PMA COMPANIES

Organizational and Safety Solutions

Accident Investigation

Background

Accident investigation and analysis is an essential element of any loss control program. A systematic study of root causes will often help to avoid recurrence. This bulletin addresses the purpose of accident investigation and briefly reviews techniques of investigation and analysis of accidents. By studying accidents that have occurred, we can identify their causes, take action to implement effective corrective measures and, thus, prevent future accidents.

A properly implemented accident investigation program can reduce the cost of accidents to your organization and prevent recurrence.

Definitions

Accident - An unplanned, undesired event that results in some kind of loss (injury, illness and/or property damage).

Incident - An unplanned, undesired event that may or *may not* result in some kind of loss (injury, illness and/or property) damage), but does *adversely* affect the completion of a task. Under slightly different circumstances, the incident could have resulted in personal injury, property damage, or both.

Near Miss - An incident where an injury, illness or property damage almost or could have foreseeably occurred.

The term "incident" is sometimes used interchangeably with "accident." For loss prevention and control purposes, an incident should be treated the same as an accident - investigated and analyzed.

Who, When, How – to investigate

Who should complete the investigation?

The immediate supervisor is usually responsible for completing the investigation, but all employees must also take an active role. Management must ensure that the following elements are in place:

- √ An accident investigation and reporting system, including forms and procedures and a defined policy statement;
- √ Assigned responsibilities for carrying out the program (usually for supervisors);
- √ Training for those responsible (supervisors) for completing accident investigations in the techniques of investigation and reporting;
- √ Holding those who are responsible for completing accident investigations accountable for their performance. Specific accountability criteria must be established, communicated to the supervisors and enforced;
- √ Clearly communicated instructions to employees about how to report an accident.

Supervisors must accept their responsibility. They are in the most effective position to determine the facts surrounding each incident, ascertain both the obvious and the “root causes,” and develop solutions. Their familiarity with the processes and employees will permit the development of effective control measures that can be implemented.

When should the investigation be completed?

All investigations should be completed as soon as possible after the incident has occurred to determine the cause(s) and develop corrective action. It is important to gather the facts while the incident is still fresh in the minds of those involved. An incident that results in only a minor injury or a "near-miss" today may result in a serious or fatal injury in the future.

Procedures and reporting systems should be developed and communicated to all affected employees. The safety director, designated safety representative, or safety committee may be responsible for reviewing each supervisory investigation report and resolving unanswered questions. The safety director, designated safety representative, or safety committee may report to management on recurring accidents, details on specific serious accidents, and plans for corrective action.

Once the procedures are established, the employees involved must be informed of their responsibilities in the investigation of accidents and an accountability system implemented. The employees involved must be properly trained in the techniques of accident investigation.

How to complete an accident investigation?

The first step in any accident involving an injury is to secure medical treatment for the injured person and/or secure the scene in order to prevent additional injuries or property damage. Once this is accomplished, the investigation should begin as soon as feasible. Interviews with the injured/involved party and any witnesses should be completed to determine the facts. Records should be made of all pertinent facts. Photos and diagrams may be useful to supplement the written description.

Perhaps the best method of completing an accident investigation is to make sure that you ask questions that will reveal the WHO-WHAT-WHY-WHEN-WHERE and HOW aspects of the accident. Answering these questions will help in determining the facts surrounding the accident.

Once all the facts of the accident have been defined, investigation of the causes can begin. The obvious causes of the loss should be determined first and then the underlying causes defined. For example, consider an accident where an employee injures a hand in an unguarded punch press. Investigation reveals that the guard was removed. The obvious conclusion is that the lack of the guard caused the injury and replacing the guard will prevent future injuries.

There are, however, additional factors to be considered in investigating this accident. Answering the following questions may yield additional vital information.

- Why was the guard removed? (Isn't it important to know who removed the guard?)
- Is the equipment and guarding consistent with current state-of-the-art? Has it been properly maintained?
- Is the guard interlocked?
- Is the most effective and efficient method of guarding being used? Have alternative methods been evaluated?
- Has a job hazard analysis been completed on this job? Was it properly completed and is it being used for training?
- Was the employee properly trained to operate this machine?
- Has the supervisor been trained?
- Has the supervisor been held accountable for his or her safety performance?

Once the problems have been properly identified, corrective action should be taken. Various alternatives should be evaluated. In many situations, the most effective corrective action cannot be implemented immediately. Temporary measures should be put in place while the more-involved alternatives are studied. Actions requiring large capital expenditures, in particular, may require months or years to implement. Employees should not restrict themselves to measures that can be completed quickly and easily. If permanent, more effective measures are feasible, management should be made aware of the action needed so that long-range plans can be made.

Management should control the accident investigation process by reviewing selected reports completed by the supervisors. The effectiveness of the completed investigations and the status of corrective actions taken should be monitored by management.

Accident Investigation Completion Steps

These steps will help you investigate an accident and fill out the form:

1. Discuss the accident with the employee involved and with any witnesses. Be sure to question the why ~ what ~ where ~ when ~ who ~ how aspects of the accident;
2. Inspect the equipment or materials involved for conditions that could be made safer;
3. Study the job set-up and process of doing work. Could it be improved?

4. Is the employee involved suited for the job he/she is doing? Did he/she receive adequate training? Are there any other contributing factors/problems? (i.e. use of drugs or alcohol, or emotional problems);
5. Recommendations to correct the problem must be practical. Be sure your recommendations will not create other situations, which could result in injury to employees;
6. Use the form to organize information gathered from your observations and interviews;
7. Complete your investigation report no later than the next working day after the accident.

Interview Tips:

Interview everyone who saw or was involved in the accident. Timely interviews are important to reduce the opportunity for workers to discuss the accident with others and "rethink" what occurred.

The Occupational Safety and Health Administration (OSHA) provides the following guidance on conducting accident investigation interviews.

- Get preliminary statements as soon as possible from all witnesses.
- Locate the position of each witness on a master chart (including the direction of view).
- Arrange for a convenient time and place to talk to each witness.
- Explain the purpose of the investigation (accident prevention) and put each witness at ease.
- Listen, let each witness speak freely, and be courteous and considerate.
- Take notes without distracting the witness; use a tape recorder only with the consent of the witness.
- Use sketches and diagrams to help the witness.
- Emphasize areas of direct observation - label hearsay accordingly.
- Be sincere and do not argue with the witness.
- Record the exact words used by the witness to describe each observation - do not "put words into a witness' mouth."
- Word each question carefully and be sure the witness understands.
- Identify the qualifications of each witness (i.e., name, address, occupation, years of experience, etc.).
- Supply each witness with a copy of his or her statements – having the witness sign the statement is desirable.

Considerations for Developing Your Accident Investigation Policy

Establishing an accident investigation policy sends a message to your management team, supervisors and employees that accidents are undesired events and that they are to be investigated to help identify corrective actions, including any broader implications for improving the organization. Your organization's policy should be as specific as possible and address:

- The types of incidents that are to be investigated;
- Who will investigate incidents;
- What forms will be used;
- Time frames for processing accident reports;
- Accident report form distribution;

- Implications for your drug and alcohol testing policy;
- Corrective actions tracking.

By detailing these types of issues in your policies and procedures, your accident investigation program can play a key role in your safety improvement process.

Accident Investigation Reporting Forms

Accident investigation reporting forms should be developed to simplify the gathering of pertinent facts and standardize the reporting of completed investigations. The reporting form should include all information that is pertinent to your operation, including:

- Time and place of the accident/incident;
- Person(s) injured;
- Occupation, work experience;
- Type of work being performed;
- Severity of the injury (medical only, lost work time, etc.);
- Type of injury (fall, struck against, etc.);
- Nature of the injury (abrasion, overexertion, etc.);
- Part of the body injured (hand, foot, etc.);
- Object, substance, equipment or motion that caused the accident/incident;
- Hazardous conditions and/or at risk behaviors that caused the accident/incident;
- Factors contributing to the accident/incident (such as a lack of training);
- Action taken to prevent re-occurrence of a similar accident;
- Follow-up to ensure corrective action was satisfactorily implemented.

The report form should also include a provision for describing the corrective measures taken or planned to prevent a recurrence. A properly designed investigation report can also provide the information necessary to report claims to the insurance carrier. The accident investigation form is not intended as a substitute for state-mandated Workers' Compensation First Report of Injury or other required forms.

The Organizational Aims of an Accident Investigation Program

The purpose of investigating all accidents/incidents is to identify corrective actions that can be taken to reduce the potential for recurrence and to help effectively educate the workplace on these types of issues. It is helpful for those investigating incidents to have three terms in mind as these can help guide investigators towards an effective plan to reduce future injury potential.

Primary or Direct Cause: This is the "cause" we directly associate with the incident (slip-fall, struck-by, over-exertion, etc.). This tends to be more of a surface description of the event, however, and is typically not particularly helpful toward the goal of reducing future recurrence or educating the workforce.

Root Cause: This is typically the primary aim of an accident investigation and it can bring both understanding and insight to the investigators in terms of how to approach corrective actions. Eliminating this factor(s) greatly reduces future injury potential.

Secondary or Contributory Causes: There are often a range of additional factors that play a role in a workplace accident. To ensure completeness, investigators should aim to identify these factors, as well as establish a corrective action plan for each contributing factor.

If an employee was injured on a piece of equipment that was being operated without a guard, the investigators will need to determine *why* this was ultimately the case (the root cause) and if there were contributing factors such as (ex.:) breakdown of typical equipment used for this task; unusual task/production factors; or inadequately trained employees performing the task.

It is not always incumbent on the safety director or supervisor to be the only one making the final determinations of causation. When there are more complex incidents or areas where the investigators do not have sufficient expertise, the organization may want to invite others into the investigation process such as engineering, safety committee members or other resources as needed.

Safety Findings Should Initiate a Corrective Action Plan

Once the investigators have established the facts, root causes and any contributory causes, the organization can begin to move forward with a corrective action plan. This aspect of the process might be suggested by the individuals most familiar with the investigation, but this process as well, can be opened up by the organization to assure an effective end result.

There are three useful ideas for organizations regarding corrective actions. These include:

1. Addressing the *specific* incident being investigated to reduce recurrence potential.
2. Expanding the probe to include other identical or similar hazards in the workplace that might present the same risk characteristics.
3. Evaluating the areas of organizational control to facilitate a discussion on how to “design” these types of factors out of the “system.”

ANSI’s Hierarchy of Controls

From a practical perspective, ANSI’s Hierarchy of Controls is a useful guide for reducing risk once safety concerns have been identified. In the well-respected, *Occupational Health and Safety Management Systems Standard*, a Hierarchy of Controls is recommended as a pathway to follow in terms of prioritizing corrective actions for specific safety concerns.

1. Eliminate the hazard
2. Substitute less hazardous materials, operations, processes or equipment
3. Engineering controls
4. Warnings and Instructions
5. Administrative controls (training, work practices, etc.)
6. Personal Protective Equipment (PPE)

Occupational Health and Safety Management Systems/ANSI/AIHA Z10 – 2012

In a brief examination of this hierarchy, one can see that *eliminating* a hazard is far better for an organization that simply providing PPE and hoping that the hazard does not negate the benefits of the

PPE used on a given day. Accordingly, safety practitioners recommend correction actions from the highest to lowest order from the above list. If the end result of the corrective action approach appears to be to rely simply on PPE (for example), the organization should pursue a higher level discussion of the hazard with the aim of achieving a more optimum remedy.

Evaluating Areas of Organizational or Safety Management Control

One of the primary functions of management is to provide control over the organization in accordance with good practice. This "control" idea applies to safety as well. Thinking in these terms, root causes and contributory factors may require an organization to evaluate their "controls" in areas where they have ultimate influence/decision-making authority to ensure hazards are effectively reduced. Some of the more common areas of implied management and safety control are listed below:

- Safe workplace and/or job design and engineering
- Equipment and process related
- Personnel and/or administrative issues
- Policies and procedures
- Incentives/disincentives
- Training and education
- PPE related
- Accountability for safety
- Establishing/Monitoring controls
- Safety culture (or safety related complacency)
- Corrective action follow through

Organizations that allow their investigation process to probe system factors such as these**,** have the greatest opportunity to effect culture and the long term safety performance of their organization.

The following pages contain a sample accident investigation form that you can use or customize to meet your specific needs. PMA can also provide training for your supervisors in how to complete an accident investigation.

If you have any questions or would like additional information, please contact your local PMA Risk Control Consultant.

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Note to Supervisor

Remember that an accident investigation is not designed to find fault or blame. Rather, it is a tool to find causes that can be controlled or eliminated

Completing the Investigation

Try to answer these questions:

- ✓ **Who** *was injured?*
- ✓ **What** *materials, equipment, machines or other conditions were involved?*
- ✓ **Why** *did the accident happen?*
- ✓ **When** *did the accident happen?*
- ✓ **Where** *did it happen?*
- ✓ **How** *did the accident occur?*

Make Recommendations

No accident investigation is complete unless corrective action is suggested and implemented.

Follow-up

Determine and document what action has been taken on your recommendations

Accident Investigation Form

Date: _____ **Time:** _____

Employee/Property Involved: _____

Position: _____ **Date Employed:** _____

Supervisor: _____ **Department:** _____

How long was employee performing this operation?

Was the employee Instructed? ☐ Yes ☐ No

Did the accident result in an injury? ☐ Yes ☐ No

Severity of Injury:

OSHA Recordable? ☐ Yes ☐ No

- ☐ First-aid only
- ☐ Medical treatment only
- ☐ Near miss
- ☐ Fatality
- ☐ Lost workday (away from work)
- ☐ Restricted duty (work or motion)

Date lost time began: _____ **Date restricted time began** _____

Type of Injury:

- ☐ Fall from elevation
- ☐ Fall on same level
- ☐ Struck against
- ☐ Struck by
- ☐ Puncture
- ☐ Caught in. under or between
- ☐ Rubbed or abraded
- ☐ Bodily reaction
- ☐ Overexertion
- ☐ Contact w/ electrical current
- ☐ Contact w/ Temp. Extremes
- ☐ Contact w/ other
- ☐ Public transportation accident
- ☐ Motor vehicle accident
- ☐ Slip
- ☐ Other
- ☐ Unknown

Nature of Injury:

- ☐ Abrasion
- ☐ Amputation
- ☐ Burn
- ☐ Contusion
- ☐ Crushed
- ☐ Foreign Body
- ☐ Fracture
- ☐ Inhalation
- ☐ Laceration
- ☐ Puncture
- ☐ Rash
- ☐ Strain
- ☐ Sprain
- ☐ Skin contact
- ☐ Rep. Motion
- ☐ Illness/Infection
- ☐ Prop. Damage
- ☐ Other (describe)

Body Part Injured:

- ☐ Arm
- ☐ Back
- ☐ Eye
- ☐ Face
- ☐ Finger
- ☐ Foot/feet
- ☐ Groin
- ☐ Hand
- ☐ Head
- ☐ Internal Organs
- ☐ Leg
- ☐ Multiple
- ☐ Neck
- ☐ Torso
- ☐ Trunk
- ☐ Wrist
- ☐ Other (describe)

Comments:

_____

_____

_____

Date of accident: _____ **Time of accident:** _____

Date reported to supervisor _____

How did accident occur? _____

_____

_____

_____

Cause of accident: _____

_____

_____

_____

Witnesses

Name	Dept./Address	Phone Number

Recommendations to prevent a recurrence: _____

_____

_____

What action has been taken/planned to date? _____

_____

_____

_____

Signed: _____ **Dept:** _____ **Date:** _____

Safety Committee Comments

☐ **Endorses actions indicated above** ☐ **Make new or additional recommendations**

Recommendations: _____

_____

_____

_____

Signed: _____ **Date:** _____

Executive

Special Orders: _____

_____

_____

_____

Signed: _____ **Dept:** _____ **Date:** _____

Additional Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Diagram or Photo: