



# Accident Investigation

Pub. No. HS93-024E (11-06)

## Goal

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The goal of this training program is to introduce basic accident investigation principles and to describe accident analysis techniques.

## Objective

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The employee will demonstrate knowledge of accident investigation principles and techniques.

## Background

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Seven fundamental activities comprise an accident prevention program:

1. Management support.
2. Comprehensive record keeping.
3. Analysis of the physical plant, operations, and practices to improve safety.
4. Education, training and discipline to minimize human factors that contribute to accidents.
5. Periodic safety inspections to detect and correct hazards.
6. Accident reporting and comprehensive investigation of every accident and incident.
7. Periodic review of the program to keep it up to date.

An accident occurs when a person or object receives an amount of energy or hazardous material that cannot be absorbed safely. The energy or hazardous material is the direct cause of the accident. The direct cause is usually the result of one or more unsafe acts, unsafe conditions or both. These unsafe acts and conditions are the indirect causes. A good accident investigation program is designed to discover the basic causes of the accident/incident. A basic cause is the action or condition that resulted in an undesired event. Incidents should also be investigated. An incident is a near miss, an undesired event that could have resulted in injury to an employee or property damage.

## Purpose

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Accident investigation is a device for preventing future accidents. An investigation must be fact finding and not fault finding. Eliminating one or more causes can prevent most accidents. Accident investigations determine not only what happened, but also how and why.

Three principle purposes of accident investigations are:

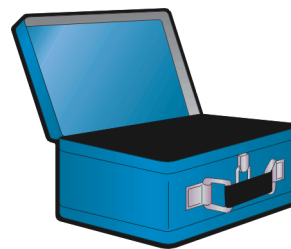
1. To learn the cause of the accident so that similar accidents can be prevented.
2. To determine if any deviation resulted in the accident.
3. To educate the employees and supervisors in a particular hazard and to direct attention to accident prevention within the workplace.

Conduct separate investigations to determine legal liability, compensability or fraud since the nature of investigations into these matters can interfere with the main purpose of accident prevention.

## Investigations

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The person responsible for investigations should make up an accident investigation kit that is held in readiness until it is needed. Some items that are needed in the kit are: camera, a tape recorder with sufficient tapes, a notebook, tape measure, a graph paper sketchpad, and high visibility tape. An accident investigation form should be developed and used for each investigation.

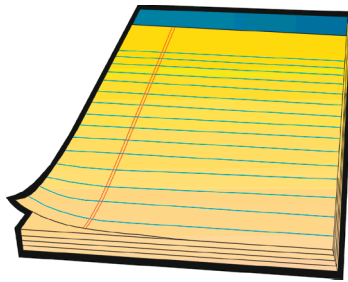


## Procedure

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1. Make sure the area is free of hazards and secure it until the investigation can begin. This preserves physical evidence.
2. Define the scope of the investigation, when the incident began and ended.

3. Select the investigators. Assign specific tasks to each, preferably in writing.
4. Present a preliminary briefing to the investigating team. Include in this briefing:
  - a. A description of the accident with damage estimates. (The principle source of information for analysis is the supervisor's accident report.)
  - b. A description of normal operating procedures.
  - c. Maps or floor plans showing the accident site.
  - d. A list of witnesses.
  - e. An account of events preceding the accident.
5. Visit the accident site to collect physical evidence, take photos and prepare sketches. Label everything accurately.
6. Interview each victim and witness privately and separately.
7. Determine:
  - a. What was not normal before the accident.
  - b. Where the abnormality occurred.
  - c. When it was first noted.
  - d. How it occurred.
  - e. Qualifications of those involved.
8. Analyze the data collected in step seven. Repeat any steps if necessary.
9. Determine:
  - a. Why the accident occurred.
  - b. A likely sequence of events and probable causes, direct and indirect.
  - c. Alternative sequences of events.
10. Determine the most likely sequences of events and the most probable causes.
11. Conduct a post-investigation briefing with management.
12. Prepare a summary report, including recommended actions to prevent a recurrence.



Key facts to look for when conducting an investigation:

1. The type of injury incurred.
2. The part(s) of the body directly affected by the injury.
3. The source of the injury – the object, substance, exposure, or bodily motion that directly produced or inflicted the injury.
4. The accident type - the event that directly resulted in the injury.

5. The hazardous physical condition or circumstance that allowed the accident to occur.
6. The source of the accident – the object, substance or part of the premises in which the hazardous condition existed.
7. The hazardous object – the specific object/activity that was hazardous.
8. Unsafe acts – the violation of an accepted safe procedure that directly resulted in the accident. Remember to investigate contributing factors and search out the root cause.

## Investigation Techniques

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Fault Tree Analysis (FTA) is a logic diagram showing all the potential causes of an accident or other undesired event. FTA involves these steps:

1. Define the undesired event to study.
2. Obtain an understanding of the system.
3. Construct the fault tree.
4. Evaluate the fault tree.
5. Control the hazards identified.

This information determines the most probable sequence of events leading to the accident.

Another investigation technique would be a Job Safety Analysis (JSA). A JSA is based on the following steps:

1. Select the job to be analyzed.
2. Separate the job into its basic steps.
3. Identify the hazards associated with each step.
4. Control each hazard.

## Investigation Report

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No investigation is complete until the report is made to management. The following format is a useful example of how to construct a report.

1. Background Information
  - a. When and where the accident occurred.
  - b. Who and what were involved.
  - c. Operating personnel and witnesses.
2. Account of the Accident
  - a. The sequence of events
  - b. The extent of the damage.
  - c. The accident type (fall, caught, struck, etc.)
  - d. Source of energy or hazardous material.

3. Analysis of the Accident
  - a. Direct causes (energy sources, hazardous materials)
  - b. Indirect causes (inadequate training, unsafe acts and conditions)
  - c. Basic causes (management policies, personal or environmental factors, etc.)
4. Recommendations to Prevent a Recurrence
  - a. Direct causes
  - b. Indirect causes
  - c. Basic causes

A successful accident investigation determines not only what happened, but also how and why the accident occurred. Comprehensive documentation and record keeping of all incidents and accidents can be a valuable tool in the investigation and accident prevention process. The ultimate goal of an investigation is to prevent a similar or perhaps more disastrous sequence of events from occurring in the future.

## Review Questions

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1. An incident is an undesired event that could have resulted in injury to an employee or damage to property.  
True or False.
2. What is the principle purpose of an accident investigation?
  - A. To discover who was at fault
  - B. To punish the person who caused it
  - C. To prevent a recurrence of the accident
3. True or false. The first step in an investigation is to eliminate any hazards and secure the accident area.  
True or False.
4. A successful investigation determines:
  - A. Exactly what happened and when it happened
  - B. Exactly how and why it happened
  - C. All of the above

The Texas Department of Insurance,  
Division of Workers' Compensation (TDI/DWC)  
E-mail [resourcecenter@tdi.state.tx.us](mailto:resourcecenter@tdi.state.tx.us)  
or call 1-800-687-7080 for more information.

## Answers

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1. True
2. C. To prevent a recurrence of the accident
3. True
4. C. All of the above

## Resources

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The Texas Department of Insurance, Division of Workers' Compensation (TDI/DWC) Resource Center offers a workers' health and safety video tape library. Call (512) 804-4620 for more information or visit our web site at [www.tdi.state.tx.us](http://www.tdi.state.tx.us).

Disclaimer: Information contained in this training program is considered accurate at time of publication.

*Safety Violations Hotline*  
**1-800-452-9595**  
**safetyhotline@tdi.state.tx.us**





