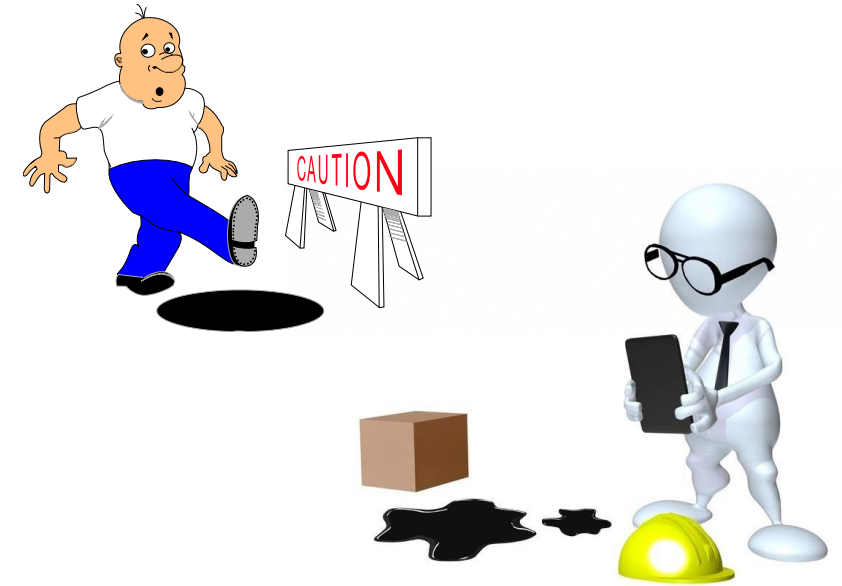


Accident Error Design  
Time Human Environm  
People Warning  
Investigation How  
Report Work



# Accident Investigation

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# What is an accident ?

**An unwanted, unplanned event that causes injuries, illnesses, or property damage.**

- Bad event caused **by error** or **by chance**.
- Unintentional, results in some damage or injury.
- Result of the failure of people, equipment, materials or environment to react as expected.

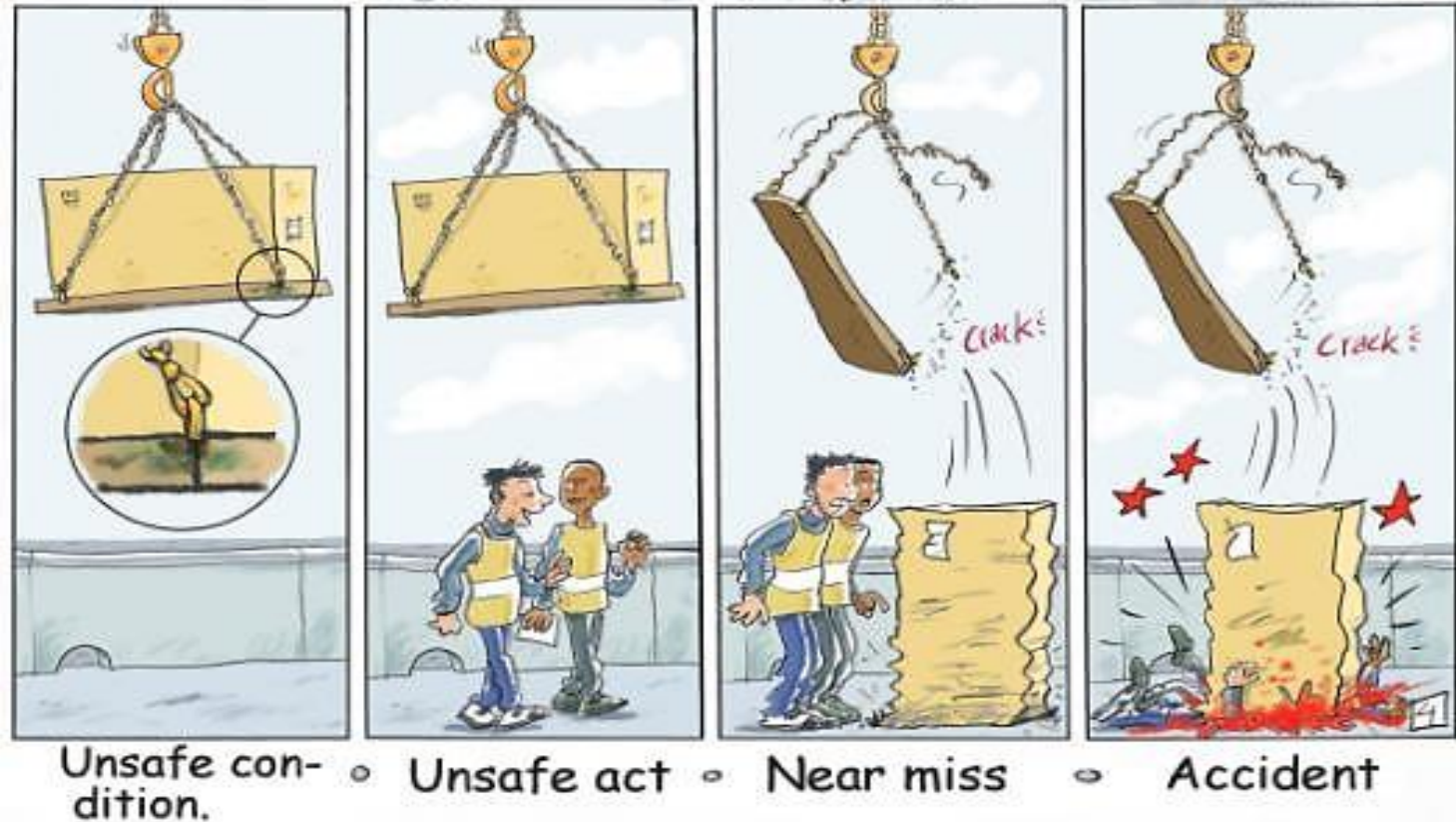
For Example:

- A **car crash**
- Some **equipment malfunctions** in a factory and injures the workers



# What is an Incident ?

- Includes all 'undesired circumstances' and 'near misses' which could cause accidents.
- Big or small, good or bad, intentional or unintentional.
- A bank robbery, a funny or controversial situation etc.

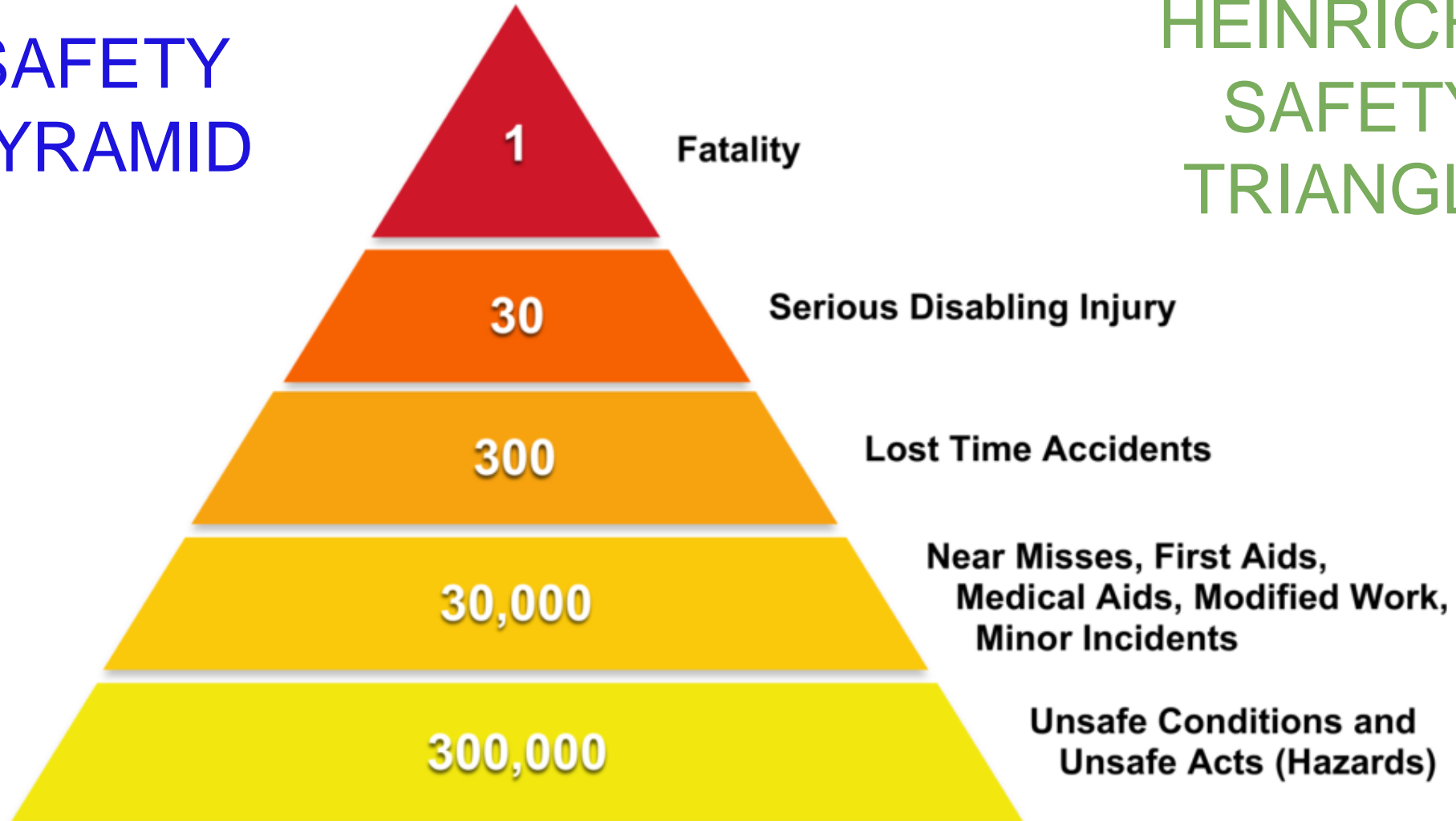


- **Undesired circumstance:** A set of conditions or circumstances that have the potential to cause injury or ill health, e.g., untrained operators working on heavy machinery.
- **Near miss:** An event that, while not causing harm, has the potential to cause injury or ill health.



# Accident Ratio Study

SAFETY  
PYRAMID



HEINRICH'S  
SAFETY  
TRIANGLE



# Types of Accidents

## **FAC (First aid case):**

An accident occurring while on the job and which is treated at site by the qualified first aider (one time treatment) or any minor industrial injury which normally do not need medical intervention. The injured person resume his work .

## **MTC (Medical treatment case):**

Medical treatment case an accident occurring in plant, and which required intervention of qualified medical professional. The injured person required medication more than a day and he may or may not resume duty on same day.

## **LTA or LTI (Lost time accident or incident ):**

A lost time injury (LTI) is an injury sustained by an employee that will ultimately lead to the loss of productive work time in the form of worker delays. An injury is considered a lost time injury only when the **worker is unable to perform the regular duties** of the job, takes time off for recovery, or is assigned modified work duties for the recovery period.

# Reasons for Incident/Accident Investigation

1. Logic and Understanding
2. Legal Reasons
3. Benefits



# Reasons for Incident/Accident Investigation

## 1- Logic and Understanding

- All incidents/accidents have causes ... eliminate the cause and eliminate future incidents.
- The direct and indirect causes of an incident/accident can be discovered through investigation.
- Corrective action indicated by the causation can be taken to eliminate future incidents/accidents.
- Valuable information and understanding can be gained from carrying out accident/incident investigations.





# Reasons for Incident/Accident Investigation

## 2- Legal Reasons

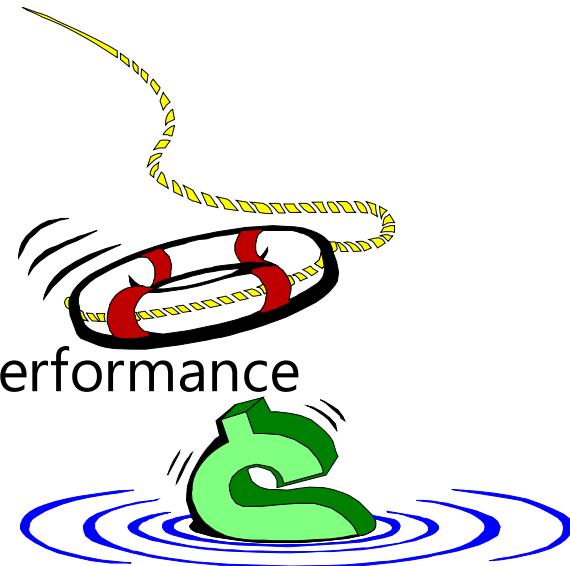
- To ensure that the organization is operating in compliance with legal requirements.
- Company has a positive attitude to health and safety.
- The investigation will also provide essential information for insurers in the event of an employer's liability or other claim.



# Reasons for Incident/Accident Investigation

## 3- Benefits

- The **prevention of similar events** occurring again.
- The **prevention of business losses** due to disruption immediately after the event, loss of production, loss of business through a lowering of reputation or inability to deliver, and the **costs of criminal and legal actions**.
- Improvement in employee morale and general attitudes to HS.
- Improving management skills to improve health and safety performance throughout the organization.

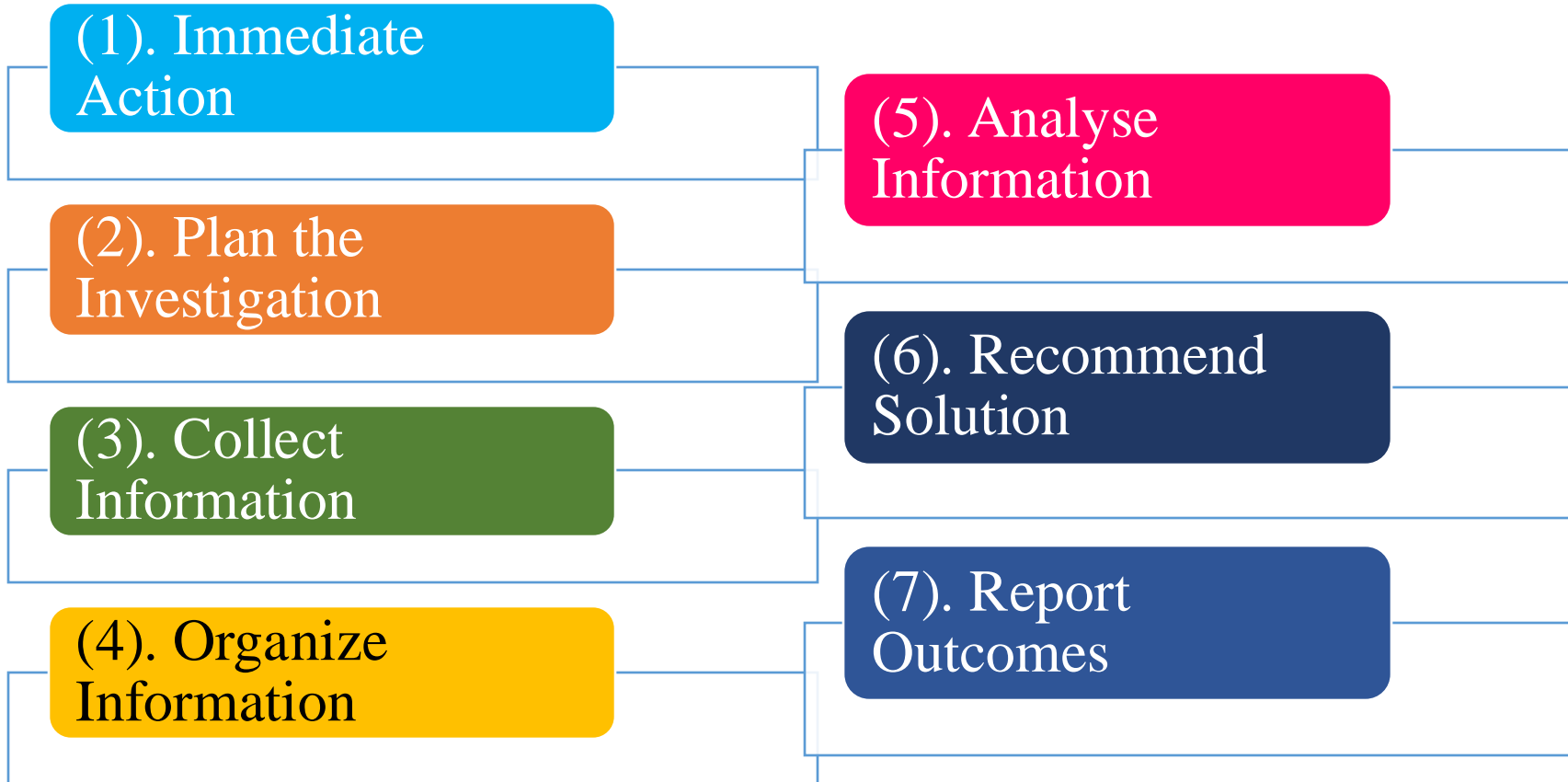


## *When Should the Investigation Be Conducted?*

Immediate information from the person suffering the accident often proves to be most useful.

- Factors are fresh in the minds of witnesses.
- Witnesses have had less time to talk.
- Physical conditions have had less time to change.
- More people are likely to be available.
- Take immediate action to prevent a recurrence and to demonstrate management commitment to improvement.

# INVESTIGATION PROCESS



# 1- Immediate Action

- Does anyone require medical attention?
- How can the incident scene be secured and taken control of?
- Are there any hazards, that pose a danger to yourself or other persons, that need removing?
- Was any equipment involved in the incident?
- Were any departmental vehicles involved in the incident?
- Does any individual or organisation need to be informed of the incident?



## 2- Plan The Investigation

- What is the time frame for the investigation?
- Who do I need to speak to?
- Does anything need to be photographed?
- Do you need to draw a sketch plan of the incident scene?
- What other documents need to be collected or sighted?
- Who do I report the investigation findings to?



## 2- Plan The Investigation

### Preparation for investigation

- Seal the accident area.
- Interview witnesses.
- Draw and take measurements of the accident area.
- Take samples.



## 3- Collect Information

- The date, time and location of the incident.
- The people involved.
- Any known events leading up to the incident.
- What was happening at the time of the incident.
- Weather conditions.



### 3- Collect Information

### (Conducting Interviews)

- Purpose for investigating the incident is to find out why it happened.
- **If any witnesses are reluctant to speak to you, assure them that the investigation aims to understand, not assign blame or liability.**
- If possible, speak to witnesses at the scene of the incident.
- Speak to people separately.
- Always use simple language and avoid acronyms.
- End each interview on a positive and encouraging note.

**Who, what, when, where and how**

Eyewitnesses who actually saw or were directly involved in the incident

People who arrived immediately after the incident occurred

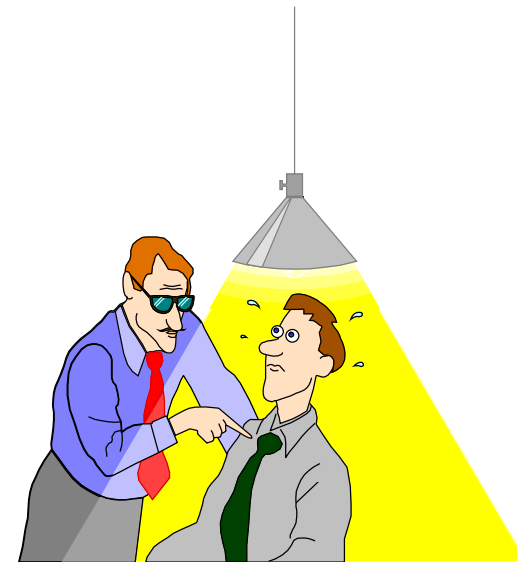
People who saw the events leading up to the incident

People who have information about the specific work, processes, equipment, materials & other aspects of the area

## 3- Collect Information

### (Conducting interviews)

- **Open questions:**
  - What did you see?
  - Who else was present at the scene?
  - When did the incident happen?
- **Closed questions:**
  - Are you feeling better today?
  - Are you happy?
- **Multiple questions:**
  - Did you see the staircase tread breaking and the teacher walking down the staircase while carrying a box?



### 3- Collect Information

### (Recording Statements )

- Recording oral information is essential in creating a **written document**, often referred to as '**taking a statement**' in investigation procedures."
- In health and safety investigations, there is no assignment of blame, and liability is linked to the investigation's findings.
- It is important to note that **the gathered information will not be presented as evidence in a court of law.**



## 3- Collect Information

### (Recording the Scene)

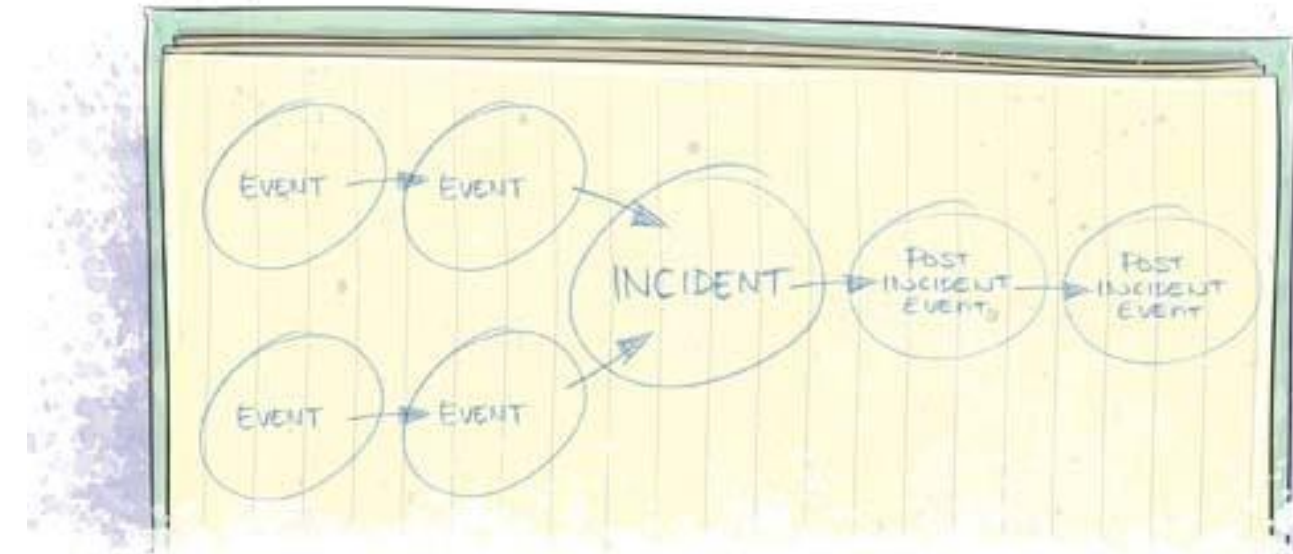
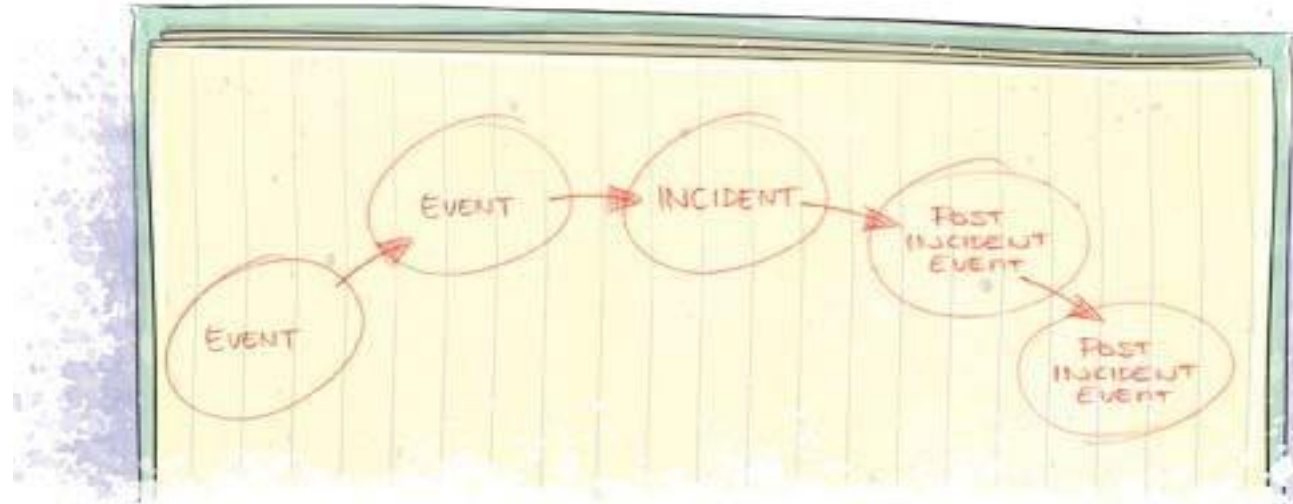
- Photographs are the **most useful investigation tools** and can eliminate the need to write descriptions.
- Photographs provide a permanent record of:
  - ✓ The original scene and as things change.
  - ✓ Any scratches, dents and perishable evidence (e.g., Tyre marks, bruises).
  - ✓ Before and after views (e.g., Scene, equipment).
  - ✓ Comparison between damaged and undamaged equipment





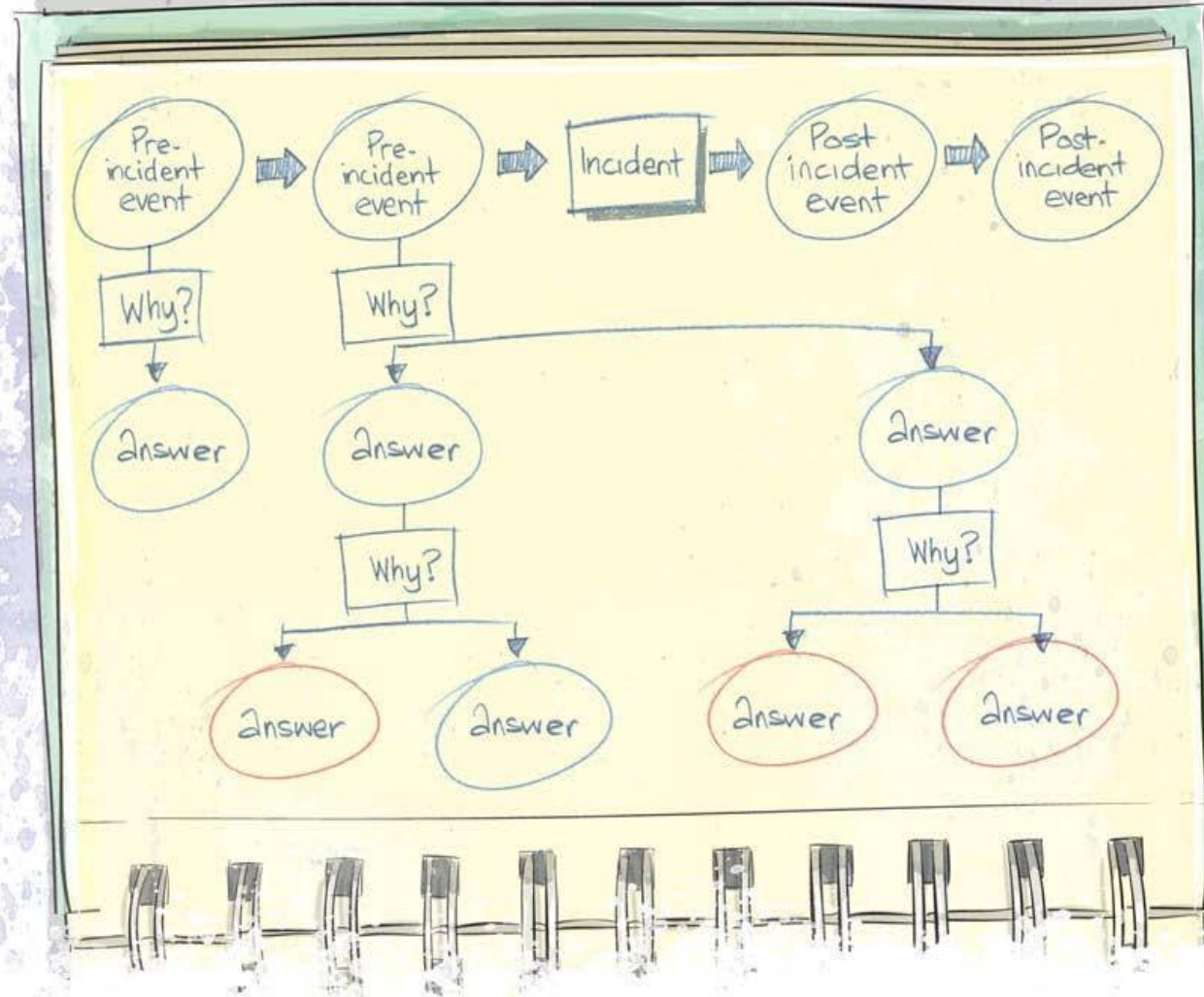
## 4- Organise Information

- Put it into some order.
- Timeline chart.



- To determine the cause of the incident, analyze the timeline events by repeatedly asking '**why**' until the root cause is identified.
- Identify the possible causes and determine which are within the control of workplace.
- Can you apply a solution to a possible cause if it is outside the control of the workplace ?

## 5- Analyse Information



Map out the events in writing, using evidence to support each conclusion or observation

# Analyze

- ▶ Say what happened step-by-step.
- ▶ Analyze the events with the 6 key questions:

1. Who?

Who saw the crash?

2. What?

What happened to the brakes?

3. When?

When did the brakes fail?

4. Where?

Where were the replacement brakes?

5. Why?

Why wasn't the mechanic told?

6. How?

How did the crash happen?



## 5- Analyse Information

- **Immediate Causes:**
  - Unsafe acts, Unsafe conditions
- **Underlying or Root Causes:** Reasons behind the immediate causes.

Often failures in the **management system**:

- ✓ No supervision
- ✓ No PPE provided
- ✓ No training
- ✓ No maintenance
- ✓ No checking or inspections
- ✓ Inadequate or no risk assessments

task & procedures  
note issues related  
to equipment or materials  
consider the worker  
consider management's role  
note what the workplace  
environment was like

## 6- Recommend Solutions

Sometimes it is easier to look for solutions by using **tables** or **columns**.

- In **one column**, list the possible causes you found during your analysis of the timeline.
- In **the next column**, indicate whether the possible causes are within the control of the workplace.
- In **the third column**, write all the possible solutions.
  - Address **hazardous conditions** promptly; interim actions can be considered.
  - **Underlying causes** will require more complex actions:
    - will take time, effort, disruption and money
    - need for prioritisation





## 6- Recommend Solutions

- **Elimination** – Completely remove the risk.
- **Substitution** – Replace the risk with a less dangerous one.
- **Engineering** – Redesign work processes or equipment.
- **Administration** – Provide training and/or procedures.
- **Personal protective equipment** – Use personal protective equipment.

## 7- Report Outcomes

- Report the investigation findings.
- Include all gathered data and information.
- Conclude with an executive summary.

“Remember, having a workplace incident is regrettable, but not learning from it is unforgivable. Take an action when you are aware of one.”

## Report

- Say what happened.
- Say which were the surface causes.
- Say which were the root causes.
- Say what needs to be done to avoid future accidents.



# SUMMARY

## Workplace Incidents:

- Are caused by unsafe acts and conditions
- Can be Prevented
- Must be reported (including serious incidents and near misses)
- Must be investigated immediately to determine root cause(s)
- Rely on fostering a positive safety culture.

# HOME WORK

## AIR CRASH INVESTIGATION

British Air Ways Flight 38 Season 10, Episode 2

Boeing 777

Investigation Took Almost a Year

What was the real culprit?

Please see following documentary on YouTube

[Seconds From Disaster - Meltdown at Chernobyl - FULL](#)

**Thank you !**

