



Accident Investigation



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Welcome to the Office of Environmental Health and Safety (EH&S) at East Carolina University.

EH&S reports to the Executive Vice Chancellor for Administration and Finance and is located at 210 E. 4th Street. EH&S operates in a collaborative effort with several university safety committees, the Office of Prospective Health and the campus community to develop policy manuals and training programs that ensure campus safety, environmental sustainability and regulatory compliance. EH&S program management and consultation areas include environmental management, safety, industrial hygiene, life safety, and workers' compensation. The



Document: Done

Objectives

- Explain the meaning and impact of accidents.
- Identify different types of accident causes.
- Know the purpose of accident Investigation.
- Explain how to conduct an accident investigation.
- Know how to document accident investigations.

What is an Accident?

- Unplanned event results in mishap (personal injury or property damage).
- Accidents are the result of the failure of people, equipment, materials, or environment to react as expected.
- All accidents have consequences or outcomes.

Purpose of Accident Investigation

- Determine the sequences of events leading to failure.
- Identify the cause of the accident.
- Find methods to prevent accident from recurring.

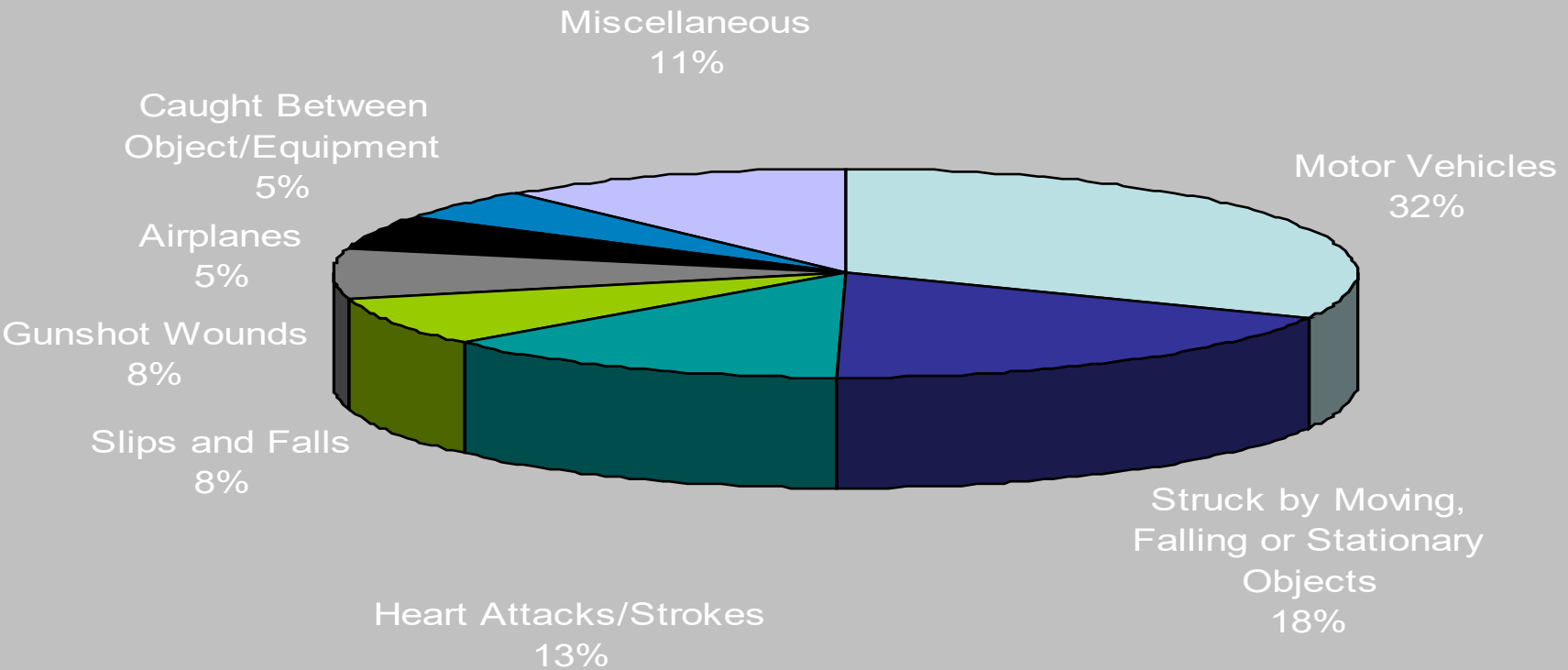
Be Prepared

- Develop a policy for accident investigation
- Routinely audit your policy to:
 - ensure personnel understand their role
 - system is driving corrective actions

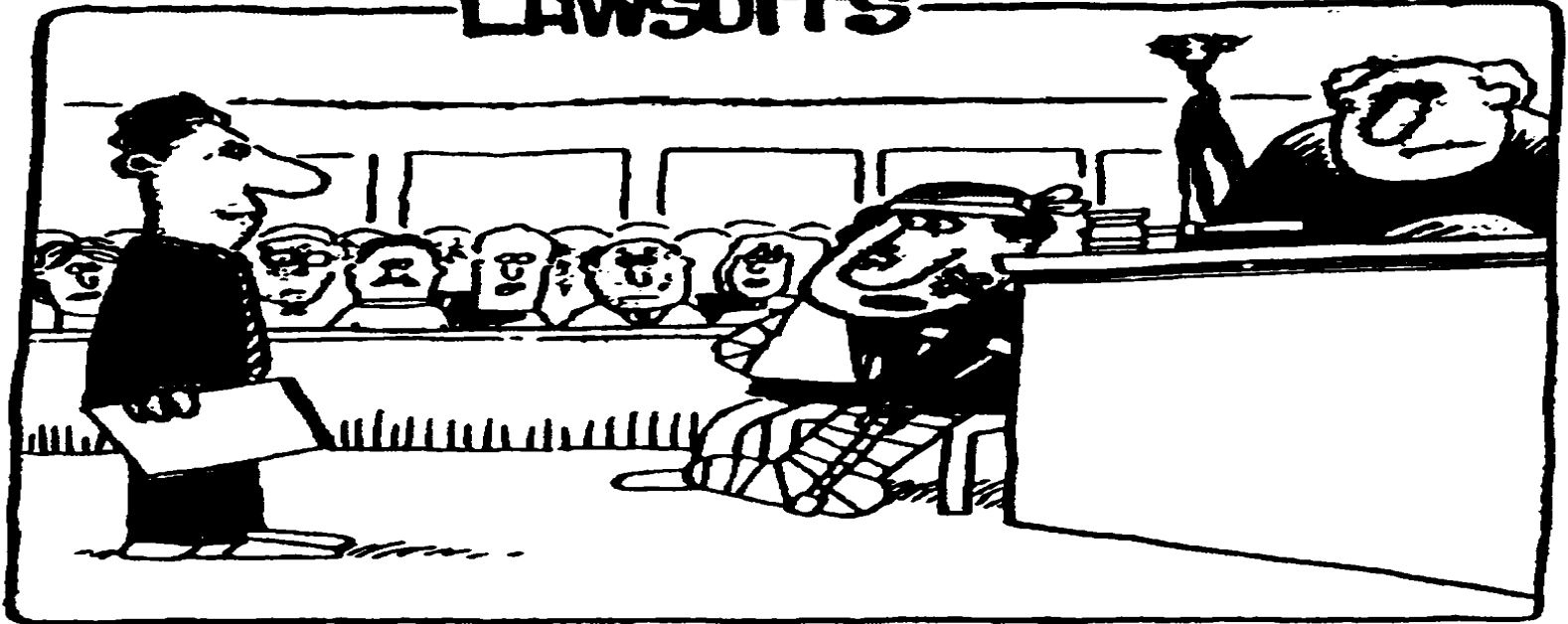
Assign responsibilities to personnel:

- employee must be trained to investigate
- investigator should know process

Leading Causes of Workplace Deaths



LAWSUITS



"...I DIDN'T KNOW THE EXTENT OF MY INJURIES UNTIL I WAS EXAMINED BY MY LAWYER."

PROGRAM REQUIREMENTS

ALL EMPLOYERS MUST:

- ☑ Review job specific hazards
- ☑ Implement corrective actions
- ☑ Conduct hazard assessments
- ☑ Conduct accident investigations
- ☑ Provide training to all required employees
- ☑ Install engineering controls where possible
- ☑ Institute administrative controls where possible
- ☑ Control workplace hazards using PPE as a last resort



ACCIDENT INVESTIGATION IS IMPORTANT

A GOOD PROGRAM WILL HELP:

- ☑ Improve quality.
- ☑ Improve absenteeism.
- ☑ Maintain a healthier work force.
- ☑ Reduce injury and illness rates.
- ☑ Acceptance of high-turnover jobs.
- ☑ Workers feel good about their work.
- ☑ Reduce workers' compensation costs.
- ☑ Elevate SAFETY to a higher level of awareness.



PROGRAM IMPLEMENTATION

IMPLEMENTATION OF AN ACCIDENT INVESTIGATION PROGRAM REQUIRES:

- DEDICATION
- PERSONAL INTEREST
- MANAGEMENT COMMITMENT



NOTE:

UNDERSTANDING AND SUPPORT FROM THE WORK FORCE IS ESSENTIAL, WITHOUT IT THE PROGRAM WILL FAIL!

MANAGEMENT'S ROLE

CONSIDERATIONS:

1. *SUPPORT THE PROCESS.*
2. **ENSURE YOUR SUPPORT IS VISIBLE.**
3. **GET INVOLVED.**
4. *ATTEND THE SAME TRAINING AS YOUR WORKERS.*
5. **INSIST ON PERIODIC FOLLOW-UP & PROGRAM REVIEW.**
6. **IMPLEMENT WAYS TO MEASURE EFFECTIVENESS.**

THE SUPERVISOR'S ROLE

☑ CONSIDERATIONS:

1. TREAT ALL “NEAR-MISSES” AS AN ACCIDENT.
2. *GET INVOLVED IN THE INVESTIGATION.*
3. *COMPLETE THE PAPERWORK (WORK ORDERS, POLICY CHANGES, ETC.) TO MAKE CORRECTIVE ACTIONS.*
4. GET YOUR WORKERS INVOLVED.
5. NEVER RIDICULE ANY INJURY.
6. BE PROFESSIONAL - YOU COULD SAVE A LIFE TODAY.
7. *ATTEND THE SAME TRAINING AS YOUR WORKERS.*
8. *FOLLOW-UP ON THE ACTIONS YOU TOOK.*

•Most important-[Investigation is not intended to place blame!](#)

THE EMPLOYEE'S ROLE

CONSIDERATIONS:

1. ***REPORT*** ALL ACCIDENTS AND NEAR-MISSES IMMEDIATELY.
2. ***CONTRIBUTE*** TO MAKE CORRECTIVE ACTIONS.
3. **ALWAYS** PROVIDE COMPLETE AND ACCURATE INFORMATION.
4. ***FOLLOW-UP*** WITH ANY ADDITIONAL INFORMATION.

INDUSTRIAL HYGIENE & SAFETY CONTROLS

ENGINEERING CONTROLS

- ✓ Work Station Design
- ✓ Process Modification

ADMINISTRATIVE CONTROLS

- ✓ Training Programs
- ✓ Pacing

PERSONNEL PROTECTIVE EQUIPMENT →

- ✓ Gloves
- ✓ Shields
- ✓ Non-Slip Shoes

FIRST CHOICE

- ✓ Tool Selection and Design
- ✓ Mechanical Assist

SECOND CHOICE

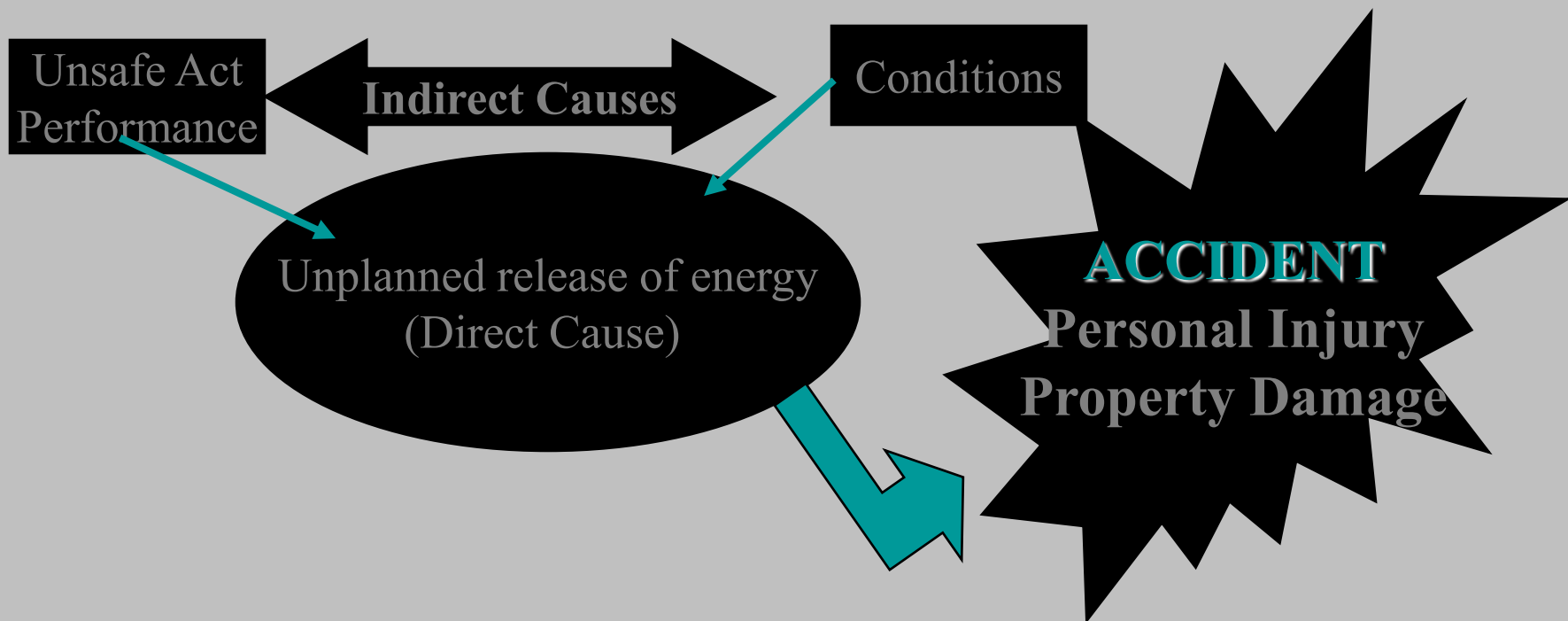
- ✓ Job Rotation/Enlargement
- ✓ Policy and Procedures

LAST CHOICE

- ✓ Wraps
- ✓ Eye Protection
- ✓ Aprons

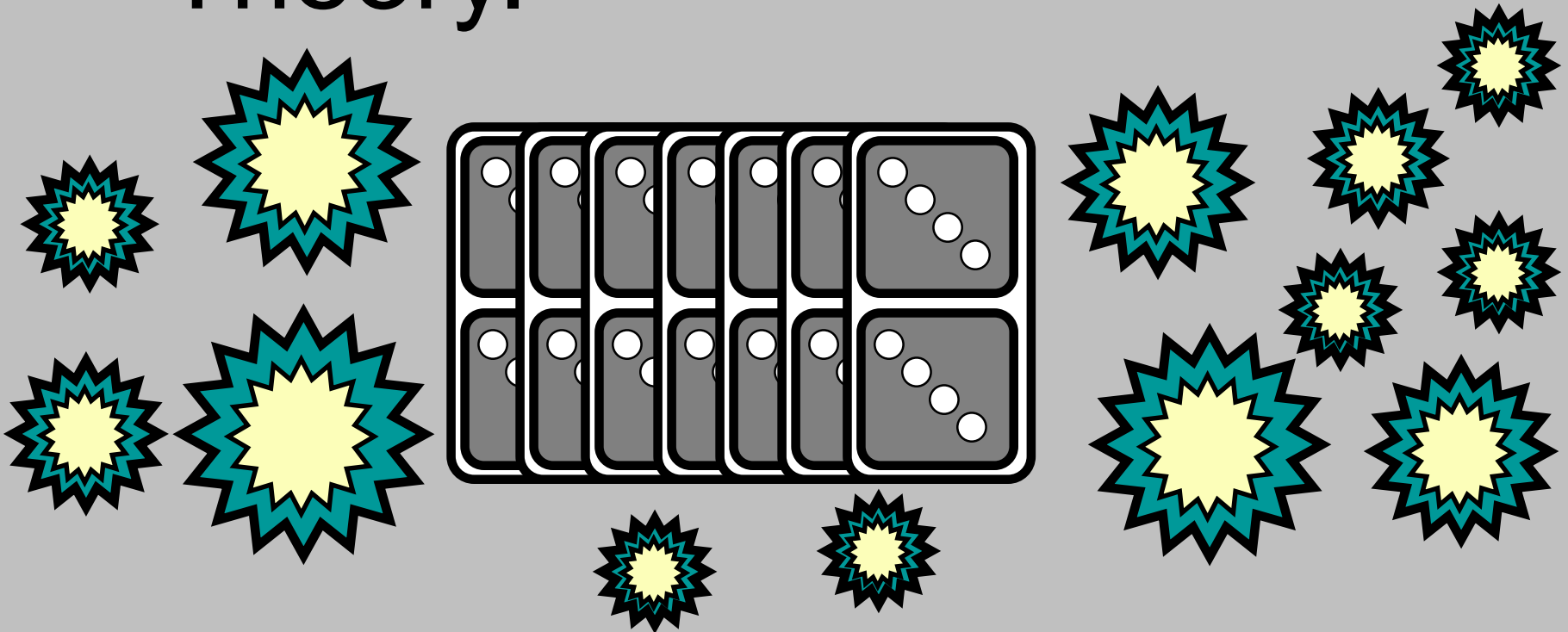
Types of Causes

Basic Causes
Poor Management Safety Policy & Decisions
Personal Factors/Environmental Factors



ACCIDENT CAUSATION

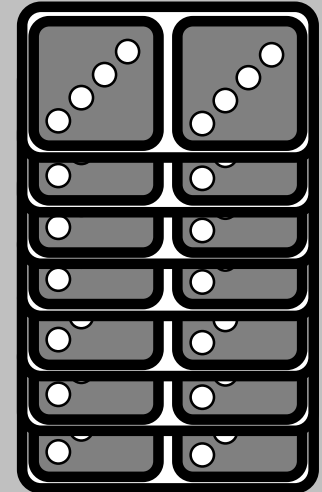
- ☑ Domino Theory.
- ☑ Multiple Causation Theory.



ACCIDENT CAUSATION

☑ Domino Theory.

The occurrence of an injury invariably results from a completed sequence of factors, the last one of these being the injury itself. The accident which caused the injury is in turn invariably caused or permitted directly by the unsafe act of a person and/or a mechanical or physical hazard.



ACCIDENT CAUSATION

☑ **Domino Theory.**

(One act or condition)

💣 The unsafe act: Climbing a defective ladder.

💣 The unsafe condition: A defective ladder.

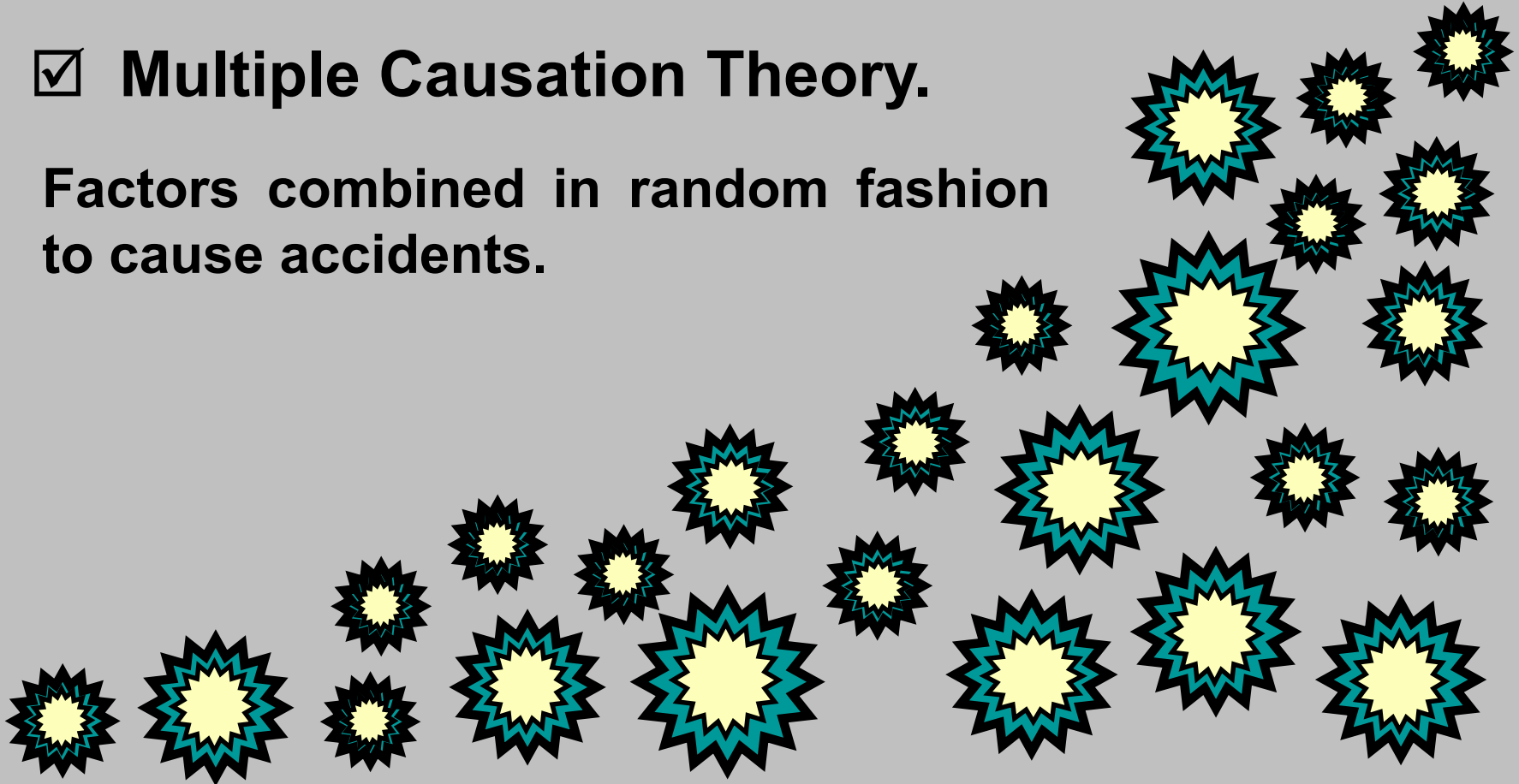
💣 The corrective action 1: Replace the ladder.

💣 The corrective action 2: Forbid use of ladder.

ACCIDENT CAUSATION

☑ Multiple Causation Theory.

Factors combined in random fashion to cause accidents.



ACCIDENT CAUSATION

☑ Multiple Causation Theory.

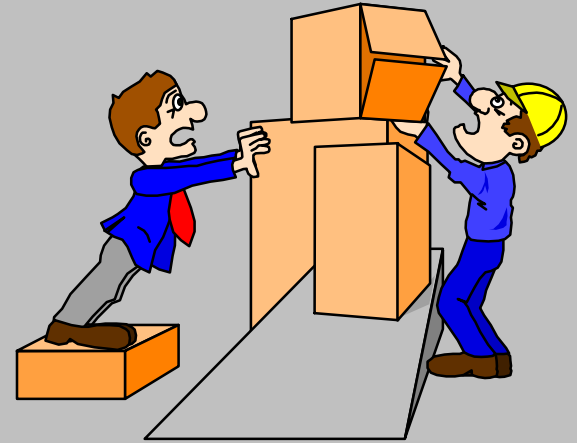
(Contributing factors)

- 💣 Was he or she properly trained?
- 💣 Was he or she reminded not to use it?
- 💣 Did the employee know not to use it?
- 💣 Why did the supervisor allow its use?
- 💣 Did the supervisor examine the job first?
- 💣 Why was the defective ladder not found?

ACCIDENT CAUSATION

☑ Unsafe Acts

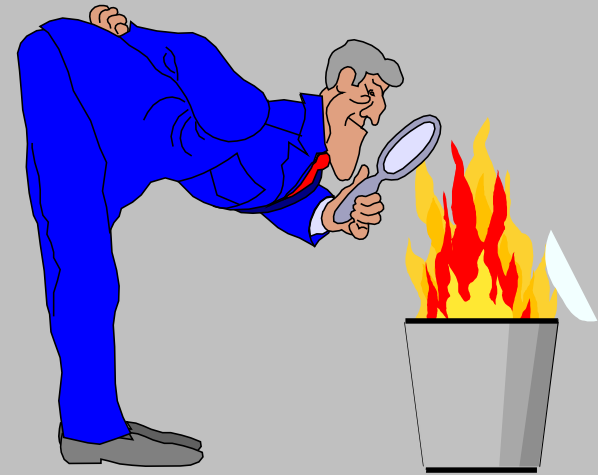
- 💣 Horseplay.
- 💣 Defeating safety devices.
- 💣 Failure to secure or warn.
- 💣 Operating without authority.
- 💣 Working on moving equipment.
- 💣 Taking an unsafe position or posture.
- 💣 Operating or working at an unsafe speed.
- 💣 Unsafe loading, placing, mixing, combining.
- 💣 Failure to use personal protective equipment.



ACCIDENT CAUSATION

☑ Unsafe Conditions (Environmental)

- 💣 Improper PPE.
- 💣 Improper tools.
- 💣 Improper guarding.
- 💣 Poor housekeeping.
- 💣 Improper ventilation.
- 💣 Defective equipment.
- 💣 Improper illumination.
- 💣 Unsafe dress or apparel.
- 💣 Hazardous arrangement.



ACCIDENT CAUSATION

☑ Unsafe Personal Factors

- 💣 Fatigue.
- 💣 Unclassified
- 💣 Improper attitude.
- 💣 Defective hearing.
- 💣 Defective eyesight.
- 💣 Muscular weakness.
- 💣 Lack of required skill.
- 💣 Intoxication (alcohol, drugs).
- 💣 Lack of required knowledge.



ACCIDENT CAUSATION

☑ Behavioristic Causes

- 💣 Improper attitude.
- 💣 Lack of knowledge or skill.
- 💣 Physical or mental impairment



CONTRIBUTING FACTORS

- **HUMAN BEHAVIOR**
 - Common to all accidents
 - Not limited to the person involved in the accident



Consequences of Accidents

Direct Consequences

1. Personal injury
2. Property loss

Indirect Consequences

1. Lost income
2. Medical expenses
3. Time to retrain another person
4. Decreased employee moral

Examples of Accident Causes

Direct Causes	Indirect Causes	Basic Causes
Struck by/against	Failure to secure	No oversight
Falls	Guarding	Poor maintenance.
Caught in/between	Improper use	Training
Exertion	Unsafe position	Policies
Contact with....	Environmental	Stress
Impact (vehicle)	Defect	Engineering

ACCIDENT REPORTING

WHAT SHOULD BE REPORTED:

- ☑ All injuries or job-related illnesses.
- ☑ Near-miss incidents.
- ☑ Vehicular, structural or equipment damage.
- ☑ Procedural deficiencies.
- ☑ Potentially unsafe conditions.
- ☑ Potentially unsafe behaviors.



Provide Care to the Injured

- Ensure that medical care is provided to the injured people before proceeding with the investigation.



CONDUCTING THE INVESTIGATION

☑ Purpose of the Investigation:

- 💣 Determine principal causes.
- 💣 Determine contributing causes.
- 💣 Develop strategies for corrective action.
- 💣 Establish a timetable for corrective action.
- 💣 Assign responsibility for corrective actions.

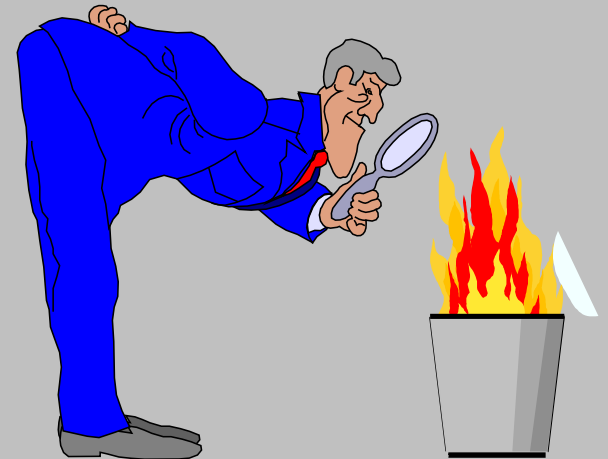


CONDUCTING THE INVESTIGATION

Continued

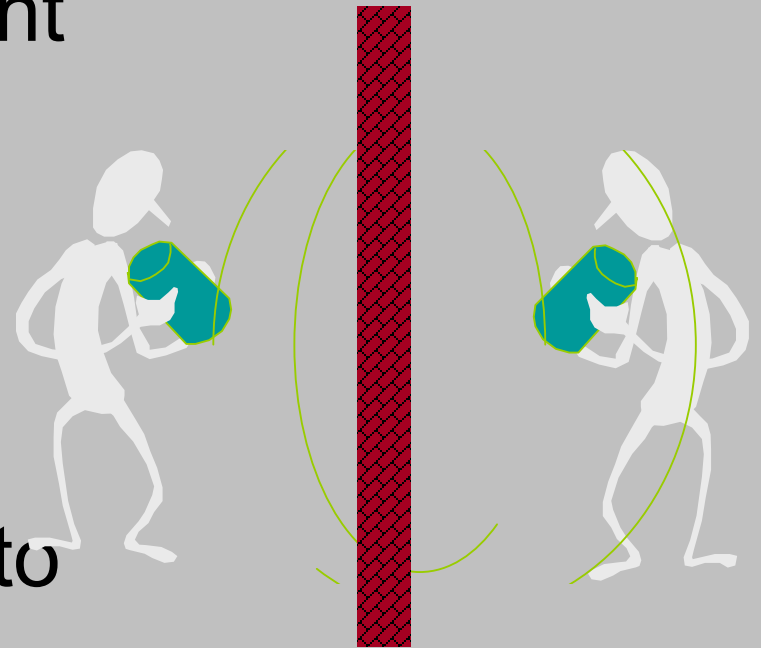
☑ Collecting the data:

- 💣 JHA assessment forms.
- 💣 Direct observation.
- 💣 Video Tape.
- 💣 Action photographs.
- 💣 Documentary accounts.
- 💣 Accident statistics.
- 💣 Employee interviews.
- 💣 Employee surveys.



Interview Victims & Witnesses

- Interview as soon as possible after the incident
 - Do not interrupt medical care to interview
- Interview each person separately
- Do not allow witnesses to confer prior to interview

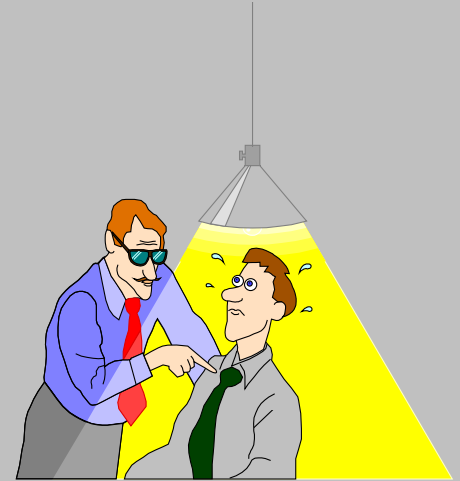


CONDUCTING THE INVESTIGATION

Continued

INTERVIEWING WITNESSES:

- ✓ Select a comfortable, private location.
- ✓ Set the person at ease.
- ✓ Explain that the situation, not them is the focus.
- ✓ Solicit ideas to prevent future recurrence.
- ✓ Consider diagrams or drawings.
- ✓ Remain neutral in your demeanor.
- ✓ Take notes or record the discussion (facts).
- ✓ Review the statements before terminating.

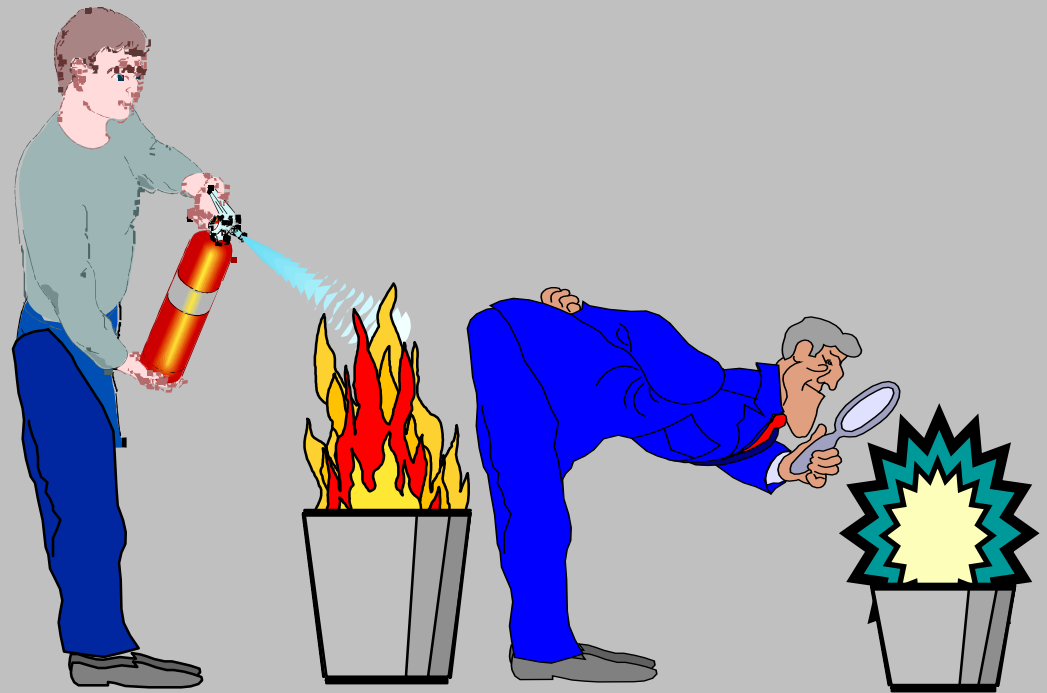


CONDUCTING THE INVESTIGATION

Continued

PRINCIPAL QUESTIONS TO BE ANSWERED:

- ☑ WHO?
- ☑ WHAT?
- ☑ WHY?
- ☑ WHEN?
- ☑ WHERE?
- ☑ HOW?



CONDUCTING THE INVESTIGATION

Continued

WHO?

- Who was injured?**
- Who was working with him/her?**
- Who else witnessed the accident?**
- Who else was involved in the accident?**
- Who is the employee's immediate supervisor?**
- Who rendered first aid or medical treatment?**

CONDUCTING THE INVESTIGATION

Continued

WHAT?

- What was the injured employee's explanation?**
- What were they doing at the time of the accident?**
- What was the position at the time of the accident?**
- What is the exact nature of the injury?**
- What operation was being performed?**
- What materials were being used?**
- What safe-work procedures were provided?**

CONDUCTING THE INVESTIGATION

Continued

WHAT?

- What personal protective equipment was used?**
- What PPE was required?**
- What elements could have contributed?**
- What guards were available but not used?**
- What environmental conditions contributed?**
- What related safety procedures need revision?**
- What shift was the employee working?**
- What ergonomic factors were involved?**

CONDUCTING THE INVESTIGATION

Continued

WHEN?

- When did the accident occur?**
- When did the employee start his/her shift?**
- When did the employee begin employment?**
- When was job-specific training received?**
- When did the supervisor last visit the job?**

CONDUCTING THE INVESTIGATION

Continued

WHY?

- Why did the accident occur?**
- Why did the employee do what he/she did?**
- Why did co-workers do what they did?**
- Why did conditions come together at that moment?**
- Why was the employee in the specific position?**
- Why were the specific tool/equipment selected?**

CONDUCTING THE INVESTIGATION

Continued

WHERE?

- Where did the accident occur?**
- Where was the employee positioned?**
- Where were eyewitnesses positioned?**
- Where was the supervisor at the time?**
- Where was first aid initially given?**

CONDUCTING THE INVESTIGATION

Continued

HOW?

- ☑ How did the accident occur?
- ☑ How many hours had the employee worked?
- ☑ How did the employee get injured (specifically)?
- ☑ How could the injury have been avoided?
- ☑ How could witnesses have prevented it?
- ☑ How could witnesses have better helped?
- ☑ ***HOW COULD THE ACCIDENT HAVE BEEN PREVENTED?***

Conducting the Investigation

- Interview witnesses.
- Document the accident scene before any changes are made.
- Review all information (procedures, equipment manuals).

Conducting the Investigation

- Make documented observations on:
 - Pre-accident conditions
 - Accident sequence
 - Post-accident conditions
- Document the facts (i.e.: location, witness remarks, and contributing factors).
- Determine sequence of events leading to accident.

CONDUCTING THE INVESTIGATION

Continued

WHAT'S NEXT?

- Instruct employee in proper behavior?**
- Warn employee of potential hazard?**
- Supply appropriate safeguard?**
- Supply appropriate PPE?**
- Eliminate the unsafe condition?**
- Repair or modify the unsafe condition?**
- Implement procedural changes?**

Common Problem Solving Methods

- Job Hazard analysis
- Sequence diagrams
- Change analysis

Job Hazard Analysis

Steps	Hazards	Causes	Control Measures

Change Analysis

- A change analysis consists of:
 - Defining the problem.
 - Establishing the norm.
 - Identifying, locating, and describing the change.
 - Identify what was affected and not affected
 - List features of change.
 - Pick likely causes.

WRITING THE REPORT

REPRESENTING THE DATA:

- ✓ Condense into the EH&S accident form.
- ✓ Compile statistical data for representation.
- ✓ Assign responsibility and prioritize.
- ✓ Make recommendations for correction.
- ✓ Recommend a timetable for correction.
- ✓ Consider funding for corrective actions.
- ✓ Forward copies to EH&S/OSHA as required.
- ✓ Distribute internally as required.
- ✓ Follow-up at periodic intervals.



WRITING THE REPORT

Continued

FORMULATING CONTROL MEASURES

- ☑ TRAINING INITIATION OR ENHANCEMENT
- ☑ ELIMINATE OR REDUCE EXPOSURE
- ☑ ENGINEERING CONTROL MEASURES
- ☑ ADMINISTRATIVE CONTROL MEASURES
- ☑ APPLICATION OF SAFE WORK PRACTICES
- ☑ PERSONAL PROTECTIVE EQUIPMENT

Documentation

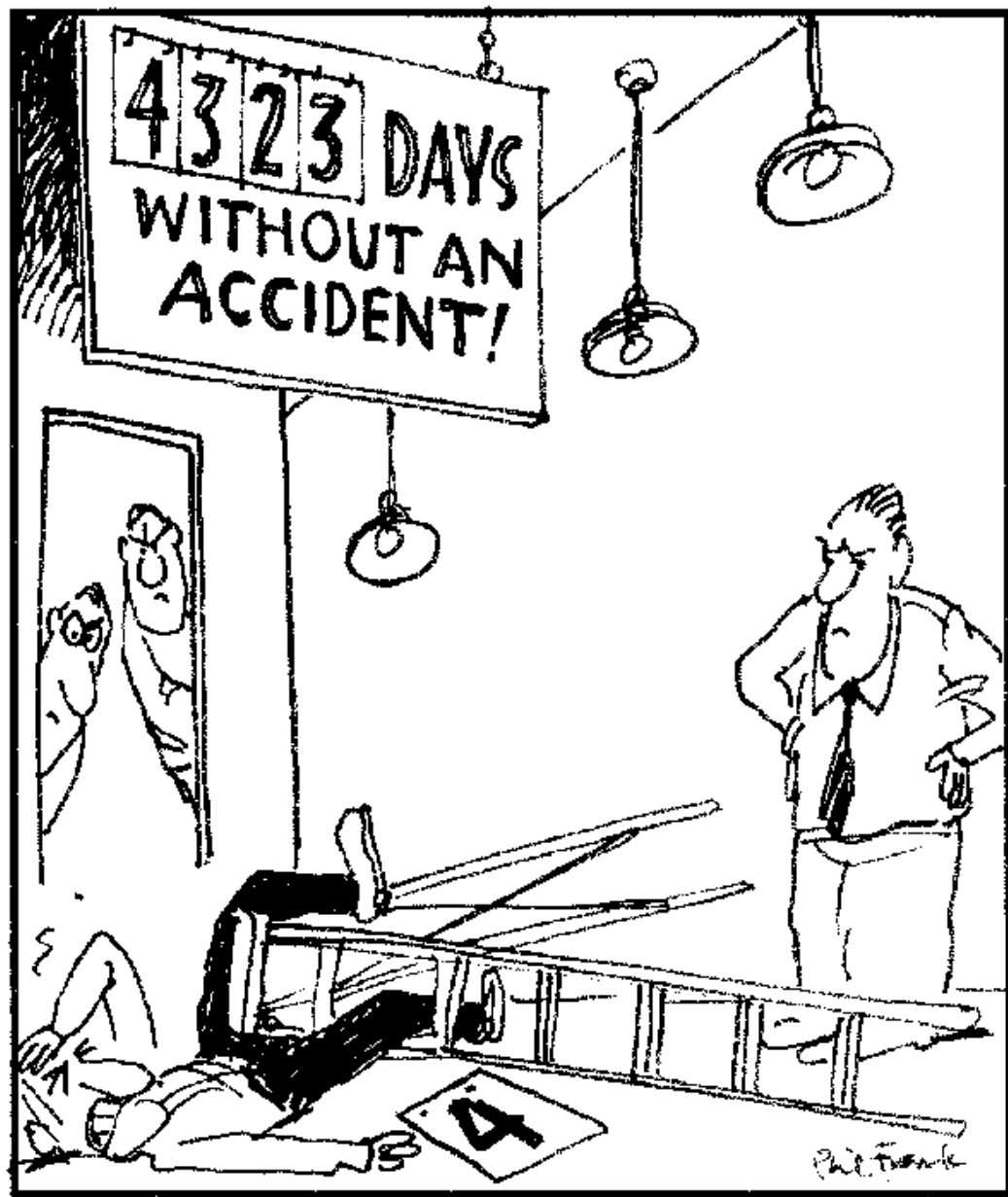
- Complete an accident investigation form to collect:
 - Personnel information.
 - Accident information (location, events leading to accident, machines involved).
 - Causes of the accident.
 - Recommendation to prevent accident.
 - Follow up information.

Documentation

- From the accident investigation form and witness statements write an accident investigation report. The report should include:
 - Background information (where, who).
 - Summary (sequence, extent, type, source).
 - Analysis (causes).
 - Recommendations.

FOLLOW-UP

**THE GREATEST
DEFICIENCY IN
ACCIDENT
INVESTIGATION IS
LACK OF COMPETENT
FOLLOW-UP!**



“Summary”

Steps to Accident Investigation

- Survey the scene.
- Secure the scene (initiate interim controls).
- Get help for the injured.
- Who talks to the Media?
- Collect evidence.
- Analyze data (review past investigations).
- Determine causes (scientific methods).
- Disciplinary action, last resort.
- Follow up (eliminate hazards).

QUESTIONS?

