FLEET SAFETY & EMERGENCY RESPONSE

The Chartered Institute of Logistics and Transport

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COURSE OUTLINE

- ❑ Fleet & Road Safety
- ❑ Yard movement & Loading Safety
- ❑ Incident Reporting and Root Cause Analysis
- ❑ Fire & Drills
- ❑ Spills
- ❑ First Aid Response

FLEET & ROAD SAFETY

Truck fleet safety involves a comprehensive strategy to protect drivers, vehicles, and cargo while minimizing risks and operational costs. It includes driver training, vehicle maintenance, technology integration, and strong safety policies.

Why It Matters

- Human Impact: Multiple life altering injury crashes and fatal crashes involve trucks
- Financial Risk: Accidents can lead to lawsuits, downtime, and increased insurance premiums.
- Reputation & Retention: A strong safety record helps attract and retain drivers and builds trust with clients.

COMPONENTS OF FLEET SAFETY

Establish a Fleet Safety Policy

- Define clear safety expectations for drivers and managers.
- Include rules on speed limits, seat belt use, mobile phone restrictions, and fatigue management.
- Make it part of onboarding and require signed acknowledgment.

Conduct Regular Driver Training

- Offer defensive driving courses and refreshers.
- Train on handling hazardous conditions (rain, fog, night driving).
- Include modules on vehicle inspection and emergency response

Implement Pre-Trip and Post-Trip Inspections

- Use checklists to verify brakes, tires, lights, and cargo securement.
- Require drivers to report issues immediately.
- Digitize inspection logs for easy tracking and compliance.

Use Telematics and Dash Cams

- Monitor speeding, harsh braking, and route deviations.
- Review footage for incident analysis and coaching.
- Set alerts for unsafe behaviors and maintenance needs.

COMPONENTS OF FLEET SAFETY

Manage Driver Fatigue

- Enforce Hours of Service (HOS) limits.
- Use electronic logging devices (ELDs) to track driving hours.
- Encourage rest breaks and healthy sleep habits

Maintain Vehicles Proactively

- Schedule preventive maintenance based on mileage or time.
- Track service history and upcoming needs with fleet software.
- Replace worn parts before they fail.

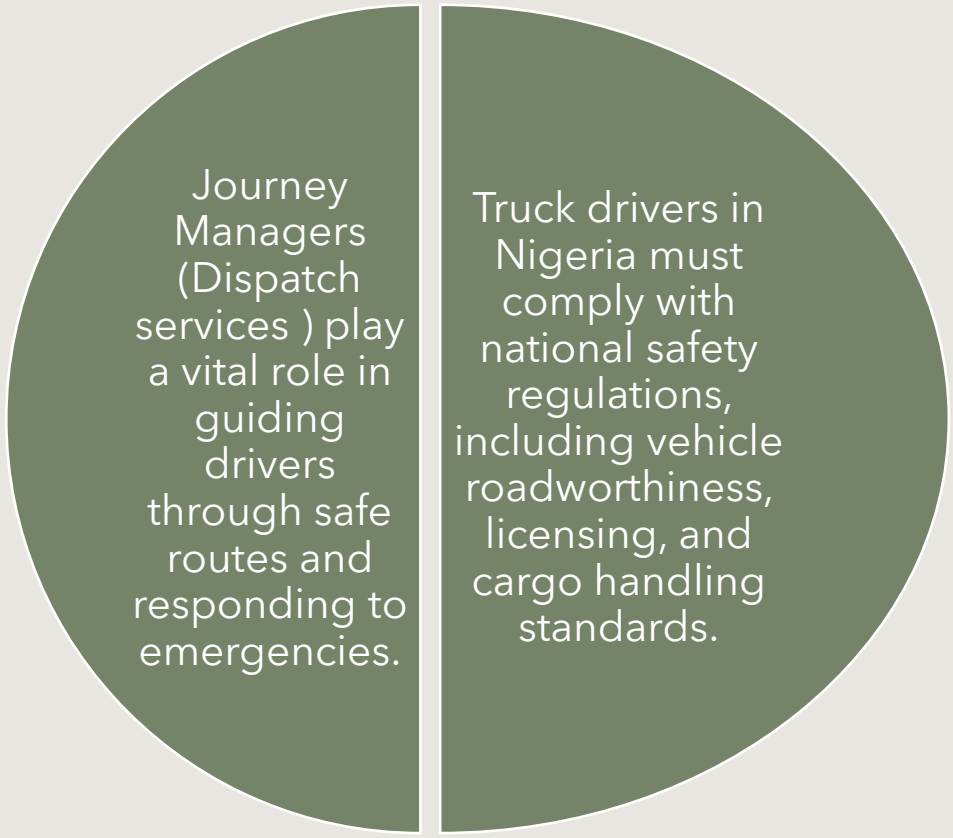
Create an Incident Response Plan

- Train drivers on what to do after a crash or breakdown.
- Include emergency contacts, insurance procedures, and documentation steps.
- Review incidents to identify root causes and prevent recurrence.

Audit and Improve Continuously

- Analyze safety data monthly or quarterly.
- Benchmark against industry standards.
- Adjust policies and training based on trends and feedback.

ROAD SAFETY MEASURES FOR TRUCKS



Follow Speed Limits

- Trucks require longer stopping distances. Speeding increases the risk of rollovers and rear-end collisions.
- **Maintain Safe Following Distance**
- Use the “four-second rule” to keep enough space between your truck and the vehicle ahead.

ROAD SAFETY MEASURES FOR TRUCKS CONTD..

- **Conduct Pre-Trip Inspections**
- Check brakes, tires, lights, mirrors, and cargo securement before every trip.
- **Avoid Distractions**
- No texting or phone use while driving. Use hands-free devices if communication is necessary.

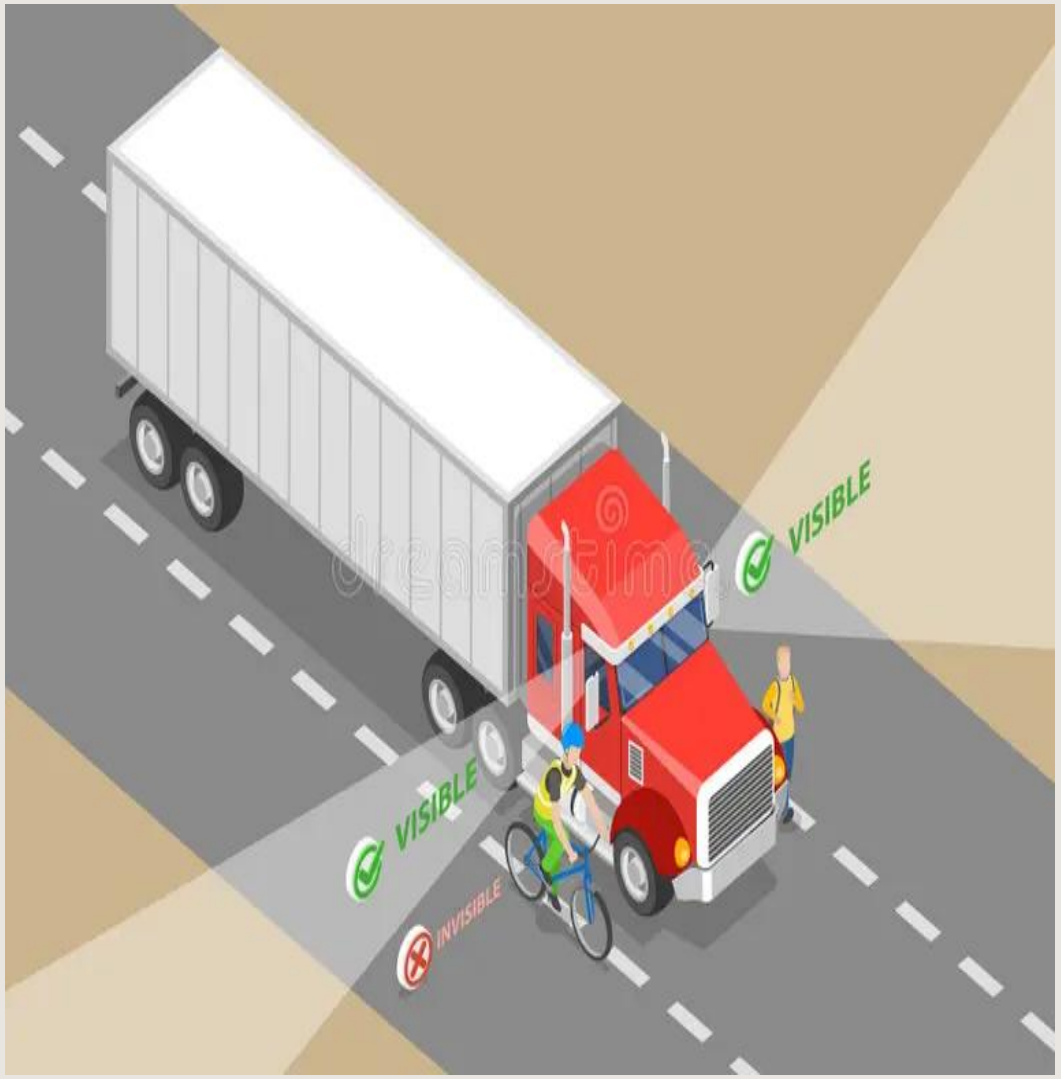
Stay Alert and Rested

- Fatigue is a major cause of truck accidents. Follow Hours of Service (HOS) rules and take breaks.
- **Secure Loads Properly**
- Unsecured cargo can shift and cause loss of control or tip-overs.

Respect Weather Conditions

- Slow down in rain, fog, or poor visibility. Use headlights and hazard lights appropriately.
- **Use Proper Signaling**
- Signal lane changes and turns well in advance. Be predictable to other road users.
- Plan Routes Carefully-avoid congested areas and low-clearance bridges.
- Be Cautious in Urban Areas
- Watch for pedestrians, cyclists, and tight turns. Use mirrors and cameras to eliminate blind spots.

BLINDSPOTS



YARD MOVEMENT & LOADING SAFETY

YARD MOVEMENT

Yard movement in industrial facilities involves managing the safe and efficient flow of vehicles, equipment, and personnel in outdoor operational zones. It's a high-risk area that requires strict protocols to prevent accidents and ensure productivity.

Key Hazards in Yard Operations

- Vehicle collisions: Trucks, forklifts, and trailers often operate in tight spaces, increasing the risk of crashes.
- Pedestrian injuries: Workers on foot are vulnerable to being struck, especially in blind spots or poorly lit areas.
- Poor visibility: Weather, lighting, and layout can obscure sightlines, leading to accidents.
- Uncoordinated movements: Lack of communication between drivers and yard staff can cause delays and unsafe interactions

BEST PRACTICES FOR SAFE YARD MOVEMENT

- **Designated Traffic Routes**
  - Use clear signage and lane markings for trucks, forklifts, and pedestrians.
  - Separate pedestrian walkways from vehicle paths wherever possible.
- **Real-Time Yard Management Systems**
  - Track vehicle locations and movements digitally to avoid congestion and improve coordination.
- **Speed Limits and Control Measures**
  - Enforce low-speed zones with speed bumps and signage.
  - Use barriers and bollards to guide traffic and protect sensitive areas.
- **Driver and Staff Training**
  - Train all personnel on yard safety protocols, including reversing procedures and blind spot awareness.
  - Conduct regular safety drills and refreshers.

BEST PRACTICES FOR SAFE YARD MOVEMENT

Lighting and Visibility Enhancements

- Install floodlights and reflective markers for night operations.
- Equip vehicles with beacons and backup alarms.

Communication Tools

- Use radios or mobile apps to coordinate movements between dispatchers, drivers, and yard staff.
- Implement check-in/check-out systems for vehicles entering and exiting the yard.

Technology that improves Yard Safety

- Telematics and GPS tracking for vehicle location and movement history.
- Sensors to monitor trailer positions and automate gate operations.
- CCTV and dash cams for incident review and deterrence.

INCIDENT REPORTING AND ROOT CAUSE ANALYSIS (RCA)

INCIDENT INVESTIGATION

AN INCIDENT INVESTIGATION IS A SYSTEMATIC PROCESS USED TO COLLECT FACTS, ANALYZE CAUSES, AND IDENTIFY CORRECTIVE ACTIONS AFTER AN ACCIDENT, INJURY, OR NEAR-MISS OCCURS.

IT IS NOT ABOUT PLACING BLAME IT IS ABOUT IDENTIFYING SYSTEM FAILURES AND PREVENTING FUTURE HARM.

PRIMARY GOALS OF INCIDENT INVESTIGATION

Determine the root cause of the incident.

Identify unsafe acts, conditions, or system failures.

Recommend corrective and preventive actions.

Share lessons learned with all relevant teams.

Ensure compliance with legal and reporting requirements.

Improve the organization's overall safety culture.

Every incident, even a near miss, provides valuable lessons for improvement.

INCIDENTS THAT REQUIRE INVESTIGATION

Type of Event	Example	Required Action
Accident	Worker injured by falling material	Full investigation
Near Miss	Scaffold plank dislodged but no injury	Investigation and preventive action
Unsafe Condition	Exposed cable on walkway	Immediate correction and documentation
Property Damage	Vehicle hits warehouse door	Review procedures and supervision
Environmental Incident	Chemical spill on ground	Investigation and reporting

INCIDENT INVESTIGATION PROCEDURE

Step 1: Immediate Response and Scene Control

When an incident occurs, the first priority is to protect life, property, and the environment.

Actions to take:

Stop the work immediately.

Provide first aid or call emergency services.

Inform supervisors and the safety department.

Secure the area and prevent unauthorized entry.

Preserve evidence for analysis. The first few minutes after an incident are critical for accurate data collection.

INCIDENT INVESTIGATION PROCEDURE

Step 2: Notification and Formation of the Investigation Team

Notify relevant personnel based on company policy and the incident's severity.

Typical notification chain:
Worker → Supervisor → Safety Officer → HSE Manager → Senior Management → Client or Authorities (if required).

INVESTIGATION TEAM MEMBERS

- HSE Officer (Lead Investigator)
- Area Supervisor
- Line Manager
- Witnesses (if available)
- Technical Expert (for specific cases)
- Worker Representative (optional)
- The investigation team should be multidisciplinary for balanced analysis.

STEP 3: DATA COLLECTION AND EVIDENCE GATHERING

Gather all information and evidence related to the incident. This includes both physical and documentary evidence.

Sources of Information:

- Witness statements
- Photographs and videos of the scene
- Equipment inspection reports
- Work permits, risk assessments, and job safety analyses
- Training and attendance records
- Weather or environmental data

TYPES OF EVIDENCE

Evidence Type	Example
Physical	Damaged PPE, broken parts
Documentary	Permit to Work, SOP, inspection log
Human	Witness testimony
Environmental	Weather conditions, lighting, noise level

Photograph the scene before moving equipment or debris. Documentation accuracy is essential.

STEP 4: DATA ANALYSIS AND ROOT CAUSE IDENTIFICATION

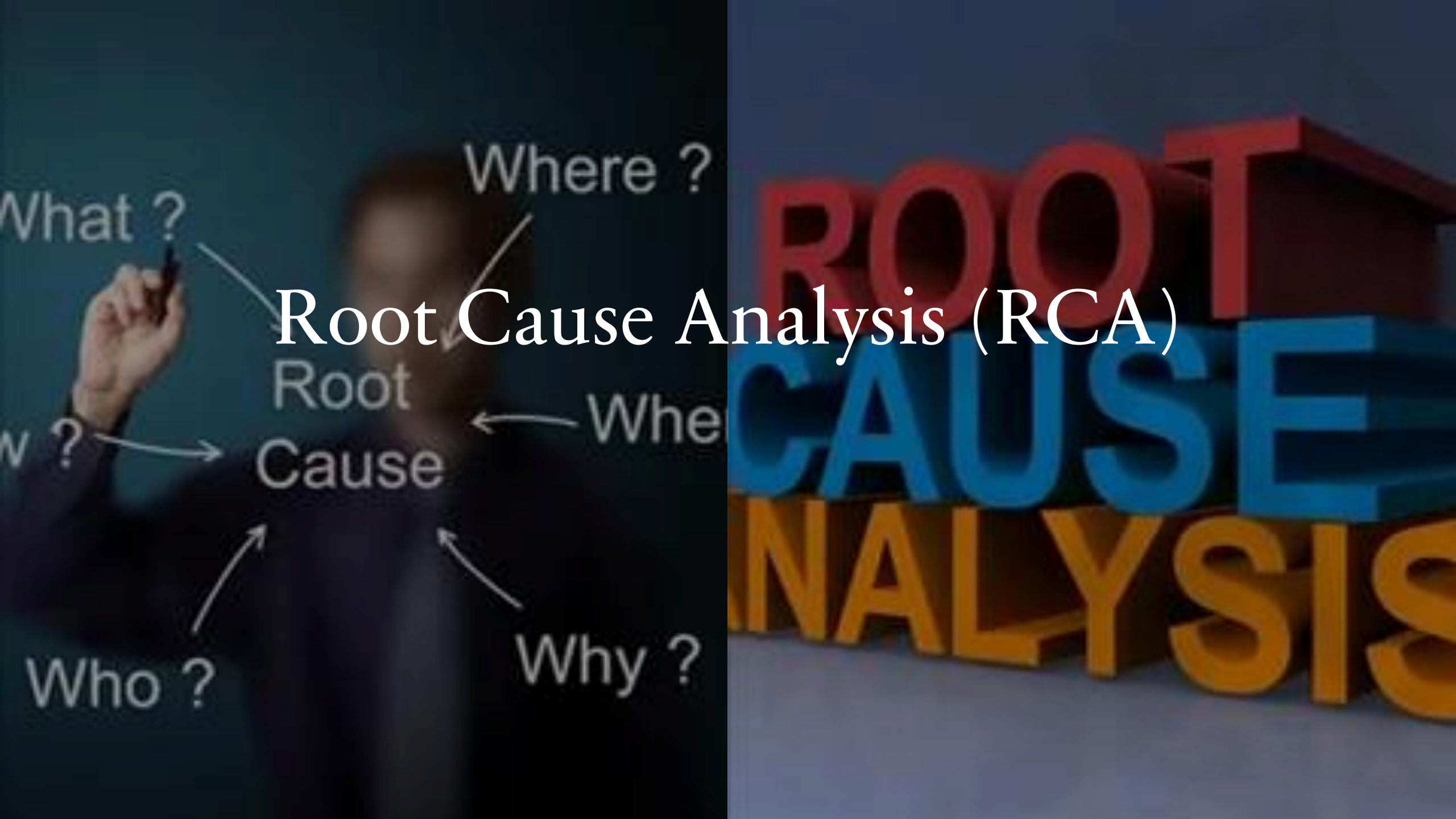
Once all information is collected, the team analyzes it to understand the true causes of the incident.

There are three types of causes:

Direct Cause: The immediate unsafe act or condition (e.g., missing guardrail).

Indirect Cause: Factors contributing to the unsafe condition (e.g., poor supervision).

Root Cause: The fundamental system failure (e.g., lack of inspection program).



Root Cause Analysis (RCA)

Root Cause Analysis (RCA) helps determine why an incident occurred and how it can be prevented in the future.

The 5 Whys Technique

A simple yet effective method to identify the underlying cause by repeatedly asking “Why?”.

- **Example:**
- Why did the worker fall? → The guardrail was missing.
- Why was it missing? → It was removed for access.
- Why was it not replaced? → No inspection was done.
- Why was inspection missed? → No procedure required it.
- Why was there no procedure? → Lack of awareness
- **Root Cause:** Lack of safety inspection procedure.
- Usually, five levels of questioning reveal the true root cause.

FISHBONE DIAGRAM

This diagram identifies potential causes under categories such as:

Man (human error, training)

Machine (equipment failure)

Method (procedure or process gap)

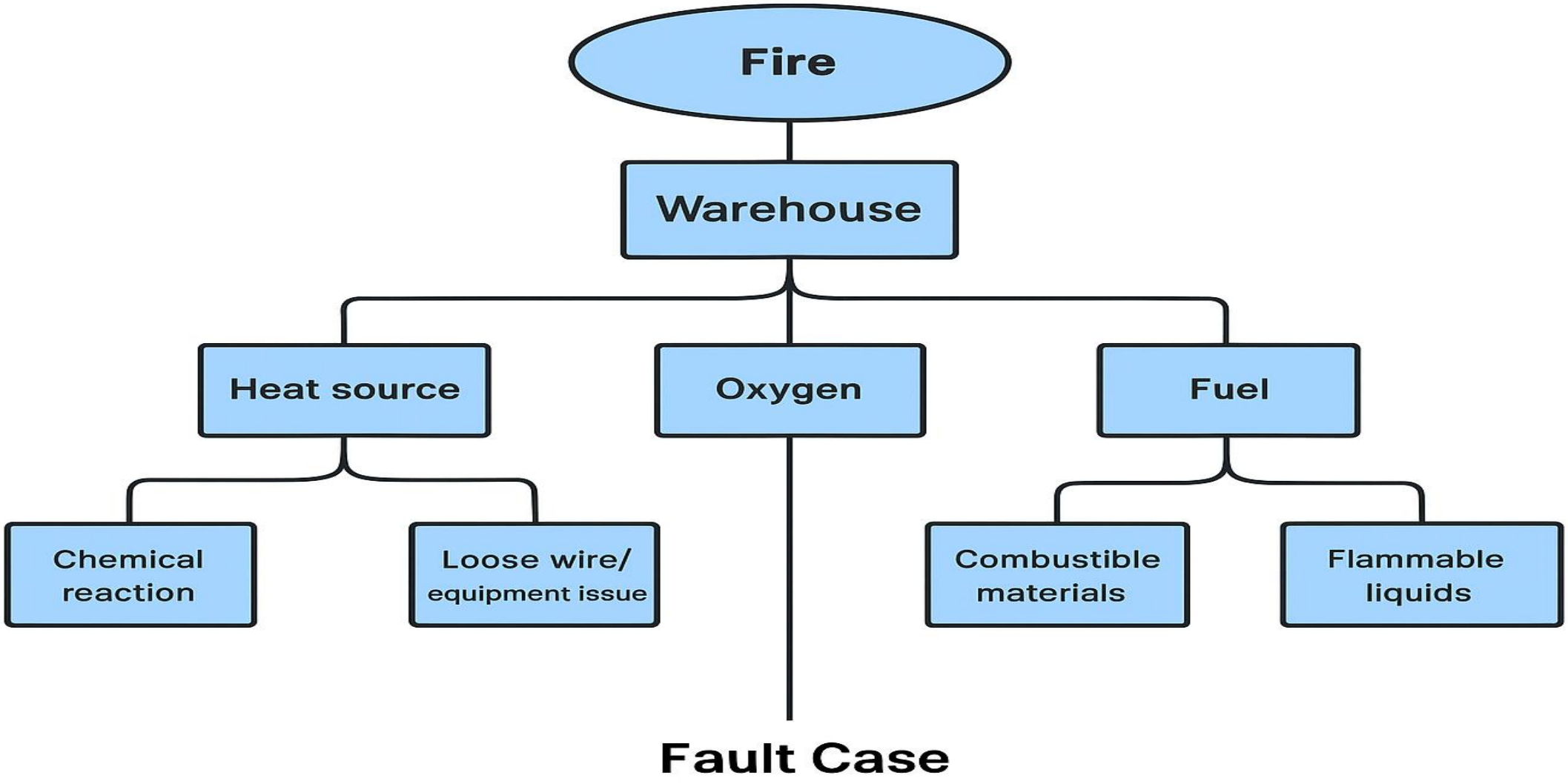
Material (quality of materials)

Management (policy or supervision)

Environment (lighting, weather, workspace)

Each branch explores contributing factors to the main problem.

FAULT TREE ANALYSIS (FTA)



CHANGE ANALYSIS

This method identifies changes that occurred before the incident:

Was new equipment or process introduced?

Were procedures or materials changed?

Were new employees assigned to the task?

Most incidents are linked to uncontrolled changes in the workplace.

STEP 5: IDENTIFY CORRECTIVE AND PREVENTIVE ACTIONS

Action Type	Example	Responsible Person	Target Date
Corrective	Replace damaged electrical tool	Maintenance Engineer	5 Days
Preventive	Implement electrical inspection checklist	Safety Manager	10 Days

After identifying root causes, develop corrective and preventive actions (CAPA) that are specific, measurable, and time-bound.

Corrective Actions: Eliminate the existing problem.
Preventive Actions: Ensure it does not happen again.

STEP 6: REPORT PREPARATION AND COMMUNICATION

Once analysis and actions are completed, prepare a formal investigation report.
Report Format:
Executive Summary
Description of the Incident
Sequence of Events
Evidence and Findings
Root Cause Analysis
Corrective and Preventive Actions
Attachments (photos, sketches, witness statements)
The report should be factual, concise, and free from personal blame.
Distribution: Line and project managers, Safety committee, Workers (for awareness)
Sharing lessons learned prevents similar incidents elsewhere.

ROLES AND RESPONSIBILITIES

Role	Responsibilities
Supervisor	Report incidents, secure area, assist investigation
Safety Officer	Lead investigation, gather evidence, prepare report
Line Manager	Review findings, implement corrective actions
HSE Manager	Approve report and ensure CAPA completion
Top Management	Review performance and allocate resources
Workers	Cooperate and provide accurate

EXAMPLE INCIDENT CASE

- **Incident:**
  Worker received an electric shock while using a grinder.
- **Findings:**
- Cable insulation damaged.
- No pre-use inspection conducted.
- Worker not trained on electrical tool safety.
- Supervisor unaware of inspection requirements.
- **Root Cause:**
  No preventive maintenance or training procedure for portable tools.
- **Corrective Action:**
  Replace damaged grinder and inspect all tools.
- **Preventive Action:**
  Implement inspection checklist and safety training.
- **Result:**
  No similar incidents in the next six months.

FOLLOW-UP AND EFFECTIVENESS REVIEW

Incident investigation must be followed by a review to confirm that actions were effective.

Follow-up checklist

Were corrective actions implemented on time?

Have preventive measures reduced the risk?

Were lessons shared across departments?

Was the incident record closed properly?

Conduct a post-incident audit after 30–60 days to verify effectiveness.

COMMON MISTAKES IN INCIDENT INVESTIGATIONS

Closing cases too quickly without deep analysis.

Assigning blame instead of identifying system weaknesses.

Ignoring near-miss reporting.

Poor or missing documentation.

Not following up on corrective actions.

Failure to communicate lessons learned.

Investigations must always focus on understanding the system, not punishing people.

BEST PRACTICES FOR EFFECTIVE INVESTIGATIONS

Create	Create a standard investigation and RCA form.
Train	Train supervisors and HSE staff in investigation techniques.
Encourage	Encourage near-miss and unsafe act reporting.
Promote	Promote a no-blame safety culture.
Review	Review incident trends during safety meetings.
Integrate	Integrate findings into risk assessments and training.
Use	Use digital tools for tracking and analysis.

INCIDENT CLASSIFICATION AND REPORTING TIMELINE

Severity	Type	Reporting Timeline	Investigation Lead
High	Fatality, Major Injury, Fire	Immediate	HSE Manager or Senior Management
Medium	Minor Injury, Property Damage	Within 24 hours	Safety Officer
Low	Near Miss, Unsafe Act	Within 48 hours	Supervisor

Severity determines the level of reporting and investigation depth

CONCLUSION

- A well-structured **Incident Investigation Procedure** is essential for preventing recurrence and improving workplace safety performance.
- By identifying root causes and implementing corrective actions, organizations can eliminate systemic failures, enhance training, and build a stronger safety culture.
- The objective is not to find fault but to find solutions—because every incident teaches a lesson about prevention.
- **"Behind every incident lies a system failure waiting to be fixed.**

FIRE SAFETY & EMERGENCY RESPONSE

FIRE

Fire is a combustion process of oxidation characterized by the production of heat, flame and smoke.

TIME is an important factor in fire fighting; therefore, the man on the spot with some training is more valuable for fighting a fire than the full-time fire service. Why ?

TRIANGLE OF COMBUSTION & CLASSES OF FUELS

Enough oxygen to support combustion

+

Enough heat to raise the material to its ignition temperature.

+

Some sort of fuel or combustible material

Solid Fuels: Wood, Paper, Furniture, rubbish, carbonaceous substances textiles etc.

Liquid Fuels: Crude oil, P.M.S., D.P.K., A.G.O, Cooking oil, paint, etc

Gaseous Fuel: LPG, Butane Acetylene, Propane and Natural gases etc.

HEAT SOURCES & PRODUCTS OF FIRE

Heat Sources

- Electricity: Defective wiring, motors, switches, circuit breakers…
- Friction: Bearing running dry, grinding, chiselling, drilling…
- Naked flames: Torch, matches…
- Impact: Steel against steel, steel against concrete…
- Spontaneous combustion: organic oil/fiber
- Cutting and Welding

Products of Fire

Smoke , Fumes and Gases including Carbon monoxide and isocyanides from burning of wool

(All are very dangerous)

METHODS & REASONS OF FIRE SPREAD

Methods of Fire Spread

Conduction: is the travel of heat via the molecular structure of an object. It can spread fire via metal joints, concrete block work in a building giving rise to secondary fires away from the first fire.

Convection: is spread of heat upward above a fire.

It is the travel of hot gases to ceiling level then it will mushroom down the walls

Radiation: radiated heat is the only form of heat that travels through a vacuum

Reasons of Fire Spread

Delayed discovery

Large inventory of combustibles

Lack of fire resisting structure

Openings in the floors and walls

Raid burning of dust deposits

Flowing oils, fats and hydrocarbons

CAUSES OF FIRE

INDUSTRIAL FIRE

- Carelessness
- Electricity
- Accumulation of refuse/rubbish in work or
- storage areas.
- Smoking
- Heaters
- Hazardous goods
- Spontaneous ignition
- Leaking fuel hoses in vehicle engine housing.
- Leaking gas valves, explosion.
- Faulty machinery

DOMESTIC FIRE

- Children playing with matches
- Overheated oil/fats
- Unsafe use of candles at home
- Smoking in bed
- Storage of leaking gas cylinders at home
- Dual usage of one container for petrol and kerosene
- Power surge/fluctuations
- Refueling of generator set whilst running.
- Electrical/Electronic appliances left on after power outage
- Unattended cooking stove/gas
- Radiated heat
- Hoarding of fuel at home
- Poor house- keeping

OTHER CAUSES OF FIRE

NATURAL CAUSES

- Thunder and lightening
- Hurricane/wild wind
- Earthquake
- Volcanic eruption

INTENTIONAL ACTS (ARSON)

- Political unrest
- Bank fraud
- Insurance claim.
- Grievances at work
- Civil disturbance

CLASSES OF FIRE

CLASS A (Solids)

Fires involving Solids and free burning materials usually of an organic nature e.g. wood, paper, textile, furniture, etc. They are domestic in nature.

They generally leave an ash

CLASS B (Liquids & Gas)

Fires involving flammable liquids or gas

e.g P.M.S., D.P.K., A.G.O., cooking oil, wax, paints, spirits, varnish, gases like propane, methane etc

CLASS C

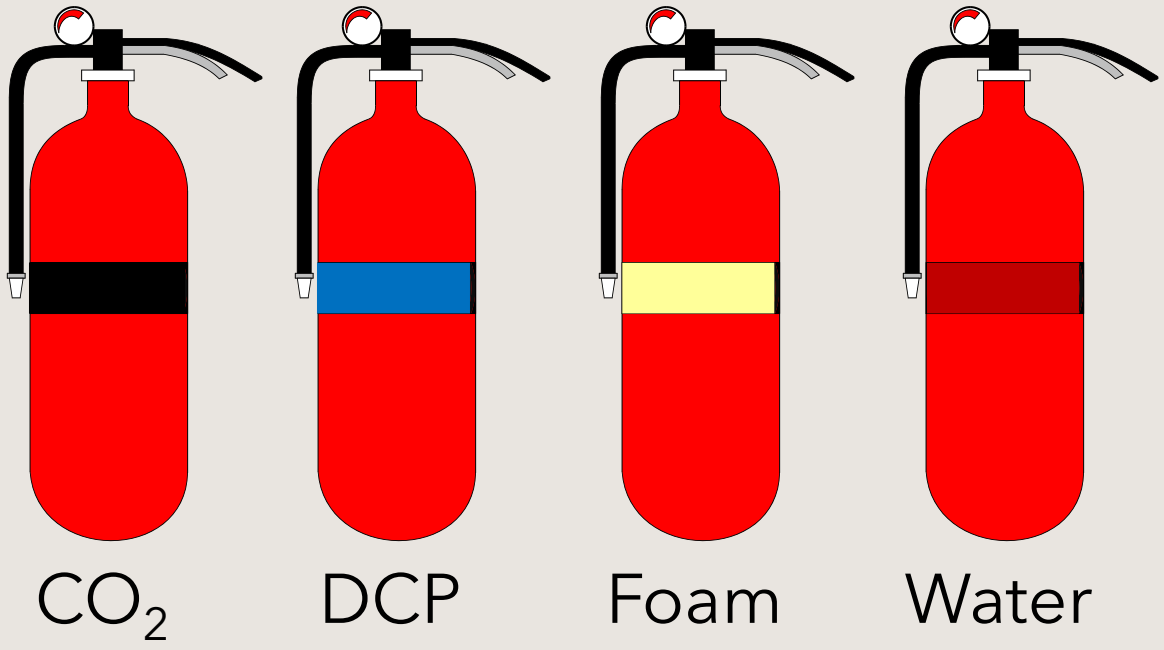
Fires involving Electrical/Energized Equipment

electricity is not considered class of fire because it is a source of energy and leads to other classes of fire.

CLASS D

Combustible metals which are particularly harzardous in their powdery forms .Eg zinc, potassium, zirconium etc

PORTABLE FIRE EXTINGUISHERS



EXTINGUISHING AGENTS AND CLASS OF FIRE THEY ARE SUITED FOR

Extinguishing Agent	Class of Fire	Effect on Fire
Water	A	Cooling
Foam	A and B	Cooling and Smothering
Carbon Dioxide	C	Smothering
Dry Chemical Powder	A, B and C	Cooling/Smothering/ starvation

EMERGENCY RESPONSE/EVACUATION PROCEDURE

On Noticing Fire

- Raise an alarm by shouting fire! Fire!! Fire!!!
- Activate the fire alarm call point by pressing the button
- CALL the Fire Service on available telephone number
- Give your name and location of fire
- Raise the alarm
- Select the suitable fire extinguisher close to you and try it before going close to fire
- Check wind direction (use the wind to protect yourself)
- Fight fire at flames base
- Do not waste fire extinguisher
- Never turn back after extinguishing a fire
- Cool the area with water

- **Others**
- Leave the building through exit/emergency exit route
- Do not go for luggage/personal belongings.
- Shut the door behind you – **DO NOT LOCK**
- Be calm do not panic
- Do not use the lift, use the staircase
- Assemble at the Muster Point for instruction and roll call.
- Do not re-enter the building until the emergency is declared over.

HOW TO USE A FIRE EXTINGUISHER

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FIRE PREVENTION MEASURES

Housekeeping: Keep work areas clean and free of combustible waste.

Hot Work Permits: Require permits and fire watches for welding, grinding, or cutting.

Electrical Safety: Regularly inspect wiring, panels, and equipment for faults.

Storage Protocols: Store flammable materials in approved containers and away from ignition sources.

FIRE DETECTION AND SUPPRESSION

Install smoke, heat, and flame detectors in high-risk zones.

Use addressable fire alarm systems for precise location tracking.

Test alarms regularly and ensure backup power is available.

Fire Suppression Systems

Sprinkler systems: Automatic response for general fire control.

Foam systems: For flammable liquid fires.

CO_2 or clean agent systems: For electrical or sensitive equipment areas.

Portable extinguishers: Strategically placed and matched to fire classes (A, B, C, D).

EMERGENCY RESPONSE PLANNING & DRILLS

- Fire evacuation plans: Clearly marked exits, assembly points, and escape routes. ***Recall the Afriland Tower Fire 2025***
- Fire drills: Conduct at least 4 times a year.
- Fire wardens: Train staff to guide evacuations and use extinguishers.
- Coordination with fire services: Share site layouts and hazardous material inventories.

TRAINING AND REGULATORY COMPLIANCE

- Induction training: Include fire safety for all new employees.
- Refresher courses: Annually or when new hazards are introduced.
- Signage and labeling: Use clear, visible fire safety signs and hazard labels.
- Follow national fire codes: such as the National Building Code and Federal Fire Service guidelines.
- Obtain fire safety certificates and conduct regular inspections.

SMART FIRE SAFETY ENHANCEMENTS

IoT-enabled detectors for real-time alerts.

Thermal imaging cameras to detect overheating equipment.

Integrated fire control panels that link alarms, sprinklers, and emergency lighting

FIRST AID

FIRST AID

First aid is the **immediate care you provide to someone who's injured or unwell**, aiming to preserve life and prevent further harm.

- First aid in a cement plant focuses on treating injuries caused by cement exposure, machinery accidents, slips, and respiratory hazards.
- Quick response and proper training are essential to prevent complications and ensure worker safety.

FIRST AID FOR CEMENT DEPOTS AND PLANTS

Common Injuries	First Aid Responses
Cement Burns (alkaline exposure)	Flush affected skin with copious amounts of water. Apply sterile dressing; avoid ointments unless directed. Seek medical attention for deep or widespread burns.
Eye Contact with Cement Dust or Wet Mix	Use an eye wash station immediately for at least 15 minutes. Do not rub eyes. Cover with sterile eye pad and refer to medical care.
Inhalation of Cement Dust	Move the person to fresh air. Loosen clothing and monitor breathing. If symptoms persist (coughing, shortness of breath), seek medical help.
Crush Injuries (from heavy machinery or falling materials)	Call emergency services immediately. Control bleeding with pressure dressings. Immobilize the injured area and monitor for shock.

FIRST AID SAFETY PROTOCOLS

- **Install eye wash stations** near mixing zones and chemical storage.
- **Train staff** in first aid and emergency response procedures.
- **Conduct monthly inspections** of kits and stations.
- **Post emergency numbers** and evacuation routes clearly.
- **Assign first aiders** per shift with refresher training.

SPILLS IN CEMENT PLANTS & DEPOT

SPILLS IN CEMENT PLANTS & DEPOT

- Spills in cement plants are a significant operational and safety concern, often resulting from material handling inefficiencies, equipment failures, or inadequate containment systems.

CAUSES OF SPILLS IN CEMENT PLANTS & DEPOT

- **Material Handling Failures**: Spills often occur during the transfer of raw materials like clinker, sand, and gravel due to poorly designed or maintained conveyor systems.
- **Dust Emissions**: Fine cement dust can escape during processing, especially at transfer points, leading to both airborne and settled spills.
- **Chute and Seal Failures**: Inadequate chute sealing or worn-out clamping systems can allow materials to leak during transport or loading/unloading operations.
- **Overfilled Silos or Hoppers**: Improper monitoring can lead to overflow, causing large-scale spills.
- **Human Error**: Mistakes during loading, unloading, or maintenance can result in accidental discharges.

RISKS AND CONSEQUENCE

RISKS	CONSEQUENCES
Occupational Hazards	Spills contribute to slip-and-fall accidents, respiratory issues from dust inhalation, and skin irritation
Environmental Impact	Spilled materials can contaminate soil and water sources, especially if not contained properly
Production Downtime	Cleaning up spills and repairing damaged equipment can halt operations, leading to financial losses
Regulatory Non-Compliance	Spills may violate environmental and safety regulations, resulting in fines or shutdowns

KEY TAKE AWAYS FROM PARTICIPANTS ….

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2…..

3…..

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ANY QUESTIONS ?

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