Occupational Safety and Health

Presented by

Skills Training Centre

Department of Labour

Ministry of

Labour,Employment and

Social Security

CONTENT

(1) SAFETY

(2) MATERIALS HANDLING AND STORAGE

What is safety?

- Safety is the prevention of accidents
- Safety is directly linked to accidents

Accident

- An accident is said to have been caused at the point of divergence from a planned and controlled event to an unplanned and uncontrolled event.

How accidents are caused?

- By lack of knowledge and understanding
- By inadequate training and experiences
- By unsafe practices and disregard of safety rules
- By unsafe environment and conditions
- By horse play or pranks

How accidents can be prevented?

- Accidents can be prevented only if everyone appreciates the cause of the accidents
- Dismissing an accident occurrence by describing it as carelessness or negligence is not good enough

Accident prevention requires

- Goodwill, example and discipline
- Safety consciousness and a safety habit
- Good housekeeping and pleasant surroundings
- Good planning of plants and machineries
- Safe system and methods of work
- Highest possible standard of supervision

Occupational safety and Health

A safe working place can be defined as a clean efficient working environment, where workers can perform to the best their ability, without fear of any toward mishappenings.

Ergonomics

Technological, organizational and human factors affect the behaviour on safety and well being of people at their work places.

Ergonomics knowledge is applied to the design of work places to safety human needs.

- Human body
- Work environment
- Warnings

1. Human Body

- The workplace shell be designed for the operator.
- Body posture
- Muscular strength.
- Body movement

2. Work environment

- Work environment includes work place and space for work related traffic.
- The physical chemical and biological environment should not impair work.
- Air quality should be adjusted.
- Color of room and equipment can influence the working environment.
- Workplace acoustics.
- Vibration and impact.
- Exposure to dangerous material and harmful radiation
- Physical/ sensory overloading causes fatigue.
- Job enlargement.
- Job enrichment
- Lighting

3. Warnings

An effective warning alerts user to the existence of hazards and how to avoid it.

(1) Warning are clear and convincing keywords

(a) Caution (minor injury)

(b) Warning (injury, damage)

(c) Danger (severe injury, even death)

(2) Attract immediate attention

(3) Shape

(4) Explain how to avoid danger

Safety Management System - SMS

- Safety policy
- Safety work practices
- Safety training
- Group meeting
- Accident investigation and analysis
- In house safety rule and regulation
- Safety promotion
- Safety inspection
- Maintain

Safety Management System - SMS

- Hazardous Analysis
- Use of labels for hazardous substances and chemicals
- Emergency preparedness
- Occupational Health program
- Evaluation
- Maintain

Working conditions and the working environment

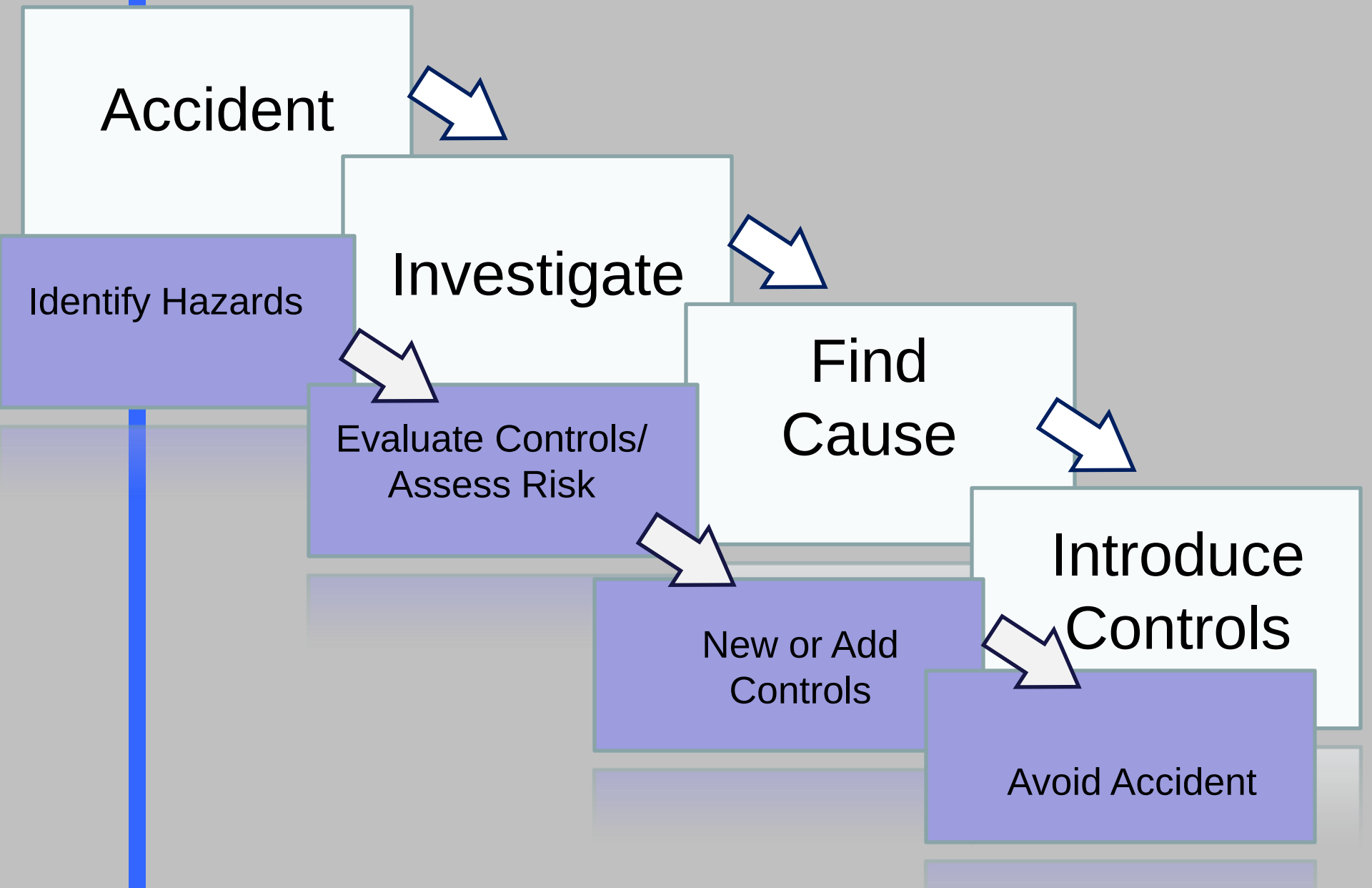
- general considerations
- occupational safety and health organization
- safety criteria
- The prevention of industrial accidents
- working premises
- good housekeeping
- lighting
- noise and vibration
- climatic conditions
- exposure to toxic substances
- personal protective equipment
- ergonomics
- working time
- work related welfare facilities

WSH (Risk Management) Regulations

- **Intend?**
  - Reducing risk at source

  - Moving away from prescriptive
  - Ownership of safety outcome

Traditional vs. New approach



WSH (Risk Management) Regulations

- **HOW?**
  - Identify Hazards
  - Compute Risks
  - Control Risks

(1) IDENTIFY

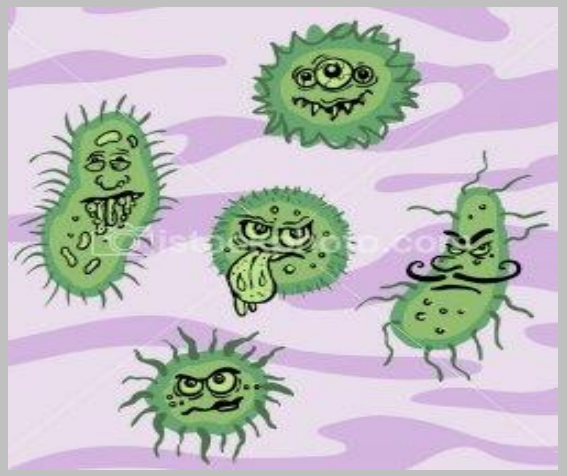
- HAZARD
  - Anything with potential to cause harm or injury

(1) IDENTIFY – Types of Hazards

- Physical
  - Working at height, Moving vehicle, Noise
- Mechanical
  - Vibration, Rotating parts, Sharp edges
- Electrical
  - Electrical shocks, burns, inadvertent activation

(1) IDENTIFY – Types of Hazards

- Radiation
  - Ionizing radiation, Laser, Infrared
- Chemical
  - Solvents, Asbestos, Cadmium
- Biological
  - SARs, H1N1,Legionella, HIV, Fungi



(1) IDENTIFY – Types of Hazards

- Ergonomic
  - Posture, Equipment, Room temperature
- Fire & Explosion
  - Explosive gas, liquid or dust
- Natural
  - Lightning, tree collapse

(1) IDENTIFY – When & How

- **Hazard Identification**
  - Identify all possible situations where people may be exposed to injury, illness or disease

- Process based
- Activity based

(1) IDENTIFY - Where

- Consider
  - Tasks
  - Location

- Many hazards are a feature of the premises rather than the task
- Conduct location assessment before individual task assessment
- Divide tasks into sequential steps

(2) EVALUATE

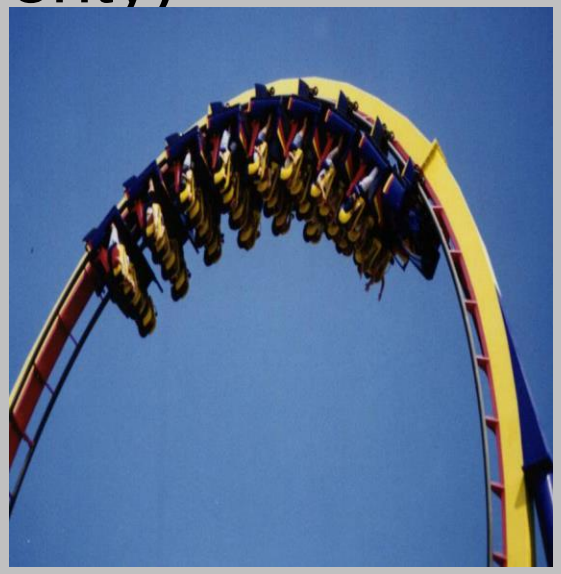
- RISK
  - The likelihood that a hazard will cause a specific bodily injury to any person

(2) EVALUATE

- **Risk Evaluation**

  – Determining the risk level

    Risk = F (Likelihood, Severity)



(2) EVALUATE - Likelihood

- Usually underestimated
- Consider existing controls
- Work conditions & procedures

Likelihood (LLH)	Description
Remote	**Not likely to occur**
Occasional	**Possible or known to occur**
Frequent	**Common or repeating occurrence**

(2) EVALUATE - Severity

- Be realistic
  - ➢Number of people affected
  - ➢Individuals at risks

Severity	Description
Minor	**No injury / minor cuts & bruises, irritation, ill-health with temporary discomfort. (1st Aid Treatment only)**
Moderate	**Injury / ill-health leading to disability. (Medical Treatment)**
Major	**Death, serious injury or life-threatening occupational disease.**

(2) EVALUATE – Risk Matrix

Likelihood / Severity	Remote	Occasional	Frequent
Major	Medium risk	High risk	High risk
Moderate	Low risk	Medium risk	High risk
Minor	Low risk	Low risk	Medium risk

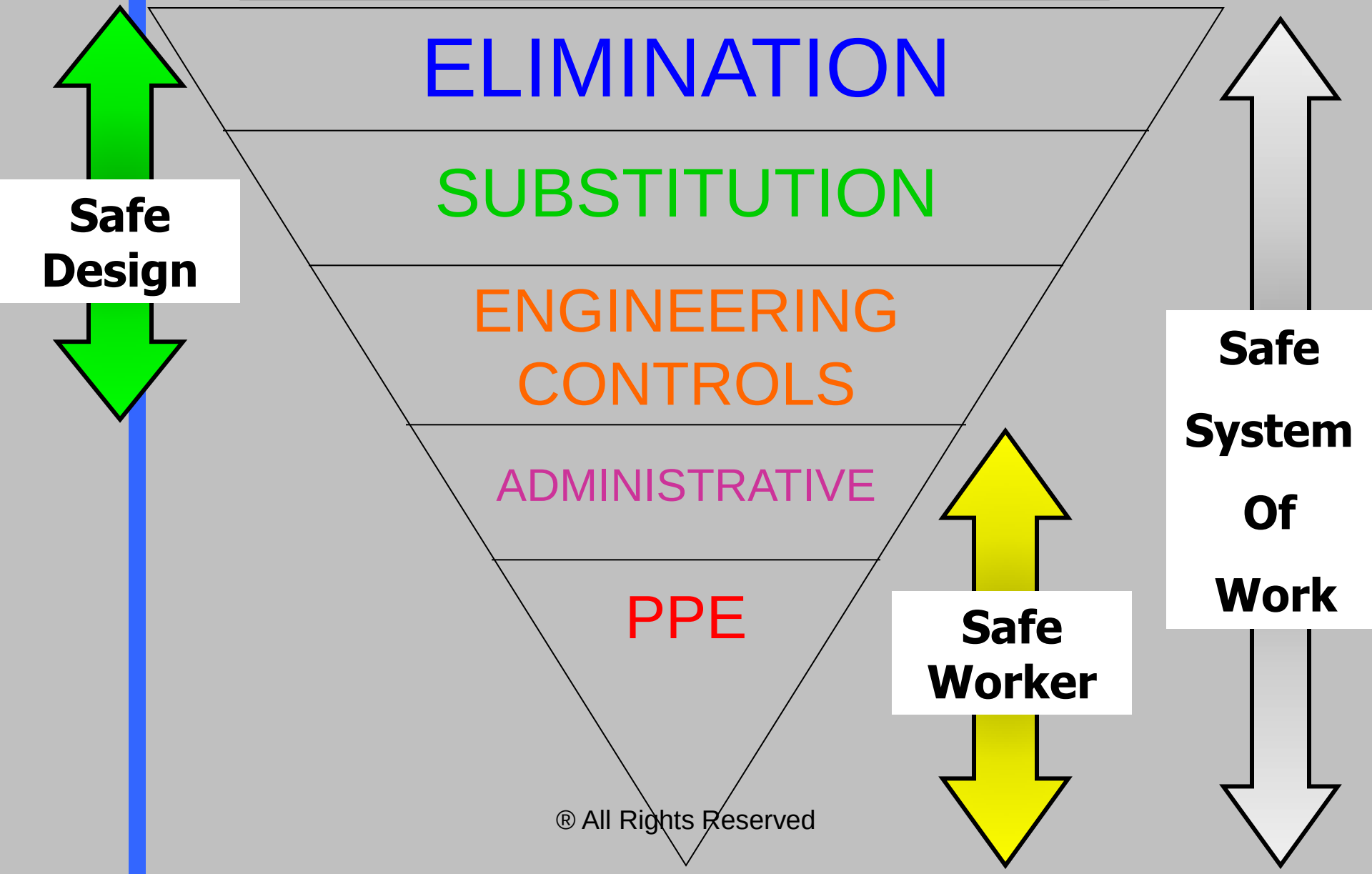
(2) EVALUATE – Risk Level

Risk Level	Acceptability of risk	Recommended Actions
Low Risk	Acceptable	▪ Additional control measures may be needed ▪ Regular review
Medium Risk	Moderately acceptable	▪ Should reduce to low risk as soon as possible ▪ Implement interim control measures ▪ Management attention required
High Risk	Not acceptable	▪ Hazard should be totally eliminated before work commences ▪ Must reduce to low risk before work commences ▪ Immediate management intervention required

(3) CONTROL

–Reasonably practicable measures to eliminate or reduce risks

Hierarchy of Control



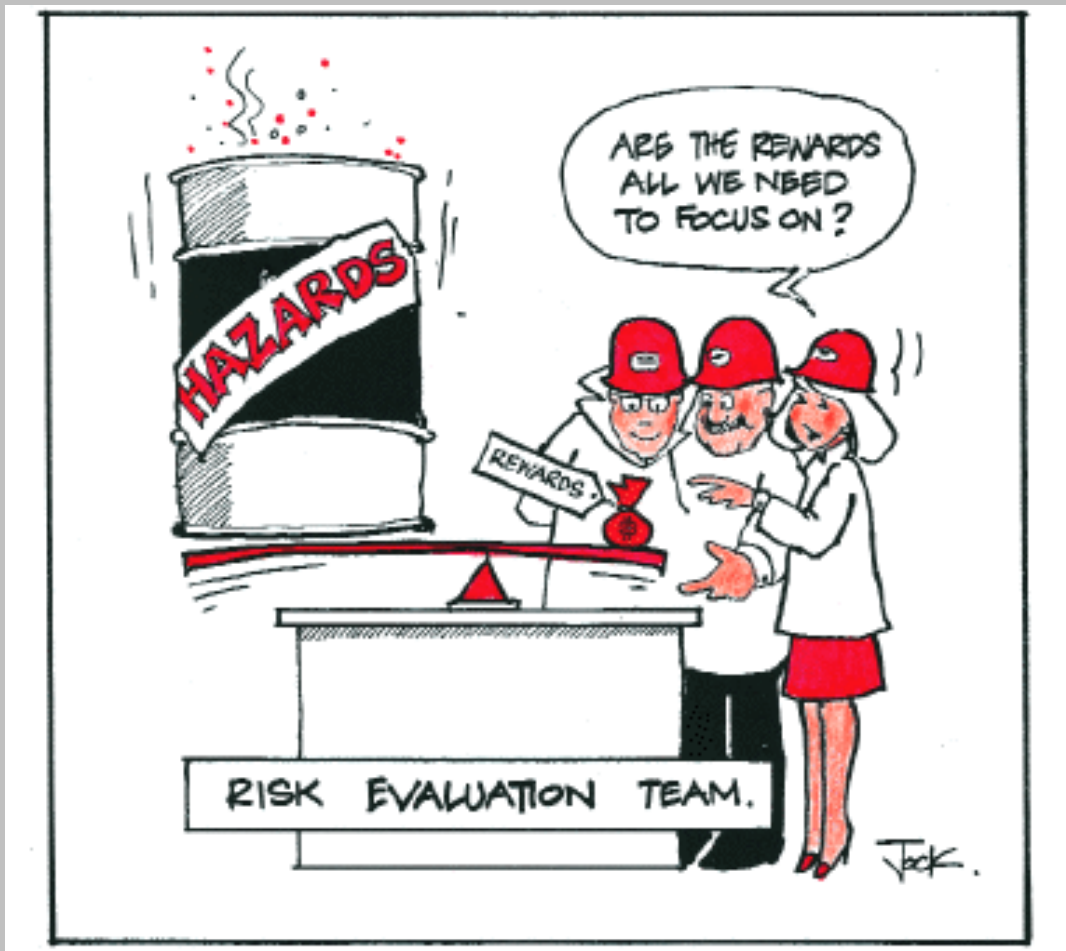
Competent Person

- Safe Work Procedures
- Warning Signs
- Personal Protective Equipment
- Variation in perception of risks
- Supervision required
- Training & Competency

Depth of Assessment

- Must sufficiently addressed **all foreseeable risk**

- Customize to suit **your** work processes



Example

Hazard Identification				Risk Evaluation				Risk Control	
#	Activity	Hazard	Possible Accident / Ill Health & Persons-at-Risk	Existing Risk Control	SEV	LLH	Risk Level	Risk Control Measure	Action Officer (Follow-up date)
1	Carrying out spray painting	Toxic solvent vapours	Exposure to spray paint solvents can result in ill health	Organic vapour respirators SWP LEV system	Moderate	Remote	Med	Regular maintenance of spray booth e.g. changing of filters and testing for airflow. Monitor worker's exposure to solvent vapours. Use explosion-proof lights & fixtures. Use non-sparking exhaust fans. Bond & ground spraying equipment & conductive objects. Substitute solvent-based paint with high-solids coatings or use airless spray method.	Plant Manager (Sub-stitution: Jul 2007 Tire test: Sep 2006)
		Flammable spray paint mists / vapours & ignition sources	Explosion from spray paint mists & vapours can result in serious injury or death of worker & nearby people	SWP LEV system	Major	Remote	Med		

Hazard Identification

Risk Evaluation

Risk Control

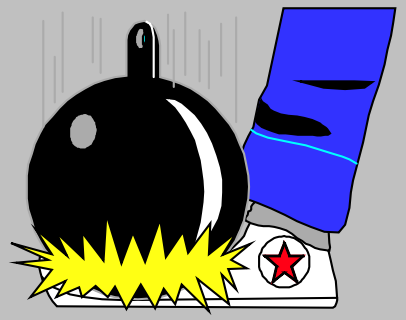
MATERIALS HANDLING AND STORAGE

Materials Handling

A technique which includes the art of lifting, moving, placing or storing of materials through the use of appropriate handling equipment and/or men.

Types of Materials Handling Accidents

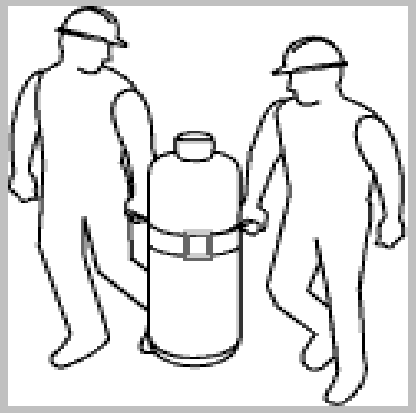
- Physical strain/over-exertion
- Fall
- Collision
- Getting trapped between objects



Classification of Materials Handling Operation

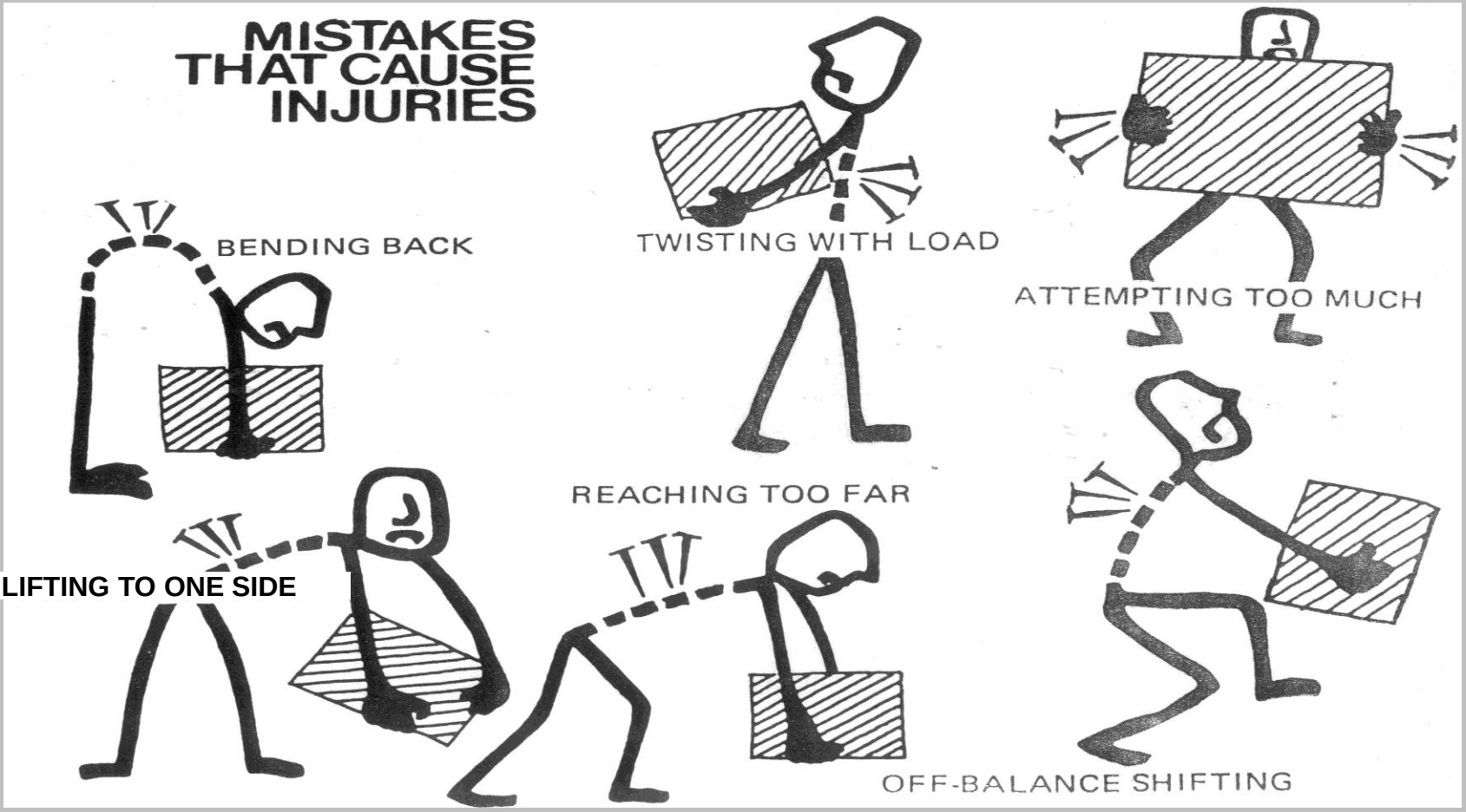
- Manual Handling
  - consists of lifting, transporting and packaging of products using own physical strength.

- Mechanical Handling
  - pertains to more rigid, manually- or mechanically-powered equipment mainly for handling bulky and heavy items.



Manual Handling

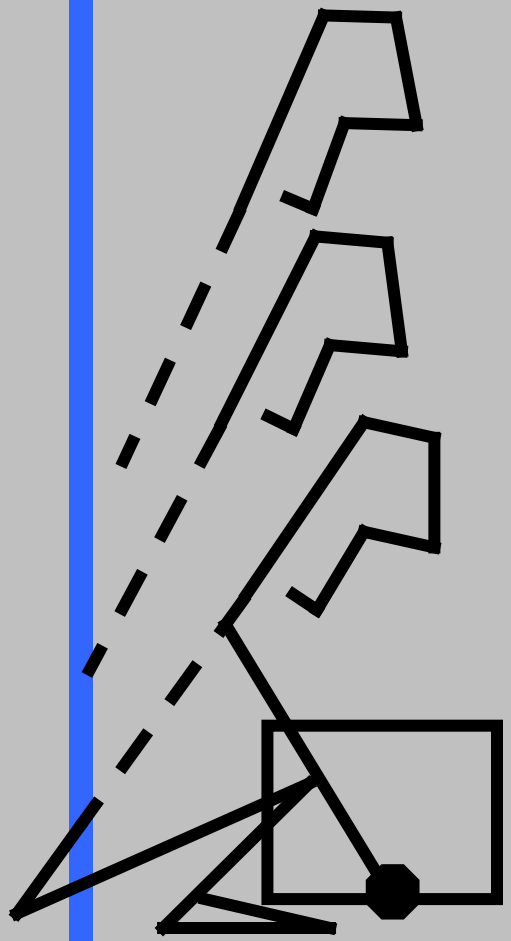
Hazards of Manual Handling



Precautions in Manual Handling

- Examine the load and the surrounding area prior to handling.
- Get a firm grip of the object.
- Use necessary personal protective equipment.
- Lift gradually.
- Follow proper lifting method.

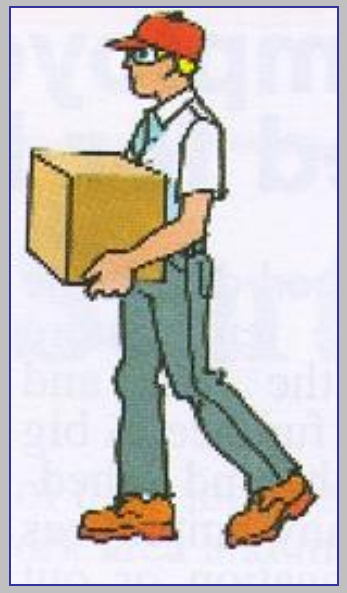
Manual Handling Method

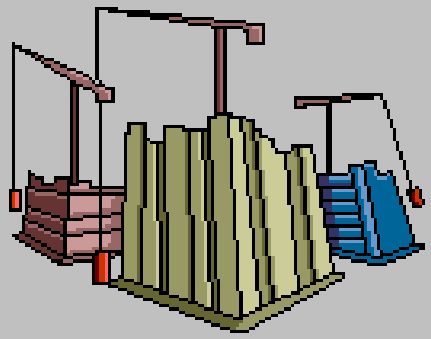


- Proper Lifting Technique
  - Position the load close to the body;
  - Maintain a firm grip on the load;
  - Keep feet apart and bend knees;
  - Look forward to keep back straight;
  - Use muscle power of the legs;
  - Use smooth, controlled movements.

Manual Handling Method

- Proper Carrying Technique
  - Hold the load close so you can see over it;
  - Keep the load balanced;
  - Use smooth, controlled movements;
  - Turn feet in the direction of the movement and do not twist;
  - Watch out for pinch points – doorways, etc.

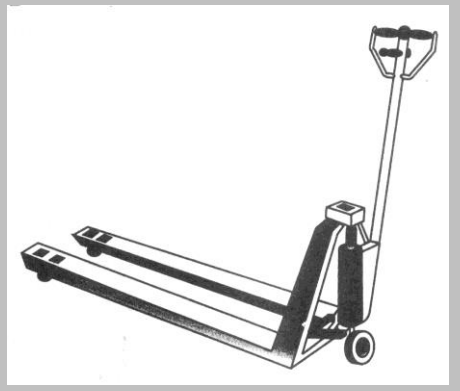


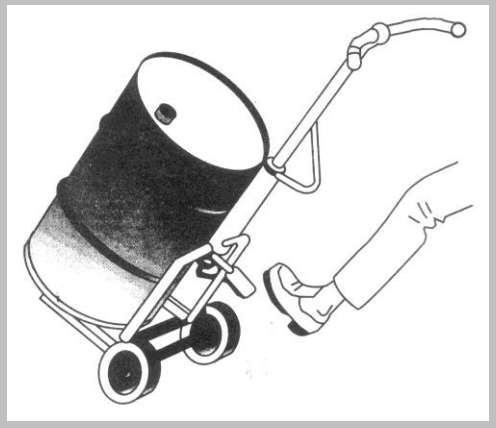


Mechanical Handling

Mechanical Handling (manually-powered)

- wheeler
- hand pallet
- cart
- drum tilter
- trolley
- pulley





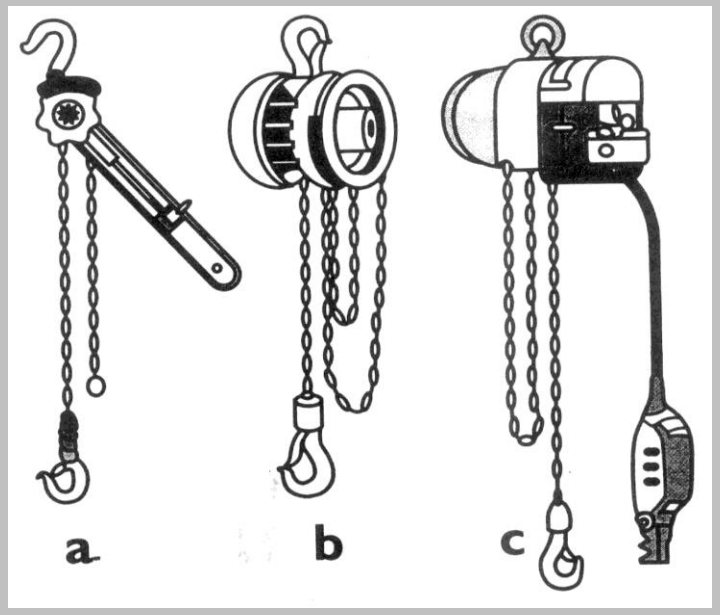
Mechanical Handling (mechanically-powered)

Mechanically-powered handling equipment could be categorized into two:

- lifting equipment
- transport equipment

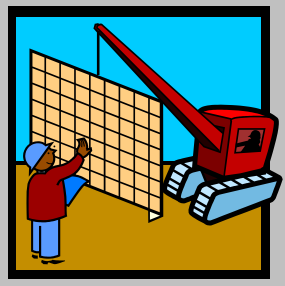
Lifting Equipment

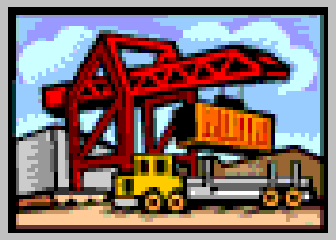
- Variety of items for lifting heavy and bulky items with minimal human intervention
- Examples of these are:
  - lever hoist
  - chain hoist
  - electric chain hoist

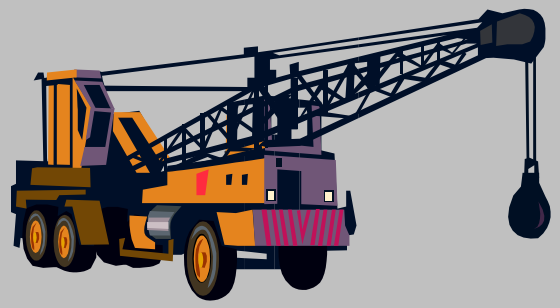


Lifting Equipment

- Cranes
  - Stationary
    - Tower
    - Overhead traveling
  - Mobile
    - Wheel Type
    - Crawler Type
    - Gantry





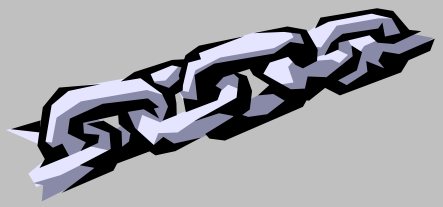


Transport Equipment

- Forklift
- Tractor-trailer
- Dump Truck
- Conveyor

Materials Handling Accessories

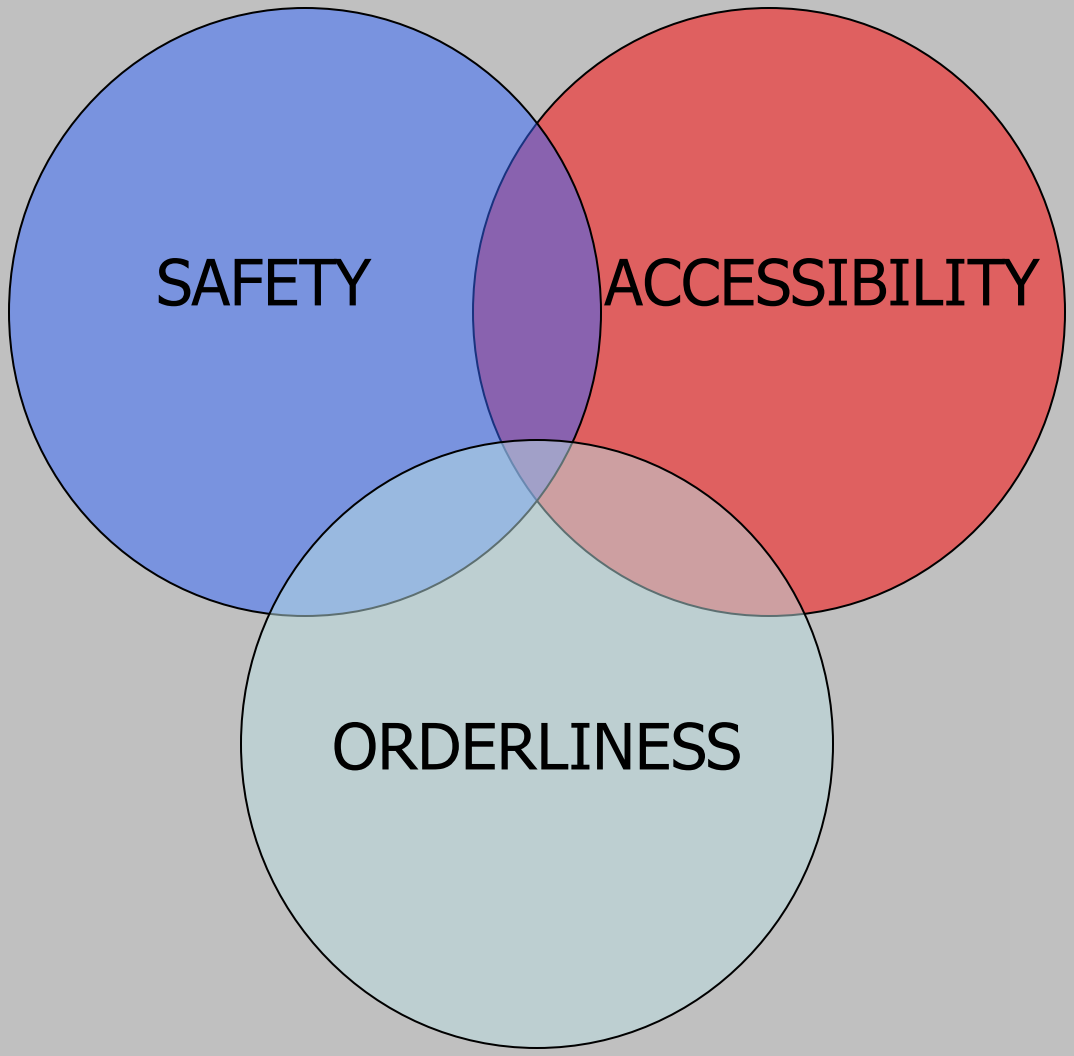
- Ropes
- Chains
- Steel Straps
- Leather/Plastic Straps



Mechanical Handling Precautions

- Operators must be certified and authorized.
- Handlers and operators must be trained in safety and health.
- Equipment must be regularly inspected.

Principle of Material Storage

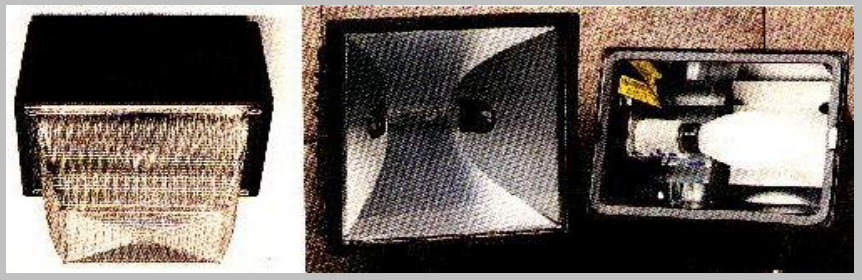


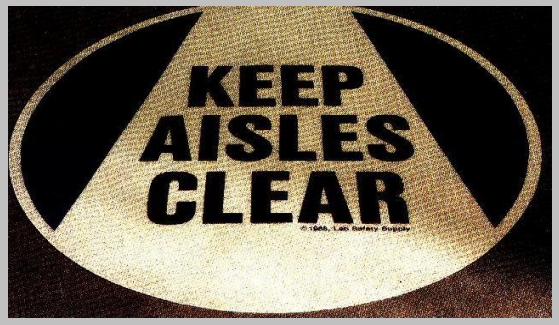
Things to Consider for a Better and Safer Materials Storage

- Workplace Conditions
- Materials
- Emergency System

Workplace Conditions

- Working surfaces are clean and clear of obstructions.
- Aisles and passageways are clearly identified and marked.
- Facilities (illumination, ventilation, first aid kits, access) are available and monitored to be in good condition.





Materials

- Stacking and Storage
  - All stacks are stable and secure;
  - Proper limitations in storage height are observed;
  - Multi-level racks are introduced to save space;
  - Rack/platform load limits are posted.
- Labeling
  - Items are properly identified/classified;
  - A coding system may be established .

Emergency System

- Warning Systems

  - Fire/emergency alarm system must be operational;

  - Hazard warning system must be available;

  - Emergency instructions and plans are available.

- Firefighting System

  - Firefighting equipment are accessible, visibly marked and well-maintained.

Safe Handling
(Summary)

- Be alert for hazards.
- Follow company safety regulations.
- Take your time and don’t take chances.
- Use proper lifting technique.
- Get help or mechanical assistance.
- Wear appropriate PPE.
- Keep an eye on what others are doing.

Thank you