cardboard cones.

6. Volume Reduction

Segregation method helps in separating hazardous components of waste from non-hazardous components. This entails in reduction of volume and, in turn, reduces the disposal cost of the waste. Volume reduction method can be subdivided into two types: waste concentration and source concentration. In the former, the material has a high chance of being reused or recycled, and in the latter, different components of the waste are treated separately to recover the cloth value in the bulk.

Disposal of waste at designated locations

Due to the increasing cost of raw material and decrease in the availability of natural resources, it has become prudent to have effective and efficient waste management system. This system will help in reducing the cost of raw material and waste disposal. Due to the risk of leakage of hazardous waste during transportation, that would have harmful effects on the environment and human being, so the waste needs to be disposedoff at designated places only in a safe manner. During the disposal, employees must wear gloves and other PPE.

Ways of waste disposal

Following are some ways to dispose off the wate generated in the store department:

- Sorting the waste into recyclable and non-recyclable waste will help in the usage of the former in its current state or after recycling. For example, used cartons in good condition can be reused for storage, or else they can be sent to a recycling plant for conversion to paper.

- Hazardous and nonhazardous waste should be segregated properly and not allowed to mix with each other.

- Hazardous waste, like used or expired chemicals that cannot be treated or recycledmust be disposed off as per SOP to a designated location away from human beings.

- Certain types of waste, such as rejected fabric, rubber, plastic, etc. can be shredded into tiny pieces and can be used for filling mattresses, pillows, etc..

- Bins or containers containing hazardous material should be covered all the time, except when workers are pouring hazardous waste into them.

- Workers should be trained and should understand the "do's" and "don'ts" before waste disposal.

5S IN HOUSEKEEPING

5S is the abbreviation for five Japanese words that represent sequence of techniques, that help in organising the workplace, keeping it clean, and achieve standard and conducive condition. This sequence is important to be followed for good housekeeping in any working area and helps in eliminating waste. This is easy to implement and doesn't require much additional resources. An untidy, unorganised working area is least productive.

Fig.: 2.7 Application of 5S in an apparel manufacturing unit

This is based on five simple principles, that are summarised below:

i) **Seiri**: **Sort** implies to searching and separatingmaterials in the store based on their frequency of usage i.e. daily needed items, weekly needed items, monthly needed items or occasionally used items. All of these are to be stored separately in designated areas in the store. Furthermore, any unnecessary or useless items or equipment need to be discarded from the store. Records of the discarded items need to be maintained.

ii) **Seiton**: **Straightening** suggests arranging all essential material in systematic order, with proper coding, for easy access. Proper measures must be taken to prevent mixing of two different categories of stock item and to ensure proper visible demarcation. The passage to emergency exits should be always kept clear for any emergency.

iii) **Seiso**: **Shining** indicates that all material and places in the store are clean. Store floors, walls, ceilings, racks, cabinets, shelves, machines, equipment, tools, stored items, materials, products, and lighting everything must be kept clean. Further, it should be ensured that all tools and materials required for cleaning are easily accessible. All the cleaning jobsmust be defined and monitored by a checklist (Figure 12), which should be displayed at visible place or board. Periodical pest control must be done to check for any pest infestation.

Cleaning Schedule			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Month	
Cleaning	Duration	Responsible Person																																		
Floor Cleaning	Per Hour	Cleaner																																		
Table, Racks and Shelves Cleaning	Once Monthly	Cleaner																																		
Dustbin Cleaning	Once in Three Days	Cleaner																																		
Fans and Light Cleaning	Once Monthly	Maintenance																																		
Doors and Windows	Once Monthly	Cleaner																																		
Wall Cleaning	Once Monthly	Cleaner																																		
Equipment and Tools	Once Weekly	Operator																																		
Signature																																			

Fig.: 2.8 Format for Cleaning Schedule

iv) **Seiketsu**: **Standardising** suggests establishing standards and guidelines in form of Standard Operating Procedure (SOP) for maintaining a clean store all the time. All SOPs, signs and marking including color coding are displayed all over the store. In addition to this, the procedure to follow the first three S's are also displayed. The regular 5's audit with the help of checklist must be done and rating must be given to each area. These standardisations have the potenitial to improve the operating efficiency of the garment/apparel industry.

v) **Shitsuke:Sustain** implies that sustaining 5S is a must for the survival of the garment/apparel factory rather than a routine thing.Therefore, motivating employees towards work should be important. Rewarding and recognising the good work of an employee is a part of the 5S system to sustain 5S. It should be ensured that they are self-disciplined and develop a habit of properly maintaining correct procedures.

Advantages of 5S for Garments / Apparel Industry

Following are some benefits proper implementation of the 5S in a garment/apparel industry:

- Health and safety of personnel working is ensured

- Increase in productivity

- Saves time, cost and storage space

- Increases efficiency

- Minimises accidents and mistakes

- Reduces inventory time

- Reduces downtime, wastage

- Provides good working environment

- Boosts employee morale

- Optimises organisation and workplace as per requirement

Role of Management in Implementing 5S

It is a known fact that implementation of 5S helps everyone in the company.The management has a crucial role to play in the implementation of 5S. The role of the management is as follows:

- Acknowledging that 5S is required for the betterment of the company.

- Allowing time to employees for 5S

- Providing infrastructure and resources for the implementation of 5S.
- Providing periodic rewards and recognition for the system's improvements.
- Encouraging ongoing 5S efforts.

Activities

ACTIVITY 1: Prepare a checklist for auditing the 5S system in a store of an apparel industry.

Materials Required:

1. Chart Paper
2. Pencil
3. Ruler
4. Eraser
5. Colorful pens and/or pencils

Procedure:

1. Divide the chart paper into five equal sections.
2. Each section should be duly allocated to each step of 5S in the actual sequence that is supposed to be followed while implementing 5S.
3. Write the points that need to be checked under each section.
4. After each point options for Yes and No should be given.

ACTIVITY 2: Prepare an inspection checklist for general housekeeping in a store of an apparel industry.

Materials Required:

1. Chart Paper
2. Pencil
3. Ruler
4. Eraser
5. Colorful pens and/or pencils

Procedure:

1. Make a list of all the places and equipment that need to be checked for an ideal housekeeping.

2. For each of the points, the option for Yes and No should be mentioned.

Check Your Progress

A. Write True or False:

1. Housekeeping is nothing but cleanliness.

2. Slow turnover inventory has financial advantage.

3. Labelling is not important for a good housekeeping.

4. Bin Cards help in inventory control.

5. Minimisation of waste is better than waste treatment.

6. Management has an important role in 5S implementation.

B. Long answer questions:

1. What are the components of a good housekeeping?

2. What are the most common causes of waste in a garment industry?

3. How can waste minimisation in store can be achieved?

4. What is 5S approach in housekeeping and list some of its advantages?

Session: 2   Ensuring Proper Storage of Material

A store is a place in an apparel manufacturing unitwhere fabric, trims and other consumables are received, stored and issued to the production department. The goal of the store is to perform all the above functions in the most economical way to save cost. Stores are the first step of material management in any company. Irony is that, this department being the most crucial is also the most neglected section of the company. So, more emphasis should be on the store room management to reduce wastage and increase profit.

UPDATING STOCK REPORT IN TIME

Material such as fabric, consumables, trims and accessories, stationary, spare parts etc. when received from the vendor or from department as returned material and after getting a clearance from quality control department are stored in specific locations in the store. Store records such as bin card, daily receipt register, consumable register, inward register is credited to the specific material account. Similarly, when materials are issued out to other departments or discarded as waste or damaged,the store documents such as bin card, issue register, outward register, consumables register are updatedaccordingly.

Apparel industry is quite volatile, as fashion changes frequently almost every season. In order to maintain competitiveness, apparel manufacturers have to change their product mix on regular basis, as a result there will be frequent churning in the requirement of raw materials including fabric, trims and other accessories. In the case of manual stockkeeping, it will be a challenge to switch to new product mix. With the traditional stockekeeping method, it would be difficult and time-consuming to manually track the new raw material, create new purchase order and allocating space for it in the store.

To ease the difficulties related to recording and maintaining stocks, managementsare opting for computer-based system for stockkeeping. The advantages of this method are quite many, a few of them are as follows:

- **Reduce incorrect inventory count**: A computer-based inventory management system is a boon for the apparel industry. This keepsa

track and count of the inventory from the moment it enters the factory premises till it is dispatched as finished products to the buyer. Therefore, one dors not need to rely on the store employees to count the number of each item in stock manually. Manual counting is prone to counting error, which hence affects the accuracy of the inventory.

- **Improve Store Efficiency**: Automated inventory system such as Enterprise Resource Planning (ERP) helps in improving employee's efficiency. This also promotes better coordination of the store with other departments, as important information is made available to all the departments. It also helps storekeeper to keep data safe and handy.

- **Increased Bottom Line**: An automated computer inventory system improves the efficiency of the store's employees and thus helps in reducing the labor cost. Even if management does not want to lay off employees, the business will increase it's bottom line. As a more efficient employee will help in increasing sales and hence the revenue.

- **Better Product Rotation**: The problem faced by the apparel industry is that quite often they are left with obsolete or outdated inventory because of change of frequent product mix. ERP will provide the management with the exact count of the said inventory item at that moment and will help in reducing the number of outdated products in the inventory. It will also prevent a stockout of any item in the inventory by giving an alert if the stock level of that item falls below a selected level.

ORGANISING AND STACKING IN-HOUSE GOODS IN IDENTIFIED AREA

Storekeeper's main function is to receive, store and issue materials to production and other departments.

- The storekeeper receives goods inwards and checks the material as per the SOP laid down by the purchase department.
- Material is then kept in an area, designated for each item, in such a way that no deterioration or damage occurs through exposure to sun or due to crushing.

For a smooth production process, an effective system for fabric storage and management is the need of the hour. Having an organised store is crucial for smoother operations of the manufacturing company. In addition to being a storage space for fabric and other consumables, it also is an area where fabric inspection is done. An organised store has multiple advantages for the garment manufacturer. Following are some of its advantages:

1. **Time Management**: Stores that practice good housekeeping norms provide a clear visibility of stock at every time. This helps the storekeeper to efficiently perform their day-to-day activities such as GRN entries, physical checking against the material received from the vendor, segregation and indexing of materials to locate the material easily, etc.

   A well organised, standardised and clean store helps in locating the required material easily and in less time. This helps the storekeeper to issue the material faster and without depending on any particular person to locate the material. This further increases the efficiency and effectiveness of the store.

   Further, dust free flooring and shelves prevent the inventory from getting damaged and gives a professional look to the store.

2. **Space Management**: Store operation is an expensive proposition for a garment manufacturer as it does not contribute directly to the generation of revenue. So, the company by using efficient space management can reduce the cost and simultaneously increase it's efficiency.

   Special areas in the store should be designated where freshly arrived inventory such as fabric, trims and accessories, stationary etc. are kept. The storekeeper physically counts the rolls, cartons etc. received and talliesthem with the invoice of the supplier. The storekeeper also checks the material physically with respect to proper tags, labels etc. The material is then kept in a quarantine area awaiting inspection.

   Proper indexing of the stored material whether rolls, cartons etc. is best done by an individual company as per their ease and system. After the inspection of the material, proper indexation is done and the material is stored in designated location. This facilitates location of material with ease.

3. **Capacity Augmentation**: An organised store helps in exhibiting the current capacity of the store and also makes it easier for the management to determine their ability to increase the capacity of the store within the same infrastructure and without involving large capital input. The capital thus saved can be used in other areas for business development.

4. **Inventory Management**: Maintaining an optimum level of inventory difficult situation for the management. As too much inventory will block the working capital and put strain on the cash flow. In case of less inventory level, there is a chance of losing a sales order. A well-organized store helps in this situation, as in-house inventory is clearly visible. The management is in a better position to know what inventory level they are holding and what more is required so that the normal operation is sustained.

5. **Information Management**: Record keeping in an organised store is more efficient, accurate, and more up-to-date due to better visibility of in-house inventory. When in-hand inventory is clearly visible, thestorekeeper can coordinate more efficiently with department where the inventory is consumed. Inventory level accuracy can also be increased with transaction-based inventory. With this approach records are immediately updated as soon as the transaction is done. This helps in increasing the level of planning. Any negligence in updating the records on time may result in an increase in confusion and an inaccurate inventory level.

Activities of Store

- Receive fabrics, trims and other accessories from vendors.
- Inventory and inspection of all the raw materials. Check and verify bills against P.O. for quantity, rate and specifications.
- Systematic storage of raw materials at the designated places.
- Taking approval from merchandisers by providing them material inventory and inspection report.
- Arranging fabric, trims & accessories samples for laboratory testing.
- Issuing fabrics, linings, interlinings & padding to the cutting department.

- Issuing sewing trims to the sewing department.

- Issuing finishing accessories to department responsible for finishing.

- Left over raw materials from previous orders are received and stored for future use.

- Storing any surplus accessories or fabric after shipment and disposing them as per pre-determined SOP.

Storage Methods

The raw material in store can be stockpiled in different ways. Each of the techniques has its own advantages and disadvantages. Some of the common methods used are discussed below:

i. **Block Stacking**: This is the most common kind of storage method, that does not require any storage equipment. In this, the loaded cartons/ bales are either directly placed on the floor or on a pallet and a stack of cartons/bales is built up one over the other till a maximum stable height is achieved. The height of the stack is determined by various factors, some of them are:

- Bursting strength of the cartons/bales used

- Conditions and strength of the pallets used

Advantages

- Setup cost is low

- Flexibility

Disadvantages

- To make this method effective, a large storage facility will be required to store a small amount of stock.

- Lack of ventilation

- Storage height of stack is variable

- Last in First out (LIFO) method of inventory is only feasible, because top cartons/ bales must be removed in order to ccess the bottom cartons or bales.

Fig.: 2.9 Block Stacking

ii.   **Selective Pallet Racking**: This is the most common method of stacking materials in the store. This is only one pallet deep with a maximum of two pallets that can be placed back-to-back. This type of racking provides direct access to all the racks. Storage capacity in this method is dependent on the aisle width. The narrower the aisle width, the slower will be the handling time.

Advantages

- Large range of stock can be accessed
- First in First out (FIFO) inventory management can be used.

Disadvantages

- Large store area will be required for storing high volume of stock.

Fig.: 2.10 Selective Pallet Racking

iii. **Double-Deep Racking**: This is similar to selective racking method, but two pallets deep are used instead of one. Thus, four rows are placed

back-to-back as a result of which only 50% of the stock is accessible once all the pallets are loaded. For better material handling, the aisle width should be quite adequate.

Advantages

- As compared to selective racking, storage capacity increased.

- Fewer number of aisles.

Disadvantages

- Accessibility of stock is reduced.

- Only Last in First Out (LIFO) inventory management system can be followed.
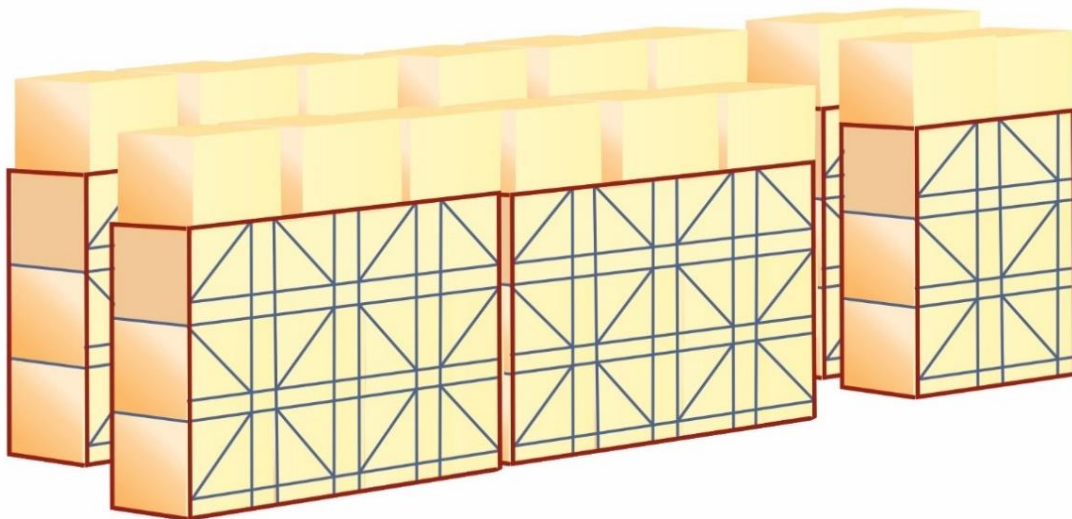
Fig.: 2.11 Double-Deep Racking

iv. **Mobile Pallet Racking**: In this system, pallets are placed on a mobile rack. This is of benefit where loading and unloading rarely occurs.

Advantages

- It almost doubles the storage capacity.

- All the individual pallets are accessible.

Disadvantages

- It requires more space.
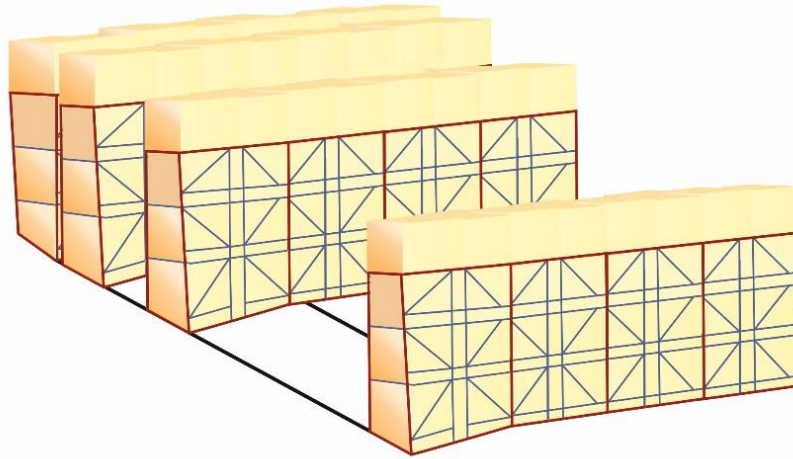
Fig.: 2.12 Mobile Pallet Racking

KEEPING ALL STORE RELATED DOCUMENTS IN EASY AND ACCESSIBLE IDENTIFIED AREA

Proper documentation is the key to the success of any apparel industry. In order to maintain the competitive edge, a perfect documentation system is the need of the hour.

Documents maintained by Storekeeper

- **Goods Receive Note**: Goods in the store are received from outside vendors, production department and various departments as returned material on material return note. When the material is received in the store, a Goods Receive Note is generated.One copy of the same is sent to the quality department beside other departments. Once the item has been passed by the quality department, it is then stored in the designated location in the store.

- **Bin Card**: After inspection, once the material is stored in the designated location in the store, storekeeper enters the receipt on the bin card In this document, the receipt, issue and balance quantities of the material at any particular time are depicted. This is attached to the racks, bins, shelves, etc. In this, only the quantities are recorded. This quantity should be same as the quantity shown in the relevant section of the stock ledger. This helps the storekeeper to know the current inventory level and helps in deciding if a need to order the item. Sometimes the concept of a duplicate bin card is adopted. Where identical bin cards are made, one is attached to the place where the material is stocked

and the duplicate will be on the storekeeper's table for immediate reference.

Bin Card

Material Code:
Material Description:
Location:
Unit of Measurement:

Maximum Level:
Minimum Level:
Record Level:

Date	Doc No.	Received from/Issued to	Receipt	Issue	Balance	Verification with SL Date &Verified by

Fig.: 2.13 Format for Bin Card

- **Material Requisition Form**: As per norms no material should be issued to any department without a written requisition that is a Material Requisition Form which is duly signed by the authority of the concerned department. The Bin Card is updated accordingly after entering the issued quantity.

MATERIAL ISSUE REQUISITION

Book No. ....
Shop/Deptt.......

Indent No......
Date.......

To
The Store-Keeper
Please issue the under-mentioned goods for job No......

S.No.	Material with specification	Quantity Demanded	Supplied	Store ledger No. where posted	Initials of store keeper	Rate	Cost	Remarks

Received........

.........(Indentor)

Fig.: 2.14 Format for Material Issue Requistion

- **Material Returned Note**: Many times, material that was issued to the department is returned back to the store. These materials should be accompanied with a material returned note (Figure 7). The quantity is then updated in the Bin Card by updating the received column.

MATERIAL RETURNED NOTE					
From Job No............ Please receive the under-mentioned materials.			Serial No............ Date.................... Signature........... (Foreman)		
Description of material	Reason of returning	Quantity	Rate	Value	Store Ledger page No.
Bin Card No.........			Received.......... Signature........ (Store-keeper)		
Note. The last three columns will be filled in by the costing department.					

Fig.: 2.15 Format for Material Returned Note

- **Store Accounting**: Materials received in the store have to be accounted for and their respective account needs to be maintained. At any time, it is desirable to know how much of the working capital is tied up in the store. The value of inventory at the beginning and at the end of accounting year is used in preparation of balance sheet and also profit and loss account of the company. When store accounts are kept up to date, it aids in the following:

  ➢ To determine the quantity and value of inventory held

  ➢ Find out values of receipts and issues

  ➢ Determining ordering level without physically checking the stock

  ➢ In accounting of total expenditure

  ➢ In indicating the location of wastage, pilferage and misappropriation and ways to prevent it.

  ➢ The management in keeping the inventory level to an optimum level.

- **Inward and Outward Register**: Material received in stores from vendors and from other departments are recorded in Inward Register. The material issued from store to different departments are recorded in the Outward Register.

- **Dead Stock or Non-Consumable Register**: Entries of non-consumable items like furniture, machinery, etc. are recorded in it. The register records the complete details of the item along with the accessories. Each separate item is to be recorded in different pages of the register.

- **Consumable Register**: In this the details of all consumables like fabric, trim, diesel, lubricants etc. are recorded. All the transaction for a particular item are to be recorded on an individual page.

- **Daily Receipt Register**: On daily basis when a material is received in the store, it is recorded in the Daily Receipt Register (DRR).

- **Issue Register**: On a daily basis, any material issued from the store is recorded in the Issue Register.

- **Surplus Stock Register**: Stocked items that have been purchased but not consumed for a longtime, say for a year or two, will be recorded in the Surplus Stock Register. This item will then be removed from the Stock Register.

- **Suspense Register**: Defective items or items received in excess are not stored in designated location of that item in store but in separate area. Such items are recorded in the Suspense Register.

All the notes and forms are supposed to be in separate files with proper indexation. For better housekeeping, all these files, along with store registers, should always be stacked in proper manner (Figure 8), within the store premises for easy accessibility.
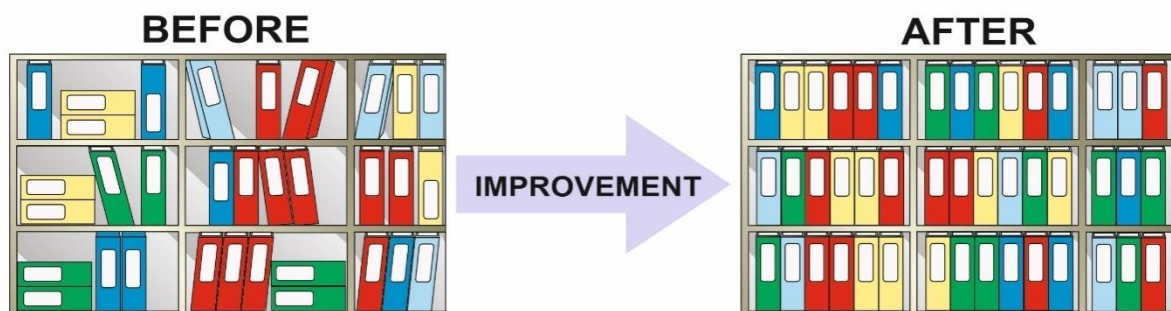
Fig.: 2.16 Correct arrangement of store records

Activities

ACTIVITY 1: An apparel manufacturing company's store received the following material on a particular day:

1. 15 rolls of fabric, each roll has 2000 meters of fabric

2. 10 bales of zipper, each bale having 5000 pcs. of zipper

On the same day, the store issued two rolls of fabric and one bale of zipper to the production department. Based on the above transaction, what store documents or registers will be affected. Illustrate all the affected documents or register showing the generated/updated record.

Materials Required:

1. A4 Sheet

2. Pencil

3. Pen

4. Ruler

5. Eraser

Procedure:

1. List all the store documents and registers that will be affected by the transaction.

2. With the help of illustrations, of each document/register shows the generated/updated status of each.

Note: Show all the new documents for each item (fabric, zipper) that will be generated in the process.

Check Your Progress

A. Fill in the blanks:

1. Computer based inventory system helps in increasing store _____.

2. Storekeeper's main function is _____, store and _____ of material.

3. The most common storage method of raw material is _____.

4. On receipt of material in store _____ document is generated.

5. Material issued from the store should be recorded in _____ register and _____ register.

B. Long answer questions:

1. What are the advantages of computer-based inventory control?

2. What are the advantages of an organised store in the apparel industry?

3. List the different methods of storage of raw materials in the store.

4. What are the advantages of proper maintenance of a store account?

Session: 3	Arranging Dyes and Chemicals as per Housekeeping Norms

ENSURING ARRANGEMENT OF DYES AND CHEMICALS WITH SPECIFIC HOUSEKEEPING NORMS AND STANDARDS AS APPLICABLE TO THE CATEGORY

Compared to other industries, hazards and risks are high in the textile industries, still textile industry is given the least importance. Besides chemical hazards, other types of hazards prevalent in the textile industry are physical, ergonomically and physiological. The process of manufacturing clothing and other finished textile products has experienced very little change since the establishment of this sector. Even though the process has experienced some technological advancement due to the introduction of upgraded machinery, the safety and health hazards associated with the industry before still persist. A number of safety and health issuesfor those working there have become prevalent.

Poor housekeeping, heavy manual lifting and inadequate usage of Personal Protection Kit (PPE) along with dust and poor ventilation are some of the major causes of hazards in apparel manufacturing units.

Risks and hazards faced by workers in the apparel industry that are often associated to chemicals used in the process of manufacturing are:

1. Eye irritation, dermatitis (skin disorder), caused by chemicals such as Hydrogen Peroxide, Caustic soda, Ammonia, Acids, Solvents.

2. Asthma and other respiratory problems caused due to carcinogenic amines, allergens from dyes, reducing agents, acids and alkalis, gas fumes, small fibers

3. Inflammability and long- term health risks from solvents, resins, softeners, etc.

CHEMICAL MANAGEMENT PRACTICES

- **Formulate purchase policies and practices**

  The group of chemicals that can be bought and those that cannot be bought is guided by the laid down company purchase policy. By

restricting the purchase of hazardous chemicals, the health of the workers is safeguarded along with keeping the cost down.

- **Maintaining record of chemicals received from vendor**

  A signed and dated Certificate of Analysis (CoA), Safety Data Sheet, test reports, etc. should accompany each consignment of chemicals and dyes received from the supplier. All these should be kept in record for future reference as this exhibits that the material supplied are in compliance to Restricted Substance List (RSL) or Zero Discharge of Hazardous Chemicals (ZDHC) program's and Manufacturing Restricted Substances List (MRSL).

- **Exposure and emission to be kept under control**

  Precaution should be taken to prevent or minimise the exposure of hazardous materials to workers and the environment.

Different measuresthat are effective in reducing risks and hazards at workplace are as follows:
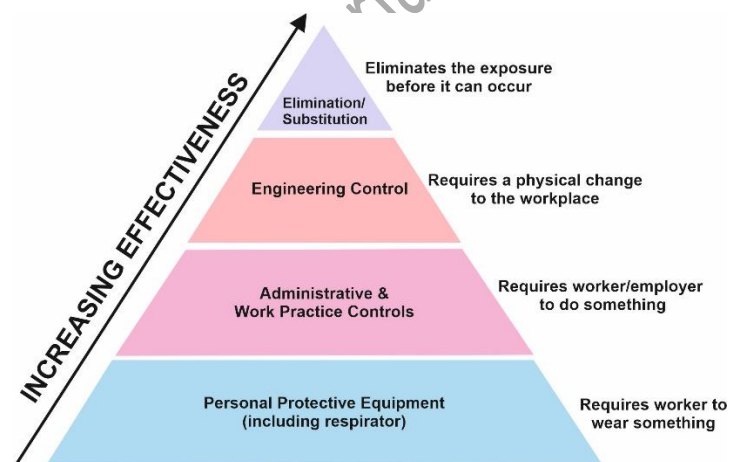
Fig.: 2.17 Measures for reducing hazards and risks at workplace

- **Elimination/substitution** is the most desirable option in order to protect the workers and the environment from exposure to hazards. In this process, hazardous chemicalis replaced by less or non-hazardous chemicals.

- **Engineering Controls** is the next desirable option through which a physical change is made at the workplace to reduce hazard and risk. Some of the ways it can be implemented are

➢ Building a fume hood.

➢ Process to be isolated or enclosed.

➢ Change in the process to reduce exposure to hazardous chemicals.

➢ Switching to wet method to reduce the generation of dust and other particles.

- **Administrative and Work Practice Controls** are the next appropriate option and are beneficial in the case when engineering controls cannot be implemented or when there is a need for change in procedure after implementing the engineering controls. Some of the ways it can be enforced are:

  ➢ Rotation of job assignments among workers.

  ➢ Work schedules of the workers are adjusted to prevent over exposure to hazardous chemicals.

- **Personal Protective Equipment (PPE)** is the least desirable but still somewhat effective way to prevent exposure of workers to hazards and risks. Workers should be provided with:

  ➢ Chemical protective clothing

  ➢ Respiratory and eye protection aids

  ➢ Gloves

Occupational Safety and Health Act 1970 (OSHA)

Workplace safety is the responsibility of everyone in the organisation. HR professionals and managers, however, play a large role in developing standards, making sure safety and health laws are followed, and tracking workplace accidents. The Occupational Safety and Health Administration (OSHA) is a regulatory agency which is a part of the United States Department of Labor. This agency was established by the Congress and signed by President Nixon on December 29, 1970. The task of this agency is to ensure the health and safety of workers at their workplace and also implement the standards through training, education, and assistance. These regulations are to be followed by all types of companies, but in the case of construction, manufacturing, and marine, they are to be adhered in totality. Some of the key components of this act are as follows:

- **Regulations on walking/working surfaces:** As per this provision, all flooring and working areas, including alleys should be free of clutter

and no protruding objects or anything that can cause tripping should be there.

- **Exits including emergency evacuation plans:** As per this provision, each building or structure should be designed in such a way that the exit from the building should be without any hindrance and the doors should not be locked under any condition.

- **Occupational noise exposure:** Here, protection against sound pollution has to be taken into account. If the noise level exceeds a certain level, the employees working in such areas must be provided with protectitve equipment.

- **Hazardousmaterial handling:** OSHA has listed about four hundred hazardous materials and the workers should be informed about possible chemical hazard of each.

- **Protective equipment for eye, face and respiratory protection:** OSHA has specified that employees should be provided with PPE. For example, head protection gear should be provided to employees working in areas where there is a risk of falling objects and eye and face protection gear should be provided where there is exposure to fumes and chemical splashes.

- **Sanitation:** Some of the requirements of this are that potable water should be provided at all places for employees. Adequate number of toilets separate for each gender should be present in the workplace.

- **First aid supplies on-site:** First aid kits should be readily available at the place of employment for the employees.

Storage of Dyes and Chemicals

- Some of the chemicals in the inventory may belong to incompatible group and may react in a risky manner when they come into contact with each other, resulting in a lot of heat generation, release of toxic gas or may cause explosion. Precautionsshould be taken while storing such chemicals. Following are some precautions that must be taken to store chemicals:

  ➢ With the help of safety data sheet of chemicals provided by the supplier, incompatible groups of chemicals in the inventory are to be listed. Care should be taken that these two groups are stored separately in designated and marked areas in the store with a minimum of 5-meter distance between them.

> ➤ Precautions should be taken that the chemicals belonging to acid group are kept away from chemical belonging to alkali group and those that belong to oxidising group should be kept away from those belonging to reducing group.

- Ignition of chemicals may result in fire,the level of precautions that need to be taken is dependent on the level of the inflammability of chemical stored.

  > ➤ In the work area/department small quantity of the inflammable chemicals should be stored in a fire retardant area and should be clearly marked that flammables are stored there.

  > ➤ Large quantities of these chemicals need to be stored in open areas or in specially designed rooms away from direct sunlight and in the secluded area of the factory. Proper warning should be present, indicating the storage of flammable material (Figure 2.19).

Fig.: 2.18 Safety signs at storage area of flammable material and chemicals

> ➤ Smoking, drinking and eating should not be allowed in the area where chemicals are stored.

> ➤ Proper ventilation at lower level should be provided for proper dispersion of heavy chemical vapors.

> ➤ Chemical storage areas should be kept locked every time except during the time of transferring material in and out of the area. Entry to the area should be restricted.

> ➤ Fire retardant lights and industrial mechanical exhaust fans should be used in the storage area.

Fig.: 2.19 Safety sign at chemical storage area

> ➢ Adequate and clearly marked exits should be allocated to the storage area.

> ➢ FIFO system for inventory management needs to be strictly followed. Expired chemicals should be removed from the storage area and disposed offas per the SOP. As some of the chemicals, certain oxidising agents, after their expiry date have a tendency to decompose and cause fire.

> ➢ Chemicals that react violently on coming in contact with water should be kept in covered area with proper lids on them. The containers should not be placed directly on the floor.

> ➢ Any spillage should be immediately cleaned up to prevent accidental mix-up of chemicals resulting in fire or explosion.

> ➢ Absorbent material, protective eye gear and suitable hand gloves should be readily available near the storage area to tackle any chemical spill or leakage.

- In the case where hazardous chemicals are stored in bulk storage tanks. The storage facility should be designed in a way so that the tank is surrounded by a sufficiently sized catchment area to prevent the hazardous chemical from polluting the surrounding areas in case a spillage occurs.

- Splashes of chemicals can cause severe burns, so acids and other hazardous chemicals should not be poured directly from small containers into bucket or jar. Chemicals should be transferred with the help of discharge valves and/or powered or hand-held pumps.

- Damaged and/or broken seals of chemical containers are to be replaced to prevent the fumes from escaping into air and causing respiratory problems for the workers.

- Inspection of chemical storage packaging needs to be done before receiving the material and before storing. Containers should not be rusted or corroded, broken or leaking.

- Inspect the storage area on a regular basis to keep it clean and prevent the storage material from getting contaminated.

- To avoid contamination of material, avoid using the same tools (for example jars, scoops etc.) for measuring or transferring different chemicals.

- Inspect whether the chemical containers and packages that have been received and being used in the factory have labels.All the information of the chemical stored and the labels are as per Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

- The flooring of the storage area should be as per standard norms

  ➢ It should not be permeable to liquids

  ➢ It must be made of concrete and sealed by resins

  ➢ It should be resistant to organic solvents

  ➢ It should have smooth but not slippery surface

  ➢ Floorings should not have cracks as this will hinder proper cleaning.

- The empty chemical containers should not be kept together in an open area. They should be stored in designated area that is not affected by natural elements such as sunlight, rain and fire.
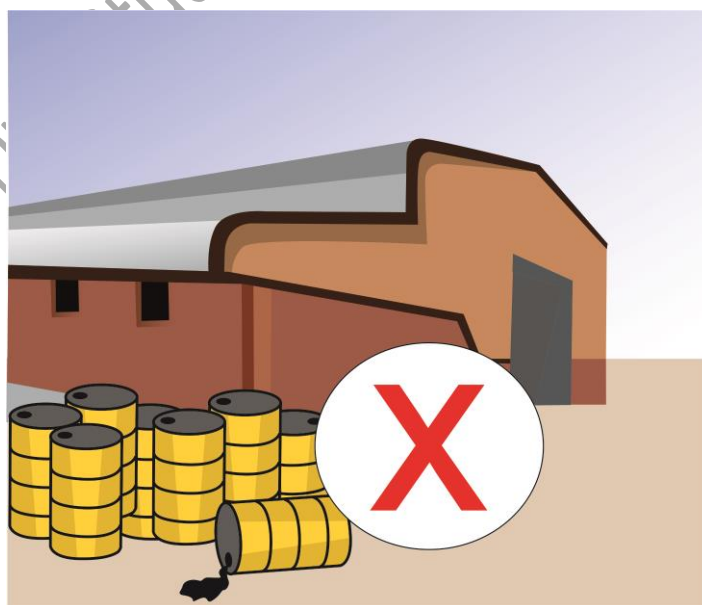
Fig.: 2.20 Improper storage of empty chemical containers

Activities

ACTIVITY 1

Design a model chemical and dye storage area in a garment manufacturing unit. Clearly illustrate and explain the guidelines that are being followed in the model.

Materials Required:

1. Chart Paper

2. Pencil

3. Pen

4. Color Pencils/Pen

5. Ruler

6. Eraser

Procedure:

1. Draw a scene depicting chemical and dyes storage area.

2. Divide the space into storage areas.

3. Identify the areas for storing different category of chemicals.

4. Explain guidelines and reason for such a storage plan.

5. Show all the warnings that need to be placed in the area.

6. Storing area for empty chemical containers need also be identified.

Check Your Progress

A. True or False:

1. Certificate of Analysis from a chemical vendor is not required.

2. Safety Data Sheet exhibit that chemical bought falls under MRSL

3. For the safety of workers, hazardous chemicalsshould be replaced by non-hazardous chemicals.

4. OSHA came into effect on December 28, 1970.

5. Incompatible chemicals should be stored separately.

6. LIFO system should be followed for chemical storage.

B. Long answer questions:

1. List all the components of a good chemical management practice.

2. What are the key components of OSHA?

3. What is GHS Classification and Labelling of Chemicals? Explain it with help of a diagram.

Session :4   Maintaining Schedule for Preserving Storage Items

Pest Control Management plays a very important role in any apparel industry. It helps in reducing wastage, maintaining quality and preserving employee's health. Rodents, silverfish, cloth moth, carpet beetles, termite, mosquito etc. are some of the major pests that have a damaging effect on any apparel industry. Cloth moth, carpet beetles and silverfish are known to damage fabric and clothing made up of both manmade and natural fibers. Mosquitoes on the other hand are threat to the health of the employee as they spread many diseases like malaria, etc. The most common causes of infestation are high humidity levels in the area, poor housekeeping or poor shipping conduit. It is also an accepted fact that in order for pesticides to be effective, their usage should be thoroughly understood.

MAINTAINING SCHEDULE FOR PESTICIDES TO PRESERVE STORE ITEMS AGAINST DIFFERENT BIOLOGICAL MICRO ORGANISMS

Pesticides are any substances (both synthetic or natural) or combination of substances that are used to control, prevent, destroy, repel or attract any organism that is construed as pest. Some of the common group of pesticides are as follows:

- **Algaecides** are used for killing and/or slowing the growth of algae.

- **Foggers** are used to kill insects that are in the open and touch the pesticides.

- **Fungicides** are used as a regulator for fungal problems like molds, mildew, and rust.

- **Insecticides** are used to control insects

- **Insect Growth Regulators** disrupt the growth and reproduction of insects.

- **Mothballs** are insecticides that are used to destroy fabric pests by the help of fumigation in sealed containers.

- **Pheromones** are chemicals that are biologically active and are used to attract insects or disrupt their mating cycle.

- **Repellents** are intended to prevent unwanted pests, often by taste or smell.

- **Rodenticides** are used effectively in killing animals belonging to rodent's family like mice, rats, and gophers.

Some of the important indications that a particular area is infested by pest are as follows:

- Presence of alive or dead adult insect

- Finding insect droppings and/or dead skin

- Presence of larvae

- Occurrence of eggs of textile pests

Some of the commonly used techniques for controlling pests can be classified under the following categories:

- ➢ **Traditional chemical treatment**: This involves applying insecticides to the area showing signs of being infested by pests. These chemicals can be applied to the area with the help of:

  - **Surface spray**: This methodology is used when the area of the store is known to be infested with cloth moth or carpet beetles. This insecticidal treatment is applied where the pests are known to feed.

  - **Space spray**: This method is used to kill moths or beetles that have been spotted on the roof, walls and other furniture and fixtures.

  - **Dusts**: The insecticidal dust is applied to the edges of carpets or in the roof cavities where due to presence of bird's nest become highly vulnerable to these pest infestations.

- ➢ **Non-chemical treatment**: This involves using a simple technique of vacuuming. Through this, eggs and larvae are removed from the infested area thus putting a break in the life cycle of the pests and thus reducing the pest population in the store area.

- ➢ **Specialised heat treatment**: Through this specialised treatment, hot and dry air is blown into the area infested with the textile pests. The temperature of the air blown is regularly monitored and controlled between 56 °C to 60 °C. This temperature is enough to kill or destroy all

the stages of pest and at the same time not damaging the surrounding area and fixture.

Substances that are used as a pesticide should be effective antimicrobial agents on vast pest spectrum and should be effective in low concentrations. It should be non-toxic and compatible with the constituents of the stored material and should have a suitable shelf life. Pesticide to be used should have good physical and chemical stability.

Biodeterioration of fabric is attributed to the environmental conditions in which it is stored. Besides these, the material is also damaged by the chemicals and pollutants in both air and surroundings along with pests. This process of fabric deterioration can be reversed or prevented by adhering to the storage norms listed below:

- **Maintenance of temperature**: Optimal temperature for storage of fabric is between 18°C and 20°C. Increase in temperature promotes growth of moths, which can cause damage to fabric.

- **Humidity level to be maintained**: Relative humidity should be maintained between 50% and 55%. As zippers, hooks and other accessories can get rusted when exposed to moisture for longer period of time. Humidity conditions should be consistent, as too much fluctuation in conditions can cause dormant spores to begin growing, thus damaging fabric by growth of mold. Dehumidifiers should be installed in stores to maintain an optimal humidity level. Similarly, desiccant bags should be kept in cabinets where material is stored for proper maintenance of humidity levels.

- **Exposure to light to be controlled**: Exposure to light, especially ultraviolet and infrared rays, has a damaging effect on colored natural fiberand fabrics as compared to man-made fiberand fabrics. So, colored fabric made with natural fibers should not be exposed to light for a prolonged duration of time. Similarly, certain chemicals also deteriorate on exposure to light. Hence, these should be stored in cool dark place.

• **Protection from Pests:** Fabric made from natural fibers are highly prone to pest's attack and damage. Hence these should not be stored in an enviornment that is conducive to pest growth. Mothballs such as naphthalene balls should be used to prevent the growth of moth. Care should be taken as this family of pesticides are known to stain the fabric. The use of biocides also helps in restricting the growth of microbes on the fabric. Biocides with low concentration can penetrate deeper and are effective against a wide spectrum of microbes. It has no effect on the properties of fabric and is also of nontoxic nature to human beings and animals. Having good housekeeping also prevents the pest larvae from growing.

Pest control is an ongoing process, which should be done once every quarter, and a preventive maintenance check is preferably done during early spring when the population of the pests is low and hence can be easily destroyed. A pest control schedule facilitates the keeping of records of pest control treatments and helps effectively to control harmful pests in any area.

				SECTION B				SECTION C
Pest Control Inspection Report Template								
Building		Field Office						Date
TYPES OF PEST	LOCATION	REPORTED BY		IMPESTATION		SERVICE		PESTICIDES, TRAPS AND OTHER MATERIALS USED
		PERSON	TELEPHONE NO.	ACTIVE	HOME	SAT.	UNSAT.	
REMARKS								
SIGNATURE OF THE CONTROLLER		TIME IN	DATE	SIGNATURE OF GSA INSPECTOR		TIME INSPECTION COMPLETED		DATE
		TIME OUT						

Fig.: 2.21 Pest Control Inspection Report Template

Activities

ACTIVITY 1:

Make a power point presentation on the role of pesticides in controlling the damage of items stored in a garment manufacturing unit store from biological microorganisms.

Materials Required:

1. Computer

2. Marker Pens

3. Pencil

4. Eraser

5. Ruler

Procedure:

1. Plan a visit to any nearby garment manufacturing unit and through discussion find out various pest control measures that are being followed there and their effectiveness.

2. With the help of internet-based search engines find information and pictures on different groups of pesticides available and their usage. Also find out information on different techniques being adopted in the apparel industry to control pest infestation and safeguarding the fabric and other raw materials from getting damaged.

3. With the help of the collected information make a power point presentation on uses of pesticides and techniques being adopted for pest control in apparel industry.

4. Present the same in your classroom.

Check Your Progress

A. True or False

1. Most common cause of infestation is low humidity

2. Algaecides are used to kill insects

3. Repellants are those used to kill rodents

4. Presence of larvae is a sign of infestation

5. Pesticides should have good stable properties

B. Fill in the blanks:

1. _____ are pesticides to control fungal problems.

2. Biological active chemicals used to attract insect and modify their mating patterns are called as _____.

3. Biodeterioration of stored fabric is attributed to _____ condition it is stored in.

C. Long answer questions:

1. What are pesticides? List some of the common group of pesticides.

2. What are the commonly used methods of controlling pest infestation?

Session: 5   Periodic Stock Checking of Material

Inventory management is the method of tracking, managing and maintaining an optimal level of inventory. For apparel industry, poor inventory management has been a major factor in losing its competitive edge and resulting in a decrease in profitability margins. This allows business to plan for sales and stock-outs, as well as to determine the optimum level of inventory to hold at any given time. While also ensuring that they are not left with idle stock resulting in poor cash flow.As inventory is an asset for a business so frequent rotation of the same will increase the cash flow, which can be used in other areas of business. There are three types of inventory for any manufacturing business namely raw material, work-in-progress, and finished goods.

ORGANISING MATERIALS CLEARLY IDENTIFIED FOR INSPECTION/CHECKING STATUS

In an apparel industry raw material and chemicals are received in the store. After the physical inspection of the material is done by the storekeeper, it is then stored in designated area depending on whether it has been waiting clearance by quality control department or has been cleared by it. Storekeeper then makes the required entries in the store records.

Fabric cost is almost three fourth of the garment cost, so the handling and storage of fabric should be done very carefully. Once the fabric reaches the factory premises:

- It is unloaded in the fabric store and placed in a separate section waiting for the pass report from the quality control department.

- Storekeeper does the physical counting of rolls and talliesthem with the purchase order. Random checking of fabric rolls is done by the storekeeper to ensure that the manufacturer's tag is put at the head end of the roll. The tag should indicate the quality of the fabric, width of the fabric, length of the fabric rolls along with the batch/lot number.

- Once the physical examination is done by the storekeeper, the entry is made in the Goods Receipt Register (GRR) and a Goods Receipt Note (GRN) is generated and issued to the purchasing, account, quality control and the concerned production departments.

- Once the fabric lot is passed by the quality control department, the fabric rolls are transferred to designated areas for storage under suitable conditions.

- In case the fabric lot is rejected, the storekeeper informs the supplier about the rejection and asks the supplier to pick it up. Till the supplier picks up the defective lot, the rolls are kept in separate area.

Trims are anything except fabric that is used to make a garment, for example lace, sewing thread, zipper, button, etc.

On receipt of the consignment of trims in the factory:

- The consignment is taken to designated area of the store, which istrim storage area.

- The storekeeper does the physical counting of the number of packages received, the packages can be cartons or bales or sacks.

- The storekeeper does the physical inspection of the quantity received. This is achieved by multiplying the number of packs received with number of items per pack. Number of items per pack is mentioned on the labels of the pack by the manufacturer. These received quantities are checked against those given in the purchase order or invoice.

- Any shortages or damaged quantities are reported to the purchase department for redressal of the issue with the supplier.

- The storekeeper makes an entry in GRR and a GRN is issued to the concerned departments.

- Passed products by the quality control department are ready to be released to the production department.

- Rejected products are kept separately, waiting to be disposed off or picked up by the supplier in designated red zone.

As soon asa**chemical** consignment enters the factory premises, several issues are considered and resolved by storekeeper, namely:

- Chemicals are unloaded by trained store workers on the unloading platform.

- The documents given by the delivery person should be checked thoroughly by the storekeeper to ensure SDS (Safety Data Sheet) or MSDS (Material Safety Data Sheet) is part of the document set.

- With the help of SDS, identification of the chemical is done by matching with the label on the container and also matching with the purchase order/s, to ensure that the material and quantity of the chemical received are as per the purchase order.

- In the absence of the labels on the container or mismatch with the SDS submitted by the supplier, the storekeeper contacts the vendor for clarification.

- Before signing the delivery challan as a confirmation of acceptance and handing over to the delivery personal, physical examination of container is done to check for leakages, dent, corrosion, bulging/puffing etc., The storekeeper informs the delivery person of his decision of rejecting or accepting the container. In case of rejected containers, storekeeper asks the delivery person to remove the container/s from the premises of the factory.

- After physical examination is done, the storekeeper makes an entry of the goods receipt in Good Receipt Register (GRR) and also creates Goods Receipt Note (GRN) and give it to the account, quality control department, purchasing concerned department rising an indent.

- Proper identification is put on the consignment stating waiting for pass report from the quality control department. Till the pass report is not received, the said batch/lot of the material can neither be transferred to the chemical storage area nor issued to the production department.

- Once the lot of chemical is passed, then with the help of trained workers the chemical is shifted to the chemical storage area. In case the lot is rejected, the chemical is transferred to a separate area and the storekeeper contacts the supplier asking for the said lot to be immediately picked up from the factory premises.

PERODICALLY TAKING OF STOCK OF MATERIALS LYING IN STORE

In an apparel industry, fabric and accessories from supplier are received by the store department, where they are properly audited and stored waiting it to be issued to concerned production departments. Thus, the storekeeper's responsibilities include receiving raw material from vendors, storing in a manner such that to protect it from damage or pilferage, monitoring to maintain adequate stock level and then issuing the materials in the right quantity, at the right time, to the right place at the same time ensuring to keep the cost to the minimal. The process flow of the store department can be best illustrated by the below :
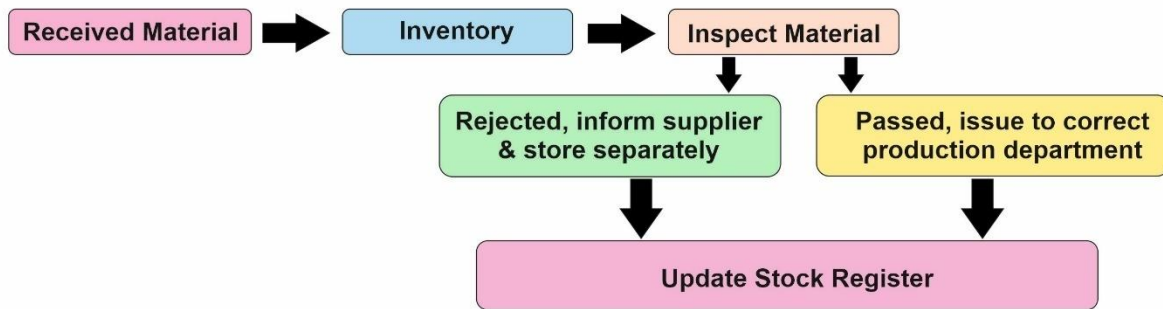
Fig.: 2.22 Process flow of the store department

ENSURING PERIODIC CHECKING OF STOCK MATERIAL IN THE STORE

Inventory control is a crucial part of any organisation. In the apparel industry, the product mix most often changes at the end of every season. Thus, the inventory of raw materials, trims, work in progress, finished goods has to change on a regular basis. Inventory control promotes savings in time and cost, besides increasing the efficiency of the warehouse/store. This management technique helps in listing out simultaneously and in an organised manner the availability of unfinished, finished and unshipped items lying at any time.

Stock management, or inventory management, is an important role that a storekeeper plays in an organisation. The purpose of stock management is to reduce the cost of holding stock while simultaneously ensuring that the organisation can meet its customer demand and also making sure that there is enough material for smooth production process. Inventory management refers to the process of ordering, storing and using a company's inventory. In other words, it enables successful cost control of operations. In order to maintain the balance, companies have implemented two major methods of inventory management,Just-in-Time (JIT) and Material Requirement Planning (MRP). A company's inventory cost comprises of the holding cost, shortage cost and the order costs. The Economic Order Quantity (EOQ) is a model that is used to ensure that the right amount of inventory is purchased or produced per batch, so a company does not have to process purchase orders or production set-ups too frequently.

Stock Management / Inventory Management System

The perpetual inventory management system works on the following guidelines:

1. Stock Category

2. Stock Control Method

3. Stock Control System- Tracking manually or using computer software

4. Using RFID for inventory control, security and quality management

5. Relationship with Suppliers

6. Contingency Plan

7. Forecast Accurately

1. **Stock Category:**

The inventory in a store can be classified under the following categories:

- **Raw material**- are those items received from various vendors and are ready to be used for the production of product.

- **Work in progress-** are partially finished items that are awaiting to be completed and then shipped to the buyer.

- **Finished goods**- these are packed items awaiting to be shipped to the buyer.

- **Consumables-** items that are used daily for business operations fuel, chemical, stationary etc.

- **Miscellaneous** items that have economic value and are also inventoried like scrap, defective products and parts.

By categorising the stock, it becomes easier to organise and keep track of what needs to be replaced. Further, the categories can also be ranked based on monetary value, so in the case of limited cashflow the important items are replaced first.

2. **Stock Control Method**

A number of methods are used in the apparel industry to control stock. All of these systems are efficient and are designed to be used either singularly or as a combination of two methods. These methods effectively help in reaching a decision about what, when and in how much quantity the material needs to be ordered. These methods can be explained as follows-

- **Minimum stock level:**

For every item in the product-mix or raw material define a minimum quantity level that should be present at all the time. If the quantity level goes down this predetermined number then it is time to produce or order, depending on whether it is a finished good or raw material. With time, conditions change and so the predetermined values should

be reviewed a couple of times in a year to ensure the viability of these values.

- **Just-in-Time (JIT)**

  Just-in-time (JIT) inventory is a strategy used during the 'pull' manufacturing, in this company plans to increase efficiency and reduce waste by receiving goods only when they are needed in the manufacturing **process**, thereby reducing the cost of inventory. Importantly, manufacturers must forecast their requirements accurately. Businesses are at risk of running out of stock; they should be confident that their vendors can deliver the material on time.

- **Economic Order Quantity (EOQ)**

  It is a production formula used to arrive at a most optimal amount of goods taking into account both the ordering and holding cost. In simple words, it represents the optimal quantity of material a company should order each time to minimise the ordering cost and inventory holding cost. The EOQ is used as part of a continuous review inventory system in which periodic monitoring of inventory level is done and a fixed quantity is ordered each time the inventory level reaches a specific reorder point. The EOQ provides a model for calculating the suitable reorder point and the ideal reorder quantity to ensure the replenishment of inventory with no shortages.

- **First In, First Out (FIFO):**

  FIFO is the stock management rule that most of the businesses follow. According to it raw material stock that was acquired first (first-in) should be released for production first (first-out). Similarly, in the case of finished goods, goods manufactured first (first-in) need to be dispatched first (first-out). This system is very beneficial for goods that are perishable or have anexpiration. To effectively implement this system, newly purchased or produced goods are placed at the end of existing goods.

- **Last In, First Out (LIFO):**

  LIFO is the stock management rule that businesses use at the time of rising prices. In this, the stock purchased last is issued for production first. In this system, the stocks are identified by date of procurement

and moves through each stage of production in strict order. In this situation, sthe cost of the most recent products purchased are the first to be expensed as cost of goods sold, which means the lower cost of older products will be reported as inventory.

- **Material Requirements Planning (MRP):**

  MRP is a computer-based inventory system, which businesses use to estimate the quantity of raw materials and also plan their delivery schedule. This system provides answers to three questions: What is needed? How much it is needed and When is it needed? This works backwards from finished goods to calculate the inventory requirement of each raw material item. The most important input to a MRP is the Bill of Materials (BOM) which is comprehensive list of raw material items required to produce the product.

3. **Stock Control System- Tracking manually or using computer software**

   There are three sections in the working of a storekeeping, namely:

   A) Receipt Section

   B) Storage Section

   C) Issuing Section

   A) Receipt Section

   The receipt function is the last step in the purchasing activity and the first step in the store function. This section is also called as goods inward section. When materials are received from suppliers, an entry is made in the 'daily goods receipt register'. The following procedure is followed while receiving inventories:

   (i)   Receiving these incoming materials in store

   (ii)   Recording the incoming materials in the goods receipt register.

   The Goods Receipt Register is an important document in the inventory management system, and helpsin recording the inward entry of any goods received at the premises of the company. The practice of recording in this document is important as it promotes proper inventory control and restricts the unwanted, unauthorised

entry of goods in the company. The contents of the Goods Receipt Register are as follows:

- Date and time of receipt

- Name of the supplier

- Name of the carrier

- Challan number and date

- Item details and description

- Quantity and value of items

- Purchase order reference

- Carrier details (RR number, lorry number)

- Goods inward note reference

- Rejected memo reference.

- Received by

- Inspected by

(iii) Preparing Goods Receipt Note (GRN)

A copy of GRN is sent to the purchase department, quality control department and the department that have been indented the received material.

(iv) Checking and inspection of incoming/received materials

The store personnel do a physical inspection with respect to the quantity received and the state in which the material has been received. If elaborate testing is required then the quality control department once receiving the GRN from store, deputes one person to do sampling and bring sample to laboratory for testing. While the testing is being done, quality control department will display a yellow card indicating awaiting approval from store.

(v) Informing the purchase department about damaged and defective goods and surplus or deficit supplies etc. along with rejection forms and notes.

(vi) Returning damaged or defective goods to the suppliers in accordance with the instructions of the purchase department.

(vii) Forwarding the materials to respective stores and locations where these are to be stored or preserved.

B) Stocking Section:

If the goods received are cleared by the quality control department, which they do by putting a green color card. The store personnel then stock the receipt material at proper designated location to ensure no damage till they are required by the production department for further use. Goods need to be stocked in a condition where they are easy to locate and ensure proper movability. The storekeeper must maintain a record in the store register of all the different types and varieties of goods received and the racks/shelves (with rack number or name) where they are stored.

C) Issue Section:

The term "issue" implies the normal supply of materials from store to various user departments. The issues are recorded in the store ledger/register against the authorised materials requisitions with the date of issue, department to whom the material is issued, and name of the person who issued the material.

The simplest form of checking and keeping a record of the stock is a manual system in which the entries are made in the stock register. This is suitable for small type businesses with limited stock. A stock card is associated with large businesses where the quantity of stock must be maintained in large numbers. Each item in stock has an associated cardwith information such as description, value, location, re-order levels and quantities. It usually also contains details & information of the supplier and the past stock history.

Modern manual systems incorporate coding to classify items. Codes might indicate the value of the stock, its location, and to which batch it belongs. This computerised stock control systems work on similar principles of manual ones, but are more flexible and information is easier to retrieve. One can quickly get the stock quantity, its valuation and all other details related to a particular item with a particular code. A computerised system is a good option for store dealing with many different types of items in stock in large quantities.

4. Relationship with suppliers:

Businesses should be able to adapt quickly if there are any changes. These changes may require last-minute restocking or fast delivery.

Maintaining a strong and cordial relationship with the supplier will be beneficial for the business in the long run. They may help manufacturer during crisis by sending higher quality products, negotiating minimum order quantity and also sometimes reducing the price. The existence of a two-waycommunication system between the supplier and the storekeeper is of utmost importance for a healthy relationship.

Activities

ACTIVITY 1: Make a power point presentation with the help of number of pictures and pictorial diagrams showing the flow sequence of fabric, other raw materials and chemicals being received at the store.

Materials Required:

1. Computer
2. Colored Pens
3. Pencil
4. Eraser
5. Ruler

Procedure:

1. Plan a visit to any nearby garment manufacturing unit and observe working of store department in the unit.
2. Collect information through discussion and observations on the working and the SOP followed in the store department.
3. Prepare a report on the flow sequence, giving detail information of each step being followed in the store department.
4. With the help of the collected information make a power point presentation of the flow sequence of raw material and chemical in the store of the garment manufacturing unit.

Activity 2: Make a Poster Presentation about Stock Management or Inventory Management System in an apparel manufacturing unit. With the help of pictures and writeup explain the various guidelines that helps in making it effective in achieving the organization goals.

Materials Required:

1. Computer
2. Chart Papers
3. Colored Pens
4. Pencil
5. Eraser
6. Ruler

Procedure:

1. Taking help of various internet-based search engines collect detailed information and pictures available on different inventory management system being followed in apparel unit.

2. Prepare a detailed write-up on the various guidelines on the inventory management system

3. With the help of the writeup and pictures make a well-illustrated and descriptive Chart / Poster and display it on the class notice board.

Check Your Progress

A. Fill in the blanks:

1. For any manufacturing company three type of inventories are raw material, _____ and _____.

2. _____ is a computer-based inventory system, which businesses use to estimate the quantity of raw materials and also plan their delivery schedule.

3. The _____ is an important document in the inventory management system, and helps in recording the inward entry of any goods received at the premises of the company.

B. Long answer question:

1. What is inventory management and what are its advantages for a manufacturing company?

2. What is Economic Order Quantity (EOQ)?

3. List the various stock control methods used in the apparel manufacturing industry.

4. What is the procedure followed by the storekeeper on receipt of raw material from the supplier?

| Module 3 | **Maintaining Records Related to Accounting, Storage and Preservation of Store Items** |

Module Overview

The cost of any product depends on the cost of material. Therefore, to avoid any losses, proper storage of materials becomes crucial. This important function is taken care of by the store department of an industry. For an efficient management of store, record keeping becomes an important step for every incoming , outgoing and stored material in a store department. It is important to keep track of all the activities of a store. This tracking of material and activities is done through proper record keeping.

Records are maintained in a store for all the materials that come into a store and also for those which are issued from a store. Along with the incoming and outgoing material, records for the stored material are maintained by the store department. These records include all the documents and records related to accounting, storage, and preservation of the materials.

Learning Outcomes
After completing this module, you will be able to: • To maintain records related storage items   • To maintain records of usage of pesticides   • Maintain records about inter-departmental communications
Module Structure
Session-1   Maintaining records related storage items
Session-2   Maintaining records of pesticides
Session-3   Maintaining records about inter-departmental communications

Session: 1   Maintaining Records Related to Storage Items

The performance of any store depends upon the inventory control so that the production process , quality of product and working capital does not suffer , Records Management (RM), also known as records and information management (RIM), is an organisational function responsible for the creation and maintenance of a system to deal with records throughout a company's lifecycle. RM includes everything from the creation of a record to its disposal.

ISO 15489-1:2001 defines records as "information created, received, and maintained as evidence and information by an organisation or person, in pursuance of legal obligations or in the transaction of business."Essentially, a record is content that documents a business transaction.

A record serves as evidence of an event. Therefore, we can often take a record into a court of law to prove authenticity, reliability, integrity, and usability. Records can provide necessary documentation for an audit, court case, or other official uses. A record can also be anything that includes personally identifiable information (PII).

Document management is part of records management since many documents are records. However, not all records are documents. Document management concerns more day-to-day activities involving physical or digital files, like capturing, storing, modifying, or sharing them.

Document management has several goals including :

1. Organising existing and future documents

2. Allowing quick search and retrieval of documents

3. Keeping the files organised to reduce the number of lost and misfiled documents

4. Reducing physical storage of documents

In records management, there is a lifecycle that corresponds to the stages that a record undergoes. This lifecycle covers everything from the creation of a record to its disposal. Different policies and procedures exist at each phase.

The inventory cost calculation is done by finance department so that they can have better control over working capital management. Therefore, the finance

department needs updated records which aremaintained by the store department.

IMPORTANCE OF ORGANISING THE STORE

A store is a place where all the material, along with the excessmaterial is stored, which will be used as and when required. Loss of items, deterioration, obsolescence and inadequacy [of what is stored to what is needed] are treated as part of store management . The goal of store management is to "receive items, safeguard them from damage and unauthorised removal while in storage, issue the material in the appropriate amounts, at the right time, to the right place, and deliver these services quickly and at the lowest possible cost."

One of the most significant cost components is the cost of materials. Proper material storage is critical to avoid losses due to damage, pilferage, and material degradation. As a result, the store department must be appropriately organised and equipped for the handling of materials.

Ideal stock levels for each material must be maintained so that manufacturing divisions receive their needed amount of supplies on time and surplus working capital is not unnecessarily locked up in overstocking.Moreover, overstocking enhances the cost of production and blocks working capital due to high inventory.

DAY-TO-DAY STOCK RECORD AND CONTROL OF MATERIAL

A well-organised stock information storage and retrieval system that follows compliance regulations and tax record-keeping guidelines significantly increases a business owner's confidence. It increasesefficiency, productivity, and improves working environment andcost control.

Store management systems track the lifecycle of inventory and stock as it comes and goes out of the store department. Store management is the fundamental building block to longevity.

Proper store managementthrough records is key to management. Disorganised shelf labels, or just a messy store department in general, impropermarintenance of proper day to day records will disturb the entire supply chain.

Out of stock and overstocks generally occur when a company uses manual recording methods to place orders without having a full grasp on the state of their store.

The following documents or records are used for recording day to day activities in the store.:

A. Bin Card

B. Stores Ledger

C. Store Issue Requisition

D. Bill of Material

E. Material Transfer Note

A. Bin Cards

After inspection of the materials, the approved materials are received by the Store keeper. These materials are stored in bins, racks, almirahs and other equipment provided for the purpose. For systematic storing, each type of material is kept in different bins, racks, almirahs, etc.

A bin is a location, such as a rack, a shelf, or a cabinet, where different materials are stored. A card containing simply the information and details of the material is kept for each bin and is updated by the storekeeper.A bin card is a quantitative record of material receipts, issues, and balances in a store. The bin card is tied to the bin or rack that holds the material.A duplicate bin card is also prepared. One card is attached to each bin, while the other is kept by the storekeeper.

The storekeeper keeps track of the bin card. This card is used not only for documenting store receipts and issues, but it also aids the storekeeper in stock control. A bin card assists the storekeeper in preparing a purchase requisition to restock the consumed stock. It also aids in finding discrepancies when physical stock verification is performed and the balance is compared to the bin card. It includes information such as the number, description of the material, code number of the material, maximum, minimum, order, and risk levels.

XYZ Private Limited

Bin Card

Material Name: Maximum Stock Level:
Material Code: Minimum Stock Level:
Location: Reorder Level:

Date	Receipt		Issue		Balance	Name
	GRN #	Qty	Request #	Qty		

Fig.: 3.1 Bin Card

Bin card has the following benefits or utilities:

i. As the most important store record it gives an up-to-date record of receiptand closing balances of items in stores.

ii. It is helpful in placing requisitions for replenishment when necessary.

iii. It makes perpetual inventory system meaningful by reconciling physical stock with the balance shown in the bin card.

iv. It helps to control material cost with a minimum investment as the storekeeper keeps the stocks within the prescribed limit.

v. It discloses the quantity balance of stock.

vi. It helps in a system of internal checks as much information relating to store keeping is available from bin cards.

B. Stores Ledger

A store ledger is a record of materials that records receipts, issues, and material balances in quantity and value. This ledger is kept in order to ensure proper store accounting.

A specimen of store ledger is given below:

Store ledger

Material Code:
Bin No.:
Material Description:
Location:

Maximum Qty:
Minimum Qty:
Ordering Qty:

Date	Receipts				Issues				Balance		
	GR No	Qty	Rate	Amount	SR No	Qty	Rate	Amount	Qty	Rate	Amount

Fig.: 3.2 Store Ledger

Benefits of Stores Ledger:

The benefits of stores ledger are given below:

(i) It is an account record which provides information about the receipt, issue and balance of material.

(iii) It helps keep a check on the quantity recorded in bin card.

(iv) Frequent overall review of stored material may be conveniently made with the help of a store ledger.

C. Store Issue Requisition

In the apparel industry, the storekeeper usually does not issue material unless he is authorised by the competent authority. Material can therefore be issued by the store keeper only after receipt of a store or material requisition slip. Stores or Material Requisition is authorisation to a storekeeper to issue materials or other supplies. This is prepared by the authorised person.

The contents of Stores Requisition are:

(i) Number and date of requisition.

(ii) Name of the section requiring the materials.

(iii) Particulars and code number of materials.

(iv) The quantity of material demanded and its unit of measurement.

(v) The rate at which issue is to be made.

(vi) The total value of materials.

(vii) Authority for requisition.

The specimen of store requisition is given below:

MATERIAL REQUISITION

No.....................

Material required for-----------------------------
(Job or Process)

Department.....................................

Date................................

Sr. No.	Description	Code No.	Quantity		Rate	Amount	Entered on store registration page no.
			Demand	Supply			

Requisitioned by	Approved by	Material issued by	Received by
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Fig.: 3.3 Material Requisition

D. Bill of Material

A Bill of Material is an official document containing a complete list of materials and components required for manufacturing a particular product or for a particular job, process or work order.

Bill of material often serves the purpose of amaterial requisition as it contains the complete list of materials required for a particular job.

Bill of Material

Buyer : ....

Style : J14253

PO# : J-145

Qrder Qty. ....

Prepared By : ....

Date : 15-01-2021

Sr. No.	Item Description	Consumption	Extra Purchase	Qty.	Unit of Measure (UOM)	Rate (Rs.)	Unit of Price	Amount (Rs.)	Remarks
1	Shell Fabric Single Jersey 160GSM	0.25	4%	1500	Kgs	250.00	Kgs	375000.00	
2	Rib (2/2) 260 GSM	0.004	2%	12	Kgs	400.00	Kgs	4800.00	
3	Sewing Thread	150	6%	2500	Tube	5.00	Tube	12500.00	Nominated Vendor
4	Size Labels	2	2%	4500	Unit	4.00	Unit	18000.00	
5	Hangtags	1	2%	11500	Unit	4.00	Unit	46000.00	
6	Cartons	-	-	40	Unit	60.00	Unit	2400.00	
7	Polybag	1	1%	4050	Unit	5.00	Kgs	20250.00	
	Total Amount							478950.00	

Fig.: 3.4 Bill of Material

Activities

Activity1: Prepare a bin card for received lot of zippers (metallic gold 6").

Materials Required:

1. Colored Pens

2. Pencil

3. Eraser

4. Ruler

5. A4 size sheet

Procedure:

1. Study formats for bin cards.

2. Based on the observation prepare a bin card for a received lot of metallic 6" zippers.

3. Paste the prepared bin card in your practical file.

Check Your Progress

A. Fill in the blanks:

1. _____ is an organisational function responsible for the creation and maintenance of a system to deal with records throughout a company's lifecycle.

2. _____enhances the cost of production and blocks working capital due to high inventory.

3. A _____is a quantitative record of material receipts, issues, and balances in a store.

4. _____ is authorisation to a storekeeper to issue materials or other supplies.

5. A _____ is an official document containing a complete list of materials and components required for manufacturing a particular product or for a particular job, process or work order.

B. Long answer question:

1. What is RM? Briefly explain the importance of RM in a store department.

2. What is the importance of organising a store?

3. Briefly explain different types of records maintained by a storekeeper.

Session 2: Maintaining Records of Pesticides

A store department of any industry stores various materials, including biologically degradable materials. To avoid any degradation or damage to the materials, various preservation measures including the use of pesticides,are adapted by the store department. In the apparel industry, many materials, including natural fabrics and various chemicals are prone to infestation, for which pesticides and other preservation methods are adopted by the store department.

Indiscriminate and injudicious use of chemical pesticides in store department may result in many associated adverse effects such as environmental pollution, ecological imbalances, pest resurgence, human health hazards, destruction of bio-control agents. Therefore, proper management of usage of pesticides is an important function of the store department in any industry.

The Government of India has also adopted Integrated Pest Management (IPM) as a cardinal principle. IPM is an eco-friendly approach which encompasses cultural, mechanical, biological and need based chemical control measures. The IPM approach is being disseminated through various schemes/ projects at national and state levels.

Pesticides are included as part of the IPM strategy, but they must be used with care and attention for safety. There are certain considerations to keep in mind when using a pesticide, especially with regard to potential harm to non-targeted organisms and humans. Any industry must follow these rules, standards and regulations while using pesticides.

SCHEDULE OF PESTICIDES USAGE IN STORE DEPARTMENT

The steps or procedure of using pesticides in a store department are as follows:

a) Selecting Pesticides : Acquire and consult the Safety Data Sheets (SDS) before deciding on a specific pesticide. These important documents give data on the potential hazards and safety precautions of various pesticides. Pesticide suppliers have SDS available.

The criteria for choosing a pesticide includes the following:

1. Safety is a top priority.
2. Effectiveness of pesticide for the material.

3. Endurance of pesticides with material.

4. The action cycle & time frame.

5. Cost of application.

b) Using Pesticides : When purchasing and using pesticides,one has to ensure that they are registered with competent authorities. The store keeper must read all the instructions before preparing the solution for applying or spraying and follow the standard procedure or methods subscribed to. Concentration of solution, medium of solution (usually it is water), temperature while preparing and storing should be followed strictly.

Inhaling or swallowing even a small quantity of pesticidemay lead to health hazards ,and even loss of life. Therefore, the store keeper or other workers who will be prepping and spraying the pesticide should have PPE for all the processes involved. It means that the safety of work force is of utmost importance while preparing stock solution, transferring it into spraying equipment and actually spraying it at the required places.

(c) Pesticide ordering and shelf-life: The shelf-life and rate of use must be considered when ordering pesticides. Do not order more than one year's requirement. The date of manufacture and shelf-life should be on the outside of the container.

MONITORING THE USE OF PESTICIDES

A store keeper must monitor the use of pesticides in the department. The following are the points of consideration that one must consider while monitoring the use of pesticides:

1. While using pesticides, it is usually advisable to employ licensed pesticide applicators(commercial operators).

2. Correctly calibrated and appropriate equipment should be used for preparation and spraying of pesticides.

3. The application of pesticides should be localised,that is, on the focus spot and not general application as the chemicals are hazardous in nature.

4. While using pesticides, it is necessary legally and morally to maintain total stock and consumption for future reference.

5. One must also monitor the area after treatment to asses the success rate.

6. An emergency contact list should be with the persons concerned and also displayed at appropriate locations.

7. Technical instructions or directions for the disposal of pesticides must be followed to avoid any hazards.

MAINTAINING RECORDS FOR PERIODICITY AND APPLICATION OF PESTICIDES

Keeping accurate and detailed records is an essential part of store management and a basic requirement of good management. It is also a legal requirement for some aspects of storing and using sprays or pesticides.

Spray record keeping need not involve vast amounts of paperwork, but it does require some organisation and management. While it may seem tedious, the modest investment of time and effort involved will be repaid by numerous benefits.

Maintaining records of the usage of pesticides helps in the following ways:

1) Traceability: Spraying records of pesticides are a vital part of thequality assurance schemes.

2) Accountability: Records provide complete information for better and more economical stock management of pesticides in store.

Record systems

The record system adopted depends on the size and function of the store and on the accounting requirements of the store keeper.

Any store department above the size of a small-scale store usually requires some sort of formal record system. The system adopted depends on organisational standards and practices. Records should be kept separate from the pesticide stock so that they are not destroyed in the event of a major disaster (such as fire, flood, earthquake, hurricane or destruction during civil unrest). Records may be kept as sheets in a ledger or in card index form. Duplicate records adjacent to the stock itself may also be required, perhaps in simplified form. A supply of material safety data sheets should be requested from the supplier or manufacturer. Records should be accurate and detailed enough to enable stock control or replacement.

Pesticides have a limited shelf-life, and stock batches bought at different times may vary in formulation and packaging. It is important that a completely separate record be allocated to each consignment of different pesticides as it is received by the store.

A possible layout for a pesticide store record sheet is given below. The store record sheet allows the use of each consignment of a particular pesticide to

be followed from receipt, through inspections, stocktaking and checking to issues, analysis of stock after the shelf-life has expired, and disposal when the pesticide hasdeteriorated.

Well-kept records are the sign of a properly run store department and are essential for minimising wastage of stock or damage caused by accidents. The store supervisor should ensure that there is an adequate system being followed by the storekeeper at all times. The storekeeper should be trained in the use of the records system and must be responsible for its upkeep.

Sample pesticide store stock record sheet

Pesticide group	XYZ
Ref. no.	Inv 29/5[R3]
Common name	Chlorpyrifos
Trade name	Dursban
Formulation/concentration	% ec, 400 g/litre
Manufacturer/supplier	XYZ
Quantity (agreed issuing quantity/package)	1 000 2.5-litre plastic containers
Primary packaging quantity	Four containers of 250 cartons
Date received	20-Jan-22
Use-by date	20-Jan-22
Notes (shelf-life; special storage conditions; inspection frequency)	Two-year shelf-life; keep cartons sealed; inspect every six months; look out for breakdown of plastic containers

Date	Quantity issued (litres)	Balance in stock (litres)	Notes (stock inspection: notes on condition etc. storekeeper's initials)
5-Dec	650	1850	
15-Jun			Stock inspected; no damage.
20-Jun	1 300	550	Stock check.
8-Sep		548	Stock inspected; two containers leaking; disposed of.
30-Sep	548	nil	

Record of disposal of outdated stock	Leak absorbed by sawdust and burnt, split containers relocated to store II and contents transferred
	Store in-charge

Fig.: 3.5 Pesticide store stock record sheet

Notes on the sample record sheet

Reference number :- Cross-reference should be made to the invoice or delivery note; location of the pesticide in the store (bin, shelf or row number).

Identification of the pesticide :-Pesticide group, common and trade names with details of formulation and concentration should all be recorded.

Source of the pesticide:- Where possible information on primary manufacturer or formulator, as well as local source, should be recorded (with local telephone number where available in case of emergency). Where the pesticide came from should also be recorded since many stocks are shifted around.

Packaging and issuing units :- These may differ; the pesticide may be in 200-litre metal drums or in 1-litre cans packed in boxes of 20 with sales or issues being made in units of the 1-litre can.

Date received:- Possibly the most important item of information; it is essential that this should be documented. It must also be recorded on the actual pesticide containers together with the use-by date.

NotesInformation :- should be obtained from the supplier on shelf-life (use-by date), any special storage requirements, particular hazards and other details, which should be incorporated as instructions to the storekeeper on the record form.

Stock operation and management:- Details of receipts and issues must be meticulously recorded and records of periodic stock inspections should be kept signed by the inspector. Careful notes should be made on the state of containers and contents at the time of inspection.

Disposal records:- When outdated stock is eventually disposed of it should be recorded, with notes on the method of disposal of the pesticide and its containers, the location of dumps, etc.

The date of purchase or arrival should be written on each container as it is deposited in the store. The store keeper must ensure that all containers have proper labels and that these remain attached to the containers and are clean and readable; labels in poor condition should be replaced.

The records of pesticides are maintained in the following manner:

1. Name & contact details of supplier

2. Who order it and record of quantity ,quality and delivery details

3. The storage procedure along with location details

4. The names of handlers

5. Date ,time ,location/description of uses

6. The actual targeted paste ,it's details

7. The equipment ,standard procedure used in application

8. Safety measure process, charts and emergency procedures incase of emergency.

PROCESS OF APPLICATION OF PESTICIDE

The process of pesticide application plays an important role in pest management. Proper technique of application of pesticide and the equipment should be used for applying pesticide as it is vital to the success of pest control operations. The application of pesticides is not merely the operation of a sprayer or duster. It has to be coupled with a thorough knowledge of the pest problem. The use of pesticides involves knowledge not only of application equipment, but of pest management as well. The main purpose of pesticide application technique is to cover the target with maximum efficiency and minimum effort to keep the pest under control as well as minimise contamination of non-targets. All pesticides are poisonous substances and they can cause harm to all living things. Therefore, their use must be very judicious. The application techniques ideally should be target oriented so that safety to the non-targets and the environment is ensured. Therefore, proper selection of application equipment, knowledge of pest behavior and skillful dispersal methods are vital.

Furthermore, complete knowledge of the equipment is necessary to develop the desired skill of operation, to select and to estimate the number and type of equipment needed to treat the material in minimum time and to optimise use of the equipment.

Activities

Activity1: Prepare a sample record of pesticide stored in a store department.

Materials Required:

1. Colored Pens

2. Pencil

3. Eraser

4. Ruler

5. A4 size sheet

Procedure:

1. Study formats for pesticide record keeping.

2. Based on the observation prepare a sample record of pesticide stored in a store department.

3. Paste the prepared sample record in your practical file.

Check Your Progress

A. Fill in the blanks:

1. _____ is an eco-friendly approach which encompasses cultural, mechanical, biological and need based chemical control measures.

2. Inhaling or swallowing even a small quantity of _____ may lead to health hazards ,and even loss of life.

3. The application of pesticides should be _____as the pesticides contain hazardous chemicals.

4. Records of pesticides may be kept as _____in a ledger or in_____.

B. True or False

1. The shelf-life and rate of use of pesticides must not be considered when ordering pesticides.

2. All pesticides are not poisonous.

3. The application techniques of pesticides ideally should be target oriented so that safety to the non-targets and the environment is ensured.

4. Well-kept records are the sign of a properly run store department and are essential for minimising wastage of stock or damage caused by accidents.

C. Short answer questions:

1. Briefly explain the criteria followed for choosing a pesticide.

2. Why is it important for a storekeeper to monitor the use of pesticides?

Session: 3   Maintaining Records about Inter-Departmental Communications

Communication between departments is sometimes called cross-departmental communication. Accurate and efficient communication between departments builds trust within the organisation. Communication is one of the organisational functions that helps a company to stay efficient and productive. One of the more important forms of organizational communication is inter-departmental communication. The system works smoothly if the relations between various departments are without any ambiguity. The efficient flow of information also avoids confusion, delays in action, reduction in cost & improvement in quality & quantity . The importance of communication between different departments in an organisation becomes most evident when it breaks down. In industry the written documents or records (written communication) serve as tools for verification and reference for taking right decision. They also serve as legal instruments in case of any dispute within or outside agencies.

MAINTAINING RECORDS ABOUT INTER-DEPARTMENTAL COMMUNICATIONS AND MOVEMENT OF MATERIALS

The garment industry works in a planned manner. We have analysed the flow chart of production process of garment units in detail. Each department has to function in a certain way in accordance to the process technology and parameters. The overall production system is managed by PPC(Production, Planning and Control) department in consultation with all the stakeholders. At every stage of production the respective department maintains the minimum stock of raw material, spare and parts for smooth working so that the quantity and quality is maintained as per pre-decided parameters.

The inventory requirements are communicated to the store in a standard format (indent form along with necessary quality ,quantity details).The records are maintained at department level.

In industry, the major inter-department andcommincation with outside agencies are in written form(documents). It is necessary to have records for future references and for better management control.

Daily consumption of resources (raw material, chemicals, spares) are reported to respective department so that everyday updated report is generated and smooth flow of inventory is maintained.

The communication process is so well designed that natural and artificial barriers in flow are minimised.

The major activity between the store and other user departments is the flow of raw material ,spares and parts of machines ,chemicals, other accessories needed for a smooth production process. The store not only ensures smooth flow but also keeps inventory at minimum level so that working capital is not blocked.

In a garment factory the fabric and trim store is responsible maintaining inventory record at department level and main store. The modern technological tools like simple Excel format are used to maintain records for inter-departmental transactions.

To maintain right inventory level, one should know how much inventory is stored in the store department and how much inventory is expected to be receivedthe store and expected date of receiving those items. A store keeper's main responsibility is to maintain minimum stock of all items (regular items) and controlling the inventory level by reordering. It is possible to have inventory management and control through software (ERP).

A storekeeper needs a tool to record all incoming materials, their volume and necessary information against each item. Spreadsheet like Excel sheet is one of the good options for industries who don't have software for inventory management and control. One can keep record of their inventories in a excel file and retrieve data whenever needed but inventory record must be entered manually.

STOCK MANAGEMENT IN EXCEL

STOCK INWARD REPORT				STOCK OUTWARD REPORT				NET STOCK REPORT		
Sr. No.	Date	Product	Quantity	Sr. No.	Date	Product	Quantity	Sr. No.	Product	Quantity
1	2-May-21	Button	20	1	4-May-21	Button	15	1	Button	5
2	4-May-21	Zipper	10	2	5-May-21	Zipper	8	2	Zipper	2
3	4-May-21	Hooks	14	3	5-May-21	Lace	12	3	Ribbon	2
4	6-May-21	Thread	25	4	7-May-21	Needle	25	4	Lace	0
5	6-May-21		10	5	7-May-21		10	5		0
6	8-May-21		12	6	10-May-21		12	6		0
7	10-May-21		15	7	12-May-21		14	7		1
8	10-May-21		24	8	12-May-21		24	8		0

Fig.: 3.6 Stock Management

How to make an inventory tracking format in an Excel Sheet

Prepare an excel format for recording data for inventory purchase and consumption. In the excel template make columns for all necessary information needed. Update the file regularly actually update inventory tracking file daily. Use pivot table for viewing data against particular item. One can use various combinations for viewing data, such as inventory sourcing status of an order.

The steps for making an Excel record are explained as follows:

1. Prepare an excel file for data recording.

When we are preparing our excel format for factory inventory record, we have to follow the following points:

  i.   Add columns in the format to hold as much information as you need.

  ii.   Use data validation for fields those will be entered repeatedly. Like buyer name, item type,etc. By doing this we can avoid typing same thing differently. Benefit of using data validation in our template is that it makes data sorting easier while we view reports.

  iii. Use formula for calculations wherever applicable. Like balance quantity of items and item wise amount.

  iv.   Add filter to the first row (header row)

  v.   Secure our excel sheet and inventory tracking file. To stop misuse of the inventory tracking sheet we can secure the file by password and also can protect specific rows and columns if we want.

  vi.   We can set conditional formatting for highlighting certain cells, like low inventory level, pending purchase, and delay in sourcing.

2. Identify columns (fields) for our record

3. Data entry and inventory record updating: Enter data in the excel sheet. Most of the departments are dependent on main store for raw materials. Merchandisers, factory owners, sampling department and production people need to know the inventory status of a particular item. We are responsible for proving the correct status of the inventory. We can provide right information to them at the right time, only if our inventory record is updated. So update our inventory tracking file daily. It is also necessary to cross check our data.

Delegate data entry job to one of our subordinates and instruct them on what to do and how to do.

4. View reports: Analysis of inventory consumption and purchase details. After a few days of data entry, we will have a lot of data in the inventory tracking sheet. Finding particular information would be a tough job. We can see desired data (information) on the same sheet (table) by filtering data in desired columns. Pivot template is another option for doing data analysis and viewing report for the desired information. Prepare pivot table for common report types. We can also do post shipment inventory data analysis.

There are some limitations of using excel sheet for inventory record. So if,one can afford an ERP, it is better to go for one. One should use a secured database. Some of disadvantages of using excel sheet are as follows:

1. There might be chance of making errors while entering data manually.

2. Repeatition of entry of same information.

3. Limitation in data analysis and report viewing

4. Lot of manual data entry work

UPDATING REPORT FOR MATERIAL MOVEMENTS

Regardless of work orders or rate schedules for an item that stores procure, the store must send the required materials to the production floor for production. The storekeeper must also deduct the quantities that are issued to the production floor from inventory through an issue transaction. Floor Management system enables one to select the point in the production process during which issue transactions is generated. In other words, one can select when one want the inventory records to reflect the issue of materials to the work order or rate schedule. For example, for a short production cycle, we might want to simultaneously deduct the issued inventory and receive the completed product into inventory when the report full completions for the work order or rate schedule. For longer production cycles, we might need to generate issue transactions at various operations within the routing instructions to minimise the discrepancies between materials that are actually on the production floor and store.

When a storekeeper issues inventory, the system performs the following updates:

1. It reduces inventory

2. Updates the item location file

3. Writes records to the item ledger file

4. Updates the production cost table

5. Updates unaccounted units in the work order parts

6. Writes general ledger transaction in the Account Ledger

A storekeeper can issue materials without recording the completion of a work order. One can also record the component quantities that are scrapped and the reason for the scrap.

Material Movement Log

Month/Year: _____ Record Holder: _____

Unit/Workplace: _____

Date	Material Name	Material ID	Material Moved From	Move Started Time	Weight	Quantity	UoM	Material Moved oo	Actual Location	Move End Time	Weight Received	Qunatity Received	UoM	Receiver Sign	Remarks

Fig.: 3.7 Material Movement Log

MAKING DECISIONS IN RELATION TO THE MAINTAINING RECORDS RELATED TO ACCOUNTING STORAGE AND PRESERVATION OF STORE ITEMS

Decision making is often an integral part of a store keeper's role in the store department. The ability to make decisions can still have a positive or negative impact on work-life as well as the company as a whole. Being able to effectively make good decisions can provide a number of benefits.

Examples of the benefits of making good decisions are as follows:

1. Saves time and resources

2. Cultivates and maintains the respect of others in the workplace

3. Improves productivity

4. Preventserrors and risks

Decision-making is defined as the selection of one best alternative. Before making decisions, all alternatives should be evaluated from which advantages and disadvantages are known. It helps make the best decisions. It is also one of the important functions of management. Without other management functions such as planning, organising, directing, controlling and staffing cannot be conducted because in this managerial function.

There are several steps forthe right decision-making process to reduce wastage of valuable resources, better inventory control and cost reduction which will result in better profits.

It is the responsibility of the storekeeper to take effective decisions for maintaining different records including store accounting and preservation. He must keep account of the store transactions and preservation of store items. It is the duty of a storekeeper to plan and oranise preservation of stored items periodically and also to maintain the flow of the material to other departments. For such store functions, a storekeeper makes crucial decisions by following the decision making steps. The decisions made by the storekeeper indirectly affects the overall expendititure of the company, hence, an efficient store keeping must include accurate decision making.

A store keeper can make effective decisions by following steps:

1. Identification of problems: the first step of decision-making is identification of problems. The problem has to be found and defined. Symptoms are identified and problems should be judged and then necessary remedial action is taken.

2. Analysis of problem: after identification of problems, the problem should be analysed by the storekeeper. It is the assembly of facts and clarifying it. Relevant information must be collected and analysed according to the complexity and nature of problems.

3. Developing the alternative solution: after identification and analysis of problems different probable solutions have to be developed which is known as developing the alternative solutions.

4. Evaluation of the best alternative: after developing the alternative solution evaluation of the best alternative is done. It is determined that which alternative has how many advantages and disadvantages. In other words, alternatives are evaluated for factors like cost, risk , benefits, facilities etc.

5. Selection of the best alternative: after evaluating various alternatives, the best alternative is selected from various alternative with the desirable consequences of adopting each alternative.

6. Implementation of the best alternative: after selection of the finest alternative, it must be used in the organisation effectively. Effectiveness of decisions in achieving the desired goals depends upon its implementation. Therefore, proper implementation of the best alternative is necessary.

7. Review of implementation: it is the last step of decision-making process. When the implementation of the best alternative is reviewed, the process of decision-making is finished. The result of implementation should be monitored and evaluated through which effectiveness can be measured.

COMMUNICATE WITH SUPERIOR, COLLEAGUES AND JUNIORS APPROPRIATELY

Communication is the key to carry out effective and successful business. The process of transferring information to one person to another, within and outside is business environment is termed as communication in business. This communication takes place at different levels within the apparel manufacturing unit as well as outside the firm.

A storekeeper is responsible for all material related communications between the departments and vendors. For a smooth flow of work, he communicates with all vendors, in office personnel, supervisors of various departments etc.

Tracking of vendors, their responsibilities, and the status of their contract can take time. Managing vendor relationships requires the ability to work effectively with business technology personnel. With new specialised vendors in the market, everything can now be outsourced from third party contractors. More technologists mean more complexity which will result in more time and money to manage. Coordinating with clients includes managing all technology-related vendor relationships, including:

- Phone systems
- Audio/visual
- Computer systems
- Servers
- Cloud services
- Security systems
- Video surveillance

To plan and manage an uninterrupted production process, a storekeeper coordinates with all the vendors and departments through different channels which includes electronic communication through e-mail and telephone. Others channels can be in form of written communication including letters, memos etc..

For efficient work, a storekeeper needs to closely understand the use of different communication channels and must choose correct words for communication. He must ensure that his message is clearly conveyed to others. With good communication skills the production process can be completed smoothly which will result in increased productivity and reduce time and money spent on one order.

SEEKING CLARIFICATIONS FROM THE CONCERNED SUPERVISORS WHEN UNCLEAR ABOUT THE PARTICULARS OR FORMAT OF A REPORT

Communication and proper execution of store programmes and directives remain very important for store management. In apparel production business, a physical separation exists between stores and production departments,and it makes engagement increasingly difficult. When communication breaks

down, stores can become confused about how to comply with operational directives or execute effective inventory control. There are strategies and tools to help improve communication and execution. The ability to respond quickly and execute matters. Poor communication results in poor execution, and poor execution can have a major impact on working capital. Communication between stores and production department breaks down due to the choice of communication platforms. A storekeeper must effectively communicate with the supervisors to understand different company formats and records in order to maintain an efficient record keeping system.

For effective communication, a storekeeper must streamline their communication process. While communication processes should still include email and phone communication, but should not be limited by them. Personal interaction for better understanding is necessary. Communication must go both ways.

Following are some important steps to be followed for better communication:

1. Centralise store communication, which means main store management is a focal point and all information with respect to inventory movement should be routed through the main control.

2. All respective communication should be made accessible to all stake holders with certain level of security.

3. The various people in connection with the store management should have better understanding of the role of storekeeper.

4. Relationship between production department and stores should be like supplier customer for healthier environment in industry.

5. It is necessary to have better time management.

6. The important of consistency is of prime importance.

7. Monitor the various compliances for smooth and better functionality.

If all the above steps are followed religiously then concerned supervisors of each user production department will have better understanding of the procedure of inventory control.

APPLY PROBLEM-SOLVING APPROACHES TO RESOLVE CONFLICTS

In industry,due to the dynamic environmental situation, dissentdifference of opinion and misunderstanding are very common in various departments. It's part of working life. Best management practices always aim at minimising or eliminating these situations. By and large, these problems are solved amicably for the betterment of industry. It is necessary to have a system that will address the problems as and when they arise.

In the garment industry, the raw material, accessories, parts and spares are continuously procured for manufacturing process.At times, some difference of opinions with regard to quality and quantity are very common. Usually these conflicts are solved by interactions between the departments but at times it becomes a problem leading to disrupting smooth operations .It is necessary to solve the problems with right approach so that repetition is avoided.

Problem solving is the act of defining a problem by:

i.   determining the cause of the problem,

ii. identifying, prioritising, and selecting alternatives for a solutionand implementing a solution.

The following are 12 principles that can help in adopting a problem solving approach to conflict:

1. **Conflict is seen as a normal part of life.** People often try to avoid conflict and see it as being destructive, painful or unconstructive. Conflict, however, can be seen as a normal part of life that is neither positive nor negative. What is important is how we **respond** to conflict.

2. **A problem solving approach requires cooperation rather than competition.** In a problem solving approach, the emphasis is on working together to overcome a problem. Conflict is thus not seen as a competition or a contest, and the people involved are encouraged to be collaborators rather than opponents.

3. **It is important to respect the interests and needs of both ourself and the other party(s).** A cooperative approach is more likely to be successful if the people involved don't just focus on what they want, but also consider what the other people might want.

5. **The aim is to find an outcome that everybody involved can at least accept**. In order to promote cooperation, we can have "win/win" solutions.

6. **It can be helpful, particularly in the early stages, to focus on interests (or needs) rather than solutions (or positions).** Conflict is more likely to be resolved if we start with a focus on interests or needs rather than solutions or positions.

7. **The role of communication in conflict is vital.** A lot of conflict is the result of poor communication or miscommunication, and clear communication can assist in conflict resolution.

8. **Analysis is an important part of conflict resolution.** An analytical approach can allow conflict to be approached in a rational and logical manner.

9. **Emotions are a vital part of conflict and need to be addressed.** Even though a rational and logical approach helps, it is important to recognise that emotions also play a major role in conflict and cannot be ignored.

10. **Self-awareness helps one respond effectively to conflict.** If we are aware of things like how we react to conflict, how other people respond to us and our communication style, we are more likely to be able to respond positively to conflict.

11. **Conflict is not always easily resolved and we need to accept that not everybody uses a cooperative approach to conflict.** This means it is important to explore ways of dealing with difficult situations and people.

12. **Despite problems or provocation, it helps to maintain a cooperative approach, to remain open to new possibilities and to seek a fair or just solution.** .

13. **It helps to remain positive and optimistic.** By remaining positive and optimistic, possibilities can emerge that we might otherwise miss.

SEEKING CLARIFICATION TO PROBLEMS FORM CONCERNED SUPERVISORS WHEN IN DOUBT

Every organisation suffers from situations that affect their business processes and profits adversely. Conflicts within a team can be handled by the team leader easily with the help of effective team building exercises, but the ones that occur among different departments are different.Interdepartmental conflicts eat away the productivity and efficiency of the organisation which leads to a high attrition rate, financial losses, loss of opportunities, and disrupt the internal environment completely.

The garment factory set up consists of production departments, service departments,and administrative departments .Every department needs various materials, which are procured and supplied by the store department. The number of items are extensive, ranging from simple stationery to complex material. There is always some wastage at various stages of production due to some procedural lapses. It's human tendency to cover up mistakes due to fear of accountability and punishment as harsh as losing the jobs. It is necessary of material manager and other departmental in charge to create conducive atmosphere to address & resolve the conflict between user department and main store department. It is necessary to involve supervisors, jobbers and workers to understand the problem (wastage ,quality variation ,quality variation) with open mind and standard procedure of dispute settlement

It is necessary to resolve the disputes through a system and it is usually by setting up a conflict resolution team. This is solution which can be used if different user departments are involved in interaction. Sometimes, queries lead to conflicts, so apart from creating a set of strict guidelines, we can also set up a conflict resolution team. This team will be responsible for all types of problem-solving and conflict resolution situations. We can supervise the team to make sure that they do their work effectively, but don't get too involved to defy the purpose of their creation. This method have seen excellent results. This proven method will enhance our profits, keep the internal environment full of positive vibes and will encourage productivity and fair competition in the organisation.

Activities

Activity 1: Prepare an inventory tracking format in an Excel Sheet.

Materials Required:

1. Writing material

2. 1

3. Computer

Procedure:

1. Study and learn MS Excel software.

2. Prepare an inventory tracking format in an Excel sheet.

Activity 2: Mock practice oral communication with supervisors for preparation of a format or report.

Materials Required:

1. Writing material

Procedure:

1. Among your classmates, categorise 2 different groups of supervisors and co-workers.

2. Identify your role according to your group and plan your work accordingly.

3. Communicate with other groups for necessary actions.

4. Students in juniors group must clarify their doubts with students in groups of colleagues and supervisor.

Check Your Progress

A. Fill in the blanks:

1. The major activity between the store and other user departments is the flow of _____ and parts of machines ,_____, other accessories needed for a smooth production process.

2. _____ system enables one to select the point in the production process during which issue transactions is generated.

3. A storekeeper must keep account of the _____ and preservation of store items.

4. It is necessary to resolve the disputes through a system and it is usually by setting up a _____ team.

B. Long answer type questions:

1. Briefly explain importance of maintaining records of inter-departmental communication.

2. List the steps a storekeeper takes for making decisions in relation to maintaining records related to store accounting and preservation.

Module 4 | Maintain A Clean and Hazard Free Working Area

Module Overview

A clean workplace means more than just having a fresh surrounding area. Clean workplace encompasses various elements:

- Walking surfaces

- Light Fixtures

- Air quality

A clean and hazard free workplace ensures the safety and health of the employees and visitors. Clean walking surfaces, suitable footwear, and appropriate speed of walking are important to preventing falling accidently. Stairways and aisles that are clean and dry are also vital in reducing accidents and ensuring a safe workplace. Clean light fixtures improve lighting efficiency in the workplace. Good air quality greatly influences work environment as well as the health of the employees.

The negative effects of the unclean environment are as follows:

- A build-up of dust, lint, and grease can create breathing problems for everyone in the working area, resulting in asthma attacks, stuffy noses that may lead to serious health issues.

- A dirty work environment is breeding ground for various germs and allergens.

- Workstations, tools and equipment, machinery, materials, and the progressive bundling system of production systems are all poorly constructed, increasing the risk of musculoskeletal injury and stress-related disorders.

- Fire dangers are typically caused by overcrowding and incorrect storage of flammable goods.

- The significant health and safety risks are caused by bad sanitation and a lack of effective maintenance procedures.

Two most common ways to tackle it are:

- Use of disinfectants to prevent the spread of germs and microbes.

- Proper disposal of waste and recyclable materials keeps work areas clutter-free.

Therefore, the major health and safety concerns of the apparel industry are related to general conditions of the work environment.

Proper maintenance procedures are a must to ensure a clean and safe working environment.

Learning Outcomes
After completing this module, you will be able to: • Identify Importance of routine maintenance and its procedures • Explain how to Maintain cleanliness • Analyze handling of machinery, equipment and tools safely and correctly • Describe Effective oral and written communication at workplace
Module Structure
Session-1   Importance of routine maintenance and its procedures
Session-2   Maintaining cleanliness
Session-3   Operation of machinery, equipment and tools safely and correctly
Session-4   Effective oral and written communication at workplace

Session 1:   Importance of Routine Maintenance and Its Procedures

MAINTENANCE PROCEDURES

Maintenance is defined as the group of systematic activities carried out to keep the machines or equipment in proper running condition.

Proper working condition of machines is a must to produce good quality products in time. Therefore, there is a need to establish a maintenance department in every factory to ensure timely production. Moreover, it is required to document the process and procedures for assistance of auditor.

Good maintenance includes the regular upkeep of material, equipment, machinery and good housekeeping, e.g. trolleys are used extensively throughout the industry and play a major part in reducing manual handling. Systematic cleaning and maintenance of wheels ensure that risks of injury are minimized. Clean floors benefit by ensuring ease of movement

THE IMPORTANCE OF RUNNING MAINTENANCE

Running maintenance means routine maintenance, inspection and servicing of machines and systems to ensure smooth functioning and efficient production. Running maintenance also means routine maintenance irrespective of presence of problem in any of the machines or systems.

The major reasons for running maintenance are as follows:

1. To increase the life and productivity of machinery, equipment and tools.

2. To avoid delays in production due to malfunctioning of machines

3. To ensure better or superior quality for the product.

4. To control and reduce the wastage.

Effective maintenance program plays an important role in the manufacturing processes. The importance of running maintenance can be understood from following points:

➢ It effectively reduces waste and run an efficient and continuous manufacturing / service operation.

➢ The cost of routine maintenance is very less than the cost of repair of a major breakdown.

➢ Daily inspections, cleaning, lubrication and minor adjustments can be detected and corrected before they become a major problem and may result in complete shut-down of a production line.

The running maintenance is one of the three maintenance systems present in apparel industry. The maintenance systems are as follows:
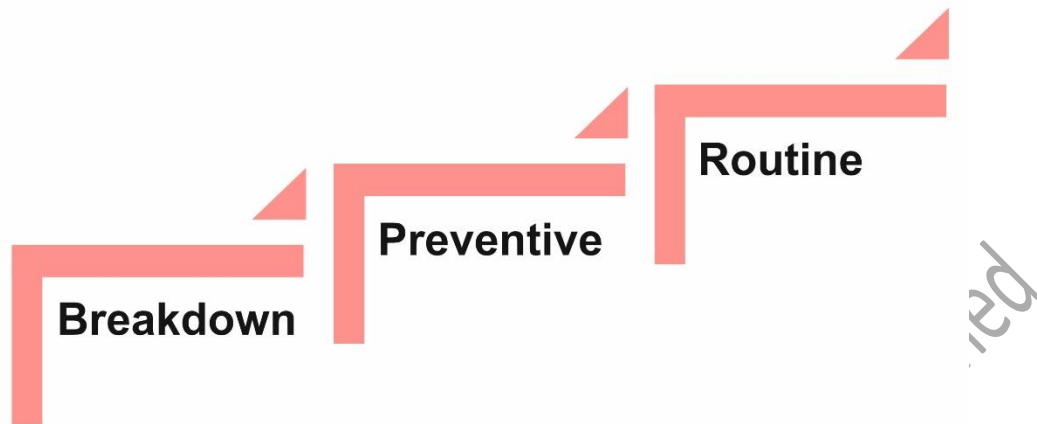
Fig.: 4.1 Types of Maintenance Systems

a. Breakdown Maintenance

Breakdown Maintenance is the repair process carried out after the equipment stops functioning.

Machine breakdown time should be recorded and tracked to see mechanic performance. It is carried out only when evident problems occur. These are unpredictable type of maintenance and difficult to schedule. The equipment is either repaired or replaced. They are important because machine breakdown time is considered as loss time in garments manufacturing. .

b. Preventive Maintenance

Preventive maintenance is periodical and timely inspection which includes daily, weekly, monthly based cleaning, inspection, equipment condition diagnosis, oiling and alignment, and servicing activities.

Maintenance team carries out preventive maintenance as per their maintenance schedule.
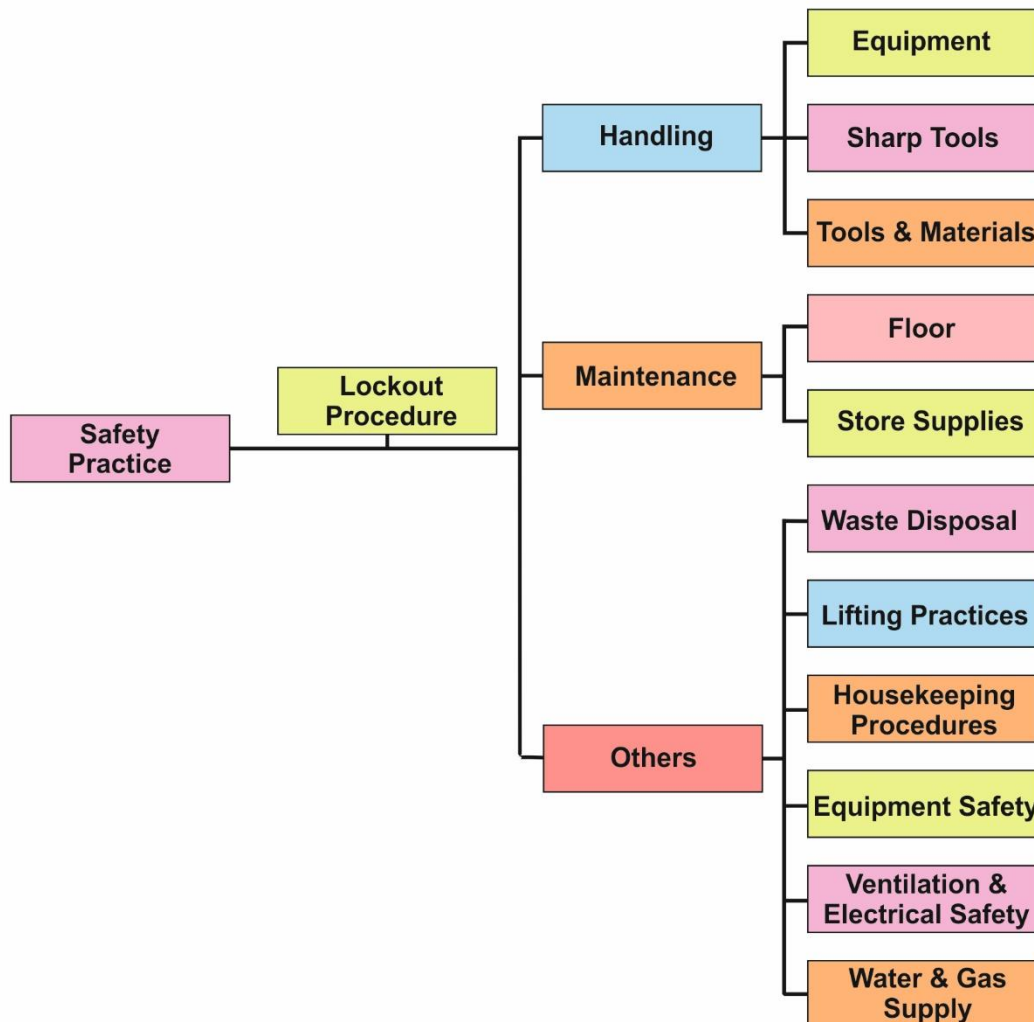
c. Routine Maintenance

Routine maintenance consists of periodical and timely inspection, servicing, lubrication and cleaning of the equipments. It might also involve replacing certain parts to prevent sudden failure and avoid problems to ensure un-interrupted working condition of all machines.

SAFETY PRACTICES

The maintenance systems are inadequate to ensure safe and clean working environment until they are complemented by the various safety practices.

Presence of hot steamers, electrical equipment, and sharp tools and devices combined with the busy schedule make it important to work carefully and pay constant attention to safety practices. The various safety practices are as follows:

Fig.: 4.2 Safety Practices

1. Lock-out procedures

Locking out a machine means disconnection of the power feeding the machine.

The designated person carrying out the maintenance or repair is in charge of the key to the lock of power supply. Before turning the power off, this person ensures the work on the machine has been completed.

The person in charge reports early before the shift timings and removes the power lock of all the machines. This allows the power supply to make

machine functional again. It is the duty of the person in charge to lock the machines during the lunch and tea breaks.

To safeguard the key, lock-out poster or signage must be posted near the equipment, so that no one can accidently restore power without the person in charge's knowledge.

The steps listed below must be followed before repairs or maintenance is carried out.

Steps of Lockout Procedure:

1. Notify all workers on duty about the lockout and the reason for it.

2. If the equipment is operating, switch it off.

3. The power cables must be unplugged. Grounding, repositioning, blocking, and bleeding down must all be used to dissipate or release stored energy in capacitors, springs, raised machine members, revolving fly wheels, hydraulic systems, and air, gas, steam, or water pressure.

4. Operate the push button or other usual working controls to guarantee that the equipment is not functional after ensuring that no workers are exposed and that the energy sources have been disconnected.

5. The equipment is now locked out.

Restoring Equipment to Service:

1. When the repair / maintenance job is completed and the equipment is ready for testing or normal service, a check of the equipment area is carried out to ensure that no one is exposed.

2. When equipment area is clear, all locks are removed. Power cables can be then reconnected.

2. Equipment handling

The points to be kept in mind while handling the equipment are as follows:

1. Do not use any machine if not trained to use.

2. Ensure the machine is switched off before cleaning or adjusting any machine.

3. Ensure fingers, hands, tools, etc., are away from moving parts. Please wait until machine fully stops.

4. Care must be taken while cleaning the cloth cutting and drilling machines. The steps followed are as follows:

    i.   Pull the plug from switch board.

ii.   Do not touch the edge of the blade.

iii. Clean the blade moving from the Centre towards the outer edge.

iv.   Clean the inside edge of the blade with a stick that has a cloth wrapped around one end.

5. Do not start a machine until the parts are locked in place and the attachments are securely fastened.

6. Use a wooden plunger (rather than hands) or other metallic tools to clean the machine.

7. Ensure awareness of the lock-out procedures that are to be followed before repairing or cleaning any machine.

8. Do not wear rings, large size wristwatch, bangles, or a tie while operating electrical power equipment.

3. Sharp tools Handling

The points to be kept in mind are as follows:

1. Use the right cutter or knife for the job.

2. Avoid close proximity to falling cutters or scissors. When a knife starts to fall, jump backward to get out of the way.

3. Always carry a cutters or scissors with the tip pointing downward, with the cutting edge turned away from the body.

4. Never talk while holding a cutters or scissors in the hand.

5. While cutting with any cutters or scissors, always cut away from the body.

6. Place cutters or scissors in drawers or in racks for proper storage.

7. Always use a sharp knife; it is much safer than a dull one.

8. Take a firm grip on a knife handle and always make sure that the handle is free of grease or any other slippery substance.

Fig.: 4.3 Sharp tools

4. Tools & Materials handling:

The points to be kept in mind are as follows:

1. Use dry towels while handling hot openers, steamer covers/doors as wet cloth conducts heat more readily than dry cloth.

2. Avoid splashing grease on top of the range. Grease will ignite quickly, causing a fire. Do not throw water on a grease or fat fire. Use a foam based extinguisher or a wet towel.

3. Remove the lids of iron steamer or washers slowly. Lift the side of the lid that is away from operator so the steam does not rush out too quickly, causing burns to the hands or face.

4. One should Know the location of fire extinguishers; know how and when to operate them.

5. Floor Maintenance

The points to be kept in mind are as follows:

1. Wet floors are dangerous. Keep them dry.

2. Wipe out any spilled water or other similar liquids immediately.

3. Walk. Do not run or slide across the floor.

4. Never leave tools and rags on the floor.

5. Keep all path areas clear of boxes, garbage cans, portable equipment, mops and brooms, etc.

6. Using rubber mats behind the range is a good practice. Mats must be kept in good condition by daily cleaning.

6. Store supplies Safety and Maintenance

The points to be kept in mind are as follows:

1. Always store heavy materials on bottom shelves, medium-weight materials next and light-weight items on top shelves.

2. Clean all dirt, grease, and trash daily to reduce fire hazards and to eliminate breeding places for rats and cockroaches.

3. Use ladders, not boxes or chairs, to get things from high shelves.

7. Waste Disposal

The points to be kept in mind are as follows:

1. Place cloth and other scraps in proper containers.

2. Do not allow containers to overflow. Empty them before they are completely full.

3. Report broken or defective containers.

4. Wear gloves while disposing off expired washing chemicals or similar liquid trash.

5. Wash and sanitize hands properly

6. Push garbage down using a tamper or other tool. Do not push it down with hand or foot.

8. Lifting Practices

The points to be kept in mind are as follows:

1. Keep back straight, but not necessarily vertical. Have a firm grip on the object.

2. Keep the object close to the body.

3. Bend the knees before lifting.

4. Lift the object by pushing weights on legs.

5. Call for help to lift or move heavy boxes or containers.

6. Use of trolley is advisable for heavy objects.

9. Good housekeeping procedures

The points to be kept in mind are as follows:

1. Do not block exits.

2. Maintain a clean, dry, and grease-free work environment.

3. Maintain the condition of your steps and ladders.

4. Keep emergency equipment clean and unobstructed.

5. Ensure that all warning signs and labels are in good working order and are easily visible.

10. Equipment Safety

Extreme care should be taken while operating equipment. Before operating any tool or piece of equipment, one must be fully trained. Make sure that all

guards are in place and function properly and that all electrical connections are properly made.

- Precautions taken while using equipment are,

    1. Understand the correct operating procedures and safety precautions before operating the equipment.

    2. Ensure that all guards are in place and functioning before any machine is started.

    3. Report defective or unsafe equipment to a responsible individual to prevent serious injury.

    4. Keep edge-cutting tools properly sharpened. Store the same in safety covers.

    5. Use tools only for their intended use and make sure the size of the tool is right for the job.

    6. Lock the machines before lubricating.

    7. Do not wear loose clothing, jewelry, or keep long hair open may around machines which increase the risk of being caught in the machinery.

    8. Approach the supervisor for any queries about a machine safety.

11. Ventilation systems

The environment in which the workers work should be free from smoke, fumes and steam. Industries should have ventilation equipment with suppression systems to release fresh air.

Many industries use emergency shutdown systems or "panic buttons." These are installed so that a single switch can be used to turn off the power to a large number of pieces of equipment.

These devices are intended to be employed in the situation in which a person is electrocuted or becomes caught in a piece of machinery. In these conditions, quick action is required. The points to be kept in mind are:

- Hit the panic button.

- Locate and learn how to use the emergency shutdown.

12. Electrical safety

The points to be kept in mind are as follows:

➢ As human body is sensitive to relatively small values of current, worker can receive a shock or burn from any common electrical circuit.

➢ Worker should be made aware of the location of the main panel or sub-panels being used, and learn how to shut them off in case of an emergency. Notify the supervisor right away.

➢ Obtain permission from the electrician before using a new service.

➢ Electrical extension cords, if they need to be used, should be orderly and not allowed to become tangled. Such cords should be taped to the floor whenever possible as this will reduce the chance of someone tripping over them

13. Water supply

If a pipe breaks or bursts, the water may damage material, tools, and equipment or work already done. In addition, water may create an electrical hazard if it comes in contact with electrical panels or outlets. Locate water shut off point of the industry, shut the water off and notify supervisor at once.

14. Gas supply

Escaping gas can cause an explosion that could injure anybody or cause severe damage. When the valve handle is running parallel with the gas line, the supply of gas is flowing and on. Locate the gas shutoff in the industry, shut the gas off and notify supervisor immediately.

CARRY OUT RUNNING MAINTENANCE WITHIN AGREED SCHEDULES

Maintenance is the action to retain, fix or restore an item in a state where it can perform its required function by the combination of all technical administrative, managerial and supervision actions.

The maintenance strategy has a significant impact on the industry's bottom line, but many maintenance managers have trouble selecting an appropriate strategy or overlook their approach altogether. Benefits of optimizing maintenance strategy include extending asset life, reducing asset failures and downtime, minimizing repair costs, and improving health and safety.

It's important to follow agreed schedules to maintain the assets properly and ensure that they remain in working order. Cutting, sewing, washing, ironing, folding, packing and finishing machines are important for the production of garments. So it is necessary to keep them in the best operating condition at economical cost.

1. Maintenance department activities in garment industry

The maintenance department is mainly responsible to look after the machines and other production equipment in proper working condition and take corrective action against any environmental pollution

a. Functions of Maintenance Department

1. Inspection of all machines and other machinery in the industry, repairing and up gradation.

2. Maintaining and ensuring continuous power supply in the factory.

3. Maintaining the water plant, compressors, air conditioning systems, Generators and boiler.

4. Planning, design and implement any kind of expansion of the industry.

5. Purchase of new machinery.

6. Issuing of different spare parts and accessories according to the production requirement.

7. Housekeeping.

2. Responsibilities of machine mechanic

a. Daily basis work of machine mechanic

1. Check machine setting correct or not

2. Check oil level and oil leaks of the machine

3. Check un-usual noise of the machine

4. Check safety equipment

5. Check machine allocation

6. Check production plan

7. Check for any loose nuts or bolts.

b. Monthly basis work of machine mechanic

1. Cleaning of whole machine by opening parts

2. Check back/ front cover

3. Check Oil lubrication, Oil level/ oil filter condition

4. Check functioning of machine

5. Check condition of Machine table

6. Cleaning and blowing

7. Check Power on/ off switch

8. Check Motor and control box condition

9. Observe abnormal sound Connections

3. Machinery maintenance schedule and procedure

a. Daily maintenance

If a machine breaks down during its operation, floor mechanics are called in to repair it. If this is not achievable in a reasonable amount of time, the machine is relocated to the maintenance room and replaced by another machine, with the appropriate steps done to repair it. The daily record of maintenance work is kept in a systematic format. Following are few of the maintenance work which are conducted daily.

Activities carried out daily:

1. Check speed and working of the machine.

2. Complete cleaning of the machine.

3. Check un-usual noise of the machine.

Activities carried out every four hours:

- Check for oil leaks.

- Clean machine parts.

b. Monthly maintenance

It is a preventive maintenance to reduce machinery problem and increase machine life, execute as per predetermined schedule fixed at the starting of the year by regular basis. This maintenance program covers total servicing of the all machine, oil change, oil filter change, or change of any defective parts. Records of monthly maintenance works must be kept in specified format.

HAZARDS LIKELY TO BE ENCOUNTERED WHEN CONDUCTING ROUTINE MAINTENANCE

Regular maintenance is essential to keep equipment, machines and the work environment safe and reliable. Maintenance workers are more likely to be exposed to various hazards.

Potential hazards could be:

A. Dangerous substances,

B. Confined spaces,

C. Working at height,

D. Awkward positions,

E. Plant under pressure,

F. Moving parts of machinery,

G. Unexpected start-ups,

H. Chemical substances or dust in the air, etc.

Insufficient maintenance can result in unsafe circumstances, accidents, and health issues. Working alongside a running operation and in close proximity to machinery makes maintenance a high-risk activity with distinct dangers and risks.

In contrast to regular operation, direct contact between the worker and the machine cannot be decreased significantly in maintenance activities, where workers must be in close proximity to the processes.

Maintenance activities are critical for the health and safety of maintenance staff. They may also be critical for others, in particular, for the equipment users or the production operators.

According to the relationships between maintenance and production, some accidents can be traced back to maintenance failures, such as insufficient, inappropriate, or late maintenance. For example, if maintenance is not performed on a regular basis, the equipment or installation can become dangerous to maintenance and production personnel. Other accidents may result from the co-activity of the two types of operators for example repair without interrupting operation.

Maintenance operations include both disassembly and reassembly, often involving complicated machinery and working at height. These can be associated with a greater risk of human error, increasing the accident risk.

Maintenance often involves unusual work, non-routine tasks and it is often performed in exceptional conditions, such as working in confined spaces. Working in confined spaces may expose workers to risks, which are:

1. Exposure to harmful gas, fumes, vapours or lack of oxygen

2. Risk of drowning in water or free-flowing solids

3. Risk of getting injured due to fire or explosion.

4. Risk of getting burned by high temperature machines

The hazards are commonly grouped as physical, chemical, biological and psychosocial. The hazards may vary significantly between planned, preventive and repair or corrective maintenance tasks.

- Type of hazards are as follows:

Fig.: 4.4 Types of Hazards

1. Physical Hazard

   a. Mechanical movement - rotating elements e.g. flywheels, compressed springs, unexpected start-ups e.g. blockages cleared, trapped air in lines operating valves, restoration of power, computerized auto-start, failure of sub-standard parts and sewing machines

   b. Electrical - capacitors; high voltage; static

   c. Hydraulics - high pressure fluids

   d. Pneumatic - high pressure steam, gases, vapors

   e. Engulfment - oxygen deficient atmospheres

   f. Fire/explosion - extreme heat/cold, noise, vibration

   g. Work at Height – visibility, loading, unloading, etc.

2. Chemical Hazards

   a. Dusts and fibres e.g. heavily starched fabric materials,   accumulated polluted air within production line, fibre/fabric dust and tiny fabric rags.

   b. Dangerous substances e.g. chlorine, oxygen, hydrogen

   c. Toxic, oxidizing, explosive, flammable, corrosive

   d. Hydraulic fluids, oils, acids, alkalis, organic solvents

3. Biological Hazards

   a. Pathogenic bacteria, viruses, parasites, insects, moulds and fungi.

4. Psychosocial Hazards

   a. Time pressure, long hours, shift work

   b. Poor work organisation, unsocial working hours

Activities

ACTIVITY 1

Visit a Garment manufacturing firm, discuss with maintenance team and prepare a report on various types of maintenance conducted by them.

Materials Required:

1. Writing material
2. Ruler
3. Adhesive

Procedure:

1. Make a group of 4 students each.

2. Visit a garment manufacturing firm

3. Enquire about its maintenance activities.

4. Prepare a report of your observation with pictures.

5. Submit the report to the teacher for evaluation and feedback.

Check Your Progress

A. Fill in the Blanks:

1. A clean and hazard free workplace ensures the _____and health of the employees and visitors.

2. Overcrowding, together with improper storage of flammable materials, frequently creates serious _____hazards.

3. _____maintenance means routine maintenance, inspection and servicing of machines and systems to ensure smooth functioning and efficient production.

4. Locking out a machine means _____of the power feeding the machine.

5. The environment in which the workers work should be free from _____and steam.

B. Write short answers for the following:

1. What is maintenance? Briefly explain running maintenance.

2. What are hazards? Enlist different types of hazards.

C. Write long answers for the following:

1. Briefly explain activities of maintenance department.

2. What are the types of running maintenance?

Session 2: Maintaining Cleanliness

Maintaining clean and organized premises is one of the biggest struggles of the job. Keeping the machines in the production line clean and in perfect working order and the aisles of work area free of debris with the minimum of effort is very essential.

It requires a bit of effort and forward planning which can pay back several times with increased productivity.

The benefits of maintaining cleanliness

Working environment that is clean, safe, and efficient, motivates employees to take pleasure in their work. A place when clean also helps to make place look more organised and contributes to worker's efficiency.

COMPLIANCE WITH HEALTH AND SAFETY REGULATIONS /GUIDELINES

Section 11 of The Factories Act, 1948 suggests "Every factory shall be kept clean and free from effluvia arising from any drain, privy or other nuisance."

Whereas Section 12 advise that effective provisions should be established in every factory for the treatment of wastes and effluents resulting from the industrial process carried out therein, so that they can be rendered harmless and disposed of.

Section 13 specifies that effective and acceptable provisions should be provided in every factory for securing and maintaining enough ventilation via the circulation of fresh air, as well as such a temperature as will provide reasonable conditions of comfort to workers and prevent danger to health.

Section 14 suggest how dust and fumes to be handled in a factory as- Every factory where, as a result of the manufacturing process, dust, fumes, or other contaminants of such a nature and to such an amount as to be hurtful or objectionable to the employees employed within are released.

CLEANING PRACTICES

The types of work perform in the industry premises will determine how frequently it needs to be cleaned, but one should perform two kinds of cleaning schedule- deep and regular cleaning.

1. Deep cleaning

Over time, the floor of industry gets dirty; dust and grunge also gets accumulated on equipment, which can affect productivity. In this case machinery needs to be cleaned deeply. Time required in cleaning depends on what kind of work is performed, and may be different for each section of the production processes.

Deep cleaning of working area takes several hours to clean surface, tools and machines, using heavy duty cleaning equipment.

To perform the deep clean, each cleaning / housekeeping staff should be assigned an area of the premises, in order to ensure accountability. Each housekeeping staff should then be provided with the equipment and supplies they need to thoroughly clean everything in their designated area. They should be provided training to use any special cleaning equipment if they require. One should schedule the deep clean during a slow production period or a non-working day, so that there won't be any loss of productive work hours.

2. Regular cleaning

A messy work environment doesn't reflect well on the business and may have an impact on work quality and production speed.

Frequency of performing regular cleaning depends majorly on two factors, which are:

i. Type of work performed in the industry

ii. Frequency of visit of clients and suppliers in the working area.

**Following are the suggestion for Regular cleaning activities:**

1. Employees should be instructed to clean up any spills, debris, rubbish, etc. as they appear to prevent them from causing any sort of health / safety hazards.

2. Providing employees with a buffer time of around 5 minutes, at the end of every shift, to get their workspace clean and tidy so the next person can use it straight away.

3. Providing employees with the suitable cleaning equipment and supplies like cloth, dustpan, brush, paper towels, etc. to clean up any spills and messes on their own.

4. Management should ensure the presence of waste and recycling bins at each work station. Management should also encourage the staff to dispose of waste as soon as it appears rather than leaving it to build up. They should also set up a rotation for emptying the waste bins so they don't overflow and become a hazard themselves.

5. Equipment not used regularly, should be kept covered and cleaned once a week, to prevent dust accumulation which may potentially affect its performance.

6. Management should invest in cleaning equipment because it helps in making regular cleaning routines easier, faster and efficient as possible.

7. Make an inventory of every item that needs to be cleaned in the industry that could help the staff to clean it more efficiently.

8. A regular cleaning routine chart can also be maintained by the management to keep a track of cleaning schedules.

DIFFERENT TYPES OF CLEANING EQUIPMENT, SUBSTANCES AND THEIR USE

A variety of necessary and vital cleaning equipment and substancesare designed and available in various colours, materials, mechanisms, shapes, sizes and styles to meet a cleaning need. They are used to clean easily, effectively and efficiently.

Types and uses of cleaning equipment:
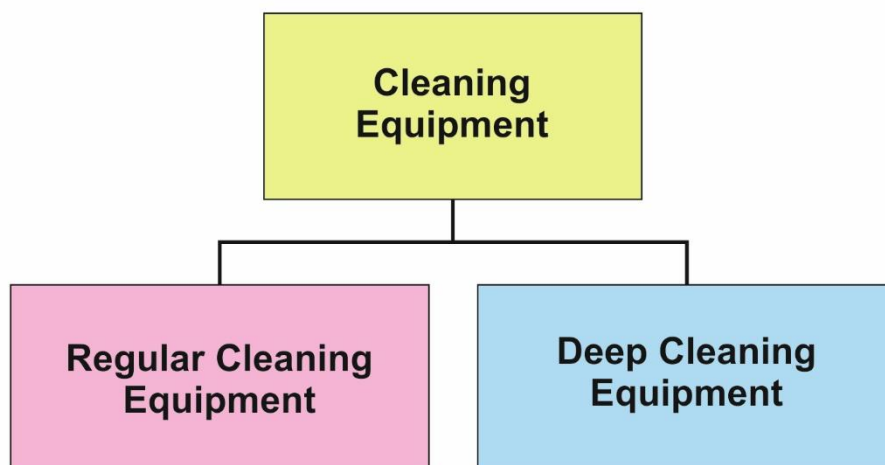
Fig.: 4.5 Types of Cleaning Equipment

1. Regular Cleaning Equipments

1. Broom – It is a cleaning equipment made of bundle of straws or twigs attached to a long handle used to sweep the floor area.

1. 2. Dustpan-   A cleaning tool used to scoop the dirt and wastes from the floor.

2. Water Hoses – It is used to supply the water in washing, toilets and other cleaning units.

3. Bucket and mug - To carry water or any other cleaning substances within the premises area and to clean the work areas.

4. Scrubber - A scrubber is a type of wide <u>brush</u> with a <u>long shaft</u> used for <u>cleaning hard floors</u> or surfaces. At the end of shaft attached soft <u>bristles</u> to sweep dirt away and hard bristles for brushing. It may be used wet, with water or cleaning fluids. There may also be a detachable mechanism to fix <u>mop</u> cloth, either soaked in water for cleaning or dry for wiping dry surfaces.

5. Dust cloth – Dust cloth is used to clean all fine dust build up on any surface.

6. Sponge - A sponge is a soft, porous cleaning device that is used to clean impermeable surfaces. Sponges excel in absorbing water and other water-based solutions.

7. Tissue paper- Tissue is a type of absorbent and disposable paper. They can be used for the same things as regular towels: drying hands, wiping windows and other surfaces, dusting, and cleaning up spills. They're commonly found in public restrooms, where paper towels are thought to be more hygienic than hot-air hand dryers.

2. Deep Cleaning Equipments

1. Spray cum vacuum suctioning cleaner– Cleaning is done automatically. It is used in professional cleaning to apply a pressured, diluted cleaning solution to filthy or contaminated surfaces, followed by vacuum suctioning to remove the applied liquid, as well as the suspended solids and dissolved pollutants.

2. A floor scrubber – It is a floor cleaning device that cleans bigger areas by injecting water with cleaning solution, scraping, and removing the residue off the floor as a floor mop or floor brush.

3. Auto floor scrubber – Auto floor scrubbers are used to scrub a floor, clean of light debris, dust, oil, grease or other marks on floor. These machines

have an automated system for dispensing cleaning solution and then vacuuming it up.

4. Washing machine - For bulk washing, the industry uses a high- capacity washing machine. For washing a smaller number of garments and sample pieces, the domestic washing machine is used for removing dirt of soiled mop clothes and other materials.

5. Vacuum washer - A wash-head of a vacuum washer sprays water without detergent and quickly suctions it out, generating a swirl of water. The drying time is substantially reduced by instantly reabsorbing the wash water. This cleaning approach is appropriate for both intermediate and basic cleaning. The technique works on all water-resistant surfaces, such as carpet, upholstered furniture, wooden floors, stone, plastics, and so on.

6. Vacuum cleaner -   Both scrap and dust vacuum cleaners are used to clean   all production line floors to remove the scraps and dust quickly to keep the working area clean and tidy.

Cleaning substances

Cleaning substances are hard-surface cleaners available in the form of liquids, powders, sprays, or granules and are used to remove dirt, including dust, stains, bad smells and clutter on surfaces. Purposes of cleaning agents include health, beauty, removing offensive odor and avoiding the spread of dirt and contaminants of work areas.

Disinfectants are cleaning agents that can kill bacteria or other microbes on surface of commonly used items like door handles, working tables etc. Other cleaning substance is degreaser which contain organic solvents and help to dissolve oils and fats.

a. Types of cleaning substances are:

1. Detergents

Detergents contain significant quantities of a group of chemicals known as 'Surfactants' They are similar to soap but are more soluble in hard water. It works by breaking up dirt or soil, making it easy to wash it away. Detergents are commonly available as powders or concentrated solutions. Detergents are also foaming agents of varying degrees.

2. Degreasers

Degreaser is used to remove grease from surface such as machine tops, counters and grill backsplashes. Methylated spirits or white spirit is commonly used for degreasing. It usually consists of strong alkalis, which can dissolve proteins and disperse grease or similar substances. It is generally based on caustic soda or sodium metasilicate. Sodium carbonate is also used as stain remover and for clearing blocked drains, cleaning all types of washers and other industrial equipment.

3. Abrasives

Abrasives are chemicals used to clean dirt from hard surfaces. In commercial industries abrasives are used to clean floors, pots and pans. The cleaning action of abrasives depends on the presence of fine particles which when rubbed over a soiled hard surface, dislodges the soil, remove tarnishing and surface scratches.

The various types of Abrasives are as follows:
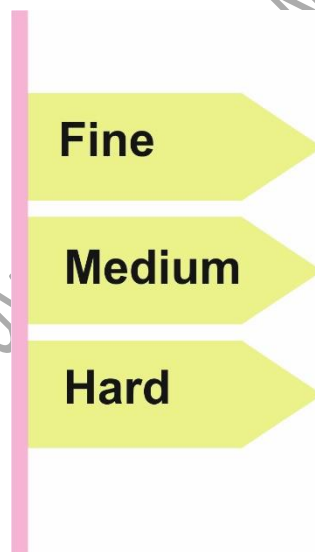
Fig.: 4.6 Types Of Abrasives

Fine abrasives are preferred over coarser ones. For example nylon pads, powdered pumice, feldspar, fine ash, filtered chalk, etc. are available in liquid, paste or powdered form.

Examples of Medium abrasives include rottenstone, salt, scouring powder and scouring paste. Scouring powders are made up of fine particles of pumice mixed with soap/ detergent, alkali and bleach.

Examples of Hard /coarse abrasives include bath bricks, sandpaper, powdered pumice, steel wool and emery paper. Abrasives are used along with

other substances such as bleaches, anionic surfactants, alkaline builders and perfumes.

4. Acids

Acid cleaners are used to remove mineral deposits and for descaling or removing rust from any surfaces. Often, surfactants and corrosion inhibitors are also added to the acid. Acids dissolve metals and are thus used to remove metal stains, stains from deposits around taps, and tarnish on copper and brass, among other things.

Vinegar can also be used to clean hard surfaces and remove Calcium deposits.

a. Acidic drain cleaners use sulphuric acid to unblock clogged pipes by dissolving greases, proteins and even carbohydrate-containing substances such as toilet tissue.

b. Hydrochloric acid (HCL) is a common mineral acid. Stubborn hard-water deposits are removed by concentrated HCL. **DiluteHCL** is used for removing stubborn scales and deposits from sanitary ware.

c. To remove tarnish and stains from metals such as copper and brass, acetic acid is used.

d. Toilet cleansers use their acid content to clean and sanitise the W/C pan while also removing metal stains. They come in a variety of forms, including crystalline, powdered, and liquid.

- Powder toilet cleaners are in the form of solid salts, such as Sodium Hydrogen Sulphate.

- Liquid toilet cleaners contain other acids like dilute hydrochloric, phosphoric or formic acid.

These acids can convert the calcium carbonate into salts that are soluble in water and can easily be rinsed away. The toilet brush is used to scrub the toilet, remove stubborn stains and biological debris.

5. Alkalis

These are used in the form of liquid and powders. Many alkalis have bleaching properties. Alkaline cleaning chemicals include bleach and ammonia. These are dispersants that keep dissolved dirt and rust from resettling.

Caustic alkalis are very strong alkalis. Cleaning products based on caustic soda are used to unclog drains and clean industrial equipment. Fats, such as

grease, oils, and protein-based compounds, can be dissolved by alkaline cleaners. Strong bases, such as sodium hydroxide or potassium hydroxide, are found in cleaning products.

6. Neutral

Non-ionic surfactants are used in neutral washing products to disperse various types of dirt. Water is the most popular cleaning agent that, even when used alone, can dissolve some type of dirt. It becomes more effective when combined with additional cleaning agents, such as a detergent.

Water is used to carry the cleaning materials to the soil, suspend the soil, remove the suspended soil from the cleaning site and rinse the detergent solution from the surface.

7. Organic Solvents

These are substances that dissolve fats, oils, grease, wax, and other similar substances. Methylated spirit, white spirit (turpentine replacement), carbon tetrachloride, and other kinds of alcohol such as isopropyl alcohol and rubbing alcohol are all examples of organic solvents. The first two are extremely flammable, whereas carbon tetrachloride is toxic if inhaled and should never be used in a confined space. Many of them are commonly used to remove stains. They are irritating to the skin and might cause fires.

8. Other Cleansing Agents

1. Polishes

They smooth out the unevenness of the article's surface by applying a thin coating of wax on it. On the surface, it also serves as a protective layer.

a. Metal polishes - They come in the form of a liquid or a paste. Plate powder, mentholated spirit, and Ammonia are examples of fine abrasives waxed with grease solvent and occasionally with an acid. When abrasive is rubbed on the metal's surface, friction is created, which removes tarnish and produces a shine.

b. Floor polishes – Spirit-based polishes, which come in paste or liquid form, may contain Silicon. It is suitable for wood, cork, linoleum, and magnesite floors. Water-based polishes are emulsions made up of fine natural and synthetic wax particles mixed in water. They can be used on thermoplastic, rubber, PVC, asphalt, and combination floors, as well as wood, cork, magnesite, and linoleum that has been sealed.

2. Floor Seals

These are placed as a semi-permanent finish to flooring surfaces to act as a protective barrier against dirt, germs, fluids, grease, stains, and bacteria. They protect the surface from scratches and make it easy to clean.

3. Bleaches

Bleaches are alkaline stabilised sodium hypochlorite solutions that are excellent for cleaning stained sinks, W/C pans, and other surfaces. They contain germicidal and whitening effects. With oxidation, bleaches can break down the tough stains. Sodium perborate is a common ingredient in detergents for washing fabrics.

4. Disinfectants and De-odorants

Disinfectants, antiseptics, and deodorants are not cleaning agents, but they are frequently used in cleaning operations. With their fragrance characteristics, these help to keep rooms free of infections and fresh.

a. Air sanitizer – It is a disinfectant/sanitizer that is used to disinfect or sanitise inanimate surfaces in the institutional and/or commercial environment by limiting or moderating the growth or development of microbiological organisms such as bacteria, fungi, or viruses. Some glycol vapours, such as tri-ethylene glycol, can operate as an air sanitizer.

b. Deodorants – It can hide unpleasant odours by interacting chemically with the particle that causes the odour or by having its own scent dominate. Restrooms, guestrooms, guest bathrooms, store rooms, and public areas such as lobbies all use them. Aerosol sprays, liquids, powders, and crystalline blocks are the most common forms.

c. Carbolic soap – It is also known as red soap, and is a mildly antiseptic soap that contains carbolic acid and/or cresylic acid, both of which are phenols and is derived from coal tar or petroleum. Carbolic acid is a skin irritant that is utilised in a wide range of industrial and consumer products.

5. Glass Cleaners

Glass cleaner comes in sprays or liquid form and is made up of water-miscible solvents. It's frequently used with isopropyl alcohol, as well as modest amounts of surfactants and alkali, to boost the cleanser's polishing effect. It can be sprayed directly onto windows, mirrors, and other glass surfaces, or it can be applied with a soft cloth and then rubbed off with a soft, lint-free glass cloth.

6. Metal cleaners

Metal cleansers contain chelating agents, abrasives, and surfactants for cleaning stainless steel sinks, faucets, metal trim, silverware, and other ferrous metals. These agents include citric and phosphoric acids, which are nonaggressive. Stainless steel, nickel and chromium cleaners contain lactic, citric or phosphoric acid.

Nonferrous metal cleaners contain ammonia, ammonium oleate, stearate and chelating agents like ammonium citrate and oxalate.

7. Absorbents

They carry out the action by absorbing the stain or grease. They are used only when the quantity of strain is too much. e.g. starch powder, fuller's earth, bran, French chalk powder, etc.

8.Anti-mildew agent

The chemical which protect the fabric material and garments from mould and mildew namely zinc chloride. It is used in textile / garments store and industries.

9. All-purpose cleaners

All-purpose cleaners are usually concentrated solutions of surfactants and water softeners, which enhance the behaviour of surfactant when used with hard water. Common examples could be alkyl benzene sulfonates, anionic detergent and modified fatty alcohols.

SAFE WORKING PRACTICES FOR CLEANING AND THE METHOD OF CARRYING THEM OUT

Safe work practices are steps that guide a worker to perform a task with minimum risk to people, equipment, materials, environment and processes.

Safe working practices for cleaning are:

1. Understand the risks and hazards of the workplace during cleaning hours and take necessary steps to reduce risk of work-related injury.

2. Measures must be taken to ensure that cleaning operations can be carried out safely.

3. Use mechanical aids for cleaning, wherever possible.

4. Use ergonomically designed cleaning equipment, and re-arrange the work area so that everything is within easy reach.

5. Use necessary tools and personal protective equipment to carry out safe cleaning and maintenance

6. Wear protective equipment to suit the cleaning tasks. Gloves, full-face mask and apron can reduce risk of injury from concentrated cleaning substances and sharp equipment. Respirators may be used while cleaning filters.

Fig.: 4.7 Personal Protective Equipments

7. Surrounding windows must have curtains or blinds which workers can adjust to prevent reflected glare during cleaning of production floors and machineries.

8. Humidity- It is important to maintain ventilation and humidity at a level which keeps the cleaner comfortable.

Methods for cleaning

It is the best practice to use a two or three-bucket system for mopping. This can be facilitated by using a cleaning cart or on a separate trolley, if a full cleaning cart is not available. The various methods and tools used in the cleaning process are as follows:

 1) Two-bucket system – It is used for routine cleaning with one bucket containing a detergent or cleaning solution and the other with rinse water.

2) Three-bucket system- It is used to for disinfection. The detergent or cleaning solution is in one bucket, the rinse water is in another and the disinfection or disinfecting solution is in the third.

3) The rinse water bucket is used to rinse and wring out the mop before re-dipping it into the prepared solution. This extends the solution's useful life, saving both time and money.

The points to be kept in mind along to ensure proper cleaning are as follows:

1. Cleaning staff should be trained on appropriate use, application and removal of PPE for all environmental cleaning procedures and tasks for which they are responsible.

2. Put on all parts of PPE before entering a working area and remove it (for disposal or reprocessing, if reusable) before leaving that area.

3. Include required PPE for specific tasks in standard operating procedures and other visual job aids.

4. All PPE parts (reusable and disposable) should be available in sufficient quantity, well maintained (good quality, appropriately stored stocks) and clean before use.

5. Reprocess (i.e. clean and disinfect) all reusable PPE, at least once a day

6. Use reusable rubber gloves for cleaning.

7. To avoid interfering with gloves or affecting hand hygiene, keep sleeves at or above the elbow.

8. Wear rubber-soled closed toe shoes or boots (but not sandals), to prevent accidental injury.

9. Regularly reprocess all reusable items (i.e. thoroughly clean, disinfect, and dry).

10. Whenever a solution is changed, thoroughly clean, disinfect, and rinse equipment such as buckets and containers. To allow full drying, store them upside down.

11. Launder mop heads, floor cloths and soiled cleaning cloths at least once a day (e.g. at the end of the day) and allow them to fully dry before storage and reuse.

12. As directed by the manufacturer, reprocess all reusable materials and equipment in a separate area that is not used for other purposes.

13. Cleaning aids and products should be disinfected by thoroughly immersing them in boiling water or a disinfectant solution for the

required contact time, then rinsing with clean water to eliminate any residue.

14. All reusable supplies and equipment should be kept clean and in good operating condition at all times. All reusable equipment should be evaluated on a regular basis and replaced or repaired as needed.

CARRYING OUT CLEANING ACCORDING TO SCHEDULES AND LIMITS OF RESPONSIBILITY

During the whole Garment production process, management should ensure that maintenance is coordinated, scheduled and performed correctly as per plan, and that the equipment or workplace is left in a safe condition for continued operation.

Environmental Cleaning guidelines deal with cleaning of the physical environment as it relates to the prevention and control of infections. Administrators, supervisors of housekeeping departments, infection prevention and control experts, construction/maintenance project supervisors, and public health officers are among those who fall into this category.

Cleaning according to schedule and responsibility

1. Written procedures for cleaning and disinfection of working areas and equipment should be followed.

   - Defined responsibility for specific items and areas

   - Clearly defined lines of accountability

   - Procedures for daily and terminal cleaning

   - Procedures for outbreak management

   - Cleaning and disinfection standards

   - Frequency of cleaning and disinfection.

2. Regular cleaning is necessary to maintain a standard of cleanliness.

3. Thorough and timely cleaning.

4. Monitoring of environmental cleanliness.

5. Ongoing review of cleaning procedures.

6. Cleaning schedules should be revised and developed, depending on:

   - Surfaces of high-touch or low-touch items / equipment,

- The type of activity taking place in the area and the infection risk associated with it,

- The vulnerability of the cleaning staff working in the area.

7. Each health care facility should have written rules and procedures for proper cleaning that clearly identify the frequency and amount of cleaning, as well as the cleaning authority.

8. Institutions should have in place systems with regard to frequency of cleaning. They should periodically conduct audits to ensure a clean environment during working hours.

9. Cleaning audit results should be evaluated and analysed, and cleaning employees should be given feedback.

10. To detect and solve cleaning issues, an action plan should be developed.

11. Knowledge of Personal Protective Equipment (PPE), hand hygiene and safe work practices is required for every cleaning staff.

12. All chemical cleaners and disinfectants should be properly labelled and kept to reduce the danger of contamination, inhalation, skin contact, or bodily damage.

13. Develop a facility-level monitoring and maintenance schedule that clearly describes the items, inspection frequency, and responsible personnel. Certain equipment, such as floor cleaners, may require regular maintenance checks by qualified personnel, as directed by the manufacturer.

14. Prepare and keep a service record, and make it available to the cleaning programme manager for examination.

Storage of cleaning substances

Cleaning agents with a longer shelf life are bought in bulk because of the reduced costs.

Points to be considered for storage of cleaning substances are:

a. Storage racks should be strong enough to carry the weight of the items. Heavier containers must be kept on the bottom shelf.

b. The store-room should always be well lit, well ventilated and clean.

c. Ensure that the lids of the containers are tightly fitted.

d. While issuing cleaning substances, use appropriate dispensers and measuring apparatus.

b) Ensure that no residual deposits of the cleaning substance is left around the rims of the containers.

c) Spillage should be avoided. And if spill occurs, it should be cleaned immediately.

d) A systematic procedure should be followed for rotating stocks.

e) Organic solvents, strong reagents and polishes should be kept away from heat sources.

f) Stock check should be conducted at regular intervals.

g) Store should be locked when not in use.

Activities

ACTIVITY 1

Prepare a geographical poster on PPE kit for safety.

Materials Required:

1. Writing material

2. Ruler

3. Adhesive

Procedure:

1. Based on your understanding, prepare a graphical and interactive poster on PPE kit for safety.

2. Display the same in your class.

Check Your Progress

A. Fill in the Blanks:

1. Working environment that is clean, safe, and efficient, _____ employees to take pleasure in their work.

2. _____cleaning of working area takes several hours to clean surface, tools and machines, using heavy duty cleaning equipment.

3. _____are cleaning agents that can kill bacteria or other microbes on surface of commonly used items like door handles, working tables etc.

4. _____is used to remove grease from surface such as machine tops, counters and grill backsplashes.

5. _____cleaning is necessary to maintain a standard of cleanliness.

B. Write short answers for the following:

1. What are the benefits of maintaining cleanliness in apparel industry?

2. Describe various cleaning practices.

C. Write long answers for the following:

1. Briefly explain different types of cleaning substances.

Session 3:   Operation of Machinery, Equipment and Tools Safely and Correctly

The most important concept to remember is that - one is responsible for one's own safety and the safety of others. Most safety practices are though very common, unfortunately can be forgotten or overlooked unless one makes safe practices a habit or an instinct.

GENERAL SAFETY

By following the right procedures, workers will commit themselves to safety on the job and with that everyone will be benefited. Accidents may occur in many ways but most often can be based on ignorance or carelessness.

Safety precautions to be followed in work area are as follows:

1. Walk instead of running - People who rush around in the work area tend to increase the likelihood of an accident.

2. Concentrate on work - Stay completely alert on the job. Lack of interest, personal problems, and distraction by others can all lead to serious accidents in the working area.

3. Understand all the rules for operating equipments. Never operate the equipment until trained

4. Never work under the influence of drugs or alcohol.

5. Pay attention to moving objects, such as equipment, cloth cutter and driller, trolleys etc.

6. Avoid back strain by lifting the materials in proper position. Accidents are caused due to overlooking of situations involved with risk. They are the result of not knowing the proper way to do a task, carelessly performing an operation or job, or not being consciously aware during the performance of a task.

The most common accidents in the working area are as follows:

a. Cuts

Cuts are too common in the industry because cutter, needle and other cutting equipment and tools are constantly in use. These cuts, as well as the severity of the cuts, can be avoided by following the right safety standards and following proper cutting methods.

Accidental cuts can be prevented if the expertise of using a cutter has been mastered. If they do occur, however, they should be treated safely and promptly. If infection sets in, it can result in more serious consequences.

b. Burns

Two types of burns occur in the working area-

- Minor
- Major

Minor burns occur when an exposed body part comes into contact with a hot surface, such as a steamer, a hot air oven, or concentrated chemical compounds.

When grease and chemicals are spilled, steam is discharged too quickly, or gas is released unintentionally, major burns occur.

Burns are more painful and take longer to heal than cuts. If a blister forms as a result of the burn, it should be treated as soon as possible by skilled medical staff.

c. Falls

Falls can cause some of the most serious injuries in the commercial industry. They may disable or incapacitate a person for life.

Falls are caused by extreme carelessness, wet floors and aisles, spilled materials, rags, grease, and by torn mats or spread rags and floor boards.

d. Strains

Strains are very painful and can cost you a lot of time at work. They are caused by carrying excessively heavy loads and using inappropriate lifting techniques. The majority of strains do not require medical attention, but they do necessitate time and care in order to heal properly.

HANDLING MATERIALS, MACHINERY, EQUIPMENT AND TOOLS SAFELY AND CORRECTLY

Employers are legally required to ensure that all equipment and materials supplied and used for work purposes are safe and does not pose a long-term hazard or risk to employee's health. Employees must have sufficient knowledge and training to handle materials, machinery, equipment and tools safely.

Safe practices to handle machinery, equipment and tools are:

1. Worker should possess the required know how of machinery, equipment and tools used for the job.

2. Routine maintenance must be carried out for all machines, equipment and tools.

3. Inspection at regular intervals to avoid wear and tear that might compromise safety.

4. Proper inspection of machines before use if the equipment's safety depends on installation

5. Noise and vibration levels should be checked and should not affect the operator and others.

6. Use hand-held tools safely- Anyone who uses a hand-held tool might be at risk of injury.

7. Band knives can cause serious wounds unless effectively protected. The circular knife of portable cutting machines should also be similarly protected.

8. If power presses are used, adequate machinery guarding, preferably fixed, is necessary to keep hands out of the danger area. Guards which prevent the pressure head from coming in close contact (most importantly, the hand) comes within the area are to be used. All presses, with their steam and pneumatic supplies, must be frequently inspected.

9. The drive motors and the needle are the two most dangerous parts of a sewing machine. Long lines of machines are still driven by under bench shafting in several places. When workers bend under benches to grab goods or fix belts, many entanglement mishaps might occur, so it's vital

that this shafting is effectively protected by enclosure or close railing. Several different types of needle guard, which keep fingers out of the area of risk, should be used.

10. Handling old equipment - Ensure that it is safely and properly handled, stored, transported and recovered or disposed-off. If the equipment contains hazardous components, follow additional requirements under hazardous waste legislation.

11. Personal Protective equipment -Workers in many activities may require special protective equipment at work like helmets, bump caps or hair nets for the head crash and climbing. Hearing protection should be worn if exposed to high noise levels. Safety glasses, goggles and face shields can also be used to prevent eye hazards. As a standard, everyone should wear safety spectacles, goggles and face shields while using hand or power tools. Other PPE types likes Safety boots or shoes, gloves, gauntlets, mitts, cuffs, armlets or elbow protectors, overalls, boiler suits, high visibility clothing, leggings and gaiters for different activities in production line are required. Cutting machine operators must wear a protective glove, preferably of metal mesh.

12. Amputation and Caught-in Hazards – Machine guards are mounted on machines to protect employees from moving parts. Every day, equipment should be checked carefully to confirm that all guards are in place.

13. Chemical Hazards – Chemical-processing equipment can be a source of a variety of risks. Leaks can result in slipping dangers and chemical exposure. Chemical-leaking hoses could cause respiratory problems for workers working nearby. As a result, caution must be given when using such devices.

14. Sharp Edges – Walking very close to machinery area, may be hazardous if sharp edges are not guarded. Hence equipment mounting brackets, signages and control boxes should be checked regularly to see if sharp edges are present.

15. Ensure that all equipment are well maintained and checked regularly. All equipment should be removed from the platform, at the end of the working day, and all power supplies should also be switched off.

16. Risks caused by workplace equipment - Cutting equipment, forklift trucks, equipment using heat or bright light, can cause risks not just during the normal operation of the equipment but also during installation, maintenance, repairs, breakdowns and servicing. Hence, use of appropriate warning signs is advisable.

Tool safety

Workers should be taught how to use tools in a safe manner. When tools are misplaced or handled incorrectly by workers, they can be dangerous.

Following are some suggestions for safe handling of tools are:

a. Tools should never be tossed but should be properly passed from one employee to the next. Pointed tools should be passed with the handles facing the receiver or in their carrier.

b. Workers carrying large tools or equipment on their shoulders should pay particular attention to the workspace clearances.

c. Cutter and screwdrivers should never be carried in a worker's pocket. In a toolbox, pointed down in a tool belt / pocket tool bag, or in the hand with the tip always held away from the body are all acceptable ways to carry them.

d. Tools should always be put away, when not in use. Leaving tools on an elevated structure such as a scaffold, poses a significant risk to workers working below the elevated structure.

e. Fabric cutting tools - Cutting tool guard must be correctly set in order to give the necessary protection to the hand positioning the material, otherwise it may have a risk of accidental cuts. Supporting and maneuvering a cutting machine, while stretching across the cutting table, can present a risk of neck, upper-extremity and back disorders.

f. Handling rolls of fabric, which can weigh up to 32 kg and must be lifted above the head onto a rack for spreading, also poses muscular hazards. Proper material-handling equipment can eliminate or reduce these risks.

g. Sewing machine operators who operate in a seated position at poorly built workstations, executing the same operation throughout the workday with highly repetitive, time-pressured work are at a significant risk of acquiring musculoskeletal disorders. It is necessary to take proper precautions.

h. Adjustable seats and worktables have the ability to reduce the dangers connected with using a sewing machine.

i. Finishing workers, such as pressers, are frequently required to work standing and in static positions. Many of these occupations can benefit from the addition of chairs, stools, or sit-stand chairs. With a slanted mechanism, table tops may be adjusted to the correct height for the operator, allowing them to work in a more comfortable

position. Hands, wrists, and arms can be relieved of some stress by padded table edges and appropriately made and sized equipment.

j. Burns and ergonomic dangers can occur when using presses and irons. The majority of the presses are constructed with two-handed controls, which eliminates the risk of a hand becoming stuck in the press. Working on a pressing machine also puts you at risk for shoulder, neck, and back injuries due to repeated overhead reaching and standing while using the foot pedals. By properly situating the worker at the machine make this task safer and minimise the excessive stress.

k. Ticketers who use manual ticketing guns to place tags on finished garments, are at risk of hand and wrist injury with highly repetitive operations. Automatic ticketing guns can decrease the force required to perform the operation, hence reducing stress and strain on the operator's fingers and hands.

l. Many injuries in warehouse activities, such as lifting and overhead work, are caused by manual material handling. Mechanical material handling equipment such as forklifts and hoists, can reduce injuries caused by lifting heavy lifts. This can also be reduced by designing the distribution workplace with adequate material handling, such as positioning of conveyors and worktables at appropriate heights.

m. Chemical exposure - Workers at every stage of apparel production may be exposed to the chemicals used in fabric finishing, the most common is formaldehyde. Formaldehyde releases into the air from fabric in the form of a gas. Workers may also have skin exposure to formaldehyde as they handle the fabric. Exposure to formaldehyde can be prevented by allowing the fabric to blow off-gas in a well-ventilated area before it is handled. Workers must wear gloves or apply protective cream.

Instruction for Safety at work place are as follows:

1. Keep the work area clean, tidy, well swept/washed and well lit. Floor should be level and must have a non-slippery surface.

2. Do not remove any guarding device; before operating, the operator must ensure that guarding devices are in position and good working condition.

3. Before measuring, cleaning, maintaining, or adjusting the machinery, follow the lock-out procedures.

4. Check and adjust all safety devices before operation.

5. Wear appropriate personal protective gear as prescribed, including CSA-approved safety glasses with side shields.

6. Ensure that all cutting tools and blades are clean, sharp and rust free and should be able to cut freely without extra effort.

7. Ensure there is enough space around the machine for operator, maintenance team and cleaning staff to do their job freely.

8. Ensure that all stationary equipment /machines are anchored securely to the floor.

9. Maintain distance with the cutting head and all moving parts of the machine, to avoid any accident.

10. Avoid awkward positions and postures as sudden slips could cause the hand getting harmed by the cutting tool or blade.

11. Do not leave machines unattended: turn OFF the power, when not in use.

12. Avoid distracting the operator; horseplay can lead to hazard and injuries.

13. Wearing loose-fitting clothing, gloves, neckties, rings, bracelets, or other jewellery that could get tangled in moving parts is not a good idea. Long hair should be kept out of the way, and rags should not be used near the machine's moving parts.

14. Return all portable tools to their proper storage place after use.

15. Clean all tools after use.

16. Use a vacuum cleaner or a brush to remove any rag cuttings.

17. Do not use compressed air, to blow debris from machines or from worker's clothes.

18. Keep the tools out of the aisles and out of the way of other workers. Knives and scissors must be sharp; dull equipment pose a greater risk than sharp ones. Cracked saw blades must be removed from service immediately; else, an accident may occur.

19. In the presence of combustible substances, iron or steel hand tools may produce sparks, which could lead to an ignition. Spark-resistant instruments made of nonferrous materials should be used near flammable gases, highly volatile liquids, and other explosive chemicals wherever this hazard exists.

20. Because power tools can be exceedingly dangerous if handled incorrectly, they must be equipped with guards and safety switches. Electric, pneumatic, liquid fuel based, hydraulic, and powder-actuated power tools are classified according to their power source.

USE CORRECT LIFTING AND HANDLING PROCEDURES

Musculoskeletal problems often emerge from poor work place or job design. Among the most common risky activities are as follows:

- Heavy loads

- Difficulty in gripping

- Excessive use of force

- Repetition

- Twisting and other awkward postures.

Some of these problems can be prevented in following ways:

1. **Manual handling of fabric rolls often close to machinery**, e.g. lifting to and from store room, in storage and dispatch areas, shelves, racks, trolleys and stillage, in quality control areas, reduces the risk of hazard.

Fig.: 4.8 Manual Handling of Fabric Rolls

a. Mechanical methods of handling the rolls, for e.g. on a conveyor and mounting on roller tracks.

b. Organize rolls according to weight, so that heavier rolls are stored at a convenient height for handling. Stackers with adjustable widths are ideal for lifting and lowering rolls in storage facilities. A roller track attached to the top of two support arms allows rolls to be passed easily to and from storage racks. The height of the trolley, which is supported by wheels, may be simply modified using a foot pump. The trolley is especially designed for transporting and moving rolls in the confined spaces of cutting section.

c. Rolls exceeding a specific weight can be routed to a truck pick-up point for loading, while lighter rolls are diverted to a manual pick-up station, where personnel can pick up the roll before bringing it to the vehicle.
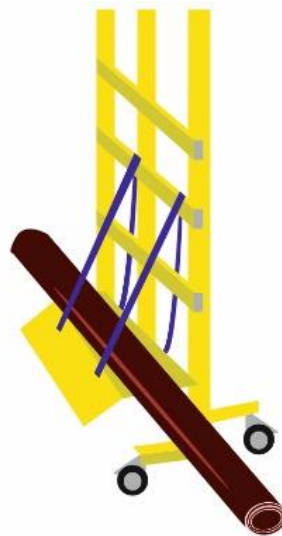
Fig.: 4.9 Mechanical handling of fabric rolls

2. **Handling loosely folded cloth at intermediate stages of the production process,**e.g. moving cloth to or from machines, inspection and quality control areas, including lifting to or from weighing scales.

A lightweight 'stretcher-board' can be utilised to reduce the distance through which the load is lifted as well as increase its stability and give a more uniform distribution of weight between two lifters. It also helps with grip and the ability to implement the proper force during the lift.

1. **Handling boxes** –It happens mainly in delivery and storage areas, loading and unloading from vehicles. Suspended overhead rail system allows the load to move freely within the storage area. Pneumatic grippers grasp the box securely and scales built into a roller conveyor to compensate for the weight of the load, allowing it to be moved with minimal effort. The device can be adapted to suit a range of different items and containers. Use of mechanized procedures reduces the risks.

2. **Lifting to and from bins, stillage, trolleys and machinery**- Trolley fitted with a self-leveling base can be used. As the material is removed, the suspended base rises, maintaining a constant height from which to lift an inner lining thereby preventing material from being caught in the springs.

3. **Working around machinery**- Use a mechanical handling device suspended from an overhead support or rail that grabs the package's centre and assists with lifting and manoeuvring by balancing and supporting the load.

4. Maintenance tasks can lead to some of the most hazardous handling operations. Flexible multi-purpose handling devices like tool-box trolley can be more practical during machine installation to minimize repetitive lifting of heavy loads at work place.

5. Do not attempt to lift by bending forward. Bend your hips and knees to squat down to load, keep it close to the body and straighten the legs to lift.

6. Any heavy object should never be lifted above shoulder level.

7. Avoid turning or twisting of body, while lifting or holding a heavy object.

8. **Work safely at height or in a confined space** -Plan work to be carried out at height. Plan steps to reduce the risks of all falls liable to cause personal injury or to anyone on the premises / site, e.g. employees, visitors and contractors. Make sure roofs, working platforms and walkways are safe.

MAINTENANCE OF TOOLS AND EQUIPMENT

A competent employee must regularly inspect, test and maintain the machine's guards and safety control system with reference to manufacturer's instructions. This will ensure the reliability and integrity of the safety system.

Maintenance and repair program should specify –

1. Where, how much, what type of and how often servicing is required?

2. Responsible worker for conducting the repair and maintenance program.

3. What standards to be used for performance testing and evaluation?

4. Program should be reviewed regularly to ensure their effectiveness. Develop, implement and maintain an accurate record of maintenance.

Following are the suggestions for Maintenance of machinery and tools

1. Carry out cleaning according to schedules and limits of responsibility.

2. Workers should take all practical steps to make sure all hazardous machineries are switched-off, before any cleaning or maintenance is done and whether it is safe to clean, maintain and repair. Standard procedures must be followed by trained workers for these activities to be performed safely.

3. Establish and follow a safe work system.

4. The machine should run at the slowest practical operating speed for cleaning, loading and setting up.

5. Restrict access and control of danger areas to one person only.

6. Emergency stop controls can be set within immediate reach.

7. Employers should maintain and keep machinery in sound operating condition at all times. They can manage the maintenance using:

   a. Preventive maintenance schedules.

   b .Regular inspections.

   c. Unsafe condition reports and feedback.

8. Carry out running maintenance within agreed schedules.

9. Carry out maintenance and cleaning within one's responsibility.

10. Report unsafe equipment and other dangerous occurrences.

11. Ensure that the machine guards are in proper place.

12. Use correct lifting and handling procedures for the tools and equipment.

13. Store cleaning equipment and tools safely after use.

Activities

ACTIVITY 1

Visit a Garment manufacturing firm, discuss with the safety officer / team and prepare a report on safety measures adopted by them.

Materials Required:

1. Writing material

2. Ruler

3. Adhesive

4. Camera for clicking pictures

Procedure:

1. Make a group of 4 students each.

2. Visit a garment manufacturing firm

3. Enquire about its safety measures.

4. Prepare a report of your observation with pictures.

5. Submit the report to the teacher for evaluation and feedback.

Check Your Progress

A. Write TRUE/FALSE the following:

1. People who rush around in the work area tend to decrease the likelihood of an accident.

2. Accidental cuts can be prevented if the expertise of using a cutter has been mastered.

3. Equipment mounting brackets, signages and control boxes can not be checked regularly to see if sharp edges are present.

4. Mechanical material handling equipment such as forklifts and hoists, can reduce injuries caused by lifting heavy lifts.

5. Workers should take all practical steps to make sure all hazardous machineries are switched-off, before any cleaning or maintenance is done and whether it is safe to clean, maintain and repair.

B. Write short answers for the following:

1. Enlist precautions which are taken while handling sharp objects.

2. What is safety? Why issafety important while working with machines?

Session: 4   Effective Oral and Written Communication at Workplace

Effective Oral and Written Communication not only helps in communicating one's thoughts clearly and concisely, but also to create focus, energy, and passion. Clear messages help to build trust and integrity between the writer and the reader. Well-written communication helps to define goals, identify problems and arrive at solutions. Employees must clearly write and talk so that other staff understand the situation without confusion.

Effective writing allows the reader to thoroughly understand everything that one is not able to say. Listening, reading, writing and talking are collectively known as effective communication skills. Good communicators have a wide range of skills and are able to adjust their communication style in response to the many variables they face at a given time.
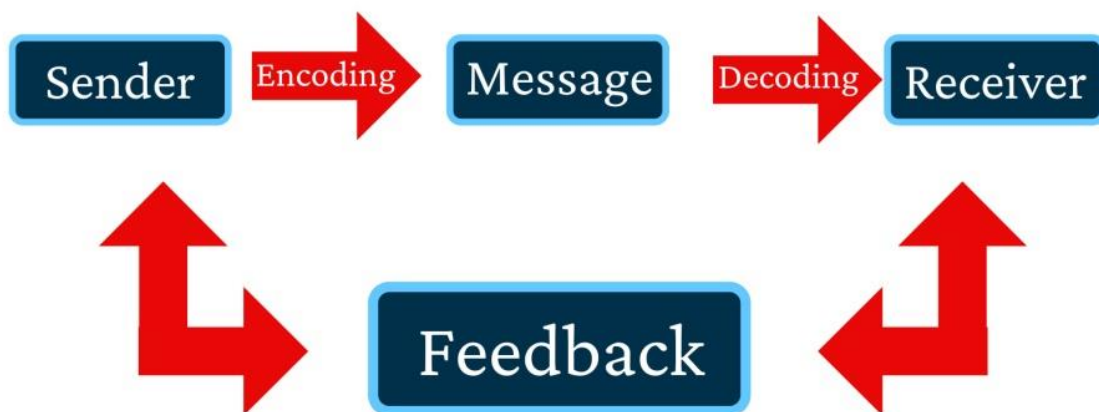
Fig : 4.10 Communication Process

The Communication Process includes the following:

1. Sender

The sender bears the responsibility for ensuring that the message is understood and that the expectations for deliverables are clear. The sender should also consider any obstacles that may prevent the recipients from understanding the message. Languages, ethnic cultural beliefs, degree of education, and/or experience are all barriers.

2. Message

Verbal, non-verbal and written communications are affected by the sender's tone and method of communication. While sending a written message, the sender must be sure that it is professional, precise, clear and in simple language. Written communications are open to interpretation by receiver. Proof the written communication for typographical errors, grammar, punctuation and sentence structure to reduce the chances of miscommunication.

3. Method and Environment

Messages are conveyed through channels. These channels are affected by the method and environment which is chosen to communicate. All written communications are one-way communication, as there is no opportunity for people to ask questions, provide feedback, express concern or gain clarification during or immediately after communication.

4. Receiver

Messages are delivered to the concerned receivers. Receiver enters into the communication process with ideas and feelings that influence his understanding of the message and send their response.

One of the indicators of a high-performance culture is open communication in the workplace. Workplace communication is the process of exchanging information and ideas within a company. Effective communication, on the other hand, occurs when a message is sent and received correctly.

a. Effective communication at workplace is center of all business goals. Its benefits are :-

- It avoids confusion
- It provides purpose
- It builds a positive company culture
- It creates accountability

b. Skills that employers mostly seek are:

- Oral communication
- Listening
- Written communication
- Public speaking
- Adaptability

c. The importance of good communication at workplace

At all levels of an organisation, effective communication is critical to attain productivity and maintaining healthy relationships. Employers who devote time and effort to establish open lines of communication will quickly gain employee trust, resulting in increased productivity, output, and morale. Employees should be able to effectively communicate with their co-workers, managers, and customers. The message is the outcome of the encoding, which takes the form of verbal, nonverbal, or written language.

THE LINES OF COMMUNICATION, AUTHORITY AND REPORTING PROCEDURES AT WORK PLACE

Lines of communication can include a chain-of-command that requires employees to communicate only with their direct superior. Workplace communication is the process of exchanging information and ideas, both verbal and non-verbal, between one person/group and another person/group within an organisation. To establish and manage, various lines of communication within a business is essential so that all workers and managers can contact the communicator, for example a manager communicating to an employee and an employee to a customer.

Protocol is a set of guidelines regarding the chain of command for how various members of an organisation must communicate with each other.

1) Owner to Manager

The company owner provides directions to manager as well as any update or news he wants to give employees through manager.

2) Manager to Employee

Managers must delegate specific duties to workers and provide directions about work projects. A manager commonly communicates through regular meetings with the entire department. Manager may also schedule yearly employee review sessions with individual workers to discuss performance and productivity.

For example a flow chart of reporting and conducting maintenance in an industrial set-up is given as below:
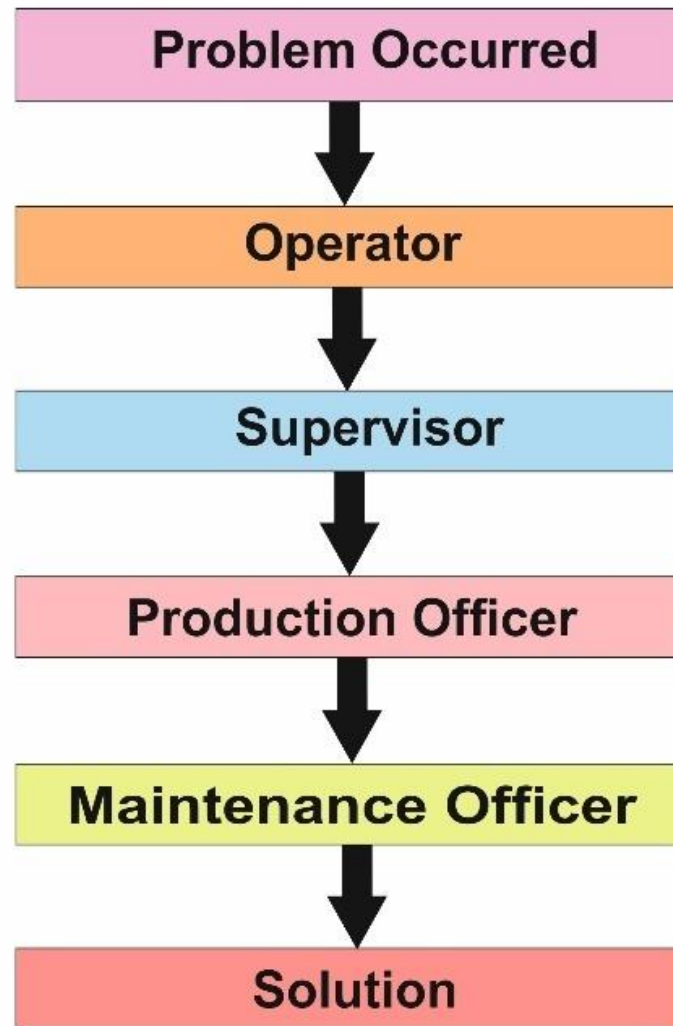
Fig.: 4.11 Flow Chart of Maintenance

3) Employee

A line of communication is also established between employees / managers and outside business contacts. Certain employees of a manufacturing unit may have to communicate directly with representatives of companies to supply raw materials, submit orders or request information.

4) Communication with Customers

Possibly the most important line of communication at a business is between the employees of a business and its customers. In some cases, certain employees are authorized to speak to clients for business contacts.

Reporting procedures at work place

Effective communication in the workplace is imperative in a leadership role. Having effective communication skills is the key to good leadership. In turn line of communication begins in descending order, i.e. reporting procedure begin from customers to employee, employee to supervisor, supervisor to manager and from manager to industry owner.

Ways of reporting procedures for effective communication at workplace are as follows:-

1. Open Meeting

It is easier to communicate in the work place situation via open meetings. In this kind of forum, workers will hear, see and feel it. This oral communication is one of the best approaches to communicate effectively with a team.

2. Emails

In official settings, written communication via email remains potent. It will enable to pass messages to the members of the team without pulling them out of their workstations.

3. One to One

Workers understand better when we talk to them on a one-to-one basis. Ensure to maintain eye contact with them to enable the message to sink in.

4. Create a Receptive Atmosphere

To effectively communicate with the team, one must create an interesting atmosphere which is open for communication.

5. Display Confidence and Seriousness

Ensure that one must display confidence and seriousness because if team members notice any uncertainty and lack of seriousness while communicating with them, they are likely to treat the information with disregard.

6. Use Simple Words

To be effective in the communications with the team members, use words that are easily understood.

7. Use Visuals

Place visuals at strategic positions around the work place of the team. Delivering messages both through sight and sound gives room for better comprehension.

8. Listen to the Team Members

Encourage team members to open up so that the leader can be well informed while communicating with them.

9. Use Body Language

The message will be conveyed much more quickly and effectively through body language. When communicating with your team, master the skill of utilizing body language. Smiles, handshakes, and eye contact should all be used.

10. Use the Appropriate Tone of Voice

Use the appropriate tone of voice to communicate the message to the team so that the message is not misunderstood and discourage / frighten the receivers. Voice modulation in such scenarios help to be beneficial.

11. Be clear

Being clear to communicate to the team members makes it easier for them to understand the message. Make a message to the point for better comprehension. Keep the focus of point to be conveyed straight forward.

12. Encourage Feedback

Do not just talk and walk away, give room for feedback so that one can measure the effectiveness of the style of communication. It will also afford the privilege of knowing if the message was well understood.

13. Gesticulate

Use the hands to demonstrate the message. Make hand motions and signals to establish the seriousness of the subject matter while communicating with the team members.

14. Be Appreciative

Always remember to thank the listeners for their time after each communication session. Working hard on these communication strategies and establishing ground rules to keep everyone up to date will ensure a smooth project conclusion. Lines of communication make it easier to not only express the information effectively, but also to respond quickly in order to avoid missed opportunities or late work delivery.

THE IMPORTANCE OF COMPLYING WITH WRITTEN INSTRUCTIONS

A written communication is always put into writing form and used when the audience is at a distance or when record is required or where its preservation is essential and required as an evidence. It is in the form of instruction, orders, rules and regulations, policies, procedures, posters, memos, reports and information bulletins.

1. The importance of written instructions is mentioned as below:

    a. It keeps evidence of what has occurred or what was stated.

    b. It keeps permanent record for future use.

    c. It reduces the chances for misinterpretation and distortion of information.

    d. It is more reliable when transmitting lengthy information on financial, production or other important data.

    e. It provides an opportunity to put up their grievance in writing and get it supported by facts.

2. Comply with industries written instructions

    a. Carry out work functions in regulatory and accordance with legislation and organisational regulations, guidelines and procedures.

    b. Seek and obtain clarifications on policies and procedures, from the authorized person.

    c. Apply and follow the policies and procedures within work practices.

d. Provide support to the supervisor and team members in enforcing these considerations.

e. Comply with health and safety and security related instructions applicable at workplace.

f. Use and maintain personal protective equipment as per protocol

g. Carry out own activities in line with approved guidelines and procedures.

3. Writing Care Instructions

Care instructions should be written in the form of notices or signages to help employees remind of care or caution to be followed with regard to machinery or wet floor or any hazardous situations.

Equipment operating procedures / manufacturer's instructions

The manufacturer of machines, as well as the operator, both should take all technical and organisational measures, in order to ensure the safety of machine operators. It includes the general rules for approaching safety issues that should be taken into account by machinery designers in the design process e.g. inherently safe design, safeguarding and protective measures, information for use, mode of application, conformity assessment procedures etc. Use of machine operating manuals should be encouraged to employee designated to use particular machine.

Implementation of safety measures by the manufacturer

The manufacturer of machinery should eliminate hazards or reduce risks associated with these hazards by applying safety measures in the following order:

1. Inherently safe design

Hazard can be eliminated through the right choice of the machine design and features and minimizing personal exposure to hazards, through reduction of the number of un-necessary interventions within the danger zones. All accessible parts of the machine should have no sharp edges, sharp corners, rough surfaces, protruding parts, etc. Many hazards of the machine can be eliminated by means of choosing proper shapes and employing proper arrangement of mechanical parts.

2. Safeguarding

The hazards that cannot be eliminated using the inherently safe design approach should be reduced by means of the application of guards or protective devices. Covers, doors, fences, etc. also perform guarding functions. Guards should be difficult to remove or switch off, situated at a proper distance from the danger zone and allow performance of required operations like installation, tool changing or maintenance, guard locking, providing only limited access to the area where the operations are to be performed and without the necessity for removal.

3. Protective device

Protective devices that do not create actual physical barriers perform their protective functions by means of generating a signal that stops a dangerous motion of a given machine element. When it is impossible to apply guards, sensitive protective devices are used to reduce risk. There are several types of these devices. Optoelectronic protective devices such as light curtains, scanning devices like laser scanners and pressure-sensitive devices, mats, trip bars, trip wires etc. are often used.

4. Functional safety of machinery control system

If failure of a control function performed by a control system can result in an immediate increase in risk, then this function is named a "safety function". Generally, safety functions can be implemented for the reduction of risk associated with the improper machine operation, failure of technological processes andmechanical hazards.

The safety functions included in manufacturer's instructions are:

a. Safety-related stop function initiated by a safeguard

b. Manual reset function

c. Start/restart function

d. Local control function

e. Muting function

f. Monitoring of safety-related input values

g. Response time

h. Monitoring of safety-related parameters such as speed, temperature or pressure

i. Reaction to fluctuations, loss and restoration of power sources.

j. Common cause failure factor

k. Components and elements to achieve emergency stop function

l. Measures for escape and rescue of trapped persons

m. Measures for isolation and energy dissipation

n. Provisions for easy and safe handling of machines and parts

o. Measures for safe access to machinery.

5. Information for use

Despite the adoption of measures for inherent safe design, safeguarding and protection, the user is informed about machine design and their parts, running and maintenance of machine.

a. The information may be in the form of accompanying documents and instruction manual, on the machine itself, on the packaging and by other means, such as signals and warnings outside the machine. Information and warnings on machinery is provided in the form of readily understandable symbols or pictograms. The operator must have facilities to check the operation of the warning devices all the time.

b. Visual signals, such as flashing lights and audible signals such as sirens may be used to warn of an impending hazardous event, such as machine start-up or over-speed.

c. All the necessary markings on machine itself

• For unambiguous identification,

• In order to indicate compliance with mandatory requirements,

• For safe use.

d. The instruction handbook or other written instructions includes all information for safe commissioning, operating, adjusting and maintenance of the machine.

e. Implementation of safety measures by the user of machinery and work equipment. Work equipment should be properly adapted to the work without impairment to their safety or health.

6. Additional safeguarding

The employer should ensure that work equipment is installed, located and used in a way ensuring that the risks to the operators and other workers have

been reduced. In particular, sufficient space between moving parts of work equipment and fixed or moving parts should be allowed with movable guards or protective devices.

7. Use of personal protective equipment

Technical safety measures comprise personal protective equipment. These are devices or equipment designed to protect worker against single or multiple risks that may affect health or safety at work.

Personal protective equipment also comprises,

5. A unit constituted by several devices or appliances which have been integrally combined by the manufacturer for the protection of an individual against one or more simultaneous risks, e.g. a helmet coupled with a visor and/or hearing protection.

6. A protective device or appliance combined or separately, with personal non-protective equipment worn or held by an individual for the execution of a specific activity e.g. clothing or knee protectors included in trousers used for performing work while kneeling.

7. Personal protective equipment should include the items such as:

1) Clothing - Well-fitted pants and jackets with all buttons fastened. Sleeves should be close fitting, hair nets and Aprons made of non-combustible and flame-resistant materials.

2) Footwear – Approved and sturdy footwear with non-slip sole and a closed toe and closed back.

3) Hand protection - Natural rubber latex gloves, synthetic rubber gloves, and vinyl gloves or thick plastic gloves.

4) Eye protection - Safety goggles or masks

5) Respirators - Properly fitted to provide the best protection from inhaling harmful fumes or vapours.

8. Work organisation and procedures

Proper work organisation is important in ensuring safe operation of the work equipment. All operations should be performed according to established safe working procedures. The employer should take necessary measures to ensure that the use of work equipment is restricted solely to persons given the task of using it. Written permission for conducting high risk works should be issued namely, repairs, modifications, maintenance or servicing.

SUGGESTIVE STANDARD OPERATING PROCEDURES OR INSTRUCTIONS

a. **SOP for machine inventory including spares, tools and tackles.**

- Receipt of material against packing list/indent.

- Machine taken for installation as per requirement.

- After installation machine is numbered. Record is to be maintained in Asset register / computer excel sheet.

- Machine is not issued to production until the numbering is complete.

b. **SOP for machine installation**

- Arrange the related person from agencies to install the machine.

- After installation arrange to train production from company technician.

- Hand over the bobbin/bobbin case or related material use to run machine to production department.

c. **SOP for maintenance of utilities - air/water/steam related**

- Making indent for materials for installation.

- After receiving of materials from vendors, installation from vender.

- Looking After the maintenance of Steam Generator and Air compressor.

- Operating of steam generator and air compressor in shift timing.

d. **SOP for machine's preventive maintenance**

- Preventive maintenance schedule is prepared.

- As per schedule, preventive maintenance is done and record is maintained

- All weighing scales shall be calibrated once a year and certificate is obtained.

- Maintenance department shall inform the purchase department regarding renewal of AMC (Annual Maintenance Contract) at least 1 month prior to its expiry.

e.   SOP for machine breakdown maintenance

- Breakdown intimation is received from concerned department.

- Breakdown maintenance is done considering type of fault.

- Record of breakdown maintenance is maintained in the breakdown maintenance register.

- Electrician repairs all electrical faults and maintains a register for electrical repair and breakdowns.

- A machine history record shall be maintained for all machines.

f.   SOP for calibration of measuring instrument &Light Illuminations record

- Any machine having measuring instrument should be calibrated yearly.

- The calibration check list shall be maintained for all such instruments.

- The maintenance in charge shall keep the certificates of calibration in a file.

- Actual date of calibration shall be maintained in the machine history sheet.

- Monthly light illumination shall be recorded in all working area on the production floor.

- At least once in 6 months, illumination checking is done and record is maintained

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Activities

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Activity 1:

Prepare a graphical poster on SOP instructions.

Materials Required:

1. Writing material

2. Ruler

3. Adhesive

4. Camera for clicking pictures

Procedure:

1. Based on your understanding, prepare a graphical and interactive poster on SOP instructions.

2. Display the same in your class.

Check Your Progress

A. Fill in the Blanks:

1. Well-written _____ helps to define goals, identify problems and arrive at solutions.

2. Verbal, non-verbal and written communications are affected by the sender's _____ and _____ of communication.

3. Use of _____ manuals should be encouraged to employee designated to use particular machine.

4. When it is impossible to apply guards, _____ devices are used to reduce risk.

5. Written permission for conducting high risk works should be issued namely, _____ or servicing.

B. Write short answers for the following:

1. Which are the ways to create effective communication at workplace?

2. What are SOPs? Briefly enlist SOP for maintenance of a needle detector machine.

Module 5	**Health, Safety and Security at Workplace**

Module Overview

Health, safety and security are one of the most important aspects of human concern at the workplace. Therefore, we should aim at building a working environment which provides and maintains highest degree of physical, mental and social well-being for workers in all occupations.

Industries and organisations should focus on health and safety related practices at workplace and should ensure availability of all the basic facilities like safe and clean drinking water, clean rest rooms, proper ventilation and lighting facilities etc.

With the advent of technical advancements in the form of imported machineries and others services in the apparel industry, we should give more emphasis on the principles of ergonomics and occupational psychosocial factors.

Thus, the benefit of maintaining occupational health, safety and security are:

    i.   Reduced work related injuries

    ii.   Make the working conditions healthy and safe in the interest of workers, employers, as well as the public/society at large

    iii.   Reduce the risk of potential accidents and emergencies

    iv.   Preparedness with suitable responses to accidents and hazards

Hence, workers should be trained to identify and report to seniors/supervisors or any other authorized personnel in case of any malfunctions in machinery and equipments, emergencies and take necessary corrective actions for the same.

Learning Outcomes
After completing this module, you will be able to:
• Analyze Compliance to health, safety and security requirements at workplace
• Explain Potential safety risks and emergencies
• Identify and report malfunctions in machinery and equipment or any other hazard at workplace
• Explain reporting emergency situations

Module Structure	
Session-1	Compliance to health, safety and security requirements at workplace
Session-2	Potential safety risks and emergencies
Session-3	Identifying and reporting malfunctions in machinery and equipment or any other hazard at workplace
Session-4	Reporting emergency situations

Session 1: Compliance to Health, Safety and Security Requirements at Workplace

Safety and security of the workplace greatly depends on the enforcement of safety policies and rules of the industry which also ensures compliance with health and safety standards. Compliance is obtained through specific efforts made to reduce the risk of potential hazards and accidents at the workplace.

It is increasingly observed that the health, safety and security of workers are subject to a variety of risks. Inculcation of safety culture in the working environment along with strict guidelines on safe work procedures significantly reduces the risk of potential hazards/accidents.

HEALTH AND SAFETY RELATED PRACTICES APPLICABLE AT WORKPLACE

Apparel industry is a labour oriented industry. Workers are the main resources and all companies must follow certain practices applicable at workplace for maintaining health and security of their workforce.

Following points must be taken care–

- Ensuring availability of fully stocked first aid boxes at every designated location according to the floor plan/layout.

- Fire extinguishers should be placed at clearly marked areas at regular intervals

Fig.: 5.1 (a & b) - HEALTH AND SAFETY RELATED PRACTICES

- It is advisable to maintain an accident register. This helps in record keeping of various accidents, their causes and the damages. The information in accident registers can be useful in prevention of accidents in future.

- Factories should ensure proper positioning of emergency lights on work floor leading the pathway to exit.

- It is essential to ensure that all fire-fighting equipment such as extinguishers are regularly inspected and kept in good working order.

- Exit signs should be clearly marked and displayed.

Fig.: 5.2 Exit Sign

- Yellow lines should be marked on the factory floor to demarcate the pedestrian pathway from the space allocated for machines.

Fig.: 5.3 Yellow Demarcation for Pedestrian Pathway

- Aisles should be designed wide enough and should not have any obstruction in between to prevent any accidents during movement of men and material.

- Cables /Wires should never be left loose or visible hanging at the floor.

- Proper lighting with well-distributed artificial light to ensure effective use of available daylight should be arranged.

- Good general ventilation plus local exhaust ventilation to remove air contaminants at the source should be ensured.

- A clean lunch room commonly called as canteen area for employees to have their meals should be allocated.

- Oily floors are a common cause of accidents and fire hazard. Splash guards and drip pans should be installed wherever oil spills or drips may occur. Prevent accidents by keeping oil and grease off the floor.

- Adequate supply of clean and pure drinking water must be ensured for all workers.

- Workers should be encouraged to use mask and gloves wherever required.

- Provision must be made for clean washrooms/restrooms for workers and staff members

- Mock drills must be performed with the workers at regular intervals for them to be prepared in case of any spills, fire, and explosion.

- It is advisable to carry outthe regular maintenance of the factoryif something gets broken or damaged. It must be ensured that same be replaced or immediately corrected/fixed, for example - defective ladders, broken handrails, steps, etc.

- Factories should have a provision of regular maintenance programmes like inspection, lubrication, upkeep and repair of tools, equipment, machines and processes.

Compliance to health, safety and security requirements at workplace will help in eliminating risk related to potential accidents and hazards caused by unfavourable conditions and thus, will lead to efficient, smooth and uninterrupted production cycle and safe and secure work environment.

ACCESS TO CLEANDRINKING WATER AND SANITARY FACILITIES

Welfare facilities like access to clean drinking water, hygienic and well ventilated wash rooms or rest rooms are a vital part of good working conditions in an industry.

Clean Drinking Water -

Provision of safe and clean drinking water, beverages or an adequate meal is mandatory for a healthy workforce.

Availability of clean drinking water is indispensable for all workers. Mostly in hot weather conditions a lot of water is lost from the body in the form of sweat or evaporation. If appropriate arrangements are not provided then the

workers might have to make the arrangements by themselves or leave the workplace often in search of clean and safe drinking water.

In case of impure or contaminated water being made available for the workers, it can be a cause of frequent transmission of diseases among them. If the workers get dehydrated, they can be tired, exhausted or fatigued and will be less productive in their outcome. Thus, provision of clean and pure drinking water should be made near the workstations. Preferably, cool drinking water must be provided specially in hot weather conditions. For example - Arrangements of water coolers or water dispenser with clean and cold drinking water can be done at regular intervals near the workstations.

Sanitary Facility –

All industries must ensure appropriate sanitary facilities for workers within the working premises. Hygienic and disinfected toilets/restrooms are very important. It is also requisite to equip adequate number of washrooms as per the number of workers/staff working in an industry and ensure their maintenance and cleanliness.

To ensure mental and physical well-being of workers and to prevent spread of any diseases within the working premises, it is vital to have proper sanitary facilities. These facilities also helps in improving rate of production as healthy workers are more efficient in their working and it simultaneously leads to lower rates of absenteeism within the workforce.

Therefore, developments in sanitary facilities should be undertaken and materials incorporated should be durable, easy to clean and quick drying likes tiles. Frequent cleaning and maintenance of toilets is also recommended.

The following points must be considered-

i. Sanitary facility must be within easy access from the work site.
ii. These facilities must be well enclosed, well lit and adequately ventillated.
iii. Proper supply of toilet paper and other hygiene supplies must be ensured.
iv. It must be equipped with a covered garbage bin.
v. Hand claning facility like a wash basin along with soap and a sanitary way to dry hands must be installed in every single toilet facility.

Activities

ACTIVITY 1

Prepare a report on various types of health and safety related practices applicable at a work place. Place it a file and submit the same.

Materials Required:

1. Writing material

2. Adhesive

3. Ruler

Procedure:

1. Visit an apparel industry, learn and understand about the health and safety related practices being followed.

2. Make a report on the same.

3. Submit the report in your class.

Check Your Progress

A. Fill in the Blanks –

1. _____, safety and _____are one of the most important aspects of human concern at the workplace.

2. _____ should be placed at clearly marked areas at regular intervals.

3. Factories should ensure proper positioning of _____lights on work floor leading the pathway to exit.

4. _____ floors are a common cause of accidents and fire hazard.

5. _____ leads to lower rates of absenteeism within the workforce.

B. Write short answers for the following –

1. Mention points that must be taken care for maintaining health and safety related practices at workplace. (Any Five)

2. Write about the importance of having access to clean drinking water and sanitary facilities at the workplace.

Session: 2   Potential Safety Risks And Emergencies

Safety risks are chances of any detrimental or unfavourable result/outcome or anticipated losses (For example – Deaths or injuries caused due to malfunction of a machine in a factory) caused due to natural or human induced causes.

Emergency is an unforeseen and unexpected incident demanding instant/immediate response. It may be caused due to natural, technological or human causes/forces.

Preparedness against any potential safety risk or emergency is essential to protect the workers against any damage of life and property. The impact of any emergency crisis can be substantially reduced by active participation of employees and employers in safety related practices at workplace.

RESPONSE TO POTENTIAL ACCIDENTS AND EMERGENCIES

Ergonomically designed work areas have several benefits like:

 ➢ Increased human comfort
 ➢ Reduced stress and fatigue
 ➢ Increased workers rate of production
 ➢ Reduced risks of potential accidents/hazards.

Some of the factors that must be considered to be prepared are as follows –
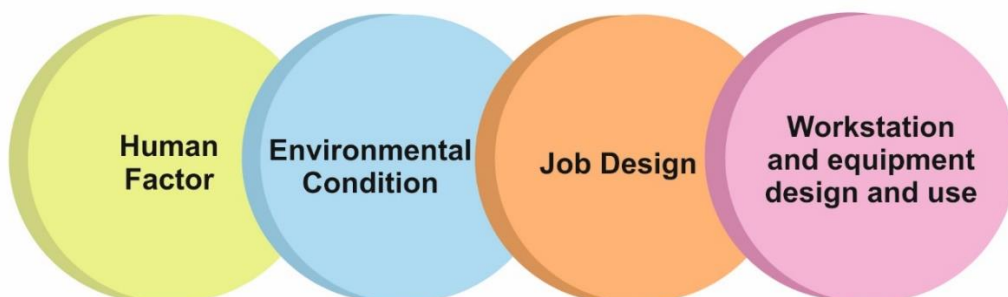
Fig.: 5.4 Factors Responsible for Potential Accidents

1. **Human factors**

   Major human factors that affect are:

   ➢ Physiological

   ➢ Psychological

   ➢ Physical

   ➢ Cognitive

Human factors mostly include all physiological and psychological factors. Workers dimensions like reach, posture and strength must be considered while considering the human factors. Physical injury can cause a negative impact on employee's work performance and lead to increase cases of absenteeism. Cognitive factors equally affect the job performance. For Example – Lack of proper guidance and feedback from supervisors or lack of autonomy can often cause stress and result in lack of motivation among workers to perform well.

2. **Environmental conditions**

Environmental Conditions in particular like proper lighting facilities, sound & vibrations, extreme temperature, humidity and poor air quality may affect the workers performance. Undesirable and unpleasant levels of a fore mentioned condition can be detrimental to workers health and safety.

3. **Job Design**

A job must be designed keeping in mind the anthropometric characteristics such as age, gender, height, weight and ethnic differences. Proper use of ergonomics is advised as tasks can be either static or dynamic. Static tasks need a sustained position which can cause stress and pain in the lower back, neck and shoulder areas. Whereas, dynamic tasks require continuous body movements, very fast movements can cause fatigue, pain, weakness and sometimes lead to injury if performed with excessive force. Poor job designs and lack of proper training to workers can often be cited as an underlying cause of injuries among workers.

4. **Workstation & Equipment Design and Use**

A workstation should be designed keeping in mind factors such as workable heights, placement, reach, requirements and postures. Adjustable equipments make it possible to adapt it in accordance to individual

requirements. Tools and equipments must also have flexibility of usage and it should not force the workers to use an unnatural body posture or motion while using it. All equipments and workstation should work together in a well-coordinated system to ensure a smooth flow of production and safety of workers.

The following points are mostly the main sources of accidents at the workplace -

- Spills
- Slippery surfaces
- Obstructions (Unclear Pathways)
- Broken equipments/tools.
- Machineries which are not regularly checked/maintained and kept unrepaired.
- Areas lacking safety signages (Fire and Emergency Exits)

Therefore, workers and employers must take collective active measures to adhere to an accident prevention plan. The following points must be considered to strengthen the safety practices at work and be prepared with response to any emergency situation –

1. Regular programmes and training sessions must be conducted on safety related practices at workplace for workers. It can be held in the form of mock drills for evacuation during fire hazards or any chemical spills, quick response training during accidents/emergencies etc.

2. Ensuring installation of proper lighting system, to have a well-lit and clear visible job site/ workstation, to avoid any potential risk associated with darkness around the workplace.
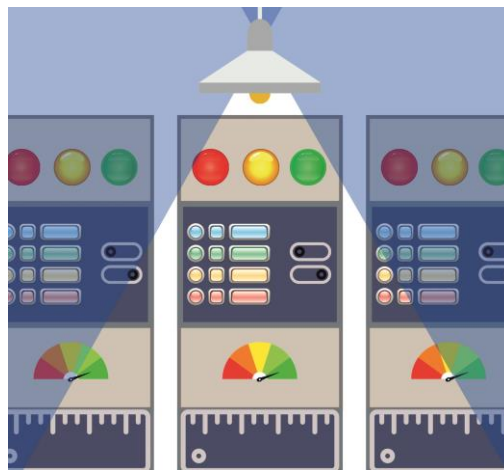
**Fig.: 5.5 Proper Lighting System**

3. Clearly visible and demarcated safety signs must be placed/ installed wherever necessary, which will help in clear identification of hazardous areas and associated risk like obstacles in pathway, toxic chemicals being stored, slippery floor, emergency exit doors etc..

4. In case of a chemical or any hazardous spill, ensure to always suppress and hold the spill and always keep the cleaning equipment at an easily accessible location.

5. Ensure to conduct routine audits and checks for all potential safety hazards and emergencies to prevent any actual loss.

6. In case of an emergency/ accident, evacuate the premises and helps fellow workers in need.

7. Proper ventilation facilities must be ensured throughout the working place to avoid inhalation of any toxic chemical or foreign particles by the employees at the time of any chemical leak.
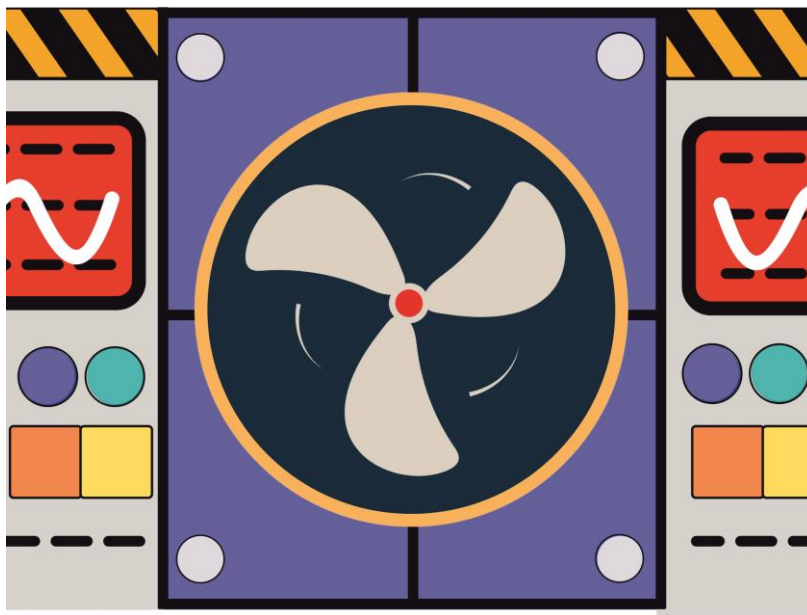
Fig.: 5.6 Proper Ventilation System

8. Workers must be instructed to follow all the rules with regards to the attire/uniform permitted for their job role. For example- Workers working in the dyeing unit must wear slippage resistant shoes to prevent any fall or trips which can lead to injury.

9. Employees in an apparel or home furnishing industry need to spend long hours in the sitting posture which can cause soreness in back and reduced circulation in legs. Therefore, to avoid any pain or injury, adjustable chairs must be provided to ensure easily adjustable heights, seat tilt and backrest positions.

10. Chairs with a cushioned/contoured seat, which distributes the worker's weight ensuring no body part feels all the pressure must be preferred.

11. To minimise awkward body postures, chair should also be placed at an appropriate distance from the workstation, so that the workers can perform their tasks without stretching their elbows away from the body.

12. Workstation design must ensure that all the tools and materials are positioned to reduce risk of tilting too far or leading to an awkward body position. It can increase the level of stress/strain in arms, shoulders and the neck. This greatly increases the risk of injury which can be avoided by proper preventive actions and adhering to ergonomically designed principles of work.

13. Workers who need to stand for prolonged hours must be provided with anti-fatigue mats. These mats help in better circulation and reduce fatigue in lower body parts.

14. Emphasis should be given on frequent short breaks to stretch and change body positions. It allows legs, beck, neck and eyes to rest in between long working hours. Shorter breaks often reduce the risk of discomfort, fatigue and injury among the workforce.
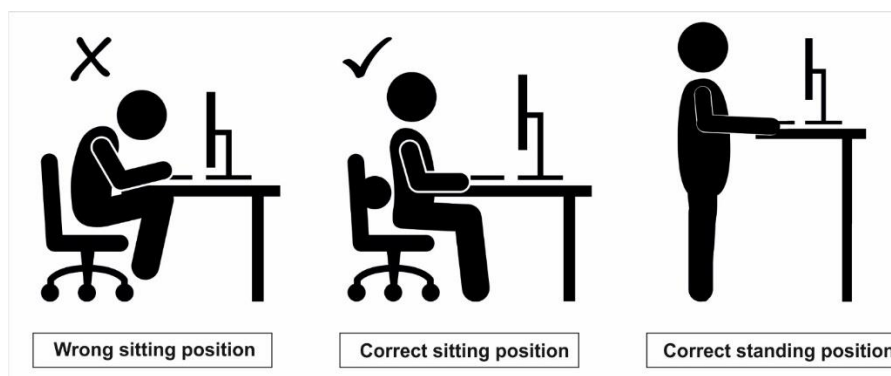
Fig.: 5.7 Correct Body Positions

MAINTENANCE AND STORAGE OF PROTECTIVE EQUIPMENTS

An effective system of maintenance and storage of protective equipments and tools is crucial to provide the level of protection they are intended or designed for. Therefore, one must always maintain an inspection schedule for all the protective equipments and tools including its shelf life. Inspection must include thorough check against any breaks, tears or any other visible sign of damage.

Maintenance also includes cleaning, examining, repairing, testing and replacing (in case it cannot be repaired) tools and equipment on a scheduled basis. Some Examples of Protective equipment are – Gloves, masks, protective helmet, safety shoes/boots, protective eye wear, ear plugs etc.

Adequate and proper storage facilities for storing of all protective equipments and tools when not in use is must. Employers must provide for a clean and safe place for the same. For example – Pegs for hanging clothing or safety helmets, case for safety glasses, a zip lock bags, shelves or racks for storing of ear muffs, gloves, masks etc.

The facility of storage must be appropriate and sufficient to protect the protective equipments from any kind of contamination, loss or damage due to coming in contact of water or sunlight. The place should be dry, clean and well sanitized and should also not be subjected to extreme temperatures.

It should protect the equipments against ageing and damaging. For hygiene purposes, one must consider separate storage from ordinary clothing storage in cases where protective equipments may become contaminated during use.

Duties of the workers in respect to protective equipments –

1. All the protective equipments must be worn by the workers in accordance to the work requirements and instructions provided.

2. Workers must ensure that all the protective equipments must be stored back carefully to their designated/ allocated storage areas after use.

3. All the protective equipments must be inspected before use and any defect observed must be reported to the supervisor.

4. It is the responsibility of the worker/employee to take due care of the protective equipments provided to them and do not make any modifications to the same them unless and until they are authorized and trained for its maintenance activities.

Fig.: 5.8 Proper Storage Facility for PPEs

Activities

Activity 1

Prepare a chart with details of potential hazards and their possible solutions applicable at a workplace.

Materials Required:

1. Writing material
2. Coloured pencils/pens
3. Eraser
4. Ruler

Procedure:

1. Collect information about the potential hazards and their possible solutions applicable at a workplace.
2. Take a chart paper and prepare the chart by placing the collected information on it.
3. Display the chart in your classroom.

Check Your Progress

A. Fill in the following blanks –

1. _____ is an unforeseen and unexpected incident demanding instant/immediate response.

2. _____ to a worker can cause a negative impact on his/her work performance and lead to increase cases of absenteeism.

3. A _____should be designed keeping in mind factors such as workable heights, placement, reach, requirements and postures.

4. To minimise awkward body postures _____should also be placed at an appropriate distance from the workstation.

5. Shorter _____often reduce the risk of discomfort, fatigue and injury among the workforce.

A. State weather the following statements are True/False.

1. Tools and equipments should not have flexibility of usage and it should force the workers to use an unnatural body posture or motion.

2. Workers and employers must take collective active measures to adhere to an accident prevention plan.

3. Safety signs must not be displayed clearly.

4. Routine audits and checks for all potential safety hazards and emergencies are not necessary.

5. Workers must be instructed to follow all the rules in regard to the attire/uniform permitted for their job role.

6. Emphasis should be given on frequent short breaks to stretch and change body positions.

7. The facility of storage for protective equipmentsmust be appropriate and sufficient to protect the protective equipments from any kind of contamination, loss or damage.

8. Workers must not ensure that all the protective equipments must be stored back carefully to their designated/ allocated storage areas after use.

Session: 3 Identifying and Reporting Malfunctions in Machinery and Equipment or any other Hazard at Workplace

Identification of malfunction in machinery/equipment or any other hazard at a workplace is an indispensable component of the health and safety management system. It is the first step in development of the safety procedures for prevention and controlling of any hazard.

A hazard is a source of any potential damage.

Identification of hazards includes the following:

- Identifying both existing and prospective workplace hazard

- Assessing or calculating the risks involved

- Determining and implementing the control measures

- Reviewing the situation

Workers must be trained to identify all the possible hazards associated with their job role and also know the control measures during an emergency situation to prevent any injury to people, property or environment from the same.

Workers must follow all the safety practices which comply with the standard operating procedures. They must regularly check/inspect the workplace, equipments, machines, tools for any abnormal changes, conditions or unanticipated emissions/leaks for identification of any perilous conditions. In case of an unsafe condition they must report them to their supervisor or authorized personnel and collectively work towards resolving the same.

Workers are exposed to various potential hazards while working near or on a machine. There is a risk of injury caused due to entanglement, friction or abrasion, cutting, stabbing or getting trapped in the moving parts of the machines. Therefore, it is suggested that workers must follow guidelines related to dress code/uniform/using protective equipments and safe working practices applicable while working near or on a machine.

Risk is also associated with noise, vibrations and radiations generated by the machines. Levels of the aforementioned must be monitored to prevent any

health issues among workers. Workers must be also able to identify and report any sparks or loose fitting which can cause fire accidents or electric shocks, over speeding or under speeding of parts of machines etc.

The following points must be checked for identification of possible hazards linked with machines, equipments, tools and services –

1. Identify use of the machine by considering the following points-

    • Cycle time & rate of production.

    • Intended use of the machine.

    • Different types of materials being used on it.

    • Amount of force being generated.

    • Range of motion or moving parts of the machine.

2. Identification of space required by the machine for safe operation of **all** tasks including access for maintenance and repairs.

3. Identifying the environmental limits of the machine such as the operating temperatures, humidity levels, and noise generation level.

4. Consideration of all the tasks performed by and on the machine such as – trial runs including

    • Regular operations

    • Change of tools

    • Scheduled maintenance of machine

    • Recovery from crashes/timeouts.

5. Identification of operation/ motions of machine such as –

    • Parts of the machine which are movable.

    • Range of motion of moving parts.

    • Type of motion (e.g., rotation, shearing, bending, cutting, punching)

6. Identify the entanglement hazards of the machine that can be caused due to coming in contact with rotating or moving parts of the machine.

7. Identify hazards due to cutting, where a worker can come in contact with cutting tools, saws, routers, knives, or any other sharp material.

8. Identify any potential hazard due to slips or fall in and around the machine due to the spills on the floor surface such as lubricating oils, grease, water etc.

9. Identifying any ergonomic issues caused while operating the machine. Ensure the following -

- Workers do not have to reach exclusively.

- Workers do not have to use excessive force.

- Workers do not have to perform movements at a very high speed.

- Machine cycle must be planned in accordance with the workers capacity

- Workers can perform work in multiple positions that promote a neutral body position.

- Work surface is adjustable according to the workers requirements.

- Worker has enough room space to move without striking anything.

10. Identify all the work that a worker must perform while operating the machine such as-

- Feeding stock into the machine

- Removal of final products from the machine

- Removal of scrap

- Scheduled and regular cleaning parts of the machine.

- Pre and Post shift safety checks.

Therefore, it is advisable to identify, report and correct any prospective risk which can lead to a hazard at a workplace,thereby ensuring prevention and control of any injury or loss.

SAFETY SIGNS AT WORK PLACE AND THEIR MEANING

1. First aid:

It is an emergency treatment given to a sick or injured person. The main aim of first aid is to preserve life, prevent from further harm or injury and to start the recovery process. A first aid kit is used in giving the first aid. The sign of first aid which is mostly used is as follows –

Fig.: 5.9 First Aid Sign

2. Fire exit:

This sign marks the way to nearest exit point during a fire accident.
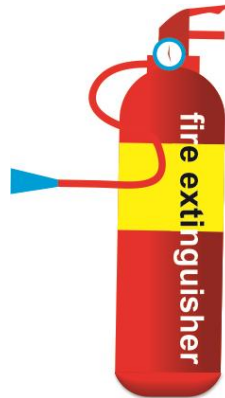

Fig.: 5.10 Fire Exit Sign

3. Assembly points:

This signage marks the area where the workers need to assemble in case of any hazard or emergency.

Fig.: 5.11 Emergency Assembly Sign

4. Fire equipment:

This sign marks the location of storage area of firefighting equipments such as fire extinguisher, fire blankets etc.

Fig.: 5.12 Fire Equipment Sign

5. Smoking ban signs:

This signs mark areas/location where smoking is not allowed/prohibited.

Fig.: 5.13 Smoking Prohibited Sign

6. Machinery Hazards:

These signs mark the areas near the machinery where one needs to be cautious of his/her movements and actions for safety purposes.

Fig.: 5.14 Machinery Hazards Sign

7. Hazardous substance:

This sign marks the areas where any hazardous or toxic substance is stored.

Fig.: 5.15 Hazardous Substance Sign

8. Pedestrian access and no access:

These signs indicate where pedestrians can and cannot access respectively.

Fig.: 5.16 No Pedestrians access Sign

9. Flammable substance:

This signs denotes the location of any extremely flammable substance being stored there.

Fig.: 5.17 Flammable substance Sign

10. Wet floor :

This sign marks the areas with wet/ slippery floor to be cautious while crossing it.

Fig.: 5.18 Wet Floor Sign

Activities

ACTIVITY 1

Prepare a report with pictures and details of all the safety signs applicable at workplace.

Materials Required:

1. Writing material

2. Pictures of safety signs

3. Coloured pencils/pens

4. Ruler

5. Adhesive

Procedure:

1. Collect pictures and information about all the safety signs applicable at workplace.

2. Prepare a report with all the details.

3. Submit the samein your class.

Check Your Progress

A. Fill in the Blanks :

1. A _____is a source of any potential damage.

2. _____ of hazard is the first step in development of the safety procedures for prevention and controlling of any hazard.

3. _____ hazards of the machine can arise due to coming in contact with rotating or moving parts of the machine.

4. _____is an emergency treatment given to a sick or injured person.

5. _____ signage marks the area where the workers need to assemble in case of any hazard or emergency.

B. Write short answers for the following –

1. Mention points to be considered for identification of possible hazards in a workplace. (Any Five)

2. Identify and name the following safety signs –

    ....

    ....

    ....

    ....

Session: 4   Reporting Emergency Situations

Identifying and reporting all hazards/emergency situations is of vital importance for the safety and security of the workplace. All such unsafe incidents must be immediately and directly reported to a supervisor or any other concerned authority. All the workers must be trained so that in case of any hazard or potential emergency situation, the standard procedure could be followed like reporting it to the supervisors expeditiously.

Employers must develop and set up a hazard reporting system for the workers. Implementation of such a system will make the workplace a safer and secure place to perform and work well.

All the workers must be trained in hazard identification and its control measures. They must be trained on the following points)

- Identification of an unsafe condition – This involves recognising any incident that might cause harm or damage to the people, machinery, tools or property. For example - Containers that are not labelled properly, insufficient stairway lighting, broken machine guards etc.

- Identification of an unsafe act that must be reported – This involves any inappropriate behaviour that could lead to an accident/cause an injury or any other damage. For Example – Workerusing equipments in a careless manner or not using PPE while running a machine.

- Procedure followed if any unsafe condition is witnessed - Any such unsafe situation should be immediately reported to the supervisor. It can be in a form of a verbal complain, a hard copy of a form to be filled or an online complain system on the website of the company.

- Follow up action post reporting the incident – Workers must expect that the corrective and preventive measures will be taken within the expected time frame. In case of any delay, they must report it again till any necessary action is taken for the same.

Taking necessary preventive actions can save from potential injuries or any significant losses caused due to sheer negligence. Reporting of hazards ensures that employees are involved in the safety management system of the company and are aware of the safety guidelines followed in the company.

For making the reporting by the workers smooth and easy, the following points can be considered –

1. Making reporting procedures easy and possible.

2. Ensure that there is no negative impact or punishment linked with the process of reporting an emergency.

3. Workers who report the hazards or any unsafe incident should be rewarded or recognised for the same.

4. Posters or signs to encourage reporting of any unsafe practices at work can be placed within the work premises.

REPORTING PROTOCOL AND REQUIRED DOCUMENTATION

In case of any hazardous condition, all workers are responsible for reporting it to their supervisors. Supervisor is responsible to take corrective steps and in case of serious conditions, must fill the hazard reporting form along with the assistance of the worker. The following steps must be followed –

- Workers who identifies an emergency condition/concern must report to his supervisor immediately.

- The supervisor must respond promptly, take necessary actions to resolve the matter within the reasonable time limits.

- If the supervisor is not able to solve the situation, then he/she must report the matter to the manager or to concerned senior authority.

- The employee is responsible to draft a document/fill the form (Depending on the rules of the company) outlining the concerns and fact.

- The senior committee members will investigate the matter and ensure correction of the unsafe conditions.

The process of reporting the hazard immediately allows the workers to report the unsafe conditions immediately. This process allows a fast response and prevent further damage. Hazards can be reported verbally or by filling a form, generally called as a hazard reporting form.

Hazard reporting form is a document which is used to report an unsafe incident/ accident at the workplace and ensures that it has been reported formally and necessary corrective steps have been taken. It is used by the first line workers – such as factory workers.

Hazards Reporting Form

Use this form to report safety concerns

Employee Name	Employee Number
Department / Area	Supervisor Name

Describe Fully the safety concern or hazard:

What can be done to make this situation Safe?

YES

YES	NO	Has the supervisor in that area been notified of the safety concern or hazards?
YES	NO	Has the maintenance team been notified of the safety concern or hazards?

Employee Signature   Report Date:

Fig.: 5.19 Hazard Reporting Form

EMERGENCY RESPONSES DURING A HAZARD/EMEGENCY

Any kind of hazard or emergency can occur anywhere and at anytime. To prevent the amount of loss and damage caused due to such unwanted incidents, employers need to provide relevant training to their employees to be adequately prepared to deal with any undesirable circumstances.

Emergency response training can be very advantageous for the employees to acquire knowledge on how to respond to an emergency situation. Employees must learn life-saving skills and acquire knowledge to save themselves and co-workers during the course of any emergency.

It is advisable to designate roles and responsibilities to every employee in the form of tasks they must perform during an emergency and train them to be specialised to fulfil the requirements of specific roles, For example – specific employee may be trained to perform first aid in the event of any injury or specific group of employees must be trained to handle fire-fighting equipments in case of fire.

Details about the following equipments, people and locations must be displayed clearly at every workstation for reference for use during any emergency situations –

Location of emergency equipments -

- Fire alarm

- Fire extinguisher

- Fire hose

- First Aid

- Panic alarm

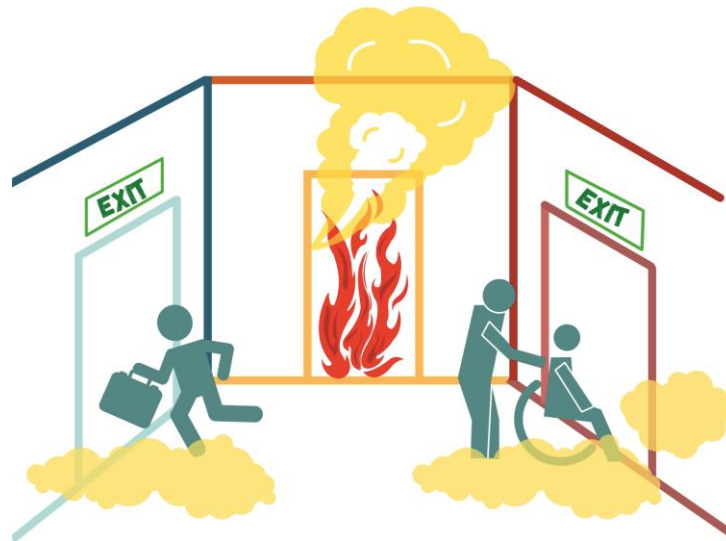- Personal Protective Equipments

Emergency contact numbers -

- Fire station and employee trained in fix hazard handling

- Ambulance and first aid attendant

- Police

- Hospital

EMERGENCY RESPONSE PLAN

An emergency action plan involves allocating designated actions that all the employees need to take for their safety during an emergency situation. Some of the suggested actions to be taken in case of an emergency like a fire or chemical hazard, injury etc. are as follows –

- In case of a fire accident or a chemical spill, one must try to move quickly towards the nearest accessible exit door.

- Walk, do not run during an emergency and do not use elevators.

- Help other co-workers to evacuate along the way to exit.

- In case of fire, if the fire alarm does not ring automatically, try activating the alarm manually for notification of all other employees.

- Exit the building/factory premises and assemble in the allocated area of assembling during an emergency.

- If any person gets caught in fire then try to extinguish their burning clothes by using the drop and roll technique, dousing with some cold water and using an emergency shower or using a fire blanket.

- If caught in the area filled with smoke, then try and stay in lower positions as smoke will rise to ceiling level first. Drop down to your hands and knees and crawl toward the nearest accessible exit point.

Fig.: 5.20 Emergency Response plan

- In case of any toxic spill or leak, alert all workers in the immediate area of spill.

- Wear your required personal protective equipments (PPE) like gloves, protective eye wear etc.

- In case of a minor spill try to contain the spill with spill absorbent material and clean the area where the spill occurred.

- Try to seek immediate medical help in case of any exposure to the spill contents.

- In case of a chemical exposure to the skin or eyes, try to immediately clean it with cool water for at least 15 minutes.

- Do not attempt to move or reposition a victim in case of a muscle, joint or bone injury, sprain or fracture as it can further deteriorate/worsen the condition.

- If there is any open wound injury or bleeding wound, then try to cover the wound with dressing/first aid at the earliest.

Activities

ACTIVITY 1

Prepare a sample report of an emergency situation at the workplace.

Materials Required:

1. Writing material

2. Ruler

Procedure:

1. Study an emergency situation at a workplace.

2. Prepare a sample report of the emergency situation.

3. Submit the same in your class.

Check Your Progress

A. Fill in the Blanks:

1. All unsafe incidents must be immediately and directly reported to a _____.

2. _____training can be very advantageous for the employees to acquire knowledge on how to respond to an emergency situation.

3. An _____action plan involves allocating designated actions that all the employees need to take for their safety during an emergency situation.

4. In case of a fire accident or a chemical spill, one must try to move quickly towards the nearest accessible_____.

B. Write short answers for the following –

1. Describe briefly about how the workers must be trained in hazard identification and its control.

2. Mention suggested actions to be taken in case of an emergency. (Any Five)

Module 6	Industry and Organisational Requirements

Module Overview

The Indian garment industry is well established and recognized worldwide and also enjoys a considerable demand from both domestic as well as global market. The growth of manufacturers and suppliers from developing countries like India, China, Pakistan, Bangladesh and others, and zeal to compete and offer products at competitive prices, the manufacturers have compromised with working conditions, safety and rights of workers. The recognition to Labour Standards and worker's rights, most of the international apparel buyers started focusing and pressurizing manufacturers to comply with the Labour Standards and Worker's rights. This resulted in increased awareness and compliance to code of conduct policies among Indian garment factories.

Indian apparel manufacturers and suppliers are not only bound to follow government guidelines but they also must comply with Social Compliance Standards and Code of Ethics. Such compliance is mandatory not only for the manufacturers but also for their vendors, distributors and other collaborators involved in the supply chain.

| Learning Outcomes |
| --- |
| After completing this module, you will be able to: |
| • Define Standard organisational compliance and related documents |
| • Explain Customer specific regulations and requirements |
| • Describe Ethical compliance and related documents |
| • Explain Documentation and reporting of compliance deviation |
| **Module Structure** |
| Session-1   Standard organisational compliance and related documents |
| Session-2   Customer specific regulations and requirements |
| Session-3   Ethical Compliance And Related Documents |
| Session-4   Documentation And Reporting Of Compliance Deviation |

Session: 1 Standard Organisational Compliance and Related Documents

WHAT IS ORGANISATIONAL COMPLIANCE?

Compliance means conforming to a rule. Compliance helps in better organisational control as it is a set of processes to ensure that the organisation as a whole abide by these set of regulations.
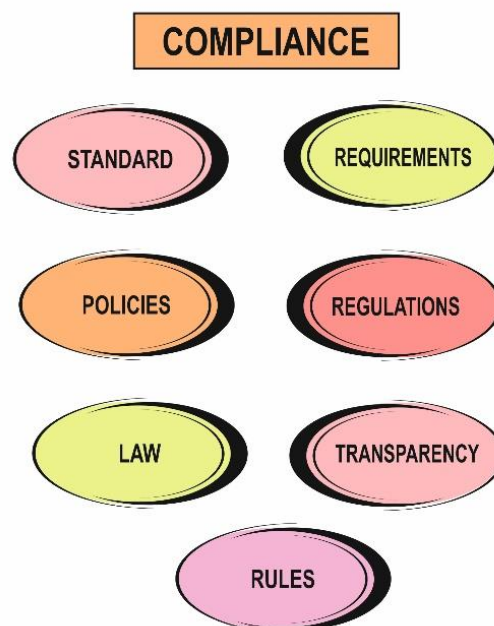
Fig.: 6.1 Organizational Compliance

SIGNIFICANCE OF COMPLIANCE IN INDIAN GARMENT INDUSTRY

Compliance with respect to the garment industry must meet the audit requirements and refers to the following:

1. Quality of products
2. Safe and comfortable working environment

Apart from quality of products, International buyers are also demanding ethical manufacturing of products, which leads to the compliance of standards by garment manufacturers. The rise in export of garment products increases the demand for social compliance has also increased in the Indian Garment Industry.

Social Compliance

Social compliance refers to compliance in respect to social responsibility, ethical treatment of employees and the working environment. A code of conduct is followed regarding employee wages, working hours and work conditions. In order to keep a check on compliance by manufacturing unit, regarding various environmental standards, a compliance audit is conducted regularly. Some of the common requirements of social compliance are as follows-

i. **Child Labour**-Organisations must ensure no child under the age of 15 is employed.

ii. **Forced Labour**- No person should be employed under any threat and if they have not offered their services voluntarily.

iii. **Discrimination**- An organisation must not discriminate among its employees on factors like remuneration, promotion, training facilities etc.

iv. **Working hours**- An organisation must comply with government rules and industry standards on working hours, break timings, public holidays etc.

v. **Disciplinary Practices**- An organisation must not use any mental or physical abuse against the employees in the name of punishment.
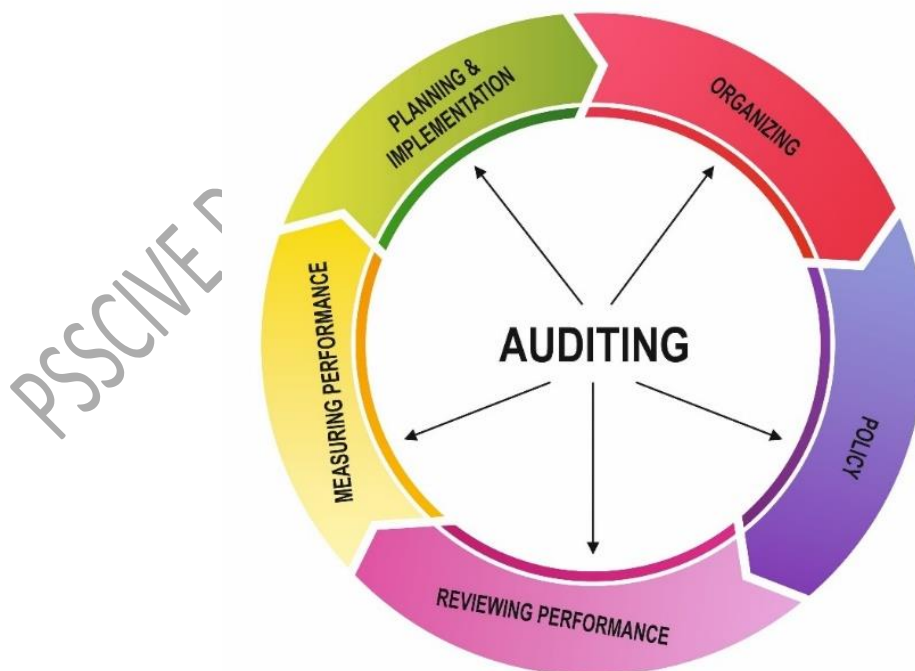
**Fig.: 6.2 Social Compliance**

INTRODUCTION TO AUDIT

Audit means to officially inspect, check or examine. Thus audit in organisational terms means check or inspection of various departments, resources and finances of an organisation. Audit is conducted regularly to ensure that no fraud or scam is caused by the organisation.

Audits and assessments ensure safety management, Security Management, and Risk Management. Aim of Auditing is to adhere to the prescribed policies and procedures and to verify compliance with regulatory requirements and industry standards. It helps to ensure that all programs are properly designed and implemented. Further, audits also helps in identifying programme deficiencies so that recommendations can be developed for corrective action.

Audit in Garment Industry:

Audit can be done by:

1. Internal Auditor - Employees or heads of a particular department
2. External Auditor - An outside firm or an independent auditor.
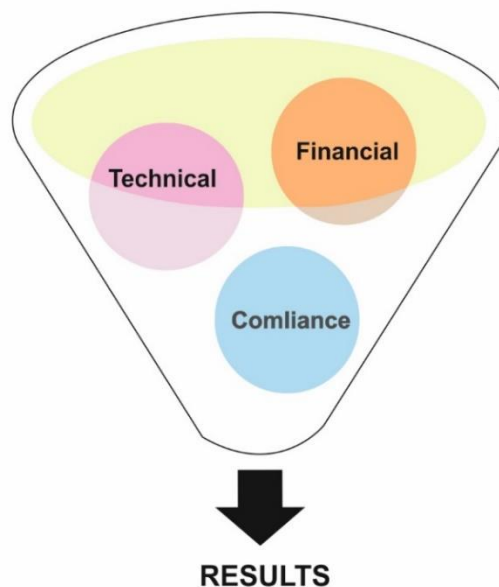
Fig.: 6.3 Types of Audit

Compliance Audit

A basic Complianceaudit may require the auditor toexamine the rules, regulations, orders and instructions for their legality, adequacy, transparency and prudence. Auditors gather information through visual observation at the

site, review of document and interviewing staff. This collected data is then compared with the applicable permits and regulations to evaluate the compliance to the applicable legal requirements.

Following information may be collected and reviewed by an auditor during compliance audit-

1. Licenses, permits and facility information

2. Child labour

3. Forced labour and discrimination

4. Freedom of association and collective bargaining

5. Right of worker

6. Disciplinary practice

7. Working hours

8. Wages, benefits & compensation

9. Workplace safety

10. Occupational health & welfare

11. Environment management

12. Management practice & sub-contractor /supplier control

13. Training records

14. Company policies

Technical Audit

Technical Audit (TA) is a very crucial task for garment manufacturing unit. Every buyer conducts a technical audit before confirming an order to any garment factory. Many garment buyers have their own technical audit checklist, which may vary from buyer to buyer. Audit must be conducted in a routine manner at different stages of garment manufacturing. Through Technical Audit, auditors check the ability of a manufacturing unit to make export quality garments as per order and specifications. The initial step of a Technical Audit is to check the plant outline and its suitability to complete the order. The objective is to pick the right manufacturing unit for the order.

Following information is collected by an Auditor during Technical Audit-

- General Information about the Plant like number of staff members, production facility, location etc.

- Production capacity

- Versatility in product manufacturing

- Quality control of raw Materials

- In-house quality system

- Production planning &executions

- Process control

- Availability of in-house testing facility

- Availability of in-house design team

- Housekeeping and maintenance of instruments

- Quality assurance process

- Lighting, fire safety etc.

Financial Audit

Financial audit is an examination or inspection of accounts books by an auditor. It is then compared with physical checking of inventory to make sure that proper documentation is being followed. The objective is toconfirm the accuracy of financial statements prepared by the organisation.All the public listed firms are required to get their financial accounts audited by an independent auditor, before the results for any quarter is declared.

The idea behind financial audit is to check and verify the accounts by an independent authority to ensure that all books of accounts are maintained in a fair manner and there is no misrepresentation or fraud being conducted.

In India, independent financial audit for any organisation is conducted by chartered accountants licensed by The Institute of Chartered Accountants of India (ICAI).

Steps in auditing process:

Following are the four main steps in the auditing process:

1. **Defining the auditor's role and the terms of engagement**. It could be in the form of a work / authorization letter which is duly signed by the buyer.

2. **Planning the audit**. It includes detailed planning of deadlines and the departments the auditor would cover. Duration of audit may vary depending upon nature and area of work.

3. **Compilation of the information collected from the audit.** When an auditor audits the department, findings are usually put out in a report or compiled in a systematic manner.

4. **Reporting the result**. The results are documented in the auditor's report.

Phases of Audit:

There are three main phases of compliance audit in India:
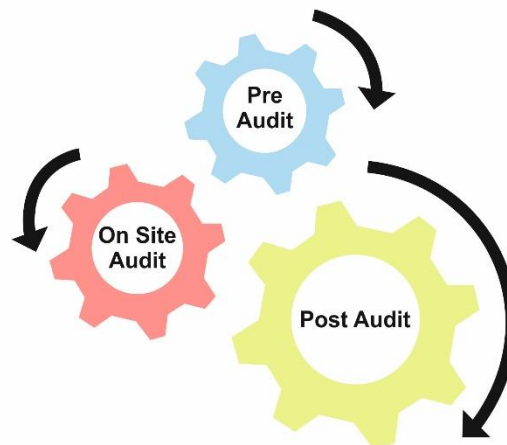
Fig.: 6.4 Phases of Audit

i. **Pre-Audit Phase**
  ➢ Planning and organising the audit
  ➢ Establishing the audit objectives
  ➢ Scope and etiquette
  ➢ Reviewing the design of the programme by inspecting documentation.

ii. **On-site Audit Phase**
  ➢ Conducting personal interviews
  ➢ Reviewing records
  ➢ Making observations to assess programme implementation.

    iii.   Post-audit Phase

➢ Briefing the management about audit findings

➢ Preparation of Final report.

CORE LABOUR STANDARDS

International labour organisation has set rules for core labour standards, to protect the rights of workers and to ensure that worker get good working conditions.

Rules are set of four fundamental and universal Human Rights, as conceived by International Labour Organisation:

    i.   Freedom from forced labour

    ii.   Freedom from child labour

    iii.   Freedom from discrimination at work

    iv.   Freedom of association and right to bargain collectively.

In most countries, all the export-import trade agreements require both the seller and buyer to meet the International labour Standards specially on the issues linked with Child labour and rights of workers.

These are the minimum 'enabling rights' which workers need to defend in order to improve their working conditions, to work in freedom and dignity.

The aim behind this concept is to make sure that the apparel industries have labour contractors which don't engage forced or child labourand get the supply chain of the suppliers audited.

Apparel Export Promotion Council (AEPC), which is an apex body of Indian apparel exporters, has designed a garment factory compliance program called 'Disha' (Driving Industry towards Sustainable Human Capital Advancement), with an aim to make India a global benchmark for social compliance in apparel manufacturing and export business.

This Common Compliance Code project will prepare the Indian apparel manufacturers and exporters on a common platform towards a more social and environmentally compliant industrial environment.

COMMON COMPLIANCE CODE

The common compliance code gives opportunity for the industry to negate international claims against child labour promotion in the garment industry. It also helps to improve the image of the industry and win more international businesses.

Some of the common compliance code guidelines for Indian Garment industry are:

- Employers must not be involved in unfair labour practices including child labour and forced labour.

- There should be no discrimination among workers' remuneration for work of equal value on the basis of gender, race, religion, age, disability, sexual orientation, nationality, political opinion, or social or ethnic origin.

- Employers should not threaten female workers with dismissal or any other employment decision that may affects their employment status negatively, in order to prevent them from getting married or becoming pregnant.

- Employers should ensure that proper air ventilation systems are installed within their factory premises to prevent airborne diseases among workers.

- If workers wish to form organisations or participate in union activities, including strikes, employer shall not restrict the workers in doing so by use any form of physical or psychological violence, threats, harassment, or abuse.

- Workers should be entitled to at a day rest in a week. If workers are required to work on a rest day, an alternative rest day must be provided in next week.

- Workers should be provided with paid annual leaves as per local laws, regulations and procedures. Employer shall not impose any undue restrictions on workers' use of annual leave or sick leave or maternity leave.

- Workers should be paid at least the legal minimum wage or the prevailing industry wage, whichever is higher.

- Employers should compensate workers for the hours they have worked. Workers engaged on a per piece rate payment scheme or any other incentive scheme, must be paid accordingly.

- There should not be any sort of unreasonable restrain in the freedom of movement of workers, including movement in canteen during breaks, using toilets, accessing water, or to access necessary medical attention.

- Garment exporters or manufacturer must ensure that none of their workers is less than 14 years of age, as per the guidelines for non-hazardous employment. Child labour is the most important concern in Indian Industries nowadays. Further, each worker shall have the right to enter into and to terminate their employment freely.

Indian apparel manufacturers must follow all the compliance related guidelines to comply with global standards. Compliance to such codes or guidelines also helps the industries to boost their image or to project a positive image and protect their goodwill in the market. The Indian garment industry must stress on strong compliance rather than competition of manufacturing cheaper garments.

INTERNATIONAL LABOUR STANDARDS

International labour standard is a set of legal standards and guidelines whichset up basic principles and worker's rights at workplace. These standards aim at improving working conditions on a global scale.

Functions of International Labour Standards:

i. To prevent disruptive competition through the defence of particular workers group and setting minimum wage and working conditions.

ii. To promote constructive competition through definite rights, for e.g. workers involvement in decision-making, improvements in productivity and motivation of workers, increasing aggregate demand and promoting the creation of jobs, active labour market policies and ways of adjusting socially desirable measures.

CORPORATE SOCIAL RESPONSIBILITY

What is Social Responsibility?

Social responsibility is "an organisation's obligation to increase its positive impact and reduce its negative impact on the society". It can also be known as "the concept that business entities should also be concerned with the welfare of the society at large".

The social responsibility of an organisation is referred to as 'Corporate Social Responsibility'.

Corporate social responsibility (CSR)essentially means that the organisation should work in an ethical manner and it should also be in the best interest of the various stakeholders. Nowadays, this concept of Corporate Social Responsibility in Indian garment industry is gaining great popularity. More and more organisations are trying to work in a way to protect the interests of the society at large along with the interest of its stakeholders including employees, customers and the suppliers.

Social Responsibility can be divided into two types:

a. Human responsibility refers to the responsibilities of the organisation towards the various 'stakeholders' in business parlance, including employees, shareholders, the government, customers, investors, suppliers, competitors and the society at large.

b. Environmental responsibility refers to the responsibilities of the organisation towards environment protection.

The scope of social responsibility extends beyond the legal responsibilities of an organisation. It has to be voluntarily fulfilled by the organisation; however there also are legal obligations.

Social Responsibility in the Garment Industry

The garment and textile industry is one of the largest industries in the world. It is also the biggest employer in India after agriculture. Globalization has made clothing affordable for all and competitive low prices. However, it has major negative impact on environment and society throughout the product life cycle. Production of textiles and garments requires consumption of vast energy. A considerable amount of wastes including sewage and discarded clothing is also generated which leads to the burden on the environment. Moreover, poor labour standards and poor working cum living conditions are additional outcomes of the ready-made Garment industry. Poor labour standards may include low wages, long working hours, hazardous work environment, workplace abuse and being excluded from unions.

Buyer companies in developed countries prefer outsourcing the production from overseas suppliers especially from countries where labour cost is considerably low, in order to keep the costing at the lower side as much as

possible and also to avoid the ill effects of production and industrialization. Working conditions of labour and their human rights are a matter of great concern in developing countries such as in India, China, Bangladesh, Pakistan and other Asian countries. This poor condition leads to many tragedies like factory fire and labour abuse that again results in poor life for workers and even death.

Textiles and garment firms are realising their responsibilities towards its stakeholders, environment and society. The ways in which a textile firm can fulfil its responsibility towards various stakeholders are similar to those of firms in other industries, as is evident from the suggestive points mentioned below:
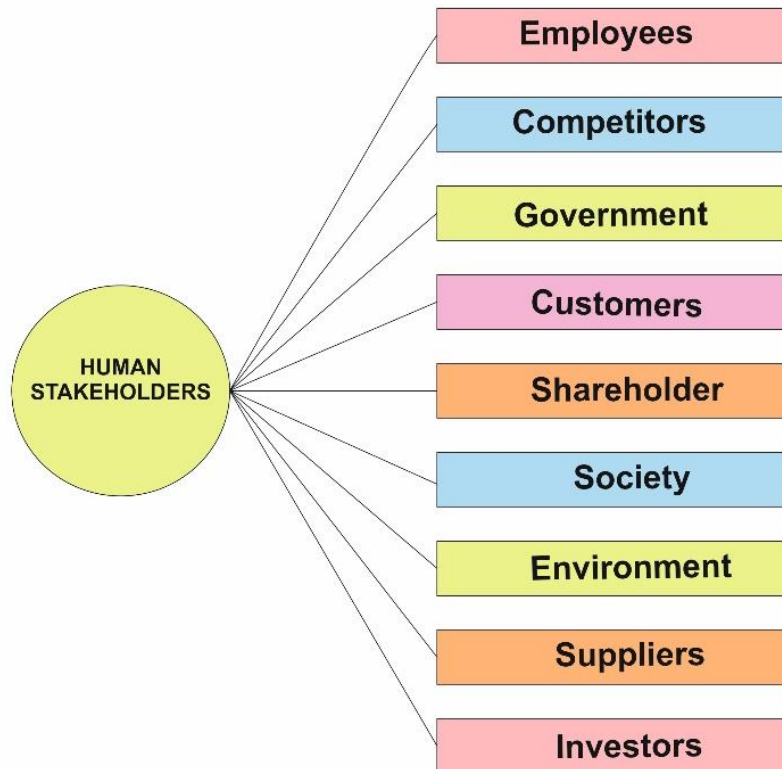
Fig.: 6.5 Stakeholders in Garment Industry

1. Towards employees:
• By having ethical recruitment, remuneration, promotion and other policies.
• By providing opportunities to the employees to voice their opinion and complaints and have an effective policy for the solution of these complaints.

• Ensuring a safe working environment for the employees.

• Having fair policies for the solution of employee disputes.

2. Towards shareholders:

➢ By representing a fair picture of the company's financial position and profit/loss to the shareholders.

➢ By rewarding them with a fair rate of dividend.

3. Towards the government:

➢ By providing the necessary information to the government as and when required.

➢ By paying taxes and dues timely.

➢ By abiding by the laws and regulations of the area in which the firm operates.

➢ Contributing to the economy through exports.

4. Towards customers:

➢ By providing quality products to the customers at reasonable prices.

➢ By undertaking constant research and development and coming up with innovative and more useful products from time.

5. Towards investors:

➢ By giving the investors a true and fair picture of the financial condition of the business.

➢ By ensuring a fair ROI (Return on Investment)

6. Towards suppliers:

➢ By ensuring timely and fair payment to the suppliers.

➢ By maintaining a good relationship with the suppliers.

7. Towards competitors:

➢ By indulging in fair and ethical practices, thereby raising the spirit of fair competition

8. Towards society:

➢ By involvement in activities that ensure development of area and society at large.

➢ By having a philanthropy arm to take care of the needs of the under-privileged.

➢ By creating job opportunities.

9. **Towards environment:**

➢ By ensuring the purchase of environment-friendly supplies. By ensuring a pollution-free process of production. By establishing a system of efficient disposal.

➢ By adopting practices which make the production and product eco-friendly.

➢ By adopting eco-friendly packaging.

Activities

Activity 1

Make a powerpoint presentation on CSR activities of a Firm.

Materials Required:

1. Writing material
2. Computer / laptop for PPT

Procedure:

1. Make a group of 4 students each.
2. Select a garment manufacturing firm
3. Enquire about its CSR activities through published literature or internet. (Volunteer in CSR activities if opportunity available)
4. Prepare a presentation document (preferably a PPT)
5. Present the presentation to the class.

Check Your Progress

A. Fill in the Blanks:

1. _____is conducted regularly to ensure that no fraud or scam is caused by the organisation

2. *A _____ audit may require the auditor to*examine the rules, regulations, orders and instructions for their legality, adequacy, transparency and prudence.

3. Compliance audit, Technical audit and _____ audit are three types of audits.

4. Pre-Audit, _____ audit and Post-audit are three phases of audit.

B. Write short answers for the following:

1. What are the three phases of audit? Explain.
2. What do you mean by audit? Explain its importance.
3. What is the significance of compliance in Garment Industry?

C. Write long answers for the following:

1. Explain types of audit.

2. Explain Corporate Social Responsibility.

4. Explain Core Labour Standards.

Session :2   Customer Specific Regulations and Requirements

Customer specific regulations and requirements are the requirements developed by the customer with the expectations that the supplier will identify, implement and audit these requirements.

These requirements fall into following categories:

i.   Material specific requirement

ii.   Delivery requirements

iii.   General requirements

iv.   Process requirements (ex: calendaring)

Customers specific requirement cannot be ignored and seek to expand the standard or define how a customer wants a portion of the standard to be met.

Country specific regulations for sector and their importance:

There are several country based regulations and requirements which a manufacturer / supplier needs to comply with. Some of these regulations could be mandatory while the rest could be voluntary / suggestive which the companies are expected to follow. Compliance to all the regulations might give a company some competitive edge over others. There could be certain requirements specific for a market or specific to a product category.

1. MANDATORY REGULATIONS

There are several mandatory requirements that manufacturers and exporters need to comply with. This includes legal requirements concerning product safety, use of chemicals, product quality and labelling. Additionally, many buyers have created their own non-negotiable terms and conditions which all their suppliers are bound to follow. These requirements could be non-legal, but still mandatory. Following are the few textiles and apparel related mandatory regulations / guidelines followed worldwide:

i. REACH

REACH stands for Registration, Evaluation, Authorization and Restriction of Chemicals and applies to all products including textile and apparels to be exported to European Union.

Hundreds of chemicals are used at different stages of textile and apparel manufacturing. Some of these chemicals could be harmful to the user. Hence, it is essential to follow REACH regulations to avoid the possible harm to the user of the product. This restriction is imposed over a wide range of chemicals used in textile and leather and such restrictions could limit the use of these chemicals completely or partially as measured by weight.

A list of some of the important chemicals banned for textile and apparel sector is as follows:

a. **Azo dyes and its aromatic amines**–

   Currently, around 60%-70% of dyes used for industrial purposes belong to the family of azo dyes due to its economic efficiency and usability. They are widely used in the textile industry to give vibrant colors to almost all materials including cotton, silk, wool, leather and other fibers. Overexposure to azo dyes can cause diseases like bladder cancers, liver cancers, and hematuria.

   India has published legislation prohibiting the handling of a total of 112 azo and benzidine based dyes. In 1993, the Government of India prohibited the handling of 42 benzidine-based dyes. The Ministry of Environment and Forests further prohibited the handling of an additional 70 azo dyes in 1997.

   According to the Indian import policy, import of textiles and textile articles is permitted subject to the condition that they do not contain any of the hazardous dyes (azo dyes) whose handling, production, carriage or use is prohibited in India under the provisions of the Environment (Protection) Act, 1986.

b. **Tris (2,3-dibromopropyl) phosphate, tris (aziridinyl) phosphinoxide, and polybrominated biphenyls (PBB)** – Used as waterproofing and stain-repelling chemicals.

c. **Perfluoro octane sulfonic acid and its derivatives (PFOS)** – Used as biocide and preservatives

d. **Dioctyl tin (DOT) compounds, tributyltin (TBT) compounds, and pentachlorophenol (PCP)** – Used in metal trims and accessories (zippers, buttons, jewellery)

e. **Polycyclic-aromatic hydrocarbons (PAHs), and phthalates** – Used in leather products

    f. Persistent Organic Pollutants (POPs) - used to make waterproof Textile material or flame-retardant fabric, and for leather finishing.

iii.   **ORR Chem**stands for Chemical Risk Reduction Ordinance and is aregulation from Switzerland regarding use of chemicals. ORR Chem totally bans certain chemicals while allow them only for certain applications when no other substitute is available. The idea is to minimize the risk and possible harm from chemicals by limiting their use.

    Similarly, Austria, Denmark, Finland, Norway, Germany and the Netherlands also have specific regulations for the use of some chemicals like Formaldehyde and PCP.

iv.   **Stockholm Convention**isa global regulation to protect human health and the environment from chemicals that remain intact in the environment for longer periods, become widely distributed geographically, accumulate in the fatty tissue of humans and animals, and have harmful impacts on human health and the environment.

v.   **Product Safety Regulations**

It is buyer's responsibility to provide design of the product which is legally safe for consumers to use. However if a manufacturer / exporter is not sure about the safety of the product, he must discuss this with the buyer or check with the safety guidelines of the importer country. Before manufacturing a product for export, an exporter may always ask its suppliers for fabric, trims and accessories if they have exported their material before or are familiar with the legal safety requirements of apparel export.

    a. Children's clothing regulations

    Generally such regulations are formulated for children below 14 years of age. The idea is to avoid fatal incidents, strangulation and choking hazards. A few regulations have been developed by various countries as listed below:

- The European Union has a Specific Standard for the Safety of Children's Wearincluding bathrobes, pyjamas, nightshirts, etc.It does not apply to baby's nightwear. This standard does not require additional labelling on the product. General product safety directive of European Union restricts the presence of certain heavy material in packaging of children's clothing, including lead, mercury, chromium, and others.

EN 14682 – Cords and drawstrings on children's clothing, **EN 14878 Textiles** – Burning behaviour of children's nightwear – Specification and **ASTM F1816-97** – Standard Safety Specification for Drawstrings.

- Similarly, UK has The Nightwear (Safety) Regulations 1985, for children's clothing.The United Kingdom's **BS 4578 Standard** devises test methods for hardness and air permeability for infants' pillows.

- The Washington Children's Safe Products Act (CSPA) requires manufacturers or importers of children's products to report to the Department of Ecology of Washington, before placing in the market products that contain chemicals that are included on the "List of Chemicals of High Concern to Children".

- Similarly, State of Vermont Act 188 also stipulates that manufacturers or importers of children's products should report to the Health Department when these products contain chemical.

- substances recorded in the "**List of Chemicals of High Concern to Children".**

b. Flammability or Fire Safety Standards

Countries like UK, Ireland, Netherland and Switzerland have specific legal requirements regarding apparel flammability. Flame retarding chemicals are used to avoid fabric flammability but this again is restricted under REACH, Hence a manufacturer / exporter has to check both REACH and Flammability guidelines for textile and apparel products.

There are national standards concerning the flammability of textile and apparel products in several countries. For ex: Standard for protective clothing, standard for protective gloves for firefighters, fire safety standard for bedding, standard for protective clothing with limited flame spread properties etc.

c. Standard for Personal Protective Equipment

CE stands for "European Conformity" and is an administrative marking which indicates conformity with health, safety and environmental protection.While exporting Personal Protective Equipment (PPE) to European Union, exporter is required to comply with the specific safety standards for the design, manufacturing, material use, testing and user

instructions concerning PPE. The exporter is required to affix CE marking to indicate that the product is in line with the PPE safety requirements.CE marking is required only if one or more of the 25 CE marking directives cover the products being exported.

d. Biocide related regulations

If biocides are added to textiles to protect it from pests or bacteria, it must comply with the Biocidal Product Regulation (BPR) as well as REACH.

vi. Labelling Requirements

With an aim to inform the consumer about the kind of apparel they are buying, it is required to affix a label to the product. It also educates the consumer about the material content, country of origin / 'Made in', product care, washing instructions, etc.

According to EU Textile and clothing regulation, products have to be labelled or marked before they are made available in the market for sale.

As per a Notification issued by the Ministry of Commerce on November 24, 2000, all pre-packaged products (intended for direct retail sale only) imported into India must carry the following declarations on the label: • name and address of the importer • generic or common name of the commodity packed • net quantity in terms of standard unit of weights and measurement (in metric) / size if garment • month and year of packing in which the commodity is manufactured, packed or imported, and the maximum retail sales price (MRP) • fibre content Footwear: Similar guidelines are applicable to footwear, which includes sizing and listing which standards are used. India follows the British size system for footwear. India has a voluntary Eco-Labelling scheme known as 'Eco-mark', which provides for easy identification of environment-friendly products. Criteria for the Eco-mark have been set for 16 product categories, including textiles and leather.

Following are some key points of labelling requirements:

a. Full fibre composition must be mentioned on the label of textile products. For example, Silk, wool, Nylon, Polyester, Cotton, Spandex etc. There is no mandatory standard for mentioning thefibre composition in most countries. However it is suggested as best practice to show the percentage of each fibre on the label. As per the mandatory labelling guidelines for textile and apparel products under the **Textile**

Labelling Act (TLA) of Canada, it is mandatory to disclose fibre content information expressed in percentages by mass and the dealer identity information on the label.

Fig.: 6.6 Fibre Content and Country of Origin label

b. Non-textile parts of animal origin must be clearly mentioned in the label (such as fur or leather)

c. The label should not contain abbreviations with the exception of mechanized processing codes.

Fig.: 6.7 Care Labels Symbols

d. Care instruction label is not mandatory under EU textiles regulation. However, if an exporter wishes to include them, care must be taken to use symbols as acceptable in the importer country.

Fig.: 6.8 Care Labels

An ideal care instruction label must include information on:

- General care and warnings

- Washing

- Drying

- Ironing

- Dry-cleaning

e. Country of Origin is not a mandatory standard for exporting to most countries, however if an exporter wishes to include, it should be clearly labelled and should not be deceptive. For example, a product imported from China, must not be labelled as 'Made in India'.

**Fig.: 6.9 Brand, Size and Fibre Content Labels**

f. Apparel products must carry a durable, legible, easily visible and accessible label, either on the product or on its packaging. Language of the label is preferably the language of the country of importer. For example, while exporting to Germany, the preferred language should be German. For apparels to be sold in Canadian markets, the care label should be in both English and French.

g. Size mentioning is not obligatory but expected on labels. Australia has defined size standards apparels too, which are:

- **AS 1344-1997**: Size coding scheme for women's clothing- Underwear, outerwear and foundation garments

- **AS 1954:1976**: Size coding scheme for men's clothing(including multiple fitting outerwear and industrial wear)

- **AS 1182:1997**: Size coding scheme for infants' and children's clothing- Underwear and outerwear

vii.   Intellectual Property Rights (IPR)

Intellectual property (IP) is a legal concept which refers to creations of the mind for which exclusive rights arerecognized. Under intellectual property law, owners are granted certain exclusive rights to a variety of intangible assets, such as musical, literary, and artistic works; discoveries and inventions; and words, phrases, symbols, and designs. Common types of intellectual property rights include copyright, trademarks, patents, industrial design rights, trade dress, and in some jurisdictions trade secrets. Illegal copy of registered apparel trademarks or design is considered as infringement to IPR. While selling own designs or apparels under a trademark, an exporter must make sure that no Intellectual Property Rights are being violated. Similarly if designs are provided by the buyer, they will also be liable in case it is found to violate any IPR.
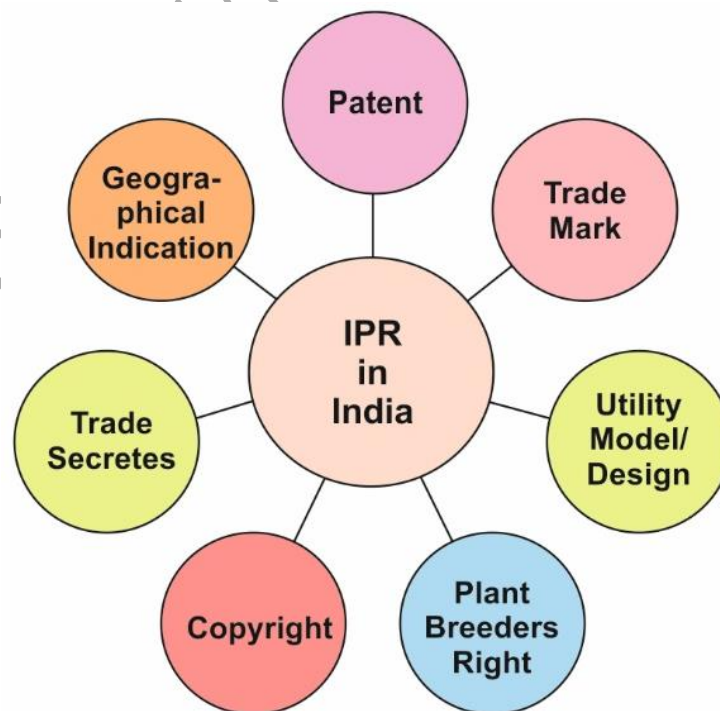
Fig.: 6.10 IPR in India

2. VOLUNTARY STANDARDS

In addition to mandatory standards (including legal and non-legal), there are many services that buyers implicitly expect or at least highly appreciate if an exporter intends to do business with them.

A voluntary consensus safety standard (also known as a "non-government consensus standard") is a safety standard for consumer products that establishes consumer product safety practices recommended to be followed by product manufacturers, distributors and sellers.

Buyers set their own standards for products. The exported products must comply to such standards along with the mandatory standard requirements. These standards can be based on the end use of the product or may be based on the product processing etc.. Such standards and implemented by the buyer to meet their business goals of desirable quality product and desirable manufacturing for the product. These standards are different for different buyers.

For example:- The EU has a voluntary standard for Textiles known as **The Burning Behaviour of Children's Nightwear**, which helps in complying with the GPSD.

CUSTOMER SPECIFIC REQUIREMENTS MANDATED AS A PART OF WORK PROCESS

As we have country specific regulations in this sector for export of textiles and apparel related products, similarly, there could be few customer / company specific requirements / regulations, which exporter / manufacturer needs to fulfil in order to do business with that customer.

Following are few basic types of customer specific requirements

1. Restricted Substances Lists (RSLs)

Apart from REACH guidelines, many fashion brands and retailers have created their own list of restricted substances, which they impress upon their suppliers to follow. Such company specific Restricted Substances Lists may be stricter than REACH. Suppliers intending to work with these firms are required to comply with these customer specific RSL along with other Country specific regulations.

Customer Specific Standards are often based on **Zero Discharge of Hazardous Chemicals (ZDHC)** guidelines on safe chemicals use.

2. Product design and development

Generally buyers have their own design team and provide new designs to suppliers. However, suppliers or manufacturers can also maintain their

design team and suggest the buyers about new designs ideas. Buyers will always appreciate new designs, materials or production methods to make them stand out in the market and have a competitive edge over other brands.

3. Garment Care Preferences

Most customers prefer an easy handling fabric which can be hand washed or machine washed and easy to care.

4. Smaller Lead Time

Some apparel brands/buyers work on fast fashion concept and prefer a supplier / manufacturer who can work on deadlines and smaller lead time.

5. Complexities

Factories usually try to get easier work order based on available fabric, simple designs and large lead time. However, brands in order to stand out in the market might ask for complex designs and innovative fabrics. To work with such buyers / brands and to supply those with their specific requirements could be difficult. Also manufacturers / exporters are required to be flexible with workmanship, Minimum Order Quantity (MOQ) and price.

6. Location of Factory in GSP

As per EU's Generalised System of Preferences (GSP) there are around 71 countries worldwide which are preferred over on listed countries to manufacture and export to EU buyers. EU Buyers are also benefited with removal of import duties. Thus, buyers might have specific requirements for manufacturer from a country listed in GSP.

Activities

Activity 1

Visit a Garment export unit and make a report on Country specific regulations which they follow.

Materials Required:

1. Writing Material
2. Ruler
3. Adhesive

Procedure:

1. Make a visit to any nearby garment export unit.

2. Enquire about the countries where they export their product.

3. Enquire and prepare a report about the country specific regulations being followed for any export order.

Check Your Progress

A. Fill in the Blanks –

1. _____ stands for Registration, Evaluation, Authorization and Restriction of Chemicals.

2. _____ is an administrative marking which indicates conformity with health, safety and environmental protection.

3. With an aim to inform the consumer about the kind of apparel they are buying, it is required to affix a _____to the product.

4. ZDHC stands for _____.

5. GSP stands for _____.

B. Write short answers for the following:

1. Explain 'Restricted Substances List'.

2. Give few examples of Children's clothing standards.

C. Write long answers for the following:

1. What are customer specific requirements?

2. Explain any 3 country specific mandatory regulations.

Session: 3   Ethical Compliance and Related Documents

Indian Garment industry is getting attention from consumers, social workers, welfare organisations and branded international buyers. Many international buyers are demanding their manufacturers / suppliers to comply with their 'Code of Conduct' and 'Code of Ethics' while placing an order.

Adherence to quality standards and employee satisfaction has become important parameters for measuring the organisation's performance. Manufacturers and organisations comply with regulations and codes, not only out of a need to act generously, but also for survival in a globally competitive environment.

In the light of growing competition among exporting countries and increasing demand for products that meet internationally recognised standards, it is essential for the manufacturers / suppliers to improve their safety and health compliance code and provide proper working environment in their factories.

Several countries have also developed various international compliance standards on health and safety compliance. Exporters should follow these compliance codes to survive in the global market. Moreover, regular practice of compliance with code of conduct would ensure higher price of products, less employee turnover rate, smooth industrial relation as well as global image & reputation.

In a consumer market, brand name and reputation are most critical assets. Companies should adopt Ethical compliance code to protect their goodwill in the market. The Indian garment industry needs to be tough on compliance rather than competing with other developing countries manufacturing cheaper garments.

WHY CODE OF ETHICS IS REQUIRED?

Code of Ethics represents an organisation's self-made constitution / regulation which aim to provide general behavioural guidelines. Such guidelines are generally towards safe working conditions, prohibition of child labour, environment protections, work hours and wage rate control, equality and discrimination issues, labour safety standards, bribery and corruption, unfair practices etc.

Codes of Ethics are generally not as detailed as Code of Conduct. Code of Ethics represents an organisation's culture and values. Large organisations usually have a dedicated department of Corporate Social Responsibility to take care of ethical practices of the organisation. Also it is a great tool for the organisation or the Brand to portray and improve brand image to the customers.

By following such ethical practices, it is conveyed that the brand is dedicated towards high quality products, comply with legal requirements and undertakes to protect the environment. Such message boost customers' confidence in the brand and products quality. Brands speak loud about their ethics and value on their websites and promotion campaigns to educate the customers and stand out in the market.

Attention to working conditions and labour related issues is also required as most of the buyers outsource their requirements from countries with lower wage rates in order to cut down on costs. But such manufacturer might not be following ethical and fair practices related with labour and environment. Hence, buyers link their code of ethics to work orders for manufacturers and compel them to respect all the labour and environment related guidelines which the buyer company believes in.

These ethics are required for:

- Increasing national competitiveness in terms of social compliance

- Increasing competitiveness of small scale manufacturers

- Reducing burden on manufacturers

In India, the **Apparel Export Promotion Council (AEPC)** is committed towards legal compliance and ethical business practices and encourages members / exporters to comply with all applicable laws and regulations of the country, to meet all the **International Compliance Standards**.

Further, the council has designed a garment factory compliance program 'DISHA' (Driving Industry towards Sustainable Human Capital Advancement) that aims to spread awareness regarding the importance of compliance among Indian garment exporters.

Some of the important compliance codes in Indian garment industry are listed below.

Fig.: 6.11 Code of Ethics

1. Working Hour and Wage Rate Compliance

- Garment factory must ensure that employees should get at least minimum wages according to the domestic law and as per the time spent by them in the industry.

- Employer should pay equal wages to both men and women employees, for performing the same work or work of a similar nature.

- Worker employed for more than nine hours on any day or for more than 48 hours in any week, should be entitled to wages at premium legal rates for such overtime work.

- Every worker should be given one holiday (for a period of 24 consecutive hours) in a week. Whenever a worker is required to work on a weekly holiday, he is to be allowed a compensatory holiday for each holiday so lost.

- Every worker is to be allowed at least half an hour rest interval after a maximum working of 5 hours at a stretch.

- Overtime work should be voluntary for employees and should be supported by legally required rate of compensation for such overtime period.

- No worker should be employed below the age of 14 as per guidelines of International Labour Organisation.

- There should not be any sort of forced labour whether in the form of prison labour, indentured labour, bonded labour or otherwise.

2. Workplace and Work Environment Compliance

- Organizations should ensure proper ventilation, sufficient light and air to provide the employees with standard working environment.

- Indian garment industries should provide the workers with comfortable sitting chair with back support and proper leg space.

- All employees should be treated with dignity and respect. No employee should be subject to any physical, sexual, psychological or verbal harassment or abuse.

- Right of employees to form association and collective bargaining should be respected and recognized. No employee should be subject to any sort of harassment, intimidation or retaliation for engaging in association or collective bargaining.

3. Non-discrimination compliance

- Organizations should not discriminate employees on the basis of physical characteristics, beliefs and cultural characteristics. All the terms and conditions of employment should be based on an individual's ability to do the job. They should provide equal employment opportunities for all employees and associates irrespective of the employees' race, colour, religion, age, sex, creed, national origin, marital status, etc.

- Women workers should receive equal remuneration, including benefits, equal treatment, equal evaluation of the quality of their work, and equal opportunity to fill all positions as male workers.

- Women workers who avail maternity leave, should not face dismissal or threat of dismissal or loss of seniority or deduction of wages, and should be allowed to return to their former employment at the same rate of pay and benefits.

4. Health and Safety Compliance in Indian Garment Industry

- Employees should not be exposed to hazards, including glues and solvents, which may endanger their safety, including their reproductive health.

- No employee should work on machines without adequate training, knowledge and supervision.

- Industries should comply with international standard code, such as ISO(Indian Standards Organisation) or importing countries standard code to become competitive in international markets.

- Wiring should be in good condition with no broken junctions or wires sticking out at the end.

- Eye-wear and face shields should be provided in areas with danger of sparks, glare, hazardous liquids and excessive dust.

- Ear plugs or muffs should be given in places with excessive noise such as generator rooms and rooms with embroidery machine.

- Headgear and protective shoes are necessary for workers involved in loading and unloading operations.

- Factories should have effective fire extinguisher with proper usage instructions.

Activities

ACTIVITY 1

Visit a Garment export unit and make a report on Code of Ethics which they follow.

Materials Required:

1. Writing material
2. Ruler
3. Adhesive

Procedure:

1. Make a visit to any nearby garment manufacturing unit.

2. Enquire about the countries where they export their product.

3. Enquire and prepare a report about the Code of Ethics being followed.

Check Your Progress

A. Fill in the Blanks :

1. Adherence to _____and employee satisfaction has become important parameters for measuring the organisation's performance.

2. _____represents an organisation's self-made constitution / regulation which aim to provide general behavioural guidelines.

3. Large organisations usually have a dedicated department of _____to take care of ethical practices of the organisation.

4. _____is committed towards legal compliance and ethical business practices.

5. Organizations should not _____employees on the basis of physical characteristics, beliefs and cultural characteristics.

B. Write short answers for the following –

1. Explain 'Code of Ethics'.

2. Explain in brief about workplace and work environment compliance in a garment unit.

3. Discuss about wage rates and working hour's compliance for workers in a garment unit.

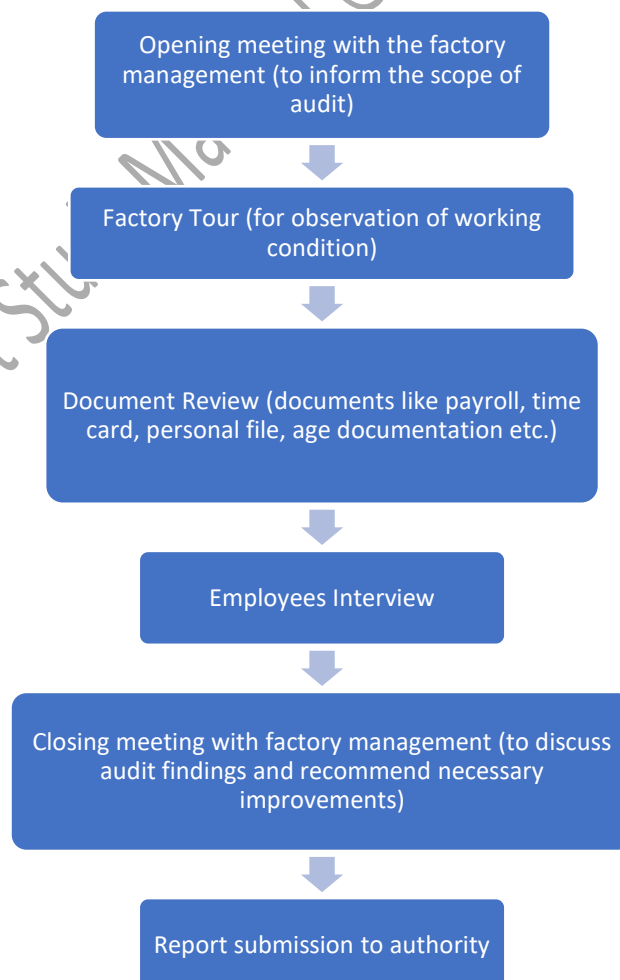**C. Write long answers for the following-**

1. Write short note on compliance code guidelines for Indian Garment Industry.

2. Explain Health and Safety compliance in Indian Garment Industry.

Session: 4 Documentation and Reporting of Compliance Deviation

Social compliance deals with employee's health and safety, their legal rights and working environment from social perspective. To make a factory compliant to such national or International standards, it needs to follow local labour law and international social compliance requirements. Social compliance audit is generally related to child labour, forced labour, health and safety, abuse and discrimination, disciplinary practices, working hours, remuneration, freedom of association, management systems, etc.. Social compliance is a vital part of the apparel industry because it has an impact on a company's reputation and business.

IDENTIFICATION AND REPORTING OF ANY POSSIBLE DEVIATION

Social compliance audits conducted as per the Code of Ethics of different buyers are based on the following steps:

Opening meeting with the factory management (to inform the scope of audit)

Factory Tour (for observation of working condition)

Document Review (documents like payroll, time card, personal file, age documentation etc.)

Employees Interview

Closing meeting with factory management (to discuss audit findings and recommend necessary improvements)

Report submission to authority

CORE LABOUR STANDARDS

COMPLIANCE CLUSTERS	COMPLIANCE POINTS
1. Child Labour	• Child Labourers • Documentation and Protection of young workers • Hazardous works and other worst forms
2. Discrimination	• Gender • Other grounds • Race and Origin • Religion and Political opinion
3. Forced Labour	• Bounded Labour • Coercion • Forced Labour and overtime • Prison Labour
4. Freedom of Association and collective Bargaining	• Collective bargaining • Freedom to Associate • Interference and discrimination • Strikes • Union Operations
5. Compensation	• Minimum wages • Overtime wages • Method of payment • Wage information, use and deduction • Paid leave • Social security and other benefits
6. Contrasts and Human Resources	• Employment contracts • Contracting procedures • Termination

	• Dialogue, Discipline and Disputes
7. Occupational safety and health	• OSH Management systems • Chemicals and hazardous substances • Workers Protection • Working Environment • Health services and First Aid • Welfare facilities • Workers Accommodation • Emergency preparedness
8. Working Time	• Regular Hours • Overtime • Leave

These are 8 major compliance cluster which are divided into compliance points. These points are required to be checked during audit. The audit checklist may vary from organisation to organisation but a suggestive checklist is shown below:

a. Checklist for Child labour and young workers:

1. Employer having a reliable system to check age of worker before hiring.

2. Employer complying to guidelines regarding fitness of worker

3. Maintenance of a register of workers below 18 years of age

4. Workers below 18 years of age performing work which is hazardous by nature.

5. Workers engaged for more than permissible working hours.

6. Engagement of employer in child labour.

b. Checklist regarding wages and working hours:

1. Workers are paid their wages on time

2. Worker's wages are paid correctly as per norms and minimum standards.

3. Women workers are paid for maternity leaves.

4. Workers are paid correctly for annual leaves

5. Workers are paid correctly for festival holidays.

6. Workers are paid correctly for sick leaves.

7. Workers are paid correctly for casual Leaves.

8. Workers are paid correctly for duration of work stoppages.

9. An accurate pay-roll record is maintained by the employer.

c. Checklist for social security and other benefits:

1. Employer has provided compulsory group insurance for workers?

2. Employer pays correct compensation in case of worker's death.

3. Workers are paid correct compensation for work related accidents and diseases.

4. Employer has established a Provident Fund and deposit employer's share for workers as per norms.

5. Festival bonuses are paid to workers as per norms.

6. Workers are provided with wage slips.

7. Any unauthorized deduction is not made by employer from worker's wages / salary.

d. Checklist for worker working with chemical and hazardous substances:

1. Workers engaged for working with chemical or hazardous substances are effectively trained.

2. Employer has taken action and precaution to prevent exposure to chemicals or hazardous substances.

3. All chemicals or hazardous substances are properly labelled.

4. Employer maintains an inventory of chemicals and hazardous substances at workplace.

5. All chemicals and hazardous substances are properly stored.

6. Availability of adequate washing and cleaning facility in case of exposure to hazardous substances.

7. Employer possesses license for storage and use of chemicals.

e. Checklist for emergency preparedness:

1. Workers are trained for firefighting and rescue.

2. Availability of emergency exit window and doors.

3. Availability of alternative stairs.

4. Availability of firefighting equipment.

5. Availability and functioning of fire detection and alarm system.

6. Emergency exists and escape routes are clearly marked.

7. All flammable materials are safely stored.

8. Possible sources of ignition are appropriately safeguarded.

9. Periodic emergency drills are conducted.

f. Checklist for Health services and first aid:

1. Availability of required health facility and staff.

2. Employer complying with medical check-ups of workers.

3. Workers are trained for first-aid and first-aid team is formed.

4. Availability of readily assessable first-aid boxes.

g. Checklist for welfare activities:

1. Availability of adequate day care facility

2. Availability of adequate lunch room / canteen.

3. Availability of adequate rest rooms

4. Availability of adequate washing facility

5. Availability of clean and safe drinking water

6. Accessible toilets and washrooms.

h. Checklist for working environment:

1. Noise levels are acceptable.

2. Temperature and ventilations are acceptable.

3. Workplace is clean and tidy.

4. Workplace is adequately lit.

PROCEDURE TO FOLLOW IN CASE OF DEVIATION

After the compliance audit, in case of any deviations are recorded, the auditor prepares a **Corrective Action Plan (CAP)**. Such plans are reviewed periodically and worked upon to avoid deviations before next audit.

Following are the aims of CAP:

1. To identify the most important shortcomings

2. To understand the root cause of the shortcomings

3. To assign a responsible person

4. To propose corrective action

5. To reach goals within time

In order to ensure that suggestions of CAP are implemented, follow-up audits are done as soon as a number of improvements are achieved. Third party audits can also help the manufacturer / exporter to get better suggestions and audit reports.

Exit meeting with management

The exit meeting with management takes place at the end of the factory visit. The aims of the exit meeting are:

- To get management on board to implement the process- to improve labour practices.

- To present the main audit findings to management, check whether management agrees with the findings and ask a response from their end with respect to findings thereby unveiling the possible causes of the problems which are identified.

- To propose corrective action plans for improvements, discuss with management whether improvements are feasible and within timeframe.

- To present main audit findings to factory level trade union representatives or elected worker representatives.

Activities

Activity 1

Visit a garment manufacturing unit and make a report on Corrective Action Plan which they follow in case of compliance deviation.

Materials Required:

1. Writing material
2. Ruler
3. Adhesive

Procedure:

1. Make a visit to any nearby garment export unit.
2. Enquire about the countries where they export their product.
3. Enquire and prepare a report about the Corrective Action Plan followed in case of compliance deviation.

Check Your Progress

A. Fill in the Blanks:

1. _____compliance deals with employee's health and safety, their legal rights and working environment from social perspective.
2. Social compliance audits are conducted as per the _____of different buyers.
3. These are ___ major compliance cluster which are divided into compliance points.
4. After the compliance audit, in case of any deviations are recorded, the auditor prepares a _____.

B. Write short answers for the following –

1. Explain in brief the process of auditing compliance standards in a garment unit.

2. What precautions are to be taken by a Garment unit where chemicals or hazardous substances are used?

3. What are the guidelines regarding employment of child labour and young workers?

C. Write long answers for the following-

1. What procedure to be followed in case of any deviation in compliance with standards?

2. How should a garment unit be prepared for emergency?

ANSWER KEY

MODULE 1

SESSION-1
Fill in the Blanks:

1. four-point

2. locked

3. increases

4. Tolerance

5. 100 square units

Multiple Choice Questions

1. a: Australian Association of Textile Chemists and Colourists

2. d: All of the above

3. b: four-point system

4. a: grams per square meter cutter

SESSION-2
Fill in the Blanks:

1. store

2. layout

3. expiration

4. manual

Multiple Choice Questions

1. d): All of the above

2. a): Purchase order

3. c): Compression based

4. a): Purchase department

SESSION-3

Fill in the Blanks:

1. Rejected

2. Inspector

3. Carefully and quickly

4. Supply Chain Logistics

5. Q.C. department

Multiple Choice Questions

1. d): All of the above

2. b): Store department

3. a): Committee of officers

4. b): Supplier

True/ False

1. True

2. False

3. True

4. True

SESSION-4

Full forms:

1. Gram per square meter

2. Picks per inch

3. Ends per inch

4. Good receipt note

Multiple Choice Questions

1. d): All of the above

2. d): All of the above

SESSION-5

Fill in the Blanks:

1. Collaboration

2. Fight

3. Conflicts

4. Desired completion date

Multiple Choice Questions:

1. d): All of above

2. b): Conditional actions

3. a): Actual completion date

4. c): Evaluation

MODULE 2

SESSION-1

True/False:

1. False

2. False

3. False

4. True

5. True

6. True

SESSION-2

Fill in the Blanks:

1. Efficiency

2. Receive, issue

3. Block stacking

4. Goods Receive Note

5. Outward, issue

SESSION-3

True/False

1. False

2. True

3. True

4. False

5. True

6. False

SESSION-4

True/False

1. False

2. False

3. False

4. True

5. True

Fill in the Blanks:

1. Fungicides

2. Pheromones

3. Environmental

SESSION-5

Fill in the Blanks:

1. work-in-progress, finished goods

2. Material Requirements Planning (MRP)

3. Goods Receipt Register

MODULE 3

SESSION-1

Fill in the blanks:

1. Records Management (RM)

2. Overstocking

3. Bin card

4. Material Requisition

5. Bill of Material

SESSION-2

Fill in the blanks:

1. Integrated Pest Management (IPM)

2. Pesticide

3. Localised

4. Sheets, card index form

True/False

1. False

2. False

3. True

4. True

SESSION-3

Fill in the blanks:

1. raw material ,spares, chemicals

2. Floor Management

3. store transactions

4. conflict resolution

MODULE 4

SESSION-1

Fill in the blanks

1. Safety

2. Fire

3. Running

4. Disconnection

5. Smoke, fumes

SESSION-2

Fill in the blanks

1. Motivates

2. Deep

3. Disinfectants

4. Degreaser

5. Regular

SESSION-3

True/false

1. False

2. True

3. False

4. True

5. True

SESSION-4

Fill in the blanks

1. Communication

2. Tone , method

3. Machine operating

4. Sensitive protective

5. Repairs, modifications, maintenance

MODULE 5

SESSION-1

Fill in the blanks

1. Health, security

2. Fire extinguishers

3. Emergency

4. Oily

5. Proper sanitary facilities

SESSION-2

Fill in the blanks

1. Emergency

2. Physical injury

3. Workstation

4. Chair

5. Breaks

True/false

1. False

2. True

3. False

4. False

5. True

6. True

7. True

8. False

SESSION-3

Fill in the blanks

1. Hazard

2. Identification

3. Entanglement

4. First aid

5. Assembly points

Identify and name the safety signs

1. Wet floor

2. Smoking ban sign

3. Hazardous substance

4. Flammable substanc

SESSION-4

Fill in the blanks

1. Supervisor

2. Emergency response

3. Emergency

4. Exit door

MODULE 6

SESSION-1

Fill in the blanks

1. Audit

2. *Compliance audit*

3. Financial

4. On-site

SESSION-2

Fill in the blanks

1. REACH

2. CE

3. Label

4. Zero discharge of hazardous chemicals

5. Generalised system of preferences

SESSION-3

Fill in the blanks

1. Quality standards

2. Code of ethics

3. Corporate social responsibility

4. Apparel export promotion council (AEPC)

5. Discriminate

SESSION-4

Fill in the blanks

1. Social

2. Code of Ethics

3. 8

4. Corrective action plan (CAP)

List of Credits

Graphics

Verma Prachi – Fig. 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11