

What is an accident and why should it be investigated?

The term "accident" can be defined as an unplanned event that interrupts the completion of an activity, and that may (or may not) include injury or property damage.

An incident usually refers to an unexpected event that did not cause injury or damage this time but had the potential. "Near miss" and "dangerous occurrence" are also terms for an event that could have caused harm but did not.

When accidents are investigated, the emphasis should be concentrated on finding the root cause of the accident so you can prevent it from happening again. The purpose is to find facts that can lead to actions, not to find fault. Always look for deeper causes. Do not simply record the steps of the event.

Reasons to investigate a workplace accident include:

- most importantly, to find out the cause of accidents and to prevent similar accidents in the future
- to fulfill regulatory requirements
- to determine the cost of an accident
- to determine compliance with applicable safety regulations
- to process workers' compensation claims

Incidents that involve no injury or property damage should still be investigated to determine the hazards that should be corrected. The same principles apply to a quick inquiry of a minor incident and to the more formal investigation of a serious event.

Why look for the root cause?

The important point is that even in the most seemingly straightforward accidents, **seldom, if ever, is there only a single cause**. For example, an "investigation" which concludes that an accident was due to worker carelessness, and goes no further, fails to seek answers to several important questions such as:

- Was the worker distracted? If yes, why was the worker distracted?
- Was a safe work procedure being followed? If not, why not?
- Were safety devices in order? If not, why not?
- Was the worker trained? If not, why not?

An inquiry that answers these and related questions will reveal conditions that are more open to correction than attempts to prevent "carelessness".

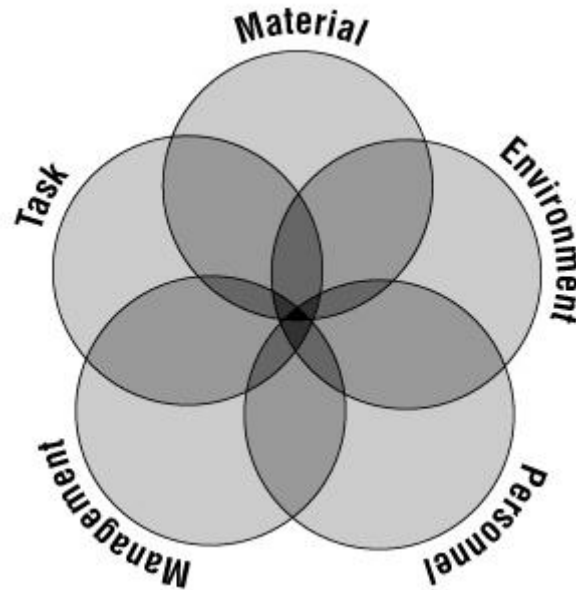
What should be looked at as the cause of an accident?

Accident Causation Models

The simple model shown in Figure 1 attempts to illustrate that the causes of any accident can be grouped into five categories - task, material, environment, personnel, and management. When this model is used, possible causes in each category should be

investigated. Each category is examined more closely below. Remember that these are sample questions only: no attempt has been made to develop a comprehensive checklist.

Figure 1: Accident Causation



Task

Here the actual work procedure being used at the time of the accident is explored. You will look for answers to questions such as:

- Was a safe work procedure used?
- Had conditions changed to make the normal procedure unsafe?
- Were the appropriate tools and materials available?
- Were they used?
- Were safety devices working properly?
- Was lockout used when necessary?

For most of these questions, an important follow-up question is "If not, why not?"

Material

To seek out possible causes resulting from the equipment and materials used, you might ask:

- Was there an equipment failure?
- What caused it to fail?
- Was the machinery poorly designed?
- Were hazardous substances involved?
- Were they clearly identified?
- Was a less hazardous alternative substance possible and available?

- Was the raw material substandard in some way?
- Should personal protective equipment (PPE) have been used?
- Was the PPE used?
- Were users of PPE properly trained?

Each time the answer reveals an unsafe condition, you must ask why this situation was allowed to exist.

Environment

The physical environment and especially sudden changes to that environment are factors that need to be identified. The situation at the time of the accident is what is important, not what the "usual" conditions were. For example, accident investigators may want to know:

- What were the weather conditions?
- Was poor housekeeping a problem?
- Was it too hot or too cold?
- Was noise a problem?
- Was there adequate light?
- Were toxic or hazardous gases, dusts, or fumes present?

Personnel

The physical and mental condition of those individuals directly involved in the event must be explored. The purpose for investigating the accident is not to establish blame against someone but the inquiry will not be complete unless personal characteristics are considered. Some factors will remain essentially constant while others may vary from day to day:

- Were workers experienced in the work being done?
- Had they been adequately trained?
- Can they physically do the work?
- What was the status of their health?
- Were they tired?
- Were they under stress (work or personal)?

Management

Management holds the legal responsibility for the safety of the workplace and therefore the role of supervisors and higher management and the role or presence of management systems must always be considered in an accident investigation. Failures of management systems are often found to be direct or indirect factors in accidents. Ask questions such as:

- Were safety rules communicated to and understood by all employees?
- Were written procedures and orientation available?
- Were they being enforced?
- Was there adequate supervision?
- Were workers trained to do the work?
- Had hazards been previously identified?
- Had procedures been developed to overcome them?
- Were unsafe conditions corrected?

- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?

This model of accident investigations provides a guide for uncovering all possible causes and reduces the likelihood of looking at facts in isolation. It should be emphasized that the above sample questions do not make up a complete checklist, but are examples only.

Why should recommendations be made?

It is important to come up with a set of well-considered recommendations designed to prevent recurrences of similar accidents. Once you are knowledgeable about the work processes involved and the overall situation in your organization, it should not be too difficult to come up with realistic recommendations. Recommendations should:

- be specific
- be constructive
- get at root causes
- identify contributing factors

Resist the temptation to make only general recommendations to save time and effort.

For example, you have determined that a blind corner contributed to an accident. Rather than just recommending "eliminate blind corners" it would be better to suggest:

- install mirrors at the northwest corner of building X (specific to this accident)
- install mirrors at blind corners where required throughout the worksite (general)

Never make recommendations about disciplining a person or persons who may have been at fault. This would not only be counter to the real purpose of the investigation, but it would jeopardize the chances for a free flow of information in future accident investigations.

In the unlikely event that you have not been able to determine the causes of an accident with any certainty, you probably still have uncovered safety weaknesses in the operation. It is appropriate that recommendations be made to correct these deficiencies.