

# **INVESTIGATION OF ACCIDENTS & DISEASES**

## **REFERENCE GUIDE & WORKBOOK**



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# Investigation of Accidents and Diseases

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## **Guidelines**

This workbook discusses concepts and methods that can help you to implement and perform effective investigations at your workplace. The information and sample forms in the workbook are guidelines. This is only one approach.

# 1. Introduction

## 1.1 Definitions

Before we can proceed into today's session, we should establish some basic definitions.

- *In the space provided, give what you consider to be a definition of the following terms.*

What is an 'Accident'?

What is an 'Incident'?

What is an 'Accident/Incident Investigation'?

*Note: For Answer Key to Workbook Questions – See Appendix 1.*

## 1.2 Investigation Concepts

Why do we investigate accidents/incidents?



### Incident Causation

Remember these three basic facts:

- Accidents/incidents are caused.
- Accidents/incidents can be prevented if the causes are eliminated.
- Unless the causes are eliminated, the same Accidents/incidents will happen again.

Usually there are four or five root causes or factors that contribute to an incident. Often there are even more. Your task is to identify as many as possible.

When considering the contributing factors, ask these questions:

- What can management do to prevent the incident from recurring?
- What can the supervisor do to prevent recurrence?
- What can the worker do?

## 1.3 Regulation

The regulatory requirements for conducting accident investigations are contained in the Workers Compensation Act Part 3, Division 10 and WCB Occupational Health and Safety Regulation Section 3.4.

These regulatory requirements are given below. Some notes on intent and interpretation are included. Remember that these are the minimum standards. Your procedure may go beyond these requirements.

### Division 10 - Accident Reporting and Investigation

#### *Immediate Notice of Certain Accidents*

*172(1) An employer must immediately notify the board of any accident that*

- (a) resulted in serious injury to or the death of a worker,*
- (b) involved a major structural failure or collapse of a building, bridge, tower, crane, hoist, temporary construction support system, or excavation,*
- (c) involved the major release of a hazardous substance\*, or*
- (d) was an incident required to be reported.*

\*A major release of a hazardous substance does not only mean a considerable quantity, or the peculiar nature of the release, such as a gas or volatile liquid, but, more importantly, the seriousness of the risk to the health of workers. Factors which determine the seriousness of the risk include the degree of preparedness of the employer to respond to the release, the necessity of working in close proximity to the release, the atmospheric conditions at the time of the release and the nature of the substance.

As a general guideline, a report would be expected when:

- 1) The incident resulted in an injury which required immediate medical attention beyond the level of service provided by a first aid attendant, or injuries to several workers which require first aid.
- 2) The incident resulted in a situation of continuing danger to workers, as when the release of a chemical cannot be readily or quickly cleaned up.

### *Preservation of evidence*

*172 (2) Except as otherwise directed by an officer of the board or a peace officer, a person must not disturb the scene of an accident that is reportable under subsection (1) except so far as is necessary to*

- (a) attend to persons injured or killed,*
- (b) prevent further injuries or death, or*
- (c) protect property that is endangered as a result of the accident.*

### ***Incidents That Must Be Investigated***

*173(1) An employer must immediately undertake an investigation into the cause of any accident or other incident that*

- (a) is required to be reported by section 172,*
  - (b) resulted in injury requiring medical treatment\**
  - (c) did not involve injury to a worker, or involved only minor injury not requiring medical treatment, but had a potential for causing serious injury to a worker, or*
  - (d) was an incident required by regulation to be investigated.\*\**
- (2) Subsection (1) does not apply in the case of a vehicle accident occurring on a public street or highway.*

\*Medical treatment means treatment by a registered medical practitioner.

\*\*Incidents required by regulation to be investigated include incidents of violence in the workplace.

## *Investigation Process*

### *Investigator's qualifications*

*174 (1) An investigation required under this Division must be carried out by persons knowledgeable about the type of work involved and, if they are reasonably available, with the participation of the employer or a representative of the employer and a worker representative.*

### *Intent of the investigation*

*174 (2) As far as possible, the investigation must*

- (a) determine the cause or causes of the incident,*
- (b) identify any unsafe conditions, acts or procedures that contributed in any manner to the incident, and*
- (c) if unsafe conditions, acts or procedures are identified, recommend corrective action to prevent similar incidents.*

### *Availability of witnesses*

*174 (3) The employer must make every reasonable effort to have available for interview by a person conducting the investigation, or by an officer, all witnesses to the incident and any other persons whose presence might be necessary for a proper investigation of the incident.*

*(4) The employer must record the names, addresses and telephone numbers of persons referred to in subsection (3).*

## ***Incident Investigation Report***

*175 (1) As part of the investigation required by this Division, an employer must ensure that an incident investigation report is prepared in accordance with the regulations.*

### **OH&S Regulation – Section 3.4**

#### **Incident investigation reports**

*An employer must ensure that an incident investigation report required by Division 10 of Part 3 of the Workers Compensation Act contains*

- (a) the place, date and time of the incident*
- (b) the names and job titles of persons injured in the incident,*
- (c) the names of witnesses,*
- (d) a brief description of the incident,*
- (e) a statement of the sequence of events which preceded the incident,*
- (f) identification of any unsafe conditions, acts or procedures which contributed in any manner to the incident,*
- (g) recommended corrective actions to prevent similar incidents, and*
- (h) the names of the persons who investigated the incident.*

### ***Distribution of reports***

*175(2) The employer must provide a copy of the incident investigation report to*

- (a) the joint committee or worker representative, as applicable,*  
*and*
- (b) the board.*

## ***Follow-up Action and Report***

*176(1) Following an investigation under this Division, the employer must without undue delay undertake any corrective action required to prevent recurrence of similar incidents.*

*(2) As soon as is reasonably practicable, the employer must prepare a report of the action taken under subsection (1) and*

*(a) provide the report to the joint committee or worker representative, as applicable, or*

*(b) if there is no joint committee or worker representative, post the report at the workplace.*

## 2. Investigation Concepts

In this module, we are going to discuss some of the basic concepts and theories of incident investigations.

- *Before we proceed, consider the fact that an accident/incident cannot be investigated unless it is known that one has occurred.*

What are some of reasons why accidents/incidents are not reported and how would you ensure that they are reported?



## 2.1 What to Investigate

Earlier in the session, we discussed the regulatory requirements as to what accidents/incidents should be investigated. In simple words, the following could be utilized as a guide.

Types of accidents/incidents to investigate:

### **Serious and Major**

- usually investigated automatically.

### **Minor and Near-Miss**

- indicators that point to a condition or practice that, if allowed to continue, could cause injury or equipment damage.

Investigations of serious accidents often reveal earlier incidents of a similar nature that have been dismissed as insignificant.

All accidents/incidents with the potential for loss should be investigated.

## 2.2 What the result must be

An incident investigation must determine certain facts and the report must show them.

- WHO was involved or injured? Were there witnesses?
  
- WHERE did the accident/incident happen? (Name of department, machine, location etc.).
  
- WHEN did the accident/incident occur? (Date, exact time of day, shift).
  
- WHAT were the immediate and basic causes? (Conditions, acts, procedures, equipment).
  
- WHY was the unsafe act or condition permitted? (Lack of training, supervision, rule enforcement, maintenance).
  
- HOW can a similar accident/incident be prevented? (Must be specific).

## 2.3 Incident Causation

Usually there are four or five root causes or factors that contribute to an incident. Often there are even more, but your task is to identify as many as possible.

When considering the contributing factors, ask these questions:

- What can management do to prevent the incident from recurring?
- What can the supervisor do to prevent recurrence?
- What can the worker do?

Examples of causes or factors that contribute to an incident are:

### Mechanical and material causes – Management Control

- unsafe or defective equipment
- improper working conditions
- poor housekeeping
- physical hazards
- improper planning

### Causes - Supervisor Control

- faulty instruction
- poor discipline
- unsafe work practices

### Causes - Personal Factor

- mental attitude
- physically unfit
- inability of employee
- lack of precaution
- improper attitude

A common tendency in incident investigations is to oversimplify. That often results in only the most obvious single cause being identified.

Most incidents are the result of several causes happening in sequence and in combination.

- *While reading the following story, IDENTIFY and UNDERLINE the various causes which contributed to the incident.*

It all started in the afternoon. Bill had a violent argument with a co-worker shortly before quitting time, which almost came to blows. Bill left the plant still angry and emotionally upset. He stopped off at a bar for a drink and stayed longer than he had intended. Leaving the bar in an intoxicated state, Bill arrived home late for supper, which precipitated an argument with his wife. Stomping out of the house without supper, Bill returned to the bar and spent the rest of the evening there. Finally leaving the bar, he realized he had better sober up before returning home and decided to drive out to a highway restaurant to get something to eat.

Outside, snow and freezing rain had been falling. The highway which had not yet been sanded, was slick with ice and snow. Oblivious to hazards, Bill drove too fast for the road conditions. Rounding a sharp curve, he was blinded by the high beam lights of an oncoming car. Bill slammed on his brakes. That did it. His car went into a skid and crashed into a guardrail. The car sustained extensive damage. Bill, fortunately, received only minor cuts and bruises.

*Note Case Study Answer Key – See Appendix 1.*

### **3. Investigation Procedure**

This portion of the session will deal with the procedures of investigation, which will include the following items.

#### **Procedure Overview**

- 1) Visit the scene, gather and record evidence.
- 2) Conduct interviews.
- 3) Evaluate evidence and draw conclusions.
- 4) Write report with recommendations.
- 5) Follow-up.

As a measure of preparedness, it is suggested that you have a ready-to-use Investigation Kit prepared and available in advance. The kit should contain the following items.

## **Investigation Kit**

- Digital camera, with flash
- tape measure
- clipboard, pad of paper
- straight edge
- pens, pencils
- accident investigation forms
- investigation checklist
- flashlight
- DO NOT ENTER tape

## 3.1 Visit the Scene

### Recommended Procedure

- 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.

- Ensure the injured are cared for.

Make sure that the injured workers are properly cared for before starting the investigation.

- Keep the accident scene as undisturbed as possible.

This refers to *Workers Compensation Act* Part 3, Division 10, Section 172(2) for WCB purposes as well as your own procedure.

- 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.

Interviewing skills will be reviewed in the next section.

- Record all information accurately.
- Start the incident investigation report.

The basic information such as dates and times can be filled in on the incident investigation report at this point.

*See Appendix 2 – Sample Accident Scene Sketches.*

*See Appendix 3 - Accident/Incident Investigation Check List.*

## 3.2 Interviews

One of the main methods of gathering information in an incident investigation is interviews with people who were at the accident scene. Interviews should also be conducted with anyone who can give relevant information, even if they were not present. An example would be the supervisor who gave instructions at the start of the shift or a trainer who instructed the worker, even months earlier. The following are suggested techniques for conducting interviews.

- Put the witness at ease.

A hostile or defensive witness can hinder the investigation and may adversely affect other persons involved.

- Reassure each witness of the investigation's main purpose.

The investigation is to find the causes so they can be eliminated to prevent recurrence, not to pin blame. Responsibilities may be pointed out, but this is only to assist in preventing the same contributing factors that led to the incident in the first place.

- Ask the witness to relate his or her account of the incident.
- Listen closely and carefully, and do not interrupt at this time.

This gives the individual a chance to formulate the story in their own mind and gives you a preview of what they know.

- Do not take notes during this initial dissertation as it distracts the witness.
- Do not use a tape recorder.
- Have the witness relate their story again and this time take notes. Ask questions to fill in the gaps.

Do not take your notes in a secretive manner. Allow the individual to see your notes.

- Ask further specific questions if required.

- Avoid questions that lead the witness or imply answers.
- Go over your notes to ensure the witness agrees with your interpretation of their story.
- Ask the witness for their suggestions as to how the accident could have been avoided.
- Encourage the witness to contact you a later date should they think of something else.
- Be sure to thank individuals for their assistance.

### 3.3 Evaluation

We are now at the stage of evaluating the evidence you have gathered and are prepared to draw conclusions based on that evidence.

- Be objective – don't start with a fixed opinion.
- Set out the events in chronological order.
- Be sure to consider all of the contributing factors.
- Use a checklist to ensure that you have covered all of the areas.
- Consider what evidence is direct, circumstantial or hearsay.
- Do not draw conclusions on the first basic cause found.

The following are common errors and pitfalls that arise in the incident investigation process:

- Believing carelessness is a cause of accidents/incidents.
- Assuming contradictory evidence indicates falsehood.
- Conducting interviews as if in a courtroom.
- Asking for a signed statement from witnesses.
- Looking for only one basic cause.
- Forgetting about the personal feelings of others.
- Failing to keep information confidential.

## 3.4 Report Writing

Now we are at the point where the report can be written. There are a few points that should be kept in mind for writing this report.

- Include a brief outline of the events leading up to and including the accident/incident.
- Describe the events in chronological order.
- Be specific – include dates, times, places, people involved, conditions, acts etc.
- Attach diagrams, photos, manufacturer's specifications etc.

Recommendations should treat the basic causes of the accident, not the symptoms.

If a worker not wearing a hardhat is struck on the head, the problem is not that he wasn't wearing a hardhat as much as WHY he wasn't wearing one.

Recommendations should also address all of the contributing factors.

A point to remember is that the report should contain enough details to provide readers with as much – if not more – information than they would have obtained if they had witnessed the accident/incident themselves.

*See Appendix 4 - Sample Accident/Incident Investigation Report.*

*See Appendix 5 - Blank Accident/Incident Investigation Report Form.*

## Follow-up

This is the final and most important step of the incident investigation procedure. If there is no implementation of the recommendations, the contributing factors could surface in another incident.

Keep these points in mind for the follow-up of an incident investigation:

- Delegate the recommendations for corrective action.
- Establish a system of follow-up to ensure corrective action took place.
- Publicize the results of the investigation.

- Ensure that copies of the report are sent through the usual routings.
- Post the action taken as well as any non-action and the reasons.
- Confirm that the action taken has cured the problem.

Without a firm commitment to taking on the recommendations, the whole exercise of conducting an investigation is a waste of time and effort.

Remember that results are based on action.



## 4. Summary

We have discussed the concepts and procedures for incident investigations. As a summary, here is an overview of the procedure.

- Go to the scene of the accident promptly; see that the needs of the injured are attended to.
- Get the facts. Talk to witnesses and, if possible and necessary, the injured worker.
- Listen for clues in unsolicited comments and conversations of others.
- Study the possible causes; look for both unsafe conditions and unsafe acts.
- Develop the corrective action; confer with others about possible solutions.

- Write the report. A narrative description is a good technique to describe events.
  
- Delegate responsibility for corrective action.
  
- Follow-up to ensure conditions are corrected.
  
- Publicize the corrective action taken.

## Appendix 1 Answer Key

Now compare your answers to the following suggested definitions.

### From page 5

What is an ‘Accident’?

*An accident is an unplanned, unwanted event that disrupts the orderly flow of the work process. It involves the motion of people, objects or substances.*

What is an ‘Incident’?

*An incident includes an accident or other occurrences which resulted in or had the potential for causing an injury or occupational disease.*

*An incident relates to any undesired or unwanted event that could (or does) degrade the efficiency of the business operation. These incidents could be accidents, quality or production problems or even security breaches such as theft.*

What is an ‘Accident/Incident Investigation’?

*An Accident/Incident Investigation is the analysis and account of an incident based on information gathered by a thorough examination of ALL FACTORS involved.*

## From page 13

### Incident Reporting

Before accidents/incidents can be investigated, you must be aware that one has in fact occurred.

Reasons why accidents/incidents may not be reported could include:

- *not wanting to spoil safety record*
- *not wanting to go to first aid*
- *afraid workers will 'kid' them*
- *afraid of medical treatment*
- *doesn't like 'red tape' involved with filling out forms*
- *afraid foreman will "get mad"*
- *not wanting to be central person in an incident investigation*
- *not wanting to lose time.*

## From page 18

Your responses to the preceding case study could include the following:

- *argument with co-worker*
- *emotionally upset*
- *goes to bar*
- *drinks alcohol*
- *stays longer/intoxicated*
- *late for supper*
- *argument with wife*
- *goes back to bar*
- *no supper*
- *more booze*
- *more upset*
- *drives intoxicated*
- *deteriorated weather*
- *slick roads*
- *unsanded roads*
- *speeds*
- *curve in road*
- *high beam*
- *over-reaction*
- *braked hard*

By identifying and listing all possible contributing factors, no matter how trivial, the investigating team can isolate the factors most useful to them.

## **From Page 18**

The breakdown of the multiple causes of this case study could be as follows:

### ***Unsafe Act***

- *braking too abruptly*
- *driving too fast for road conditions*

### ***Personal Factor***

- *his alcoholic state*
- *his emotional state of mind (arguments with co-worker and with wife)*

### ***Unsafe Environment or Conditions***

- *the icy road conditions*
- *the glare of oncoming headlights*
- *the sharp curve in the road*

### ***Unsafe Act by Another Person***

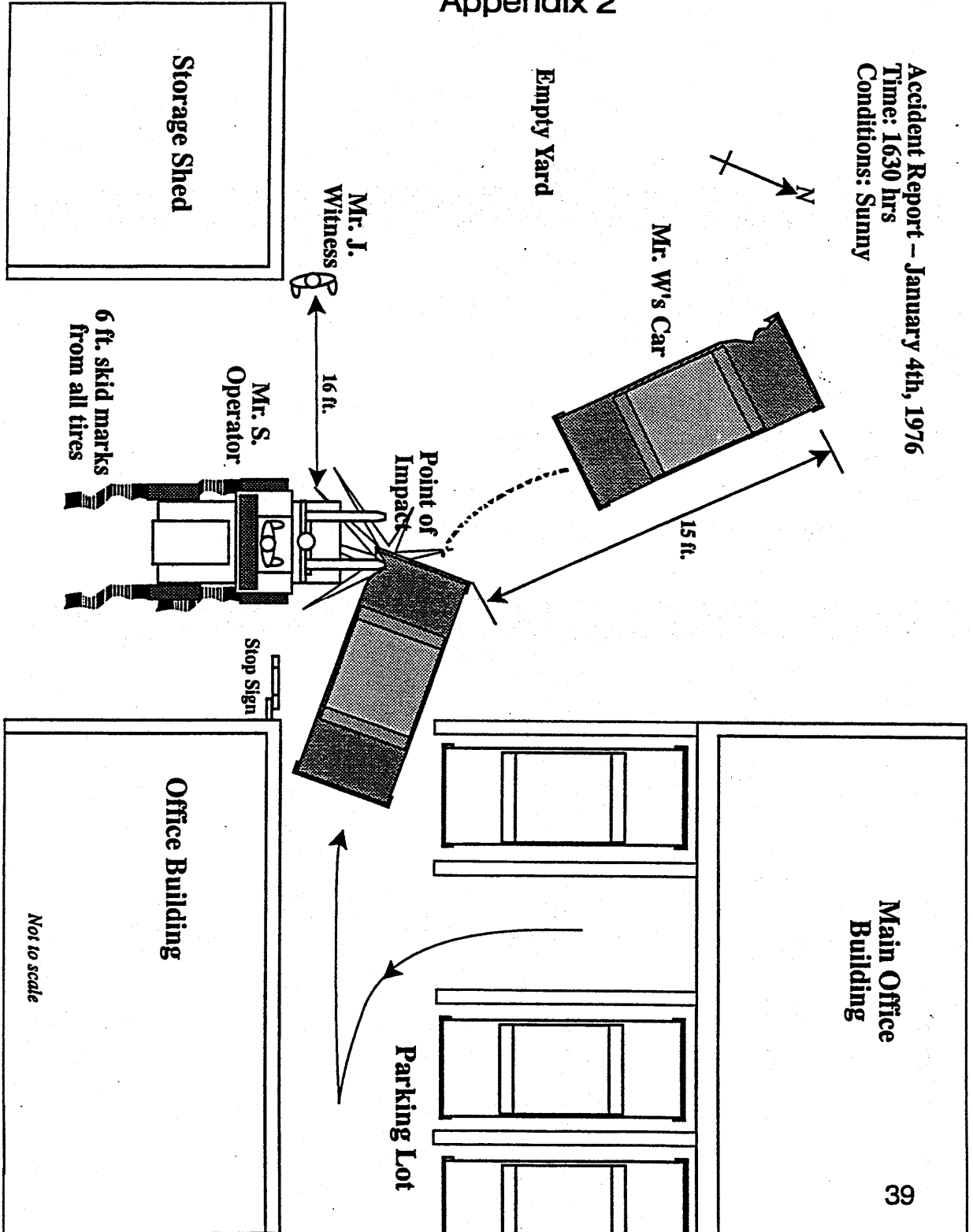
- *failure of oncoming driver to dim his lights*

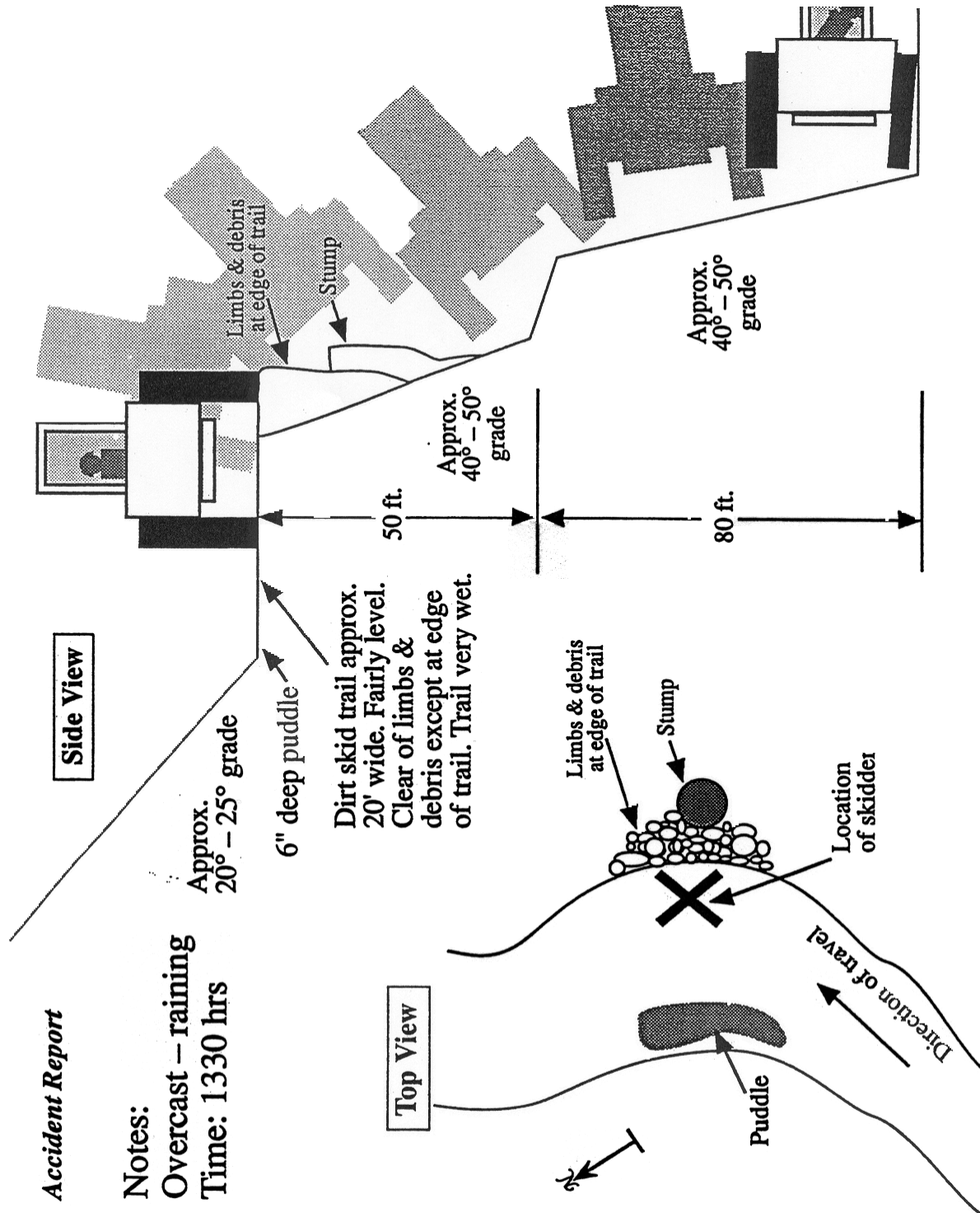
### ***Deficiency for which Others are Responsible***

- *failure to sand the road*

### Appendix 2

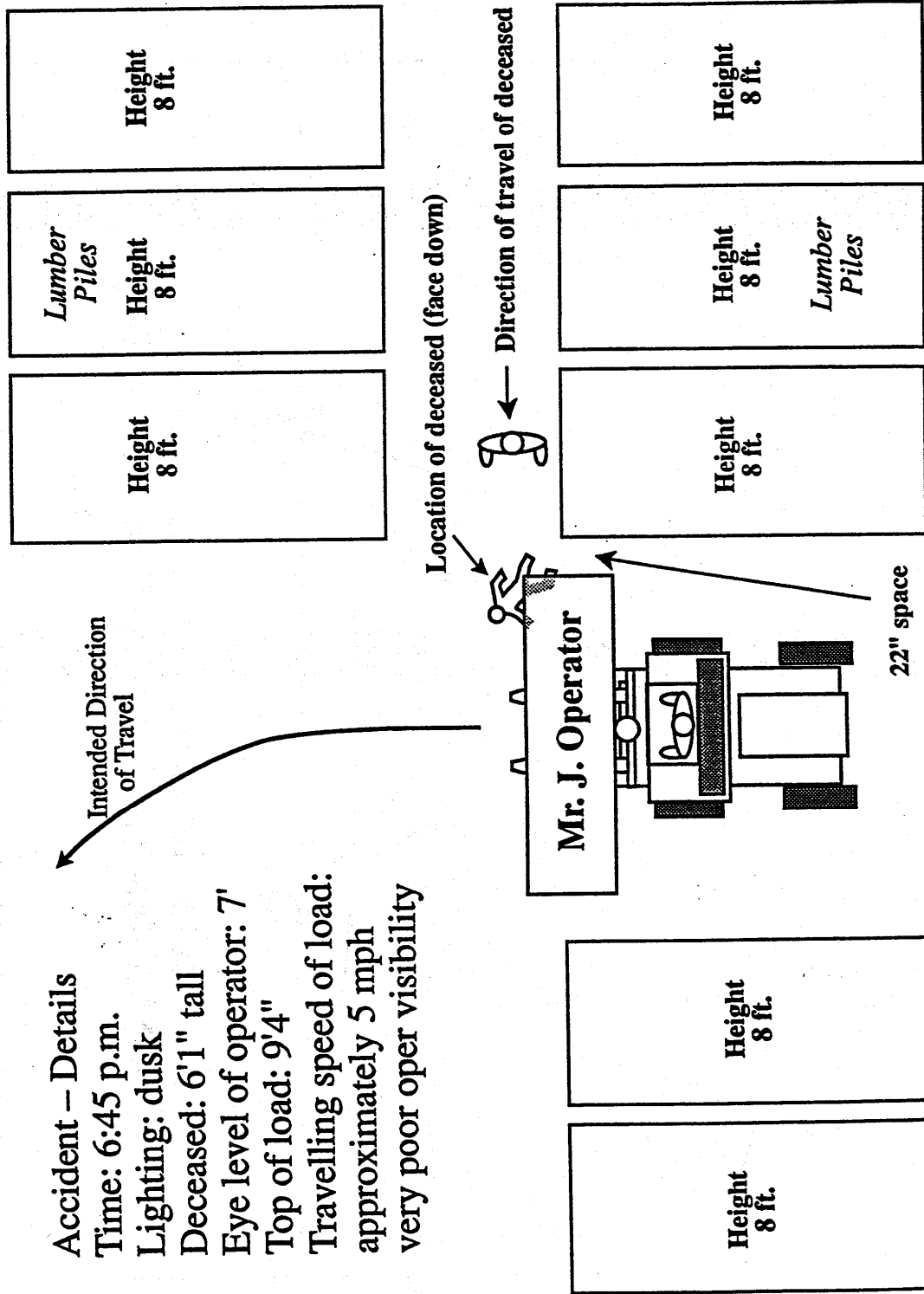
Accident Report – January 4th, 1976  
Time: 1630 hrs  
Conditions: Sunny

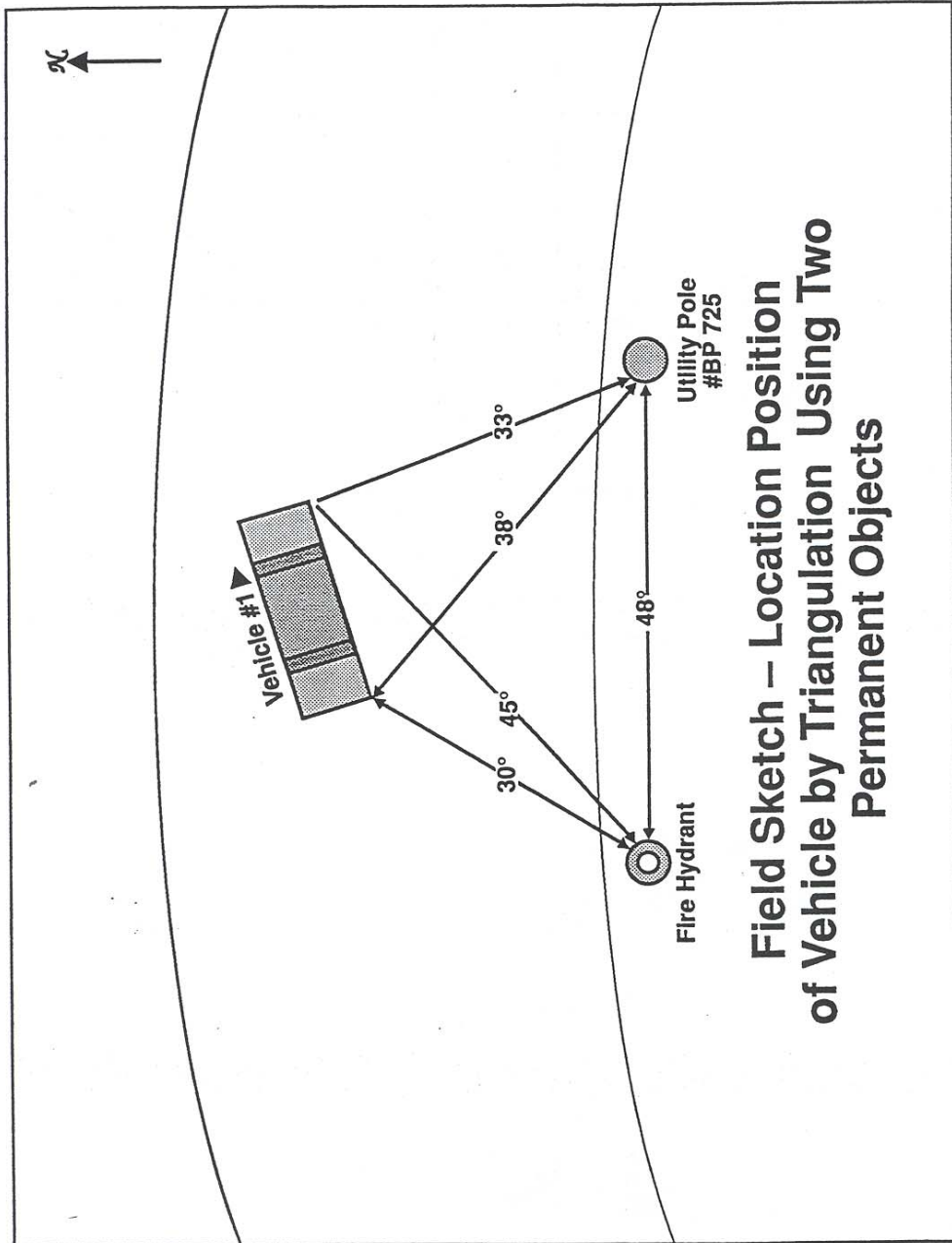




**FATAL** Lumber Storage Area, XYZ Sawmill Ltd.

**Accident – Details**  
 Time: 6:45 p.m.  
 Lighting: dusk  
 Deceased: 6'1" tall  
 Eye level of operator: 7'  
 Top of load: 9'4"  
 Travelling speed of load:  
 approximately 5 mph  
 very poor oper visibility





**Field Sketch – Location Position  
of Vehicle by Triangulation Using Two  
Permanent Objects**

## Appendix 3

### ACCIDENT/INCIDENT INVESTIGATION CHECK LIST

#### NOTIFICATION

- Agency
- Time and date of accident
- Time and date of notification
- Time and date of arrival on site

#### SCENE

- Diagram
- Photos
- Measurements

#### WORKER

- Name
- Age
- Home address and phone no.
- Occupation
- Experience
- Training this job
- Familiarity with equipment
- How supervised
- Personal Protective Gear
- Personal Problems On/Off job
- Mental/Physical disabilities
- Nature of injuries

#### SUPERVISION

- Name
- Age
- Experience as supervisor
- Experience in job worker was doing
- Personal knowledge of worker
- Method of supervision
- Knowledge of OH&S Regulations
- Opinion of how accident happened
- Opinion of how accident could be prevented
- Supervisors' instruction from management

#### FIRST AID

- Were services available
- Was treatment given
- Name of First Aid Attendant

#### OTHER PARTY

- Instructions
- Experience in Industry
- Experience in job at time of accident
- Supervision
- Training
- Knowledge of OH&S Regulation
- Familiarity w/equipment used at time of accident

#### EQUIPMENT AND SITE

- General condition
- Make and serial and model number
- Manufacturer's information
- Maintenance information and records
- Suitability and adequacy of equipment
- Layout of operation

#### ENVIRONMENT AND SITE

- General condition
- Lighting
- Ventilation
- Wind
- Temperature
- Weather conditions
- Terrain
- Noise

#### PERSONS WITH INFORMATION

- Name
- Work and residence address
- Recollection of accident
- Hearsay (scuttle)

#### EMPLOYER

- Name and address of Head Office
- Address of office where worker records are held
- Condition of firm Safety Program



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*NOTE: Wherever possible, the names and addresses of dependents/next of kin should be obtained in all fatal investigations*

## Appendix 4

ROYAL OAK FURNITURE MANUFACTURING CO. LTD.

### ACCIDENT/INCIDENT INVESTIGATION REPORT

**NOTE: SHADED AREAS ARE THE MOST IMPORTANT**

Last name of injured person <b>BAKER</b>		First name <b>BRENT</b>		Age <b>43</b>	Sex <b>M</b>
Length of service <b>18 YEARS</b>	Time on present job <b>16 YEARS</b>	Occupation <b>TABLE SAW OPERATOR</b>			
Date of accident <b>January 14, 2000</b>		Time of accident <b>2:55 P.M.</b>		Date of report <b>January 14, 2000</b>	
Nature of injury <b>PIECE OF STEEL IN RIGHT EYE</b>					
Description of accident/incident or employees account					
<b><i>Shipping ran out of pallets and needed two for a shipment this afternoon. Foreman instructed Baker to rip 6" X 6" posts that were part of old warehouse torn down last year. Baker proceeded to rip the posts into 3" X 6" and as he was in a hurry he didn't check for nails. He also did not use the saw guard and he did not wear any eye protection. Also, First Aid Attendant was sick today and there was no one to treat the injured worker.</i></b>					
Basic cause and contributory causes. Explain fully unsafe act, unsafe condition, personal factor, other.					
<b><i>Out of pallets – Poor planning. Worker rushed due to production deadline.</i></b>					
<b><i>Using material that had nails in it. Saw guard not used.</i></b>					
<b><i>Worker not wearing eye protection.</i></b>					
<b><i>Post accident problem – No F.A.A. on duty which delayed treatment.</i></b>					
Recommended Corrective Measures:				Action by:	
<b><i>1) Develop inventory system for pallets and other supplies.</i></b>				<b><i>G. Green</i></b>	
<b><i>2) Use new stock or carefully inspect material prior to cutting.</i></b>				<b><i>G. Green</i></b>	
<b><i>3) Saw guard must be in place.</i></b>				<b><i>Operator</i></b>	
<b><i>4) Saw operators must use eye &amp; full face protection at all times.</i></b>				<b><i>Operator</i></b>	
<b><i>5) Supervisor to retrain operators.</i></b>				<b><i>G. Green</i></b>	
<b><i>6) Train or hire additional first aid attendants.</i></b>				<b><i>T. McMillan</i></b>	
Inspection Team: <b><i>George Green ..... Dal Singh .....</i></b>					
Management review by: <b><i>Tim McMillan, Manager</i></b>			Date to be completed by: <b><i>Jan. 21 – items 1 –5. Feb.. 18 – item 6.</i></b>		

\_\_\_\_\_  
**Company Name**  
**ACCIDENT/INCIDENT INVESTIGATION REPORT**

**NOTE: SHADED AREAS ARE THE MOST IMPORTANT**

Last name of injured person		First name		Age	Sex
Length of service	Time on present job	Occupation			
Date of accident	Time of accident		Date of report		
Nature of injury					
Description of accident/incident or employees account:					
<b>Recommended Corrective Measures:</b>				Action by:	
Inspection Team:					
Management review by:				Date to be completed by:	