Construction Hazard and Risk Control

Lecture Title:

Emergency Preparedness & Accident investigation

Lecturer: Josette Cutajar

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Undergraduate Diploma in Occupational Health and Safety

This lecture covers the following learning objectives:

- The importance to plan and be able to visualise what can possibly go wrong.
- Have the necessary resources in place and maintained.
- Understand how accidents result
- How to carry accident investigation and communicating learned lessons.

Introduction

Emergency procedures are a critically important part of the health and safety organisation. They are concerned about the control procedures and equipment required to limit the damage to people and property caused by an incident. Local fire and rescue authorities will often be involved and are normally prepared to give advice to employers.

What workplace emergencies are:

OSHA defines a workplace emergency to be:

" A situation that threatens workers, customers, or the public; disrupts or shuts down operations; or causes physical or environmental damage. Emergencies may be natural or man-made, and may include *hurricanes, tornadoes*, earthquakes, floods, wildfires, winter weather, chemical spills or releases, disease outbreaks, releases of biological agents, explosions involving *nuclear or radiological sources,* and many other hazards."

Examples of types of emergencies:

- fire
- explosions, bomb scares
- escape of toxic gases
- major accident
- Extended power loss
- Acts of terrorism

Typical elements of emergency procedures

- Fire notices and fire procedures (including testing)
- Fire drills and evacuation procedures
- Assembly and roll-call
- Arrangements for contacting emergency and rescue services
- Provision of information for emergency services
- Internal emergency organisation – including control of spillages and clean-up arrangements
- Media and publicity arrangements
- Business continuity arrangements

Testing and training for emergencies

Training courses should be given to staff on a regular basis on the following topics:

- use of fire-fighting equipment;
- regular refresher first-aid training;
- suitable training (and competency assessment) for all those allocated particular roles in an emergency; and
- regular timed fire drills

Provision of first-aid:
Main functions of first-aid treatment

- preservation of life and/or minimisation of the consequences of serious injury until medical help is available
- treatment of minor injuries not needing medical attention.

First- Aid Equipment

As a minimum, one fully stocked first-aid kit might be provided for a small, low-risk workplace. In larger workplaces multiple first-aid kits should be positioned at various locations in the workplace, as well as:

- Eye-wash stations.
- Emergency showers.
- Blankets.
- Splints.
- Resuscitation equipment.
- Stretchers.
- Wheelchairs.
- Other equipment, as required.

First response: Life safety and stabilization.

- A prompt warning to employees to evacuate, shelter or lockdown can save lives.
- A call for help to public emergency services that provides full and accurate information will help the dispatcher send the right responders and equipment.
- An employee trained to administer first aid or perform CPR can be lifesaving.
- Action by employees with knowledge of operations and process systems can help control a disaster and minimize property damage and/or environmental release.

First-aider requires first-aid training, and the first-aid course depends on the level of risk in the workplace.

- For low risk, a 6-hour Emergency First-aid at Work course
- For higher risk, 18-hour First-aid at Work course
- Either 6-hour emergency or 4-day first-aid course initially
- A repeat course every 3 years.

Basic First- aid provision

- Depends on:

- number of workers;
- the hazards and risks in the workplace;
- accident record and types of injuries;
- proximity to emergency medical services; and
- working patterns (shift work)

The second priority is the stabilization of the incident and property conservation.

- Use of fire extinguishers by trained employees can extinguish a small fire.
- Forecasting severe weather events hours before they arrive provides valuable time to protect a work site.
- Establish a plan and have resources on hand, or quickly available, to prepare a site.
- The plan should also include a process for damage assessment, salvage, protection of undamaged property, and cleanup following an incident.

Types of Extinguishers

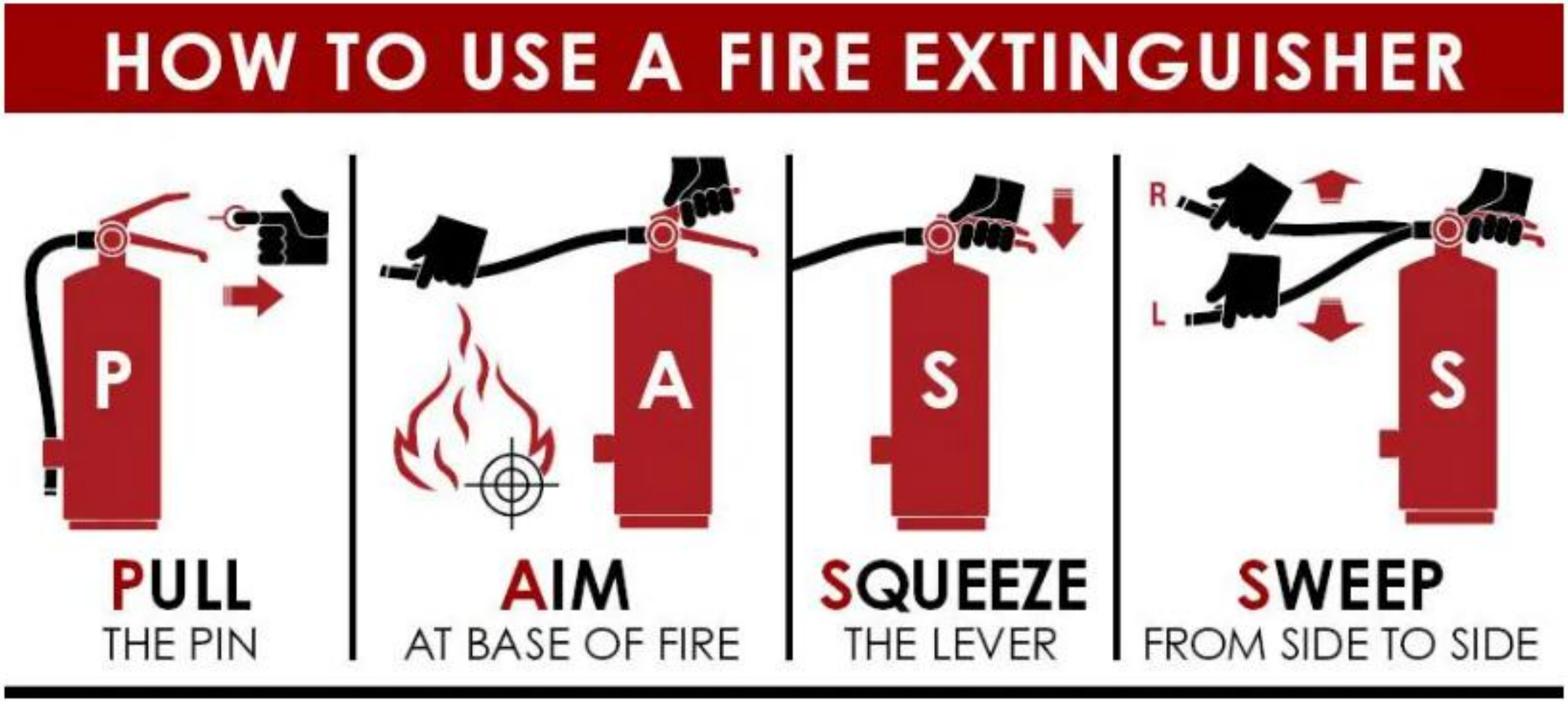
General Fibres and paints

General Fibres & Flammable liquids

Wood, Paper, Plastics

Electrical Fires

Oil & Fats (Industrial Kitchens)


HOW TO USE A FIRE EXTINGUISHER
P
A
S
R
L
S
PULL
THE PIN
AIM
AT BASE OF FIRE
SQUEEZE
THE LEVER
SWEEP
FROM SIDE TO SIDE

1. Emergency escape procedures and emergency escape route assignments:

- Evacuation policies, procedures and escape route assignments are put into place so that employees understand:

1. Who's authorized to order an evacuation
2. Under what conditions an evacuation would be necessary
3. How to evacuate
4. What routes to take

2. Procedures to be followed by employees who remain to perform critical operations before they evacuate:

The employer should outline procedures to be taken by employees selected and trained to remain behind to attend or care for essential operations or processes until their evacuation becomes necessary. These designated employees are usually personnel in supervisory positions who must ensure:

- Critical operations are properly shut down
- All workers or occupants safely evacuate the site

Critical operations which require specific procedures during an emergency may include:

- Designated employees remain behind briefly to operate fire extinguishers
- Chemical processes that must be shut down in stages
- Monitoring power supplies, water supplies and other essential services that cannot be shut down for every emergency alarm
- Shutting down individual tools, equipment or machines
- Lowering crane booms
- Turning off gas lines or fuel systems
- Shutting down automated systems
- Terminating confined space entries
- Directing the safe evacuation of employees, visitors, customers and guests
- Notifying the appropriate response team (fire, police, ambulance)

3.Procedures to account for all employees after emergency evacuation has been completed:

a. Head count: Designated persons or team leaders, such as management or supervisory personnel, should conduct a head count of those that have safely evacuated the site to determine if anyone requires medical assistance.

b. Names and locations: Team leaders should be instructed to identify the names and last known locations of anyone not accounted for and pass this information to rescue personnel. The team leader should also have the authority of moving personnel to an alternative refuge area if conditions worsen.

Additional best practices:

- Inviting external emergency responders to tour the site to learn about hazards, construction operations, protective features and systems, and proper actions to take (or not to take) during emergencies.
- Tours should account for different shifts of firefighters;
- Coordinating tours for volunteer firefighters at times that accommodate their work schedules;

Additional best practices… cont.

1

Arranging training drills for responders and facility personnel to practice emergency procedures together;

2

Designating a facility liaison to coordinate with emergency responders and keep them updated if hazards or processes change;

3

Designating one or more emergency contact persons that are knowledgeable of the site's hazards and processes and ensure their contact information is quickly accessible during emergencies;

Additional best practices… cont.

- Designating staff responsible to inventory and maintain emergency equipment and supplies;
- Including a description of the alarm system in the emergency plan to be used to notify workers (including disabled workers) to evacuate and/or take other actions. The alarms used for different actions should be distinctive and might include horn blasts, sirens, or even public address systems;
- Identifying the site of an alternative facility for communications to be used in the event the primary facility is inaccessible because of emergencies, such as a fire or explosion; and
- Storing original or duplicate copies of accounting records, legal documents, worker emergency contact lists, building plans and other essential records at a secure on-site or off-site location.

https://youtu.be/wmq0eoM3wBw

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Reasons for reporting incidents:

- To trigger the provision of first-aid treatment, etc.
- To preserve the accident scene for the investigators.
- To enable the investigation to be carried out to prevent recurrences.
- To meet any legal requirements to report incidents.
- To record that an incident has occurred in the event of subsequent civil claims for compensation.

Reasons for Investigating Accidents:

- To identify the immediate and root causes of the incident – incidents are usually caused by unsafe acts and unsafe conditions in the workplace, but these often arise from underlying, or root causes.
- To identify corrective action to prevent a recurrence – a key motivation behind incident investigations.
- To record the facts of the incident – people do not have perfect memories, and accident investigation records document factual evidence for the future.
- For legal reasons – accident investigations are an implicit legal duty imposed on the employer in addition to any duty to report incidents.
- For claim management – if a claim for compensation is lodged against the employer the insurance company will examine the accident investigation report to help determine liability.

Reasons for Investigating Accidents:

- For staff morale – non-investigation of accidents has a detrimental effect on morale and safety culture because workers will assume that the organisation does not value their safety.
- For disciplinary purposes – though blaming workers for incidents has a negative effect on safety culture, there are occasions when an organisation has to discipline a worker because their behaviour has fallen short of the acceptable standard.
- To enable risk assessments to be updated (an incident suggests a deficiency with the risk assessment, which should be addressed).
- • To discover trends.

Types of Incidents- definitions:

Accidents can be further subdivided into:

- Injury accidents – an unplanned, unwanted event which leads to personal injury of some sort.
- Damage-only accident – an unplanned, unwanted event which leads to damage to equipment or property.
- Near Miss- An unplanned, unwanted event that had the potential to lead to injury, damage or loss but did not, in fact, do so
- includes diseases and conditions related to exposure to:Work-related ill health
    1. Toxic substances, e.g. lead poisoning.
    2. Harmful biological agents, e.g. legionnaires' disease.
    3. Physical or ergonomic hazards, e.g. noise-induced hearing loss

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Frank Bird's Accident Triangle:

Accident causation

Direct or immediate cause include:

- unsafe acts by individuals due to poor behaviour or a lack of training, supervision, information or competence or a failure to wear PPE
- unsafe conditions, such as inadequate guarding, inadequate procedures, hazardous substances, ergonomic and/or environmental factors
- fire or explosive hazards

Accident causation

Indirect, root or underlying causes include:

- poor machine maintenance and/or start-up procedures
- management and social pressures
- financial restrictions
- lack of management commitment to health and safety
- poor or lack of health and safety policy and standards
- poor workplace health and safety culture
- workplace and trade customs and attitudes

Elements of an investigation:

- interview relevant operatives, managers, supervisors
- obtain detailed plans and/or photographs of scene
- check all relevant records (working procedures, maintenance, training, risk assessments)
- interview all witnesses
- possibly arrange for equipment and/or substances to be independently tested

Elements of an investigation:

Produce a concise report for management that includes:

- background to the accident
- possible causes of the accident (direct and indirect)
- relevant health and safety legislation, guidance and standards
- recommendations (including any remedial actions)
- any additional training or follow-up requirements

- Undertake a post- accident Risk assessment.

Reporting accident at the workplace

Navigation

- Construction eForms
- Tower Crane Certification
- Workplace Lift Certification
- Accident at the Workplace
- Removal of Asbestos
- The use of Group 2, 3, or 4 Biological Agents
- COMAH (Control of Major Accident Hazards)

Accident at the Workplace

An employer shall notify OHSA regarding accidents which result in the death of or major injury to any person or the serious injury of an employee at work as required by S.L. 646.03 (Work Places (Health, Safety and Welfare) Regulations).

Where the notifiable accident results in the death or a major injury to a person, the employer shall - (i) notify forthwith OHSA by the quickest practicable means; and (ii) within 7 days from the date of the accident send a written notice of the accident to OHSA.

Fill in the online form to submit to the OHSA.

e-form

Accident Notification Form

Form should reach OHSA (email: accident@ohsa.mt) within seven (7) days after the accident in terms of LN 52/1986 Article 22.2(b)

Employer's Name

ID Card No.

Company Name

Company Registration No.
(MFSA Reg. No.)

Postal Address

Type of Industry

Email

Telephone

Date of Accident

No. of Persons involved

Place /
Address of Accident

Days out of Work
(working days)

Person filing the Accident Notification

Name and Surname

Position within the Company

Signature

Details of Injured Person(s)

Name and Surname

ID Card No. Gender M

Address

Age

Job Title

Name and Surname

ID Card No. Gender M

Address

Age

Job Title

Name and Surname

ID Card No. Gender M

Address

Age

Job Title

Name and Surname

ID Card No. Gender M

Address

Age

Job Title

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Type of Accident

- [ ] Use of Hand Tools
- [ ] Fall on Same Level
- [ ] Fall on Lower Level
- [ ] Inhaling of fumes/gases
- [ ] Burn
- [ ] Electrocuted
- [ ] Hit by a moving, flying or falling object
- [ ] Injured while handling, lifting or carrying
- [ ] Injured while using means of transport
- [ ] Physically injured after being assaulted by human or animal
- [ ] Use of chemicals
- [ ] Striking against object

Other *(specify)*

Type of Injury

- [ ] Fracture
- [ ] Sprain
- [ ] Strain
- [ ] Contusion
- [ ] Laceration with wound
- [ ] Burn
- [ ] Chemical Burn
- [ ] Amputation

Other *(specify)*

Part of Body injured

- [ ] Hand(s)
- [ ] Leg(s)
- [ ] Head
- [ ] Forearm(s)
- [ ] Back
- [ ] Face
- [ ] Eye(s)
- [ ] Foot (Feet)

Other *(specify)*

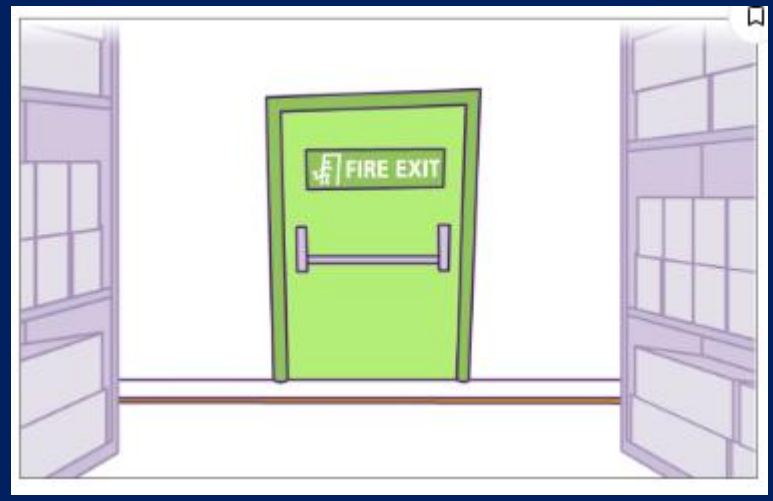
PRINT

The contents of a typical incident investigation report may include:

- Date and time of the incident.
- Location of the incident.
- Details of the injured person/persons involved (name, role, work history).
- Details of injury sustained.
- Description of the activity being carried out at the time.
- Drawings or photographs used to convey information on the scene.
- Immediate and underlying/root causes of the incident.
- Assessment of any breaches of legislation.
- Details of witnesses and witness statements.
- Recommended corrective action, with suggested costs, responsibilities and timescales.
- Estimation of the cost implications for the organisation.

Benefits of accident/incident investigation:

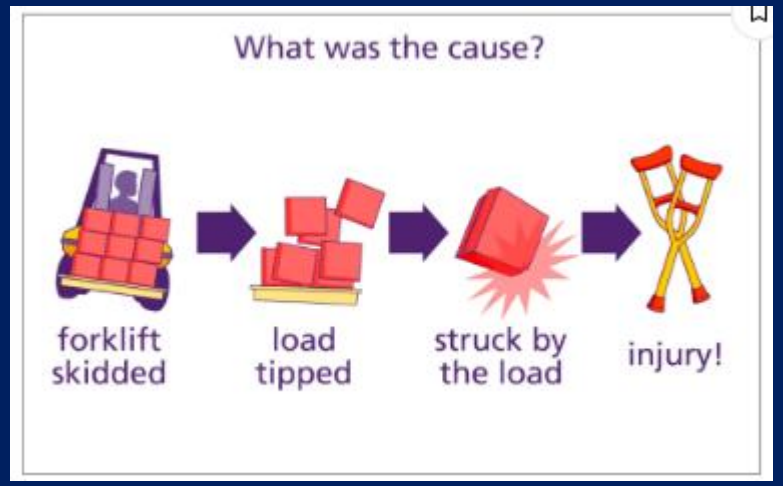
- prevention of a recurrence;
- prevention of future business losses;
- prevention of future increased insurance premiums and costs of criminal and civil actions; and
- improve employee morale and organisation reputation.

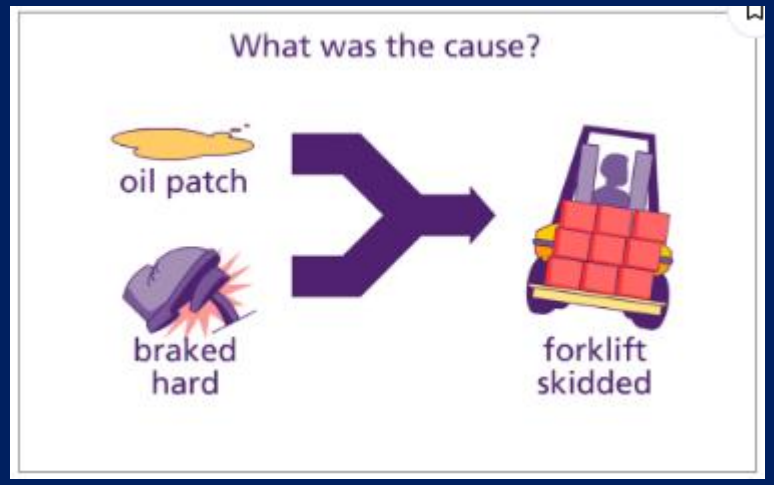

FIRE EXIT

What was the cause?

What was the cause?

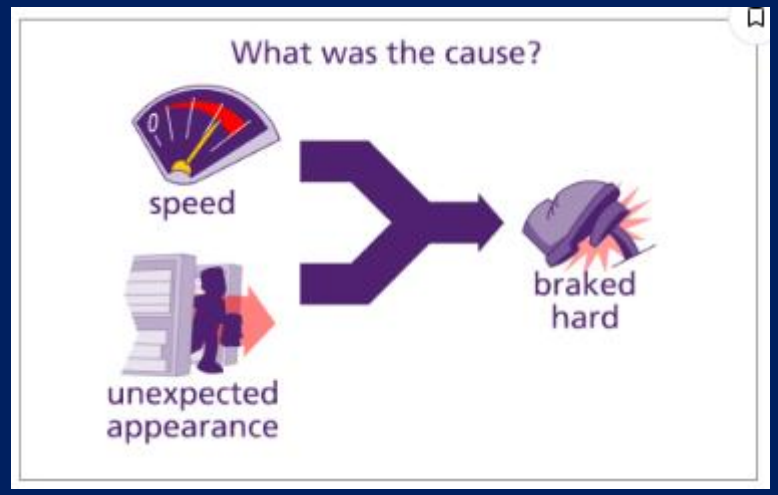
What was the cause?
struck by
the load
injury!

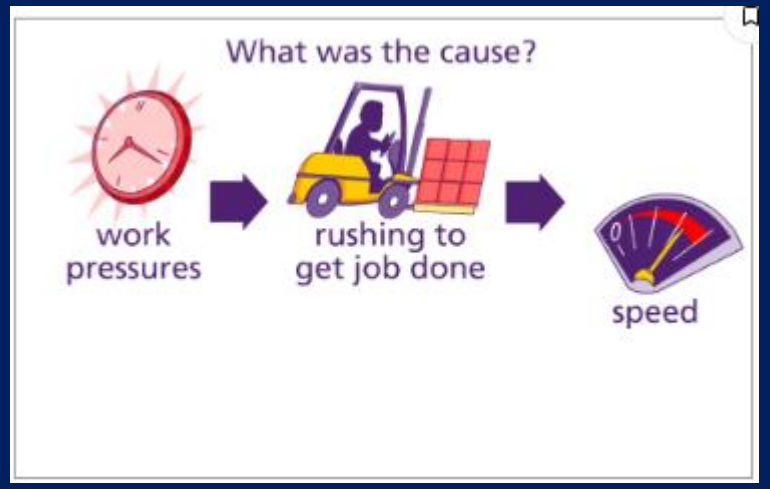

What was the cause?
forklift
skidded
load
tipped
struck by
the load
injury!


What was the cause?
oil patch
braked
hard
forklift
skidded

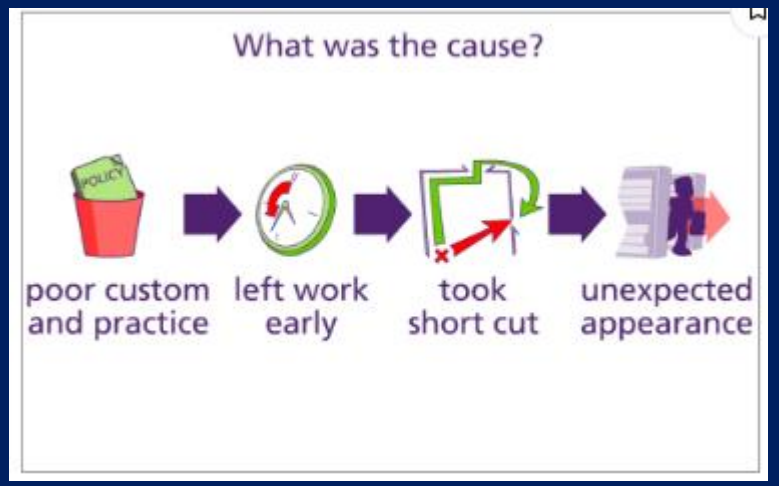
What was the cause?
leaking forklift
oil patch

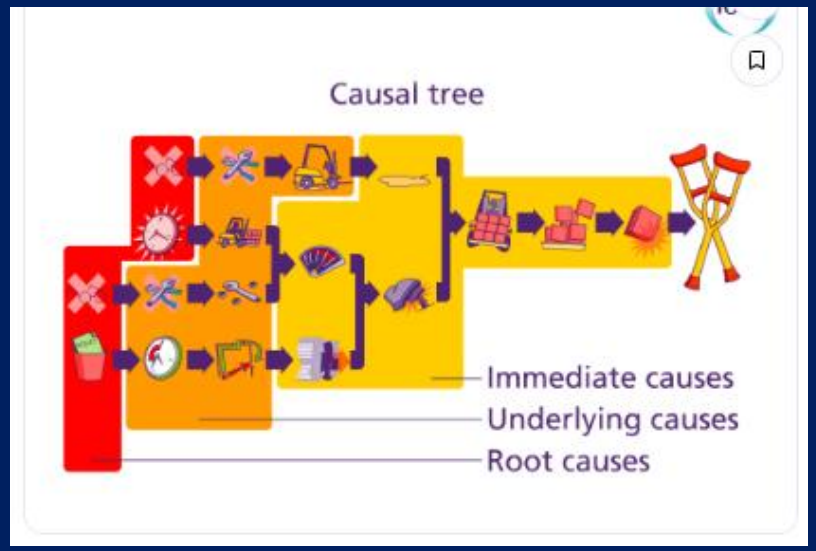
What was the cause?
lack of supervision
inspection/ maintenance not carried out
leaking forklift
oil patch


What was the cause?
speed
unexpected appearance
braked hard


What was the cause?
work pressures
rushing to get job done
speed

What was the cause?
work pressures
rushing to get job done
speed
lack of supervision
no inspection
speed limiter removed


What was the cause?
POLICY
poor custom and practice
left work early
took short cut
unexpected appearance


Causal tree
Immediate causes
Underlying causes
Root causes

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