Incident Investigation Course

STUDENT GUIDE

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PREFACE

The Trucking Safety Council of British Columbia (TSCBC) is the certifying partner for the Certificate of Recognition (COR) program for the General Trucking and Moving and Storage industries. As part of this program, TSCBC offers Occupational Health & Safety training courses, including this one. Welcome to Incident Investigation.

Course Description

Incident investigations are a cornerstone feature of safety in the workplace. Effective investigation of the causes of a workplace incident enable the improvement of policy and procedure and, ultimately, a safer working environment. This course is a practical introduction to the process for conducting incident investigations.

Participants will work in groups through the course to conduct a mini incident investigation. Using the theories and skills covered in each module, participants will collect facts, analyze causes and generate recommendations for the case study incident.

Course Goals

The course is organized around five modules which cover the five core goals. By the end of the course, participants should be able to:

1. Understand the purpose and general process of an incident investigation and when investigations should be done.

2. Explain the importance of pre-incident preparation, including policy development and training for the incident team.

3. Execute a comprehensive exploration of fact surrounding an incident.

4. Analyze and explain immediate and root causes for an incident.

5. Generate appropriate recommendations to prevent future incidents.
Evaluation

Self-evaluation with module quizzes (Truck Stops) and a final quiz at the completion of the course.

How to Use this Guide

As a learning guide:

During the course, follow along through each module as the facilitator covers the course material.

As a review tool:

During and after the course, use the quiz questions (Truck Stop) at the end of each module to measure what you have learned.

As a reference:

Use this book as a source of information when you are on the job.
Module 1 – Incident Investigations
1.1. Introduction

Incident investigations are not just good sense, they are required by law. This module will introduce the purpose and value of incident investigations and explain why incident reporting is crucial to overall workplace safety.

1.2. Learning Outcomes

By the end of this module, participants should be able to:

1. Explain the purpose and value of an incident investigation
2. Explain the legal obligations for investigations
3. Understand the basic process of incident investigation
4. Define an incident and appreciate the imperative of incident reporting

1.3. Purpose of Investigations

An incident investigation is designed to assess the causes of an incident and then make recommendations for changes based on those causes. The objective of an investigation is not to lay blame on individuals, but to target system failures that foster or enable human error. Incident occurrence can be reduced with a stronger system in place, including, for example, more robust safety policies and procedures.

Apart from complying with the legal requirements, investigations:

- can prevent recurrence of a similar incident by identifying causes and developing recommendations
- are a moral responsibility
- make good business sense by reducing costs associated with future incidents
- can improve workplace safety and morale
- can be used to improve the company’s safety program
1.4. **Legal requirements to investigate**

Incident investigations have intrinsic value within a company. To reinforce this, legal requirements for incident investigation are defined in both provincial and federal jurisdictions. The process for incident investigation covered in the following modules of this course is designed to ensure the investigation team meets these legal requirements.

1.4.1. **Businesses under Provincial Jurisdiction**

Part 3, Division 10 of the Workers Compensation Act specifies the requirements for an investigation and requires that:

- The investigation be carried out promptly by someone who is knowledgeable about the type of work, and, if available, a representative of the employer and a worker representative;
- The cause(s) of the incident be identified;
- Any unsafe conditions, acts or procedures that contributed in any manner to the incident are identified;
- Corrective actions to prevent similar incidents if unsafe conditions, acts or procedures are identified and recommended;
- The employer makes a reasonable effort to ensure all witnesses and other people present are made available for interviews by the investigator or a WorkSafeBC officer.
- The employer record the names, addresses and phone numbers of the witnesses and people interviewed.

Section 3.3 (e) of the Occupational Health and Safety Regulations requires that a safety program provides for the prompt investigation of incidents to determine the action necessary to prevent recurrence.

Section 173(2) of the Workers Compensation Act states the requirements for an investigation do not apply in the case of a vehicle accident occurring on a public street or highway; however a case could certainly be made for a company to investigate all incidents.
1.4.2. Businesses under Federal Jurisdiction

Part XV, Section 15.4(1) of the Canada Occupational Health and Safety Regulations states:

Where an employer becomes aware of an accident, occupational disease or other hazardous occurrence affecting any of his employees in the course of employment, the employer shall, without delay,

a. appoint a qualified person to carry out an investigation of the hazardous occurrence;

b. notify the workplace committee or the health and safety representative of the hazardous occurrence and of the name of the person appointed to investigate it; and

c. take necessary measures to prevent a recurrence of the hazardous occurrence

1.5. The Investigation Process

There are 6 steps to the investigation process covered in this course. As you cover each step in this process, you will have an opportunity to practice it using an incident case study. The case study will be introduced in Module 2.

1. Pre-incident preparation (Module 2)
   - Establishing company reporting and investigation policies, procedures and forms.
   - Establishing an investigation team
   - Training the investigation team
   - Reporting of the incident internally and to external parties.

2. Secure the Scene (Module 3)
   - Securing the scene immediately after an incident to prevent further incident and to preserve evidence.

3. Collect Information (Module 3)
   - Systematic collection of information about the incident, fulfilling all legal requirements.
4. Analysis (Module 4)
   - Determining the sequence of events, what happened, and why

5. Develop Recommendations (Module 5)
   - Developing recommendations to prevent recurrence of the incident and improve the safety program.

6. Implement Recommendations (Module 5)
   - Following up and implementing the recommendations resulting from the investigations.

1.6. When to Investigate

Incident investigation is precipitated, of course, by a workplace incident. The BC Occupational Health and Safety Regulations define an incident as:

“an accident or other occurrence which resulted in or had the potential for causing an injury or occupational disease”.

Incidents include all of the following:

**Accident:** an incident that resulted in injury to people, damage to equipment or property, or loss of production.

**Near Miss:** an incident where no injury or damage occurred, but in slightly different circumstances could have caused injury to a person, equipment damage, or environmental damage.

**Close call:** same as near miss

All incidents must be investigated to some degree. Some incidents may require only a preliminary investigation, as the causes are readily apparent. Others may require a more in-depth investigation.

Central to this course is a message about the value of incident investigation. Even the most minor-seeming incidents, if investigated, could reveal deep systemic issues that could lead to serious issues or even a fatality.
The choice to do a simple or in-depth incident investigation is made in the moment, guided by legal requirements, company policy and the experience of the supervisor involved. Sometimes the investigation is limited to the basic questions asked in the process of completing an incident report form and other times it involves a multi-person team of trained investigators and an extensive process of interviewing and assessment. It is the latter process that is the focus of this course; however, the principle of searching for root causes should always apply, even in more simple investigations.

Further, the imperative to do a full or complex investigation should not be applied only to serious incidents; extensive investigations of close calls and minor incidents are crucial ways of avoiding the less frequent but devastating serious incidents.

Consider, for example, the incident pyramid developed by Frank Bird, shown in Figure 1. The pyramid illustrates the relative likelihood of various types of incidents – the proportion of minor to serious incident. Regardless of the actual statistics within your company or industry, the principle of the pyramid applies; it’s too late if a company waits until a serious incident occurs to do a major incident investigation. By that time, a company has had many indications of systemic problems with safety.

![Incident Ratio Pyramid](attachment:figure1.png)

*Figure 1. Incident Ratio Pyramid*
1.7. Incident Reporting

Incidents can only be investigated when they have been reported. Consistent and comprehensive response to accidents, hazards and close calls is part of an effective safety management system. A company should have a clear incident reporting policy; further, in many cases, incident reporting is required by law. Once an incident is reported, the incident investigation process can begin.

1.7.1. Close Calls/Near Miss

Close calls often go unreported, and this is a serious missed opportunity; the investigation of close calls is a critical link in incident prevention. Close calls provide an excellent insight to what might be dangerous without anyone getting hurt. Multiple close calls of a similar nature generally indicate a problem and reporting and investigation can lead to changes in the system that will help minimize the likelihood of a serious incident.

A close call can be defined by a situation that has caused a fright or gave pause to consider what just happened. In all cases, the incident should be reported and the investigation team can decide what to do next.

1.7.2. When, Where and How to Report Incidents

Reporting of incidents is critical. A company’s safety program should have a clear incident reporting policy that specifies:

- what must be reported
- when reporting must be done (timeframes)
- who receives the reports (internal and external)
- how reporting is to be done (mechanism and form, e.g. verbal, written, specific form)

All incidents should be reported and investigated internally. Certain incidents are required to be reported to WorkSafeBC. Table 1, from the Forest Safety Council, illustrates typical types of incidents and how they must be reported.

Note, as you review the example, that reporting policy combines internal company specific procedures and forms with legal requirements.
Table 1: Incident Reporting Example

<table>
<thead>
<tr>
<th>Type of incident</th>
<th>Reporting within Company</th>
<th>Reporting to WorksafeBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resulted in serious injury or death of a worker. (see flowchart chart below)</td>
<td>✔</td>
<td>▲</td>
</tr>
<tr>
<td>Major structural failure or collapse of any type of construction or excavation.</td>
<td>✔</td>
<td>▲</td>
</tr>
<tr>
<td>Major release of a hazardous substance</td>
<td>✔</td>
<td>▲</td>
</tr>
<tr>
<td>Situations that required the use of the company’s Emergency Response Plan</td>
<td>✔</td>
<td>□</td>
</tr>
<tr>
<td>Close calls (near misses)</td>
<td>✔</td>
<td>□</td>
</tr>
<tr>
<td>Injuries or occupational illnesses that prevent a worker from performing assigned tasks</td>
<td>✔</td>
<td>□</td>
</tr>
<tr>
<td>Injuries that are treated on site</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Any event or loss, such as a motor vehicle accident, theft or spill</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

KEY:

✔ The Supervisor or Worker must complete the INCIDENT REPORTING FORM – company management and supervisors can then take the necessary follow-up action

▲ Must be reported immediately to WorkSafeBC

□ Must be investigated by the company, with a report submitted to WorkSafeBC

■ Requires the company to complete and submit to WorkSafeBC, Form 7 (Employer’s Report of Injury or Occupational Disease) within three days of the incident.

Source: BC Forest Safety Council
Federal Jurisdiction

BC based companies that are under the federal jurisdiction of the Canada Labour Code are insured by WorkSafeBC and must report all incidents to WorkSafeBC as per requirements.

In addition, under the COHSR, Part 15, HRSDC also has reporting requirements for federal companies. Companies are required to report to a health and safety officer as soon as possible, but not later than 24 hours after becoming aware of:

- death of an employee
- disabling injury to 2 or more employees
- loss by an employee of a body member or part thereof or the complete loss of the usefulness of a body member or part thereof
- permanent impairment of a body function of an employee
- an explosion
- damage to a boiler or pressure vessel that results in fire or the rupture of the boiler or pressure vessel

Federal companies often have to report to WSBC and the HRSDC.

1.8. Group Activity – Effective Reporting and Investigation

Introduction

Effective incident investigation depends on both consistent incident reporting and a comprehensive investigation process. Company policy around incident investigation should ensure both of these conditions.

Instructions

Work in small groups and reflect on the following questions.

1. As a group, share experiences of incidents, especially close calls, that were not reported. Develop a list of reasons why incidents might not be reported in the workplace. Finally, based on this list of reasons, consider some solutions to ensure better and more consistent incident reporting.

2. As a group, share experiences of involvement in an incident investigation, in any role (witness, investigator, involved in incident, etc.). Make a list of examples of investigations that you feel were beneficial or had good outcomes and examples of investigations that were unsatisfactory or incomplete.
### 1.9. Truck Stop

Use your course book and any notes you have taken to answer the following questions. When everyone is finished, the instructor will review the answers.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answer Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>What is the purpose of an incident investigation?</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>What incidents should be investigated?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>List the six steps of the investigation process.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>What should a company safety program include in its reporting policy?</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>What is an incident?</td>
<td></td>
</tr>
</tbody>
</table>
Module 2 – Pre-Incident Preparation
2.1. Introduction

Effective incident investigation actually begins long before any incident occurs. This module outlines what a company needs to have in place to ensure that when an incident occurs, it is prepared to keep its employees safe, meet its legal requirements, and conduct an effective investigation. The activity in this module will introduce the case study incident that groups will investigate and analyze through the course.

2.2. Learning Outcomes

By the end of this module, participants should be able to:

1. Create an incident investigation policy
2. Explain best practice in selecting and training an incident investigation team

2.3. Pre-incident Preparation

Nobody wants incidents to occur. When they do occur, solid preparation for first response and investigation is crucial. Prior to any incident, the following preparations are needed:

1. Have clear policy for incident reporting and investigation
2. Have a defined investigation team, with a well-trained investigator. This team should meet periodically to ensure a ready plan of action
3. Have a step-by-step process to notify investigators/investigation team at the time of an incident and ensure employees are aware of this process
4. Have an investigation jump kit prepared. The kit should contain:
   - emergency response plan with emergency contact numbers
   - incident investigation form(s)
   - investigation procedures / checklist
   - notepaper, pens and pencils
hazard tape / Do Not Enter tape
- camera
- gloves
- tape measure

2.4. Investigation Policy

A comprehensive investigation policy is an essential tool for any employee faced with an incident, as well as to the investigation team as they proceed with their work. The investigation policy must contain specific information related to responsibilities, timelines, reporting mechanisms, and the expected complexity of investigations.

When creating an incident investigation policy, the following categories of information constitute best practice. Some of these categories, such as that defining the depth of investigations to be done for different types of incidents, reflect a commitment to seeking out root causes and, so, a proactive approach to safety.

Topics for Investigation Policy:

- Reporting Procedure – what gets reported, how and to whom
- Investigation Procedure – when investigations are done, the depth of investigation to be done, responsibilities for those doing the investigation, timelines for the investigation, and requirements for reporting recommendations.
- Expectations for follow-up, including who must sign off on the investigation, who must receive copies of the completed investigation, how recommendations are tracked to completion, and monitoring effectiveness of recommendations.
- Who must conduct investigations, including responsibilities and authorities of management, investigators, witnesses, worker representatives and JHSC members
- Definitions of incidents and types of investigations
- Definition of and expectation to complete root cause analysis of full investigations
- Process for reporting to and working with WorkSafeBC
- Step-by-step process for conducting an investigation or reference to a document that offers this.

When designing an Investigation policy, it might be useful to look up examples from other, similar, companies and look at recommendations by organizations such as the Trucking Safety Council of BC. See Appendix B.
2.5. Investigation Team

At the time of an incident, an investigation team is assembled to conduct an investigation. This team should include:

1. The person/people involved in the incident
2. A trained, lead investigator
3. At least one member of the Joint Health and Safety Committee or the designated health and safety representative
4. A supervisor.

2.5.1. Preparing the Investigators

Most members of the team can be selected and trained prior to an incident occurring. Most significantly, a company can ensure it has at least one well-trained lead investigator ready. The following table shows a list of skills and knowledge required by an effective investigator and suggestions for training or preparation.

<table>
<thead>
<tr>
<th>Investigator Skills/Knowledge</th>
<th>Suggestions for Training/Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of regulatory and legislative requirements</td>
<td>Course in safety regulations and legislative requirements</td>
</tr>
<tr>
<td>Knowledge of the tasks and jobs being performed</td>
<td>On-going orientation to all core jobs performed on the worksite</td>
</tr>
<tr>
<td>Knowledge of the workplace hazards</td>
<td>On-going updates from JHSC and management on workplace hazards</td>
</tr>
<tr>
<td>Knowledge of company policies and procedures</td>
<td>On-going review of company policy and procedures</td>
</tr>
<tr>
<td>Skill in conducting incident investigations</td>
<td>Incident investigation course</td>
</tr>
<tr>
<td>Ability to be objective, good listener, good note taker</td>
<td>Communication skills and training</td>
</tr>
<tr>
<td>Authority to conduct investigations</td>
<td>Investigation policy granting authority</td>
</tr>
</tbody>
</table>

2.5.2. Preparing the team

Other members of the incident investigation team, a supervisor and member of the JHSC, should meet periodically with the trained investigator to review company policy for incident investigations and, significantly, to review the plan of action for when an incident occurs. Each member of the team should know what needs to be done in the first moments of an incident. In this way, there will be no hesitation when timely and accurate response is required.
2.6. **Group Activity**

**Introduction**

This activity gives participants an opportunity to assess Incident policy and their own preparedness to be investigators. It also sets up the case study for the subsequent modules of the course. Before beginning this activity, your instructor will break you into incident investigation teams.

**Instructions**

1. **Pre-Incident Preparation Checklist**

   a. As a group, review one or more sample incident policies against the best practices discussed in this course. Evaluate the policy for gaps and take note of its focus on when investigations should occur. Participants can bring in their own company policies for review, and/or the instructor may provide a sample.

   b. Complete a skills gap analysis on each member of the group to determine what if any further training and skill development is needed to be an investigator.

2. **An Incident Occurs.**

   a. Read over the incident description below.

   b. Determine: what type of incident this is and whether or not legally it needs to be reported outside the company.

   c. As a team, you will conduct an in depth investigation of this incident, following the process explained in the subsequent modules of this course. You will collect information (module 3), analyze causes (module 4) and make recommendations (module 5).

**Details of Incident:**

_A log truck driver damaged the air lines while loading his trailer. He drove down the road to a wide spot where he could pull over and be in the clear from other traffic._

_While attempting repairs, he fell from the truck, injuring his head, chest and rib cage. The driver was found lying unconscious behind his rig by another truck driver and was subsequently airlifted to hospital for treatment._

This is a real safety alert dated June 17, 2013 from the BC Forest Safety Council website. [http://www.bcforestsafe.org/node/2406](http://www.bcforestsafe.org/node/2406)
Use your course book and any notes you have taken to answer the following questions. When everyone is finished, the instructor will review the answers.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answer Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>What should a company have prepared before an incident occurs?</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>In the investigation policy, what should be included in the procedure for conducting investigations?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>List three core skills needed by a trained incident investigator.</td>
<td></td>
</tr>
</tbody>
</table>
Module 3 – Secure the Scene and Collect Information
3.1. Introduction

Strong incident investigations focus on the facts, not blame. After securing the safety and integrity of the incident scene, investigators must collect information from the site and from witnesses. Comprehensive information will allow for useful cause analyses later in the process.

3.2. Learning Outcomes

By the end of this module, participants should be able to:

1. Understand the importance of collecting and recording information in an investigation
2. Describe when and how an accident scene must be secured for external investigators
3. Identify the key elements to investigate
4. Explain effective strategies for interviewing witnesses

3.3. An Incident Has Happened. Now what?

When an incident occurs, the immediate first response is to:

- Act, if possible, to prevent further injury or damage;
- Seek medical aid if necessary; and
- Report the incident as per company policy and legal requirements.

For a minor incident, this first response may be as simple as reporting to first aid or letting the supervisor know something has happened. If the incident is more serious in nature, it may involve activating the company emergency response plan.

After the initial first response, when appropriate people have been notified and everyone is safe and receiving medical treatment, a more measured response to conducting the investigation can begin, starting with securing the scene for investigation.
3.4. **Step 1: Secure the Scene**

Securing the scene is critical to ensure further incidents to not occur. For serious incidents, WorkSafeBC or HRSDC must be notified immediately and the scene frozen for investigators. Securing the scene means that nothing must change other than what is necessary to rescue workers or prevent further, immediate damage. No materials must be removed until the scene has been released. Securing the scene may include:

- taping or roping off the scene
- posting security personnel

WorkSafeBC will let the company know when the scene can be released.

Once the incident scene has been secured and any first aid or medical treatment issues taken care of, it’s time for the investigation team to get started. Every incident should be investigated, at least to some degree. Very minor incident probably don’t need the full investigation team to be involved; however, anything that had, or could have had, a serious outcome should be investigated by the full team.

If the incident required WorkSafeBC or HRSDC to be notified immediately, they may require the scene to be frozen until they can begin their investigation. If this is the case, follow the instructions from the officer.

3.5. **Step 2: Collect information**

During the information collection process, focus should not be to lay blame but to target system failures that foster human errors. You can do this by ensuring focus is on collecting all necessary pieces of information and recording all facts and details for later analyses. Confidentiality is a critical part of the investigation process and should be adhered to at all times. Information gathered in confidence should be kept that way.

3.5.1. **Purpose**

Key to a good investigation is as much information as soon as possible following the incident. Take lots of notes. It’s much easier to take lots of notes and not need them than to not take enough and need them later. All information should be documented.
• The purpose of collecting information is to facilitate the following:
  • be able to establish a timeline of events leading up to the incident
  • identify incident causes
  • identify substandard acts and conditions
  • identify personal factors and
  • identify system or job factors

3.5.2. Focus of Collection

In collecting information, investigators focus on the basic details of the incident, but also on the context of the incident, looking particularly for any variations in usual procedure and from established best practices. Elements of the investigation focus can be broken into four basic categories, defined as the PEME model:

• People
• Equipment
• Materials
• Environment

Information to be collected at the scene should include:

1. Basic incident information such as:
   • Incident type: injury, property damage, fire, other
   • Severity: fatality or serious injury, medical aid, close calls, first aid
   • An assessment of the level of investigation required

2. Administrative details:
   • Date and time
   • Location
   • Person/people filing report
   • Supervisor name
• First aid person name
• Injured person details including occupation
• years of experience in the job/task they were performing at time of the incident
• hours on the job before the incident

3. Witness Details
• Names and contact details of witnesses
• An indication of the witnesses interviewed and if a formal statement was taken

4. Injury Information
• Nature of injury
• Part of body injured
• Injury mechanism

5. Description of Events
• Provide details on what happened, when it happened, who was involved, site conditions, weather, action taken, estimated value of property damage and any other relevant details (People, Equipment, Materials and Environment)
• Identify any obvious causes of the incident, focusing on fact not blame

Take photos and make diagrams of the incident location and piece together a sequence of events. Use your company incident investigation form as a guide to help collect information; however, be aware that not all forms include enough information for a satisfactory investigation.

**Appendix A** is a copy of the Trucking Safety Council’s template for an Incident Investigation Report Form. Take a few minutes to review this form as a group. Get a sense of the type of information that is needed so you understand what kinds of information to collect and document.

### 3.5.3. Setting the Scope for Collection

Even at the time of information collection, before an in depth analyses has begun, investigators need to be thinking about why things have occurred. This will ensure that the investigator does not stop at the obvious or immediate causes and miss recording information that my lead to important analyses of deeper, root causes.
During the information collection phase, constantly ask “why” things are the way they are to assist in collecting information that will help determine the causes. Ask questions that can lead to an understanding of why things happened.

For example:

A driver fell off a load while tarping. Why did it happen?

- Does the company have written procedures for tarping?
- Is there a training program in place for tarping loads?
- Did the driver get the training for working at heights?
- Was the appropriate equipment available to the driver? Why not?

A mechanic was under a truck adjusting brakes when someone else started the truck. Why did it happen?

- Is there a company lock out procedure in place?
- Why was the truck not locked out?
- Were the mechanics trained in the lock out procedure? Why not?

3.6. Witnesses

Witnesses to an incident can provide valuable information about the details surrounding an incident. They may be able to provide details on what happened immediately prior to the incident, the sequence of events during the incident and what happened after the incident. Interviewing witnesses as soon as possible after the incident will help preserve details and provide the most accurate representation of what happened. Waiting to conduct interviews may not only lead to lost details but also allow for witnesses to re-thinking of the incident which may not result in the most accurate descriptions.

Depending on the nature of the incident, witnesses, including the person or people directly involved, may be in shock and their condition should be respected. Get them help first if they need it.

A witness list should be drawn up quickly following an incident and should include not only those directly involved, but others who may have indirectly witnessed both the immediate incident and actions preceding it.
3.5.4. Interviewing Witnesses

Key to good interviewing is keeping an open mind. Do not pre-suppose what happened; let the witnesses tell you what happened. In terms of strategies, it can be helpful to begin with closed questions that required a simple “yes” or “no” answer, but it is crucial to then follow up with open ended questions that can’t be answered with a simple “yes” or “no” to find out more detail.

The following is a list of best practice techniques for making the most of a witness interview:

**Atmosphere**

- Ensure interviewee is comfortable and relaxed
- Establish rapport
- Explain why the interviewee is being interviewed
- Assure them the process is not to assign blame, but to find out more information to prevent a similar incident.
- At the end, thank the interviewee and let them know you may follow up in the future
- Assure them the interview is confidential if the information is confidential

**Getting good information**

- Avoid leading questions
- Don’t be afraid to ask for more information or details on a response
- Make sure you take good notes; write clearly and record both what you asked and what they answered
- Listen to what they are saying. If necessary, paraphrase and confirm what they said. Details may be critical to prevent future incidents
- Don’t interrupt their responses, but do clarify if you aren’t sure of what they are saying
3.7. Group Activity – Collect Information and Witness Interviews

Introduction

In this activity, each investigation group will collect information and interview witnesses for the incident introduced in Module 2.

Instructions

Task one –

As a group, review the incident description and make a list of questions that reflect the information you should collect for this investigation. You can break your list of questions into the categories below or modify them as you like. Also, think about how the answers to a question can lead to more questions. Here’s a sample to get you started:

SAMPLE QUESTION:

Did the driver have the required training?

FOLLOW UP QUESTIONS:

If not, Why Not?

What is the required training for this role? (If not defined, why not?)

When is it offered and how is it documented? (Who tracks it?)

Possible categories for areas of investigation. Ask questions that would elicit important information in each category.

- Basic details of the Incident
- Sequences of events
- People involved
- Equipment involved
- Materials involved
- Environment
Task two –

Choose one of the members of your group to be the witness. This person will receive a card of information from the instructor. The witness is only to reveal information on the card if it is elicited by the investigators asking questions.

The goal of this activity is to find out all of the information on the witness’ card through effective witness interviewing.

Make sure you review the steps in the module for conducting a best practice interview.

Task three –

As a class, share and review your lists of questions and discuss what would be able to find out about this incident. Remember, the purpose here is not any specific answer to the questions, but how certain supposed answers might lead the investigator to ask other more probing questions. Compare and discuss the scope and depth of questions for collecting information.

Task four –

Turn now to Appendix C for supplementary information about this incident. You will find a sample safe work procedure and a bio on the driver. In addition to the information you gleaned from your witness, you can use this information in Module 4 for analyses of the incident.

Remember – all information beyond the initial description of the incident has been manufactured for this course and is not connected to any real person, incident or company.
3.8. **Truck Stop**

Use your course book and any notes you have taken to answer the following questions. When everyone is finished, the instructor will review the answers.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answer Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What should be done as the first response to an incident?</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>In a serious incident, how should a scene be prepared for the WorkSafeBC investigator?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>What key categories are used in the collecting of information about an incident?</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>How can an investigator prepare a witness for an interview?</td>
<td></td>
</tr>
</tbody>
</table>
Module 4 – Analyze Information
4.1. Introduction

After collecting information from the incident scene and interviewing witnesses, investigators must conduct analyses to determine the root causes of the incident. From such analyses, recommendations for changes can be made to ensure a safer working environment. This module focused on how the information collected from an incident scene can be analyzed in order to isolate root causes.

4.2. Learning Outcomes

By the end of this module, participants should be able to:

1. Explain the importance of information analysis
2. Describe the 5 “Why” process
3. Explain the different types of incident causes

4.3. Step 3: Analysis

The key to understanding an incident is to understand the sequence of events leading up to the incident. In the information analysis phase, investigators review evidence to determine not only the sequence of events but why each event occurred. To do this type of analysis, investigators need to understand that a causal chain leads back from an incident, marking a series of actions and decisions.

The following sections introduce an analysis process based on the domino model of accident theory. In other words, analysis must extend back beyond the immediate incident to examine the preceding dominos that played a causal role.

4.4. Domino Theory of Why Accidents Happen

Many theories and models exist to explain how incidents occur; they all generally agree that incidents are a result of many factors and not just a single factor. In early accident models, causes were generally attributed to worker error, but over time the models have changed to reflect a more accurate representation of the causes of accidents, with emphasis on cumulative systemic elements.
Workers must certainly be held accountable for their own actions and decisions to do, or not do, something that may lead to an incident. However, other factors are involved. Frank Bird’s domino model, Figure 2, is based on the work of Heinrich, and identifies several factors that lead to the occurrence of an incident.

In Bird’s model, attention is on several types of factors beyond individual worker characteristics and failures. These factors include management’s lack of control, inadequate systems, issues with job descriptions and equipment, and the immediate working procedures and working conditions.

The general concept of the domino model is that root causes and basic causes lead to immediate causes which then lead to an incident. The consequence is, of courses, losses. Much like a row of dominos, under certain conditions, once one starts to fall, they all fall and an incident will occur.

4.4.1. Types of Causes

The challenge of an incident investigation is to move beyond the obvious to identify the deeper or more systemic causes of an incident. To aid in this, theory defines three types of causes.

Direct or Immediate causes are an error or failure that has an immediate or adverse effect. Many investigations incorrectly focus on the direct cause(s) without delving into the deeper reasons for the incident. Examples of direct causes include unsafe actions, such driving too fast or jumping off a truck and unsafe conditions, such as icy roads or damaged equipment.

Indirect or Basic causes are the result of an action, inaction or decision made well before the incident and are the reason for the direct cause. Basic causes can be considered to be personal or job factors. Personal factors include inadequate training or lack of skill. Job factors include insufficient equipment maintenance and poor ergonomic design.

Figure 2. Bird’s domino incident model - Source: various
Consequences of a basic cause may lie dormant for a long time and are usually a result of decisions made, or not made, intentionally or unintentionally, by people that are removed in time and space from the incident.

Root causes are the reasons an indirect cause or condition exists and are not identified until an incident occurs and is investigated. The root causes are associated with inadequate control by management. Bird identified 3 root causes in his model:

- Inadequate program.
- Inadequate program standards.
- Inadequate compliance to standards.

Examples of causes of each type can be found in Appendix D.

4.4.2. Stopping the Dominos

Direct and indirect causes must align for an incident to occur. The elements underlying indirect causes should work as a line of defense against direct causes of incidents; in other words, training should eliminate behaviors like driving too fast for the conditions. However, if the indirect causes of incidents occur simultaneous to the direct causes, then an incident is likely; in other words, if the training is inadequate (indirect cause) and dangerous driving occurs (direct cause), there is more chance of an incident.

This notion of each level of defense against an incident – from direct user behavior back to the indirect procedural and systemic levels is based on Reason’s “Swiss cheese” model of system failure. The “Swiss Cheese” model is simple in concept, but highly complex in reality.

Swiss cheese is known for its holes. The model posits that several pieces of cheese (each slice being a level of defense against incident) are lined up parallel to each other, with one end of the line being the danger and the other end being an incident. As long as the holes in the slices of cheese don’t line up, an incident will not occur because it has been prevented or mitigated at one level of defense; however, if a hole lines up in each slice, then there is a gap in the defenses, and an incident will occur.
Incident investigation is about working backwards from the incident to find the holes (causes) in each level of defense against possible hazards and fixing them.

4.5. Cause Analysis

Bird’s “domino model” shows the progression of incident causes running from left to right. Cause analysis works in reverse, from right to left. The cause analysis starts with the incident and works back through the sequence of events to determine the immediate, basic and root causes.

Analyzing all the information and evidence available, the investigator can determine the various causes of an incident, ideally working towards an understanding of root causes.
But exactly how does this analysis occur? What is actually done to move from evidence and information to identification of causes?

Analysis is done using an investigation process such as an incident tree, fishbone or “5 Why” process to determine direct, indirect and root causes. Any of these processes start by asking a question relating to the incident and keep asking why it happened until why can no longer be answered. The next step, looked at in more detail in Module 5, is to develop conclusions based on the questions and answers; every root cause identified must have at least one recommendation made to prevent recurrence.

4.6. The “5 Why” Process

The “5 Why” process is only one of many processes available to determine the causes of an incident. The premise of the process is to work backwards from an incident, asking why something happened at least 5 times. The goal is to find the root cause and then use that information to make recommendations that will improve the safety management system.

If 5 “Whys” are not enough, and it makes sense to ask further questions, then that should be done as many times as necessary to ensure a complete investigation.

Let’s go back to the example of the driver who falls off the load while tarping, first introduced in module 3.5.3.

Consider the following investigation process:

![Figure 5. Example #1: 5 Why Process](image-url)
Sometimes a step in the “5 Why” process can be used to start another process that can identify additional issues. Using step #2 from Figure 5, we can investigate further, see Figure 6.

Figure 6. Example #2: 5 Why Process

During the 5 “Why” process, it is important to ask continuously if the answers to each “Why” are valid and would realistically lead to the result. Each step in the analysis should identify an immediate, basic or root cause. The last step should identify the root cause.

See Appendix E for a sample of a “5 Why analysis” worksheet. You may be able to use this worksheet to complete the group activity in section 4.7.

4.6.1. Documentation

As the process of investigation continues, the investigator must ensure the documentation of both information and evidence, as well as the cause analysis process, is ongoing and consistent. All notes, “5 Why” analyses, and other information should be stored securely and kept together in case further information is needed. Ultimately, along with the Recommendations, all of this information will form the incident analysis report.
4.7. Group Activity

Introduction

In this activity, each investigation team will complete a cause analysis of the incident case study, using the “5 Why” process. Keep in mind, that in doing this case study analysis, as with the collection and interviewing in module 3, that it is the process that counts, more than the content itself.

Instructions

In your investigation teams, use the information you received in Module 3 to conduct “5 Why” analyses of the incident. You can use the following for information:

- Details from your witness interview
- The Safe Work procedure
- The Driver Bio

In addition, you can use your own common sense understanding of the job conditions and working environment. Feel free to speculate a little on details not offered in the sample material. The goal is to determine potential causes of the incident, including immediate, basic and root causes.

Use the “5 Why” worksheet in Appendix E to help you.

Use the List of Causes in Appendix D to assist in your analysis.
4.8. **Truck Stop**

Use your course book and any notes you have taken to answer the following questions. When everyone is finished, the instructor will review the answers.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answer Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Explain the difference between direct, indirect and root causes.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Why is the domino model useful for explaining why incidents happen?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>How does the “5 Why” process work?</td>
<td></td>
</tr>
</tbody>
</table>
Module 5 – Develop and Implement Recommendations
5.1. Introduction

Once the investigation team has determined the causes of an incident, it is in a position to make recommendations to ensure the same does not happen again. This module will review how to develop useful recommendations and ensure they are implemented effectively.

5.2. Learning Outcomes

By the end of this module, participants should be able to:

1. Develop appropriate remedial recommendations
2. Describe a SMART recommendation
3. Describe requirements to distribute and communicate findings of an investigation report.
4. Describe the process for implementing recommendations
5. Describe the imperative to track and review implementation efforts

5.3. Step 4: Develop Recommendations

At the recommendation stage, investigators use the information from the cause analysis to determine problems that needs to be addressed and recommend solutions. At least one recommendation should be developed for each root cause identified. Recommendations should address the root cause (the problem) and seek to improve the overall safety management system.

A well-developed recommendation should:

- Be written
- Address the root cause identified and explain details of the problems and why it is a problem
- Provide rationale on how the recommendation will improve safety
- Provide an explanation of why the recommendation needs to be implemented
5.3.1. S.M.A.R.T Recommendations

The SMART concept is a useful tool when developing recommendations. These guidelines help to ensure recommendations are well-focused, on topic, and have a realistic possibility for implementation.

Consider the following example, as an extension from our scenario of the worker who falls while tarping. After the analysis, a root cause of an inadequate safety training program was identified.

Study the following SMART guidelines in the development of a subsequent recommendation.

<table>
<thead>
<tr>
<th>Specific and Simple</th>
<th>Recommendations should be specific, simple and straight forward.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Example:</strong> We should develop and implement a training matrix.</td>
</tr>
<tr>
<td>Measurable</td>
<td>The results of implementation should be measurable in some manner.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> The training matrix should include employees at all levels in the organization, including senior management. The matrix should be based on a job inventory to ensure all people are included.</td>
</tr>
<tr>
<td>Achievable</td>
<td>To be achievable, the recommendation must be realistic in terms of a company’s ability to respond. It should be realistic with company resources including people, budget and time.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> The training matrix should take advantage of in-house training capabilities as well as external training. A specific training budget will be developed.</td>
</tr>
<tr>
<td>Relevant</td>
<td>To be successful, the recommendation must be relevant and appropriate to the organization size, budget and resource availability and people must see the value in implementing the recommendation.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> Training needs for the matrix will be identified based on company requirements, legislative requirements job specific training needs.</td>
</tr>
<tr>
<td>Time constrained</td>
<td>Realistic deadlines should be set for implementation for the recommendations. Setting a deadline too near or too far in the future is not effective. Progress towards the deadline should be tracked on an ongoing basis. An individual should be assigned the responsibility to ensure the recommendation is implemented as required.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> We will develop the matrix within the next 60 days.</td>
</tr>
</tbody>
</table>
Final Recommendation

A lack of direction in training needs has been identified from a recent incident investigation. To ensure all employees are provided the necessary training a training matrix should be developed.

Within the next 60 days we will develop a training matrix that will cover all employees in the company from senior management all the way though to new hires. Training needs will be identified through a job inventory and training requirements will be consistent with company policy, legislation and job specific training needs. To ensure best use of resources the training courses can be provided by in-house or external providers. Bob Loblaw will be assigned the responsibility to ensure the matrix is developed on time.

5.4. Investigation Report Distribution and Communication

When the recommendations have been developed and the report completed, it should be distributed to WorkSafeBC, management, joint health and safety committee members and others who may need to review it. Ensure all those specified in Company policies receive a copy of the report and sign off as required.

Communication of the investigation results to others in the workplace is also an important step in the process. Confidential specifics of the investigation should not be released; however, hazard alerts, changes to safe work procedures and other information workers may need to continue to work safely must be communicated as soon as possible. Communication methods could include e-mail, 1-on-1 conversations, and safety meetings.

5.5. Step 5: Implement Recommendations

Once recommendations have been developed by the investigation team, they need to be implemented. To ensure they are implemented, each recommendation should:

- Be assigned to an individual who will be responsible to ensure completion. That person may not necessarily carry out the implementation directly, but is responsible for ensuring the task is completed.
- Be tracked on a regular basis and with consistent documentation of its progress, particularly if the implementation takes a longer period of time. Tracking could be done as part of the joint health and safety committee process, or task tracking software.
5.5.1. Monitoring and Review

Once a recommendation has been implemented, it should be monitored and reviewed for effectiveness, particularly if it required changes to company procedures or policies. Monitoring should be documented and, based on review, further changes or additional recommendations may be required.

5.6. Group Activity

Introduction

In this activity, each investigation team will develop recommendations based on the root causes they identified in module 4.

Instructions

Develop at least 1 recommendation for each root cause identified in your cause analyses in module 4. Ensure each recommendation is SMART. Use the table below to guide you.

When you have finished, make your recommendations available to the other teams. Discuss and compare findings and recommendations with the other teams. How many recommendations are repeated? Why? Look at unique recommendation and assess them as a group.

Use the table on the following page to develop your recommendations:
<table>
<thead>
<tr>
<th>Specific and Simple</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurable</td>
<td></td>
</tr>
<tr>
<td>Achievable</td>
<td></td>
</tr>
<tr>
<td>Relevant</td>
<td></td>
</tr>
<tr>
<td>Time constrained</td>
<td></td>
</tr>
<tr>
<td>Final Recommendation</td>
<td></td>
</tr>
</tbody>
</table>
5.7. Truck Stop

Use your course book and any notes you have taken to answer the following questions. When everyone is finished, the instructor will review the answers.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answer Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>What does S.M.A.R.T stand for?</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>How should the findings of an incident investigation be distributed?</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Why is it important to monitor and review the implementation of recom-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mendations?</td>
<td></td>
</tr>
</tbody>
</table>
Appendices
6.1. Appendix A: Sample Incident Investigation Form (TSCBC)

Incident Investigation Report

<table>
<thead>
<tr>
<th>Operation</th>
<th>Date of Incident</th>
<th>Time of Incident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions at time of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Incident</th>
<th>Recordable Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Injury</td>
<td>□ Property damage</td>
</tr>
<tr>
<td></td>
<td>□ First aid</td>
</tr>
<tr>
<td>□ Near miss</td>
<td>□ Mobile equipment</td>
</tr>
<tr>
<td></td>
<td>□ Lost time</td>
</tr>
<tr>
<td></td>
<td>□ Medical aid</td>
</tr>
<tr>
<td></td>
<td>□ Fatality</td>
</tr>
<tr>
<td></td>
<td>□ Restricted Work</td>
</tr>
<tr>
<td></td>
<td>□ N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person(s) Involved</th>
<th>Department &amp; Position</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>☐ Employee</th>
<th>☐ Contractor</th>
<th>Age:</th>
<th>Time in Position (Month/Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Visitor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>☐ Male</th>
<th>☐ Female</th>
<th>Length of Service (Month/Year)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Contractor Name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Address of Incident</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Company Address &amp; Phone Number</th>
<th>(Complete if different)</th>
</tr>
</thead>
</table>

Witness

<table>
<thead>
<tr>
<th>Witness</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Witness</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date Reported (D/M/Y)</th>
<th>Date Investigated (D/M/Y)</th>
<th>Date of last SWP (D/M/Y)</th>
</tr>
</thead>
</table>

Cost Estimate (property/equipment damage, downtime):

The information contained in this document is a suggestion for improving OHS in the workplace, but is not specifically tailored to your individual working conditions. It is your responsibility to add those items specific to your workplace or situation. Therefore the TSCBC takes no responsibility for how you use the information contained within these documents and cannot be held liable for any inaccuracies, omissions or deficiencies in the information provided to companies or workers based on the information contained herein.
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### Incident Description
(List sequence of events leading to occurrence and immediate actions taken)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Injury Information

#### Nature of Injury
- □ Allergies / sensitivities
- □ Amputation
- □ Asphyxiation
- □ Bruise / contusion
- □ Burn
- □ Concussion
- □ Cut / puncture / open wound
- □ Dislocation
- □ Electric shock
- □ Foreign body
- □ Fracture
- □ Hearing loss
- □ Hernia / Rupture
- □ Infection
- □ Respiratory conditions
- □ Scratch / abrasion
- □ Sprains / strains
- □ Other occupational injuries

#### Body Part
- □ Abdomen □ L □ R
- □ Ankle □ L □ R
- □ Arm □ L □ R
- □ Back □ L □ R
- □ Chest □ L □ R
- □ Ear □ L □ R
- □ Eye □ L □ R
- □ Elbow □ L □ R
- □ Face □ L □ R
- □ Foot □ L □ R
- □ Hand □ L □ R
- □ Groin □ L □ R
- □ Head □ L □ R
- □ Hip □ L □ R
- □ Knee □ L □ R
- □ Leg □ L □ R
- □ Mouth / teeth □ L □ R
- □ Neck □ L □ R
- □ Shoulder □ L □ R
- □ Wrist □ L □ R
- □ Multiple parts □ L □ R

□ Other: ____________________

□

□
The information contained in this document is a suggestion for improving OHS in the workplace, but is not specifically tailored to your individual working conditions. It is your responsibility to add those items specific to your workplace or situation. Therefore the TSCBC takes no responsibility for how you use the information contained within these documents and cannot be held liable for any inaccuracies, omissions or deficiencies in the information provided to companies or workers based on the information contained herein.
<table>
<thead>
<tr>
<th>Immediate Causes</th>
<th>Recommended Corrective Actions</th>
<th>By Whom</th>
<th>By When</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Inadequate grip or hold</td>
<td>□ Failing to use PPE properly</td>
<td>□ Poor housekeeping / disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Improper use of equipment / tools</td>
<td>□ Inadequate awareness of surroundings</td>
<td>□ Worksite conditions / congestion / visibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Failure to follow safe work practices or rules</td>
<td>□ Improper placement, storage or load securement</td>
<td>□ Inadequate / improper protective equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Improper lifting / pushing / pulling</td>
<td>□ Inadequate use of safety devices</td>
<td>□ Under influence of alcohol and/or drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Failure to obtain assistance</td>
<td>□ Repetitive motion</td>
<td>□ Inadequate labeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Failure to warn or instruct</td>
<td>□ Inadequate warning systems</td>
<td>□ Absence of guards and/or barriers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Failure to lockout</td>
<td>□ Weather conditions</td>
<td>□ Equipment failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Fire / Explosion</td>
<td>□ Road conditions</td>
<td>□ Vehicle failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Others:</td>
<td>□</td>
<td>□</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## Root Cause

| □ Inadequate work planning or Programming | □ Inadequate assessment of needs risks and / or hazards | □ Inadequate change management |
| □ Inadequate communication standards | □ Inadequate maintenance system | □ Inadequate purchasing standards: tools / equipment / materials |
| □ Inadequate policy, procedures, practices or guidelines | □ Inadequate engineering and / or design | □ Fatigue |
| □ Improper performance is rewarded (tolerated) | □ Inadequate or lack of inspections | □ Mental / physical stress |
| □ Inadequate performance feedback | □ Inadequate employee skill | □ Inadequate physical capability |
| □ Inadequate Supervision / leadership | □ Inadequate training standards | □ Other - please specify: |

### Description of Root Causes

- 
- 
- 
- 
- 
- 

### Recommended Preventive Actions

<table>
<thead>
<tr>
<th>By Whom</th>
<th>By When</th>
<th>Date Completed</th>
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<tbody>
<tr>
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</tbody>
</table>

### Reasons for not taking Corrective / Preventative Action:

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- 

-
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### Review and Approvals

<table>
<thead>
<tr>
<th>Role</th>
<th>Print Name</th>
<th>Signature</th>
<th>Phone Number</th>
<th>Date (D/M/Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigation Leader</td>
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<tr>
<td>Investigation Team Member</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Safety Representative</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Immediate Supervisor</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Approved by Manager</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**PLEASE ATTACH ADDITIONAL PAGES IF YOU REQUIRE MORE ROOM**
6.2. Appendix B: Sample Incident Investigation Policy

Sample Incident Investigation Policy

[Insert company name] health & safety programs work to reduce costs due to injuries and/or property damage and our goal is zero incidents however, incidents can still occur and must be investigated to prevent recurrence.

Incidents that must be investigated include:

- vehicle collisions – all occurrences of vehicle contact,
- injuries – any injury requiring first-aid or medical attention,
- property damage – any property damage to company or non-company equipment or premises
- and near misses – any incident that had things gone differently could have resulted in the above.

Incident investigation is not assigning blame but to identify both the immediate causes and the root causes (or underlying factors) that resulted in the incident. Our objective is to identify and implement preventive and corrective measures to ensure the safety of the work environment and to prevent similar incidents from happening again.

Incident Investigation Responsibilities

Management

A manager will investigate any incident reported to them. Management participation is required in an investigation of an incident if the severity or potential severity requires action appropriate to the manager’s authority. All investigations that require immediate notification to WorkSafeBC will be attended by the appropriate management personnel.

Supervisor

A supervisor must investigate incidents or secure the scene as soon as possible given the circumstances and severity of the incident. Incidents of a serious nature or requiring reports to a regulating agency will be referred to a manager or the company owner. A supervisor’s incident review and signoff are a requirement.

Worker

A worker will report to the supervisor, manager, or company owner, all incidents including close calls. A worker will attend the incident investigation unless unable to do so as a result of injury.

Safety Committee Member or Safety Representative

A Joint Occupational Health and Safety Committee member or the Workers Safety Representative should be included in an incident investigation. If not available, another employee knowledgeable in the investigation process may be included in the investigation.

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Incident Reporting

Employees must report all incidents including vehicle collisions, injuries, property damage and near misses to the supervisor, manager, or company owner immediately. “Immediately” means as soon as practicable after taking care of any injuries and securing the area or moving away from danger. The supervisor, manager, or company owner must notify the relevant authority immediately.

Incident Reporting for federal regulations

Notify Employment and Social Development Canada (ESDC) immediately to report these hazardous occurrences:

- The death of employee
- Disabling injury to two or more employees;
- An employee’s loss of a body member or a part thereof or the complete loss of the usefulness of a body member or a part thereof
- Permanent impairment of an employee’s body function
- An explosion
- Damage to a boiler or pressure vessel that results in fire or the rupture of the boiler or pressure vessel; or
- Any damage to an elevating device that renders it unserviceable, or a free fall of an elevating device

Incident Reporting for provincial regulations

Notify WorkSafeBC immediately to report any incidents that:

- Resulted in serious injury to or death of a worker
- Involved major structural failure or collapse of:
  - building
  - bridge
  - tower
  - crane
  - hoist
  - temporary construction support system
  - excavation
- Involved major release of a hazardous substance
Investigation Procedure

[Insert company name] will investigate incidents using best practices as outlined in the WorkSafeBC publication, “Investigation of Accidents and Incidents Reference Guide and Workbook”. This includes the following elements:

- Visit the scene, gather and record evidence.
- Conduct interviews.
- Evaluate evidence and draw conclusions.
- Write report with recommendations.
- Follow-up

Recommended Procedure

While not every situation will require all elements of this procedure, all appropriate actions must be taken relative to the severity and complexity of the incident.

- Secure the scene to minimize the risk of any further injury.
- While approaching the accident scene, analyze the situation and take suitable action to prevent further deterioration.
- Make sure that the injured workers are properly cared for before starting the investigation.
- Keep the accident scene as undisturbed as possible.
- Make an accurate record of the accident scene.
- Photographs of the accident scene should be taken, drawings made and measurements checked for reference in future discussions.
- Identify and interview all witnesses separately and individually as soon as possible.
- Record all information accurately. (SafetyDriven example accident report)
- Start the incident investigation report.
- Take time to evaluate the details recorded by the investigation and draw conclusions based on that data.
- Develop recommendations that will prevent the incident from recurring.
- Record the investigation and recommendations on the SafetyDriven Incident Investigation Report.
- Follow up to see that the recommendations have been implemented and they are having the desired effect.

Name: ___________________________ Title: ______________________________
Signature: _______________________ Date: ______________________________

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<table>
<thead>
<tr>
<th>Incident Type</th>
<th>Immediate Steps</th>
<th>Investigation and Follow-up</th>
<th>Documentation</th>
</tr>
</thead>
</table>
| First Aid     | - Report to First Aid Attendant/Supervisor for treatment.  
- If on your own use first aid kit and report to First Aid at earliest opportunity | - First Aid Attendant to complete report  
- Supervisor reviews first aid report within 24 hours to determine follow up action required | - First aid report |
| Injury/Medical Aid | - Report to First Aid Attendant/Supervisor immediately  
- Remove employee from danger  
- Secure area to prevent further danger or hazard  
- Attend medical practitioner  
- Provide RTW package to medical practitioner | - Supervisor and Worker OHS representative complete an investigation within 24 hours  
- Determine preventative and corrective actions  
- Assign implementation activities and completion time frame  
- Senior management/company owner review actions completed and sign off report | - Incident investigation report  
- First aid report |
| Near Miss     | - Report to First Aid Attendant/Supervisor immediately  
- Remove employee from danger  
- Secure area to prevent further danger or hazard | - Supervisor and Worker OHS representative complete an investigation within 24 hours  
- Determine preventative and corrective actions  
- Assign implementation activities and completion time frame  
- Senior management/company owner review actions completed and sign off report | - Incident investigation report |
| Vehicle Collision | - Report to Supervisor immediately  
- Remove employee from danger  
- Secure area to prevent further danger or hazard | - Driver submits copy of the police report  
- Supervisor and Worker OHS representative review report and determine avoidable or non-avoidable  
Determine preventative and corrective actions  
- Assign implementation activities and completion time frame  
- Senior management/company owner review actions completed and sign off report | - Police report  
- Vehicle collision investigation report |
| Work Refusal  | - Report to supervisor immediately  
- State reasons for work refusal | - Supervisor assesses hazards and risks of the job task to determine if adequate controls are in place  
- Supervisor tries to resolve safety concerns with worker  
- If worker continues to refuse, conduct investigation with involvement of Worker OHS representative.  
- If not resolved contact government authority (ESDC or WSBC)  
- Resolve work refusal incident with assistance from government safety officer  
- Supervisor documents all steps taken | - Supervisor journal |
6.3. Appendix C: Case Study Supplemental Information (Driver Bio) and Case Study Supplemental Information (SWP)

Case Study Information

Remember – all information beyond the initial description of the incident has been manufactured for this course and is not connected to any real person, incident or company.

Driver Bio

6. Driver is 32 years old and has 5 years’ experience driving logging truck. Only the 5th year has been with this company.

7. He has been off for 8 months on medical leave and returned to work a week ago.

8. He received no orientation or training, nor any review of training, upon his return to work.

9. He is driving the same truck and doing the same work that he did before being on leave.

10. While he was on leave, the company came under new owners and many of the supervisor and management people are new and unfamiliar to the driver.

Company’s Safe Work Procedure for Log Truck Drivers

See next page.
SAFETY DRIVEN

LOGGING TRUCK DRIVER

PERSONAL PROTECTIVE EQUIPMENT:

- Adequate Footwear with Good Traction Soles
- Hi-vis hardhat
- Gloves
- Hi-vis Vest
- Hearing Protection

PROCEDURES:

Vehicle Inspections

- Inspect the logging truck to ensure it is in safe operating condition.
- Check the logging rigging regularly to ensure the cables, bunks, stakes, lift straps, couplings, lights and other critical components are free of defects and in good working order.
- Check the condition of the brakes and adjust them regularly to ensure they are functioning properly.
- Ensure the required government inspections of the vehicle are conducted and are current.

Operating the Vehicle

- All logging trucks must be equipped with a two-way radio using the frequency posted for the particular haul road.
- Drive with the headlights on at all times.
- Passengers are not allowed unless they have proper authorization.
- Operate the logging truck in a safe manner. Drive within the posted speed limits and/or within safe speeds determined by the conditions of the road.

- Always get into and leave the truck in a safe manner using the handholds provided to prevent slipping and tripping.

- Wear the personal protective equipment required when getting out of the vehicle.

- Refer to Section “Rules of the Road” for Operating the vehicle on industrial forest roads and use of the two-way radio system.

- Report any observed unsafe haul road conditions to your supervisor, the logging contractor or the sawmill personnel.

**Tire Chains**

- Where winter conditions prevail, always adequately chain up the vehicle in a safe flat location before you encounter areas where vehicle traction is questionable. You must be prepared to stop suddenly if you meet unexpected traffic or an unforeseen event occurs.

- Always follow proper lifting techniques when handling tire chains. Bend your legs and keep your back straight while lifting the chains.

**Log Loading**

- Ensure there is a safe area for loading.

- Follow the communication system established at the loading site with the loaderman.

- Always wear required personal protective equipment when outside the vehicle.

- Use caution and communicate with the loaderman when coupling up the trailer unit.

- Do not walk along slippery narrow components of the logging truck and trailer unit to release stake extensions and straighten bunks.

- The location of the driver must be known by the loaderman at all times. Stay inside the truck cab or out in front of the unit while being loaded.

- Do not climb on top of the truck or the load. Branches must be trimmed from the logs before they are placed on the load. Logs with protruding branches placed on top of the load must be removed by the loader and branches trimmed at ground level.

- Communication with the loaderman that the loading is complete and ready to install load wrappers.
• Have the loaderman restrain the load on the side where wrappers will be installed if possible.

• Observe the area for hazards before installing wrappers i.e. moving equipment, debris, icy conditions etc.

• Ensure good footing while throwing wrappers over the load.

• All logs must be restrained with a minimum of two wrappers. Ensure firm grip on the cinch handle when closing the cinch.

• Give notice on proper radio channel that you are leaving the landing and ensure all workers are in the clear before pulling out.

Unloading

• Approach the unloading area in a safe manner. Watch for other workers and machinery which might be present.

• Wear required P.P.E. when outside the vehicle.

• Follow the safe unloading procedures established at the unloading site.

• Ensure good communications with the loaderman.

• The load must be restrained before wrappers are removed from the load.

• Remain in a safe location and in view of the loaderman while being unloaded. Usually the driver will remain in the cab of the truck or out in front of the truck. Follow the posted unloading procedures at the unloading site.

• Ensure workers and machinery are in the clear before moving through the log yard

Written Safe Work procedure Courtesy of the BC Forest Safety Council. Used with permission.

Logger Safety Tool Kit Revised 2006/08/25

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### 6.4. Appendix D: Incident Cause Examples

This list is not comprehensive and is adapted from the TSCBC Incident Investigation Report form. The form is available on the TSCBC website. The root cause section is not on the TSCBC form and has been added based on course content.

http://www.safetydriven.ca/resources/large-employer-toolkit/templates-forms/

<table>
<thead>
<tr>
<th>Direct / Immediate Causes</th>
<th>Direct / Immediate Causes</th>
<th>Direct / Immediate Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Inadequate grip or hold</td>
<td>❑ Failing to use PPE properly</td>
<td>❑ Poor housekeeping / disorder</td>
</tr>
<tr>
<td>❑ Improper use of equipment / tools</td>
<td>❑ Inadequate awareness of surroundings</td>
<td>❑ Worksite conditions / congestion / visibility</td>
</tr>
<tr>
<td>❑ Failure to follow safe work practices or rules</td>
<td>❑ Improper placement, storage or load securement</td>
<td>❑ Inadequate / improper protective equipment</td>
</tr>
<tr>
<td>❑ Improper lifting / pushing / pulling</td>
<td>❑ Inadequate use of safety devices</td>
<td>❑ Under influence of alcohol and/or drugs</td>
</tr>
<tr>
<td>❑ Failure to obtain assistance</td>
<td>❑ Repetitive motion</td>
<td>❑ Inadequate labeling</td>
</tr>
<tr>
<td>❑ Failure to warn or instruct</td>
<td>❑ Inadequate warning systems</td>
<td>❑ Absence of guards and/or barriers</td>
</tr>
<tr>
<td>❑ Failure to lockout</td>
<td>❑ Weather conditions</td>
<td>❑ Equipment failure</td>
</tr>
<tr>
<td>❑ Fire / Explosion</td>
<td>❑ Road conditions</td>
<td>❑ Vehicle failure</td>
</tr>
<tr>
<td>❑ Others:</td>
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<td></td>
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</table>
### Indirect / Basic Causes

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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>❑ Inadequate work planning or programming</td>
<td>❑ Inadequate assessment of needs risks and / or hazards</td>
<td>❑ Inadequate change management</td>
</tr>
<tr>
<td>❑ Inadequate communication standards</td>
<td>❑ Inadequate maintenance system</td>
<td>❑ Inadequate purchasing standards: tools / equipment / materials</td>
</tr>
<tr>
<td>❑ Inadequate policy, procedures, practices or guidelines</td>
<td>❑ Inadequate engineering and / or design</td>
<td>❑ Fatigue</td>
</tr>
<tr>
<td>❑ Improper performance is rewarded (tolerated)</td>
<td>❑ Inadequate or lack of inspections</td>
<td>❑ Mental / physical stress</td>
</tr>
<tr>
<td>❑ Inadequate performance feedback</td>
<td>❑ Inadequate employee skill</td>
<td>❑ Inadequate physical capability</td>
</tr>
<tr>
<td>❑ Inadequate Supervision / leadership</td>
<td>❑ Inadequate training standards</td>
<td>❑ Other - please specify:</td>
</tr>
</tbody>
</table>

### Root Causes (based on Bird's incident model)

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>❑ Inadequate program</td>
<td>❑ Inadequate program standards</td>
<td>❑ Inadequate compliance to standards</td>
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### 6.5. Appendix E: “5 Why” Worksheet

<table>
<thead>
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<tr>
<td><strong>Direct Cause(s)</strong></td>
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</tr>
<tr>
<td>Energy Source or hazardous material</td>
<td>Why #2?</td>
</tr>
<tr>
<td>Why #2?</td>
<td>Why #2?</td>
</tr>
<tr>
<td>Why #3?</td>
<td>Why #3?</td>
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<td><strong>Indirect Cause(s)</strong></td>
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</tr>
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<td>Unsafe Acts and Conditions</td>
<td>Why #4?</td>
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<td>Why #5?</td>
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<td>Why #5?</td>
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<tr>
<td><strong>Root Cause(s)</strong></td>
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