Health and Safety Guidelines

Incident and Occupational Disease Investigations Guide

CUPE Canadian Union of Public Employees

Health and Safety Branch

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INTRODUCTION

We know most work-related incidents, illnesses, diseases and deaths are preventable. In fact, prevention is the main goal of occupational health and safety work and one reason effective and comprehensive health and safety programs are needed in all workplaces.

While we hope that no one is ever injured at work, this is not the case for many workplaces. CUPE members must be prepared to react when an incident happens or someone is made sick because of the workplace. Incident and occupational disease investigations are important before and after-the-fact measures that can help prevent future problems.

This guide is part of CUPE's on-going efforts make workplaces safer and to prevent work-related injuries, diseases and deaths by providing CUPE members with information and tools. It was developed by CUPE's National Health and Safety Department.

The guide is designed to be used by CUPE members across the country, to assist them with workplace incident and disease investigations. The purposes of this guide are to:

- provide basic information on incident and disease investigations;
- suggest solutions and strategies to ensure that incident and occupational disease investigations are properly conducted.

CUPE believes that worker participation in all aspects of an employer's health and safety system is vital to ensure the highest standards of health and safety for our members. However, not all jurisdictions include, in their health and safety legislation, the right to have worker members participate in all investigations. Where the right to investigate is limited or does not exist, health and safety committees[1] or representatives[2] should work with the employer ahead of incidents to ensure they can investigate. This can be incorporated into committee terms of reference or collective agreements.

This is a document for action. Used with the checklists and fact sheet, it is a tool for change. CUPE recognises that member action in implementing the strategies suggested in the guideline is the only way to ensure that proper workplace investigations are carried out.

This guide has been written to introduce members to leading practices in investigation. While some legislative references have been made, it is up to the users of this guide to ensure they understand their specific legislative requirements. It should be noted that some terms used in this guide will be used differently across the various Canadian legislative jurisdictions, and readers should apply the 'concepts' described in this guide in their legislative frameworks.

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[1] For this guideline, health and safety committee will refer to the legislatively required committees **or** committees required by collective agreements. Other names for these committees include Joint Occupational Health and Safety committees (JOHS) or workplace committees (WPC)

[2] Health and safety representative refers to the person who has been chosen by the local to bring health and safety-related concerns to the employer in locations where there is no health and safety committee. Where only the committee is mentioned in this guide, it should be expected that the health and safety representative would be the person to carry out the work where no committee exists.

SECTION 1 – INVESTIGATIONS

What are Investigations?

Investigations are processes that are used to uncover workplace hazards which need to be corrected. They are performed most commonly after an incident has left a worker injured or worse, but recently, there has been a positive and progressive move towards investigations even when no one was injured (frequently called near-misses or near-hits).

> Investigations are processes that are used to uncover workplace hazards which need to be corrected.

Investigations and the investigative process must be part of any health and safety program. The investigation program should be a clearly written plan that includes a policy statement, specific responsibilities and step-by-step procedures for carrying out investigations. As a health and safety committee member or Health and Safety Representative, CUPE members should be active participants in all incident investigations.

Why Carry Out Investigations?

All incident investigations should focus on establishing why or how an incident happened. Once this has been determined, steps can be taken to remove the factors that led to the incident and prevent anyone else from being exposed to the hazard and potentially injured or made ill. Investigations must be focused on finding all the causal and contributing factors that led to or worsened the incident. However, the investigation process should not stop at considering factors related to the incident, but also to identify what prevention measures can be implemented for all identified hazards at the workplace that are discovered during the investigative process.

CUPE maintains that investigations need to be based on the premise that they are **fact-finding, and not fault-finding**. What that means is that investigations should be focused on establishing what *should* have happened and contrasting it with what *did* happen, not on whether person X did or did not do something. There must be a consensus that the goal of any investigation that CUPE members are participating ing is understanding, and that information obtained during the investigation will not be used to lay blame and punishment.

For CUPE members, the value of investigations goes beyond determining causes and complying with the law. They can be preventive tools to evaluate health and safety programs. They can be used to find and help solve problems, strengthen health and safety programs and provide information to back up workers' compensation claims. As a tool for bargaining, investigations help to gather information to strengthen collective agreements.

Who Does Investigations?

Investigators are detectives. They try to find out what happened, or is happening, after specific incidents. They lack general suspicions or assumptions about unsafe or unhealthy working conditions before they start.

Good "detectives" are persistent. They always ask "why?" or "why not" to get at the source of a problem. They look for all available evidence and information before drawing conclusions. Investigators know superficial answers are not good enough; they are creative when looking at problems, analyzing available information or drawing conclusions. Good incident investigators know that there are frequently multiple causal and contributing factors, and they work to ensure that they are all identified. For example, good investigators know that it's not enough to state that the injury happened because the worker slipped on water that was on the floor, but to push further to understand why the water was on the floor in the first place. Is this a case of faulty pipes? Leaky roof? Raining outside and no mats? Housekeeping is not frequent enough?

These "detectives" may be government inspectors, consultants, supervisors, union representatives or workers. In fact, an investigative approach that uses people with a variety of backgrounds and expertise is best, especially for complex investigations. As mentioned previously, regardless of who is leading the investigation, CUPE members should be an active participant to ensure that a proper investigation procedure is followed. In some special types of investigations, such as harassment, CUPE members need to consider rather they will be part of the investigative team, or just be involved in the representation of CUPE members. Your CUPE National Representative or Health and Safety Specialist can provide more guidance on an appropriate level of participation.

Near Misses (or near hits) are incidents where there was a potential for incidents, but by random happenstance, no one was injured.

Training

Any members of the committee (either workers or management members) that will be taking part in investigations in the workplace should be provided with the training required to develop the necessary skills. This is best achieved by hands-on, in person training from a qualified individual so that members learn the proper steps and can practice the skills needed to perform a proper investigation.

Features of an Investigation

In general, the basic steps to any investigation include gathering information about an incident or possible problem, analyzing the information, testing hypotheses or theories, drawing conclusions from the analysis, making recommendations and following up on the recommendations. Good investigations will also show the following features:

Collaborative. Worker participation, through full involvement of the health and safety committee or as a representative, is essential to the success of an investigation and prevention of repeat or similar events. Employers must ensure that committee members are informed of incidents, provided with an opportunity to be consulted, and provided with an opportunity to participate in the planning of investigations, investigation processes, the development of recommendation(s), and the implementation of corrective actions. It is important that

employers recognize and value this participation and remove barriers to participation, such as not ensuring adequate time or resources to perform investigative tasks.

Comprehensive. All incidents should be investigated with the resources suitable to react to the potential severity of injury. Most employers recognize that all injuries (even the smallest paper cut) require at least the most basic investigative processes such as reporting, and procedure review. However, many employers miss an opportunity to prevent future injuries by ignoring near misses. If fire or explosion occurred, but no one was injured, employers should ensure that a full investigation takes place as if someone were hurt by that incident. This concept should apply not only to significant disasters, but any incident that had the potential to injury a worker.

Planning. The health and safety committee has a role to play in investigations before investigations are required. The planning should include establishing standard investigation policies and procedures, as well as establishing what would be adequate resources and training for investigators. In addition, there should be clear goals set out at the start of each investigation to ensure that it is effective. Investigators need a clear understanding of what will be investigated, who will be involved, what role or capacity those involved will have, and the time frame over which the investigation will take place. Outlining these during each investigation planning session will ensure that each investigation receives the resources that are required to achieve its specified goals.

Investigators need a clear understanding of what will be investigated, who will be involved, what role or capacity those involved will have, and the time frame over which the investigation will take place

Compliance. The health and safety legislation in each jurisdiction sets out the minimum requirements for investigations. Usually only serious injuries, deaths, and reportable diseases or illnesses are required to be investigated as requirements of legislation. However, incidents that had the potential for serious injury and near misses, should also be investigated to ensure that a reoccurrence does not happen that causes an injury. Health and safety programs can expand on the legal requirements to be more specific. It can also be bargained into collective agreement language.

Commitment. The investigation policy should clearly demonstrate the senior management's commitment to safe and healthy workplaces. An investigation program must outline management's responsibility to immediately review all investigation reports and how and when recommendations from each investigation will be addressed. No matter what the program includes, the union should have its own plans for investigations; some of these plans may be recognized or negotiated in the collective agreement.

Confidentiality. The investigators must ensure that everyone who participates in the investigation are aware that confidentiality is to be maintained *where possible*. Personal and identifiable information about the details of the investigation will only be revealed to those who need to know. This practice will help ensure that information relevant to the incident is forthcoming. Additionally, for members of the investigative team, it must be recognized that participating in an investigation is actually an obligation of the committee members. To ensure

that workers can do this safely, their specific participation and the information must remain confidential, and management will not attempt to discredit their contribution.

Consultation. Affected workers at all levels of the organizations should be consulted with, and allowed to provide information and data into the incident investigation process to ensure that the investigation is thorough.

Communication. While not violating confidentially mentioned previously, the investigation team should provide anonymized updates on the investigation and the process. During the investigation, this communication includes the investigation's purpose, the process and timing. When completed, the investigation team should complete a written report and relay the findings to the employer and the health and safety committee, and the employers should effectively communicate any plans to change the workplace to prevent re-occurrence.

Systematic. The incident team should be organized, and follow a documentable investigation process that has a goal of finding the causal and contributing factors that lead to the incident.

Tools for Investigation

Investigators need training, specialized skills, access to resources and time to carry out investigations. Some of the essential tools and skills investigators need to include are checklists, forms and template reports, the ability to conduct interviews, take effective notes, do basic research, develop and test hypotheses or theories toward conclusions what factors lead to the incident or disease and develop a final report.

Checklists and forms

Checklists and forms are useful tools to help organise investigative work. Checklists provide a set of essential questions to ask or standard topics to cover. They are designed to be used in a variety of situations, so all questions may not apply to your workplace. It is also important to realize that the checklist may not have all the questions which are relevant to the investigation.

Forms ensure that the information recorded for each investigation is consistent. They may have limited space for answers, so be careful that important information is not omitted. The most effective template forms have the capacity to accommodate varying amounts of information.

Remember: each investigation is unique; you must look at all the facts and possible causes of an incident, illness or disease. Use checklists and forms with caution. If possible, devise your own, based on the needs and characteristics of your workplace. There are sample checklists in the CUPE H&S Committee Resources Kit that can be modified for use in your workplace.

Interviews

Interviews may be the main source of information about incidents and exposures to hazardous substances or work. Interviews should be handled with tact, diplomacy, courtesy, sympathy and understanding. Try not to sound like a television private investigator – officious, formal and using unusual phrases. Specifics for interviewing in an incident and disease investigation

are provided in the relevant sections, and Appendix B has several tips for conducting interviews.

Note Taking

You will need to take notes when performing interviews. A useful habit is to write down ideas or questions as they occur to you, as ideas may be fleeting as you are provided with new facts. There are no rules about making good notes; you need only develop a style which suits you.

Some people recommend taking only a few notes when interviewing someone. Others prefer to note everything as they go. You can also ask someone else to take notes, while you ask the questions. In that case, introduce the second investigator and tell the person you are interviewing you are working together. You can also consider taping the interview, provided the person you're interviewing agrees to this process.

Research

Research is the process of gathering information on a particular topic. It may seem very difficult at first, especially if you are researching an issue that is technical or new to you. Finding information takes time, training and practice. Help is available when you need it. Think of people in your workplace who may be working on or with something you are researching. For example, if you have an indoor air quality problem, ask maintenance workers for assistance. Maintenance workers may know a lot about how the ventilation system in your workplace is supposed to work.

The CUPE National website (cupe.ca) has a lot of information on a variety of different health and safety topics. You can also contact the CUPE National Health and Safety Representative in your region or the National Health and Safety Department for assistance. Other sources of information could be university libraries, government websites, health and safety associations and other unions can be useful.

Final Report

The steps of an investigation should be presented in a report. The report format is less important than making sure all the points of the investigation are covered. You can create your own template. The report should:

- state the facts, describing events as best as possible;
- provide background information about workplace training programs, health and safety policies and accepted work procedures;
- include photographs, diagrams and full survey results;
- refer to legal requirements, guidelines and codes of practice used in the workplace;
- describe your analysis of the situation;
- lay out your conclusions, including violations of laws where relevant;
- make recommendations, directing them to the appropriate authorities or officials;
- set time-lines for implementing recommendations; and
- follow-up to make sure the recommendations are implemented.

SECTION 2 – INCIDENT INVESTIGATIONS

What is an Incident?

The Canadian Standards Association (CSA) defines an incident as an occurrence, condition, or situation arising in the course of work that resulted, or could have resulted, in injuries, illnesses, damage to health, or fatalities. This broad definition was chosen to emphasize that having too narrow a focus on what needs to be investigated is insufficient and ineffective and needs to be broadened.

It is not just the incidents that cause injuries that need to be investigated. Incidents can be near-misses, result in property damage, or even a dangerous condition. What all of these incidents have in common is that the underlying factors that caused these incidents will eventually lead to a worker being injured if they are not corrected.

When a serious or fatal incident takes place, workers must be involved in the investigation to determine what happened and to prevent future incidents.

Good incident investigations always look beyond the obvious. Incidents never have a single cause, but too often the victim is singled out for blame. All incidents are the result of many direct and indirect factors, and it is important to recognize and analyze all possibilities before making any conclusions. For the purposes of this guide, we will consider both causal and contributing factors that lead to incidents using the following definitions (also from the CSA):

Causal factors are the condition(s), event(s), omission(s), deficiency(ies) or action(s) that contributed directly to the incident happening.

Contributing factors — the condition(s), event(s), omission(s), deficiency(ies) or action(s) that contributed indirectly to the incident. Contributing factors are those factors, if eliminated, that would not necessarily prevent the incident, but could help prevent future incidents.

As stated above, the purpose of the investigation is to understand all the causal and contributing factors that have lead to the incident so that

Causal vs Contributing

To illustrate the difference, take the following example:
A health care worker is working alone with a patient who has aggressive responses when triggered. The worker is assaulted by the triggered patient. It takes 4 minutes for help to arrive.
The **causal factor** in the injury is the patient being triggered – that causes the assault.
The fact that the worker was alone is a **contributing factor** to the incident because working alone was not the direct cause of the assault, but it may have allowed it to happen or let the injuries became worse because it took longer to contain the incident.

future incidents or injuries might be prevented.

Incident Investigation Procedure

There are a number of steps to an investigation. The investigators will need to:

- Develop general response plan before an incident takes place
- Responses to incidents
- Gather data[3]
- Analyze the Data
- Determine their findings
- Make recommendations, and
- Write and share the report

Though this guide describes the steps in a linear fashion, it is likely that the investigation team will be moving back and forth between steps, especially in more complicated investigations. For example, the team may conduct interviews, then as the data is being analysed, realized they missed a piece of information, so they will need to either research or perform additional interviews.

Pre-incident procedure planning

Health and safety laws in most jurisdictions give worker members of the joint health and safety committee or the worker health and safety representative the right to investigate incident and/or to be informed when they happen. Most laws require investigations where there is a need for medical attention or when there has been a death.

A written action plan must be in place so that the investigation team can act quickly.

To ensure the success of the organization's investigation process, planning of an incident happening is critical. When an incident happens, the investigators must be ready to act immediately. Investigators must be trained and ready ahead of time. A written action plan must be in place so that the investigation team can act quickly.

Trying to figure out everyone's role as an incident is taking place will lead to confusion, poor execution and a poor investigation. Employers, in consultation with the health and safety committee, must develop a procedure to provide guidance for a range of investigations that vary in complexity, potential impact, or potential severity. All incidents should be investigated in some manner, but not all incidents require a large-scale investigation. The procedure established needs to be scalable such that either a single investigator or an investigation team can use the appropriate guidance to proceed with any investigation.

The health and safety program should spell out the types of incidents to investigate. As a minimum, the following should be investigated:

[3] Data is sometimes referred to as 'evidence', however as the word evidence is often linked to criminal investigations, CUPE prefers to use the word 'data'.

- incidents resulting in injuries or death
- near misses
- fires and explosions
- structural collapses or failures; and
- collapses or failures of machinery or equipment (e.g. hoists, confined space equipment, machine guards, tools)

A typical weakness of incident investigations is the failure to involve workers in the process. Insist that investigation teams be established in your workplace. The teams should be set up through joint health and safety committees. This can be negotiated into your terms of reference or collective agreement.

It should be noted that if your employer prevents the local from participating, Unions can have their own investigative teams, and some locals have won the right to conduct union investigations. We have the right to talk to our members, and find the truth of what happened to help make sure it never happens again.

Investigation Kits

Consider placing investigation tools and equipment into an investigation kit which is kept in a designated place, much like first aid kits. The contents should be checked regularly, since you need to be prepared to react quickly when called. The kit should include:

- cards identifying the investigation team, or blank union official's cards
- pens, pencils, coloured markers, highlighters, chalk
- lined paper for notes and graph paper for diagrams
- clipboard
- measuring tape
- waterproof flashlight and extra batteries
- camera, flash, batteries and memory stick
- checklist(s) and relevant forms
- pocket knife
- plastic bags or other containers for samples
- string or tape
- tape recorder, batteries and tapes
- tape to cordon off areas marked with "keep out" or something to that effect
- stickers or tags that say the equivalent of "do not touch" or "do not move"

Depending on the nature of the workplace where the incident occurred, investigators may need personal protective equipment – hard hats, respirators, coveralls, boots, etc. These needs should be evaluated and the equipment selected, fitted ahead of time and available with the kit.

Incident Response

Incidents can happen at any time. Employers need to, with consultation with their health and safety committees, establish, implement, and maintain a procedure for response to a reported

incident. These plans should include both an internal response, and where necessary, the means for gaining the assistance of external emergency responders to the scene.

The first thing that should be described is how to respond to the needs of the injured worker. Often, the first people on the scene must deal with the immediate problems. First aid, or cardio-pulmonary resuscitation (CPR) may be needed. If the injured person needs medical attention call a nurse, doctor or ambulance.

The second thing that should be described is who needs to be informed of the incident. Most jurisdictions have requirements for reporting incidents to the government and to unions. Usually critical injuries, as defined in the occupational health and safety legislation, and death require an investigation. Often government officials and members of the joint health and safety committee will be required to investigate. Where this is not required, workers should try to get an agreement that assures participation. The health and safety program in the workplace should detail these procedures.

The last thing to be described in the initial response to an incident is when and how to secure a scene. In some jurisdictions, nothing may be touched until a government inspector arrives and gives approval for the scene to be accessed, especially if there was a fatality. It is critical that the employer and the people designated to perform an investigation know the laws around scene preservation and reporting before an incident took place.

Unless it is necessary to attend to injured persons or to prevent further injuries the incident scene should not be disturbed. Erect barriers, cordon-off the area, shut down machinery (unless it is dangerous to do so) and follow other established procedures.

Initial Investigation Steps

Once the injured person is looked after, the incident reported to the appropriate people and the scene preserved as needed, investigators need to take a quick look at the site and identify all witnesses. If you are conducting the investigation, make sure you have all the equipment and materials you need, then set priorities and deadlines for the investigation, otherwise the investigation team or person should be contacted.

The investigation can now begin. Speed is essential; evidence and documentation about the incident must be collected thoroughly and quickly. Preserving physical evidence and making records about the incident area should be done first. Everyone involved should know the importance of not disturbing the incident scene or removing evidence.

Police officers and government inspectors have the right to collect and take away samples and equipment for analysis. No worker should interfere with this process; however, someone should be recording if this is done. Document what is taken, and where it is taken from. If you want to take anything, consult with the officials before doing so. Where there has been a workplace fatality, the investigation is often controlled first by the police and then by the government health and safety officials.

Data Collection - Physical Evidence

Documenting the scene of an incident is very important. Physical evidence is often the easiest to collect but is also the most fragile and likely to be lost. For this reason, it should be documented as soon as possible. It is crucial that the scene be documented from every possible angle. Photographs are an easy way to document, and allows the investigation team to start from far away for an overall picture and slowing moving in to specific points of interest. High quality digital cameras are inexpensive and relatively easily to use and allows you to see the results of your picture-taking immediately. Many will also allow the investigation team to record short videos. Remember that a flash or external light is needed in dark areas, inside buildings etc. Have replacement batteries and a sufficient memory stick and count on taking two pictures of everything in case you make a mistake. Once documented, broken equipment, debris, and samples of materials involved may be removed for further analysis by appropriate experts. Even if photographs are taken, written notes about the location of these items at the scene should also be prepared.

Some employers object to union investigators taking pictures, so negotiate this right in the collective agreement and the workplace health and safety program.

If you do not have a camera, be prepared to draw diagrams and describe the scene in words, as best as possible. You might be able to use copies of blueprints or other prepared diagrams of the work area. Make a record of the scene by taking photographs or drawing diagrams.

A sample of the type of items that the investigation team may want to document include[4]:

- positions of injured workers
- all equipment being used or present
- products being used
- protective equipment used
- all safety devices in use (e.g. machine guards)
- position of appropriate guards
- position of controls of machinery
- position and damage to all machinery, equipment and their controls and guards
- housekeeping conditions such as tidiness and cleanliness
- weather conditions
- lighting levels
- noise levels
- time of day
- ventilation;
- other physical conditions; and
- anything out of the ordinary (e.g. debris)
- anything else that may be useful later

[4] Reference: CCOHS (https://www.ccohs.ca/oshanswers/hsprograms/investig.html)

Some organizations may use pre-determined forms or checklists. While these can be useful (example have been provided in CUPE's health and safety committee resource kit) pre-determined lists should be used knowing that they may be limiting in some cases.

Data Collection - Interviews

Interviews are an essential component of an incident investigation. Although there may be occasions when the investigation team may be unable to speak with anyone who witnessed the event, other workers throughout the organizations may be able to provide information that will benefit the investigation. Because witnesses may be under severe emotional stress or afraid to be completely open for fear of reprisal, interviewing witnesses is probably the hardest task facing the investigation team. Appendix B has many tips for conducting interviews.

When possible, the investigation team should interview people as soon as possible after an incident when the issue is in the forefront. If you wait too long, witnesses begin to forget circumstances and the momentum of the investigation is lost. Where possible, witnesses should be kept separated until they are interviewed. It's important to understand that if a witness is experiencing emotional/psychological stress, the information may be difficult to relate until the person has had an opportunity to process the events of the incident. In this case, it's best to at least wait 1 day before re-interviewing that witness. If each witness is to have a union representative present at the interview, it must be a union member that is not on the investigation team. Other than the representative, witnesses should be interviewed without other witnesses.

Depending on the type of incident and the timeframes involved, there are benefits to interview a witness at the scene where it is easier to establish the positions of each person involved and to obtain a description of the events. On the other hand, it may be preferable to carry out interviews in a quiet office where there will be fewer distractions.

The investigation team should make a point to talk to:

- everyone who was present
- workers on the same shift, including the supervisor
- maintenance workers
- workers on other shifts who use the same equipment/tools or do similar work; and
- anyone else who may be helpful, including members of the public

Workers can provide valuable information after an incident. But employers tend to make getting meaningful information difficult, if not impossible. Workers who fear disciplinary action following an incident will be reluctant to volunteer crucial information. The Canadian Charter of Rights and Freedoms gives individuals the right not to incriminate themselves. The health and safety program should include a policy that assures workers any information they provide after an incident will not be used against them in a punitive manner.

One of the best first question an investigator can use is to simply ask, 'what happened?' and allow the witness to tell the complete story without interruptions. The interviewer can always ask follow-up questions to any part of the story, but interrupting the witness may cause them

to skip details. It is also useful for the investigator to repeat information back to the witness when asking clarifying questions to be sure the information was documented correctly.

As the investigation teams collects information, there are basic investigative questions to consider and which should be answered in the report. They are how? and the five w's – who, what, where, when and why.

Additionally, the investigation team can ask for reports from the police, ambulance attendants, doctors involved (as long as you obtain the individual's consent) and government inspectors or officials.

Data Collection - Other Information

Other important data can be found in documents such as manufacturer's instructions, technical data sheets, health and safety committee minutes, inspection reports, company policies, maintenance reports, past incident reports, safe-work procedures, and training reports. Any relevant information should be recorded and analyzed considering the other data collected from the scene and witness testimony to see what might have happened, and what changes might be recommended to prevent recurrence of similar incidents.

Data Collection – Time line

As the data is being collected, one useful method is to assemble the various data pieces into a timeline. You can also have more than 1 timeline. For example, you may have a timeline that shows the issues progressing over a 3-month period, and another one to lay out the events of the day of the incident. The investigation team can fill in the timeline using photos, interview and other data. This activity can show the investigation team where there are potential gaps and inconsistencies in the 'story' before they move onto the data analysis. Where gaps or inconsistencies are identified, the investigation team can take the time to gather the additional data before the analysis is started. The timeline can also be a good activity to start to determine if there is any investigator bias affecting the considerations of the investigation team (bias is explained more in appendix C).

Data Analysis

After the facts and background information are collected, the process of analyzing and piecing together what likely happened and most importantly, why it happened, can begin. Even with the most carefully planned investigation, as the information is analyzed, the investigators may find that there are still gaps in their understanding of the timeline of events that resulted in the incident. Doing the analysis with several people ensures facts are correct and presented logically. Re-interview people or return to the scene if necessary. Review the photographs and notes from conversations with witnesses.

Incident causes have been studied by researchers for a long time. There are many proposed theories about the causes of incidents. Some focus on single factors such as the "careless" worker or machine faults. Others look at multiple factors and how they interact.

The Failings of Single Factor Analysis

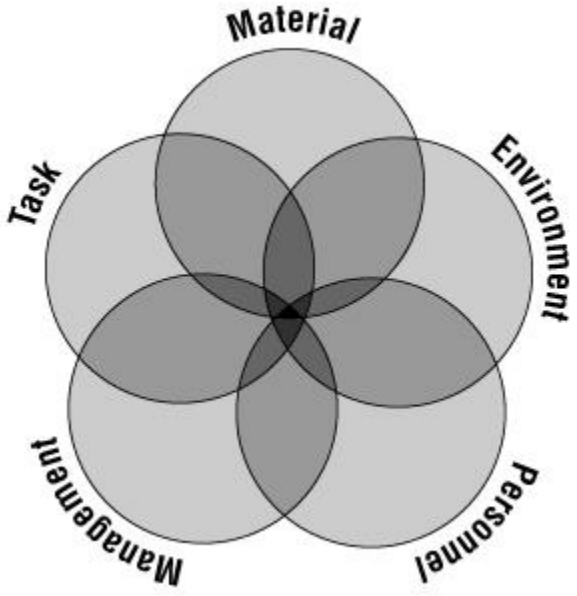
Investigators using this approach often ignore truly unsafe or dangerous conditions. In the end, their recommendations will not help prevent similar incidents or find true causes.

Consider the following example: A worker falls and is injured. The incident report says the immediate cause was carelessness because the worker was not paying attention. Management's solution to prevent a similar incident is to tell the worker to be more careful in the future. This is an example of the single factor theory.

The most famous single factor model is H.W. Heinrich's domino theory. It says incidents are caused by unsafe acts or unsafe conditions that have nothing to do with how a workplace is managed. It was first proposed in 1931, and still today it is the source of the erroneous statement that more than 80 percent of all incidents are caused by "unsafe acts", for example by "careless" workers. Despite serious criticisms, most laws, employers and safety posters still rely on this theory.

Multi-Factor Analysis

The multiple factor alternative is a more preventive model of investigating incident. With it, the investigator tries to describe and identify events in the process that led to the incident. Multi-factor analysis attempts to look at many factors and how these factors relate to each other in the development of an incident. They include factors such as equipment, machinery, tools, environmental and working conditions and individuals' factors such as knowledge and training.



There are many multi-factor model programs that are commercially available, all with strengths and weaknesses. Many companies have also developed their own multi-factor analysis techniques. A simple multi-factorial analysis model has been offered by the Canadian Center for Occupational Health and Safety (CCOHS).

The diagram in figure 1 shows how an incident has five potential sources of causal and contributing factors: - task, material, environment, personnel, and management. The diagram also illustrates that these factors can interact.

Multi-factor analysis attempts to look at many factors and how these factors relate to each other in the development of an incident.

This is only one model of incident investigation that provides a guide for uncovering all possible causes to allow workplaces to implement corrective measures. It also is useful in reducing the likelihood of looking at the individual facts in isolation. Additionally, the sample list

of questions for each category is just a guide to get started. Investigators should not get too hung up on which category each question is placed as it is not the categories that are important. As long as each question is asked and each issue is followed to determine how it relates to other factors. Many investigations will find that there is considerable overlap and interaction between categories, and these interactions can help prevent incidents in the future.

For all the questions[5] that are listed below, if the answer is no, then investigators must follow up to determine why the condition was allowed to exist. Additionally, more sample questions can be found in the CUPE health and Safety Committee Resources Kit.

Task. In this category, the actual work procedure the worker was performing at the time of the incident is explored. The actual work procedure or task may be the main problem. Something may have changed to make it unsafe. Inappropriate tools or equipment may have been used. Safety devices, like machine guards may not be working properly or equipment may not have been locked out. Members of the investigation team will look for answers to questions such as:

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

Material. Material or equipment may fail, be sub-standard, not fit properly or poorly designed. In some cases, exposure to hazardous substances may cause incidents, for example organic solvents target the nervous system, affecting people's judgement. Protective equipment may be inadequate. For example, gloves may let solvents through or respirator cartridges may only protect against vapours when mists are also present. To seek out possible causes resulting from the equipment and materials used, investigators might ask:

- Was the equipment/material appropriate for the task?
- Was there an equipment failure?
- What caused it to fail?
- Was the machinery poorly designed?
- Were hazardous products involved?
- Were they clearly identified?
- Was a less hazardous alternative product possible and available?
- Was the raw material substandard in some way?
- Should personal protective equipment (PPE) have been used?
- Was the PPE used?
- Was it properly fitted to the worker using it?
- Were users of PPE properly educated and trained?

[5] Source of Questions: CCOHS (https://www.ccohs.ca/oshanswers/hsprograms/investig.html)

Work Environment. The physical work environment, and especially sudden changes to that environment, are factors that need to be identified. Environmental factors include: temperature, lighting, toxic gases, dusts, mists, vapour or fumes; housekeeping and weather conditions. It is important to note that the circumstances present in the environment at the time of the incident are what is important. It is also important to note what differences were in place compare to the "usual" conditions. Investigators may want to ask:

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

It is important to note that the circumstances present in the environment at the time of the incident are what is important

Management. Management holds the legal responsibility for the ensuring safety of the work and therefore the role of supervisors and higher management and the role or presence of management systems must always be considered in an incident investigation. These factors may also be called organizational factors. Even though management is legally responsible to ensure the health and safety of the worker, supervision may be inadequate or rules may be ineffective and not enforced. Gaps in the occupational health and safety program management are often found to be direct or indirect causes. Ask questions such as:

- Were safety rules or safe work procedures communicated to and understood by all employees?
- Were written procedures and orientation available?
- Were the safe work procedures being enforced?
- Was there adequate supervision?
- Were workers educated and trained to do the work?
- Had hazards and exposures been previously identified and assessed?
- Had procedures been developed to eliminate those identified hazards or control the exposures?
- Were unsafe conditions corrected?
- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?
- Had the condition or concern been reported beforehand?
- Was action taken?

Personnel. An incident in which people were involved cannot have a complete investigation without considering the actions or interactions of those people. The investigation will not be complete unless personal characteristics are considered in light of their interactions with the other four factors. For example, the psychosocial environment in the workplace and its influence on those individuals directly involved in the incident should be explored. However, the purpose for investigating the incident is **not** to establish blame against someone but to determine why the person took the steps they did, comparing what should have happened

against what did happen and figuring out how the differences happened. Some questions to consider may be:

- Did the worker follow the safe operating procedures?
- Were workers experienced in the work being done?
- Had they been adequately educated and trained?
- Could they physically do the work?
- What was the status of their health?
- Were they tired?
- Was fatigue or shiftwork an issue?
- Were they under stress (work or personal)?
- Was there pressure to complete tasks under a deadline, or to by-pass safety procedures?

Application Example

It is necessary to examine all causal and contributing factors around an incident.

Even in the most seemingly straightforward incidents, **it is rare that there would be only a single cause**. For example, consider an event where a very tired worker trips on debris on the floor, and falls and cuts their arm on a saw blade. An 'investigation' which concludes that an incident was due to worker carelessness, and goes no further, fails to find answers to several important questions such as:

- What job was the worker performing?
- Was a safe work procedure being followed? If not, why not?
- Were necessary safety devices present and in good working condition? If not, why not?
- Was the worker trained? If not, why not?
- Was the worker tired? If yes, why was the worker tired?

Even in the most seemingly straightforward incidents, **it is rare that there would be only a single cause**.

It is clear from this basic example that there are deeper organizational issues that contributed to this incident. An investigation that keeps looking for answers to these and related questions will probably reveal conditions that are more open to correction and will actually prevent incidents from happening in the future.

Human error

As noted above, the personnel at the workplace must be considered when performing an investigation. Errors happen because being perfect all the time is impossible. What's important is to have a system in place to find those errors and to correct them to prevent further errors. As union representatives on an investigation team, CUPE members may be concerned about documenting errors that have been made by a worker, as identification of who made an error is usually the first step towards laying blame. However, when a thorough worksite investigation reveals that some errors made by a person or persons among managers, supervisors, and/or

workers contributed to causing an incident, then this fact should be pointed out. But it must be re-iterated, that the intention here is to remedy the situation that led to the error being made, not to discipline an individual.

> It's impossible to be perfect at all times.

Failing to point out human flaws that contributed to an incident will not only reduce the effectiveness of the investigation and its related recommendations, it will also allow future incidents to happen from similar causes because those flaws have not been addressed.

For example, consider an incident where a worker hand was severely injured because they attempted to reach into a high-speed conveyer to remove a foreign object that would have disrupted production. When asked why, most workers will say things like 'I just didn't think' or 'I didn't want to see the production run lost for the day'. In a poor investigation, the worker will be blamed, sometimes given training, and in the worst case, disciplined. But the question should not be *why* did they take that action, but *how* was a worker able to get a hand into a dangerous part of the machine in the first place? It needs to be recognized that workers are not machines, and make snap decisions based on the information and situation they find themselves in. Investigators must be also be aware of the potential effects of bias, which are further explored in Appendix C.

Disregard for Safe Work Procedures

No guide would be complete without a discussion about purposeful actions that have been taken by a worker that violate safety rules. Consider an investigation that has been completed using objective measures, and it has been found that all safety aspects (training, equipment, supervision etc.) have been put in place, and found to be in established safety limits without defects or deficiencies. If after all other considerations have been made, and it is found that a worker contributed to the incident because they refused to carry out work in accordance with established safe work procedures, this must be reported. Not including these facts into the report will do nothing to protect the workers who are concerned for their own safety but whom work with someone who frequently chooses to perform work duties in a manner that violates safe work procedures. This is a matter that the employer will deal with outside of the investigation process. It should never be the investigation team that recommends discipline. Any disciplinary steps should follow the procedures laid out in the collective agreement.

Union members of Health and Safety Committees should be aware of any other non-OHS issues that arise during the investigations or after. These may include disciplinary issues, Collective Agreement entitlements, Human Rights matters, Duty to Accommodate obligations and compensation claim issues. Each of these must be addressed separately, but coordinated through your CUPE National Representative as applicable.

Conclusions

As the investigation team is analyzing the data, they will start to draw conclusions. To test the validity of each conclusion, it is useful to write down a step-by-step account of what happened (the team's conclusions) working back from the moment of the incident, listing all possible causes at each step. This should be compared to the timeline that has been developed and can serve as a draft for part of the final report. Each conclusion should be checked to see if:

- it is supported by evidence
- the evidence is direct (physical or documentary) or based on eyewitness accounts, or
- the evidence is based on assumption (sometimes, assumptions have to be made, but if they are, they should be clearly stated).

Conclusions not supported by the evidence, or that contradict the facts gathered should not be included in the final report. All conclusions should be defendable by the facts gathered.

Recommendations

After the conclusions of the investigation team have been made, the final step is to develop recommendations to prevent reoccurrences of similar incidents. Not all investigation teams will take this step. If the investigation team fails to make recommendations, the CUPE members on the health and safety team can do so through the health and safety committee process. Additional documentation on how to make recommendations has been included in CUPE's Health and Safety Committee Resource Kit. It is also appropriate to make recommendations to correct any issues or deficiency found during the investigation, even if it was not a causal or contributing factor in the incident.

In general, recommendations should:

- be specific
- be constructive
- identify causal factors
- identify contributing factors

Additional documentation on how to make recommendations has been included in CUPE's Health and Safetv Committee Resource Kit

When recommendations are being made based on the conclusions of an investigation, they should be specific, and related to the causal or contributing factors. Using the example provided previously where a worker cut their arm after tripping, recommendations could include:

- Replace/place a guard on saw
- Lock out any machine found during inspections that is missing or has improper guard

These are better than more general recommendations such as:

- Develop policy on machine guards

Finally, it must be reiterated that an investigation team should **never draw conclusions about blame or** make recommendations about disciplining a person or persons who may have made an error. This action would not support the real purpose of the investigation, but it would jeopardize the chances for a free flow of information in future investigations.

Incident Investigation Report

Using the investigation timeline, a draft of the sequence of events can now be used to describe the sequence of events that happened. This should be factual, and not include opinions or viewpoints not substantiated by the data collected. To ensure comprehension, the investigation team should include all relevant details, including photographs and diagrams to support the narrative they are describing. Where assumptions have been made to fill in holes in the data or if there was any doubt about a piece of data, they must be clearly stated, and the reasons provided.

The investigation team should not include extra material that is not required for a full understanding of the incident. This includes reports not related to the incident or photographs that do not add to the understanding of the report, or considerations that were found to be invalid.

It is advised that the framework for the report should be the preventive approach that first considers factors over which the worker has no control. The investigation team must avoid bias as much as possible.

> The conclusions are a candid explanation of what you believe happened, including all possible causes.

All the documentation and data should be assembled into the report. A straight-forward description of events can be much more powerful than saying legal rules were broken or ignored. Reproducing the timeline within your report may also be a useful visual. Additionally, a report can recommend improvements even if laws were not broken. If needed, list possible violations of health and safety legislation or regulations can be made separately based on a description of the facts.

The report should include conclusions and recommendations. The conclusions are a candid explanation of what you believe happened, including all possible causes. Where you make assumptions or where particular points need to be reinforced, refer to any evidence that explains or supports your conclusion.

Recommendations should be clearly written, and as specific as possible. If you recommend that refresher training courses should be given, specify the time interval between courses. Cover immediate and long-term changes and procedures. State which ones, if any, are most important. If there is a potential for delay on the implementation (for example, it may take a year to study, sort out materials, develop policy and procedure, etc.), suggest temporary measures that could be implemented instead. Going back to the worker who tripped and fell on the saw, a temporary measure could be that the saw will be made inaccessible until the blade is properly guarded as per the recommendation.

A copy of the report should be sent to the employer, the joint health and safety committee, the union health and safety committee, the union local, the involved individuals and major witnesses.

Depending on the severity of the incident , the requirements of the legislation and the implications of your findings, consider sending the report to the family of the injured worker, the CUPE Health and Safety Representative in your region, the National Health and Safety Department, provincial federation of labour, Canadian Labour Congress' Health, Safety and Environment Department, coroner or official responsible for inquests or fatality inquiries, local occupational health centre, occupational health section of the local medical association, media and political officials such as municipal mayors, government ministers or opposition critics.

Follow-up

The health and safety committee must follow-up and keep track of what happens to the recommendations. Time limits must be set for management to deal with the recommendations, and they should be discussed at the next scheduled joint committee meeting. If there is a long wait before the next meeting, it could be necessary to schedule an extra meeting. Some jurisdictions have legislated time limits for employers to respond to joint committee recommendations.

Depending on how serious the injury is, think about how to get action, including using the government, the media, the Union and your community. If the injured person dies, insist on a coroner's inquest.

Investigator Beware

There are a great number of possible issues that will complicate investigations. A few of the more common issues that the investigation team should consider are listed below.

Scene Control and Access

Depending on the type and location of the incident, the investigation team may not have control or even access to the incident scene (for example: a Traffic accident in a company vehicle). The investigation team can still investigate these incidents, although the job will be more difficult. For example, interview witnesses away from the workplace, and collect as much background information and material as possible.

Prevented from Investigating

Where workers' rights to participate in incident investigations is not spelled out in law, employers may disagree about which incidents need to be investigated. In other cases, employers are unaware or disregard the worker's right to investigate, even if it is spelled out in law or in your collective agreement. Any disputes should be resolved by calling the government inspector and demanding that the employer be ordered to conduct an investigation. Additionally, the CUPE members of the health and safety committee should work with their union executive and can contact their CUPE National Servicing Representative.

Additional Pitfalls

The investigation team should be aware of the following potential issues that could prevent the investigation from leading to appropriate conclusions and recommendations.

1. Listing "carelessness" as the only cause of an incident is a direct admission that the investigation is worthless.
2. Basing the cause solely on the type of incident or injury indicates a lack of completeness (for example, listing "faulty wiring" as a fire cause without physical evidence or condition to support the conclusion).
3. Assuming contradictory statements from witnesses indicates falsehoods is not always true. No two witnesses receive identical impressions of events.
4. Assuming certain physical conditions or phenomena are unlikely or impossible. For example, it is a common misconception that lightning never strikes the same place twice.
5. Assuming one true cause will be found in every investigation. Some investigations in which delays – such as missing witnesses or not enough evidence – will not permit a single cause to be determined.
6. Insufficient investigation. A thorough investigation will not stop at establishing a primary cause.

SECTION 3 – OCCUPATIONAL ILLNESS & DISEASE INVESTIGATIONS

What Causes Work-Related Health Problems

Stories of unhealthy workplaces are familiar to many CUPE members. Toxic substances, unhealthy work procedures, poorly-designed equipment or inadequate ventilation systems provide daily challenges to workers' health. When several hazards are present at once, they may also have a synergistic effect, where the overall effect is more severe than adding up the effects of each hazard.

Synergistic: An **effect** arising between two or more factors that produces an **effect** greater than the sum of their individual **effects.**

Most workers recognize health and safety hazards and they know some work can make them ill. Incidents and their consequences are usually obvious to everyone. In most cases, investigations aimed at finding out “what happened” and “why” are automatically carried out. But, workers' health can deteriorate slowly, with the damage not becoming obvious for years. Eventually if illness or disease is found, the link between it and the workplace may not be recognized. In fact, employers and compensation boards frequently deny any relationship between occupational diseases and workplace causes.

Workers can act for change by carrying out occupational investigations to show the links between illnesses or disease and workplace factors. These investigations try to find out what is

making a workplace unhealthy. They can be useful tools to investigate complaints, reports of illness or disease, or to support workers' compensation claims.

There are important differences between incident investigations and occupational disease investigations:

- incidents are easier to identify since their causes are usually much more visible;
- some occupational diseases can be transmitted between workers;
- work-related symptoms are often like those of common illnesses and diseases;
- chronic (long-term) effects usually do not appear until many years after exposure starts;
- many health care professionals don't really understand work-related causes of illness and disease, they may miss the link to the workplace;
- little is known about the health effects of many substances found in modern workplaces, either alone or when they're combined; and
- showing a link between disease and the workplace often requires much more background research.

Types of Health Effects

Depending on the hazard, the observable health effects on a worker's health can be quite different.

Acute Health Effects. Acute health effects are those that occur immediately during the exposure or within hours after exposure. Examples are a cut, broken bone, skin rash, loss of consciousness or even death. The amount of damage (the effect) is usually directly linked to the exposure to the hazard.

Chronic Health Effects. These are illnesses that occur as a result of low exposure over many years. Repetitive strain injuries are one of the most common chronic conditions developed by CUPE members, while occupational cancers are one of the most serious chronic effects which can occur several years or even decades after the original exposure. Because of the potentially long length of time from exposure to the development of symptoms, chronic health effects are harder to link back to the workplace.

Teratogenic Effects. Certain exposures may not affect the exposed persons, but can cause developmental abnormalities in the fetus (unborn baby). Examples of known teratogens include certain drugs, infections, alcohol and ionizing radiation.

Genetic Effects. Some exposures can permanently damage the genetic material of the worker, and this is passed on to their offspring.

Sensitizers. Agents that may cause allergic or allergic-like responses to occur.

Gathering Information

There are two ways to get information for occupational disease investigations. One way is to conduct a hazard assessment, which examines the work processes which could create dangers

in the workplace. The other is a health assessment where one talks to the workers, especially about any work-related health complaints.

The information needed depends on how many people are affected and the seriousness of the health complaints or disease. Like incidents, health effects are not always caused by one particular event. All hazard categories: chemical, physical, biological, psychological and ergonomic should be investigated, especially if there are no obvious links between illness symptoms and the workplace.

Hazard assessment

Hazard assessments are based on investigating the work being performed in the workplace. It should identify all the possible or potential hazards that may be found. It is critical to examine the jobs done by those reporting health problems. Look at what is done and how it is done. Consider what materials or products are used and how they could contribute to the problems. Remember to review past practices and substances that may not be used any more. It could be that a change in process or materials used is part of the problem. Keep in mind that workplace design and organizational hazards are no less important than other perhaps more obvious hazards. The ultimate goal is to relate workers' symptoms to hazards in the workplace.

Health assessment

If there are health related complaints, it may be easier to start by investigating the symptoms. A health assessment gathers information about:

- workers' symptoms;
- the timing of their symptoms (do they appear at certain times of day or when they do certain kinds of work? Are workers better away from the workplace? When did they first notice the symptoms?);
- disease or illness diagnosis (with workers' consent);
- medical histories (usually for chronic problems); and
- individual work histories (if the investigation gets complicated, or a compensation claim is to be filed and extensive details are needed).

To link workers' symptoms to hazards in the workplace, the investigation will need to gather information about:

- known or suspected effects of the hazards found in the workplace hazard assessment;
- known or suspected causes of the symptoms;
- known or suspected causes of the illness or disease (if there is a diagnosis);
- patterns in the workplace (e.g. timing, who is affected, number with similar symptoms);
- recommended work procedures (e.g. dilution instructions for cleaning products); and
- what the workers think causes the problem.

The checklist at the back of this guide provides some ideas for questions to carry out hazard assessments.

Getting the Information

There are a variety of ways to collect information to carry out an assessment. People are the most important source of information. Answers to questions and their opinions can be recorded on survey questionnaires or in notes. Select the best way to get the information you require. Individuals can keep personal logs or diaries noting what they do each day, how they feel, their symptoms and when they get better or worse.

Questionnaires and surveys

An investigation should be kept as simple as possible. Sometimes a problem's cause is obvious. If it is not, surveys or questionnaires can be used to get a better idea of which symptoms exist and how many people are affected or to prove a problem exists. Questionnaires and surveys gather important information and they help build membership support.

Surveys can cover hazards or health symptoms. Hazard surveys are basically workplace inspections for all types of hazards. Health surveys are used to find symptom patterns and the extent of a problem. Both kinds are useful, since they bring together preliminary evidence and clues. They help to plan the investigation and sometimes lead investigators to possible causes.

Surveys also help establish the possible link between the work environment and worker's symptoms.

Surveys are frequently conducted using questionnaires. Questions can include symptoms experienced, specific types of hazards or problems or an individual's work history. Depending on the type of survey, questionnaires can be filled in by interviewers or individual workers.

Use questionnaires and surveys with caution. There are limits to what they can do. Workplace surveys would not be helpful if only 1 or 2 people are affected. They are not the last word to link disease and illness to the workplace. Additionally, an investigator will only get the answer to what the person answering the survey understands the question(s) to mean. In some cases, questionnaires limit the questions asked or point you in the wrong direction.

Additional information on developing surveys can be found in CUPE's Health and Safety Committee Resource Kit.

Testing

In some situations, testing of the environment or equipment may be needed. Testing may include light, noise and radiation levels, or measurements of air contaminants. In some cases, vibration may be measured. Use measurements to get information to solve problems, not to delay solutions. If possible, do these measurements yourself; otherwise, insist that your employer get them done with input from the joint health and safety committee. In some jurisdictions, government occupational health and safety inspectors can help conduct measurements.

If test results are compared to standards, ask about the standards used, or do independent research on the standards. For example, many people used to think the standards for

workplace air contaminants are set in a fair way to protect workers' health. But this is not always true.

Threshold Limit Values (TLVs) published by the American Conference of Governmental Industrial Hygienists (ACGIH)[6] are the most common standards for exposure to hazardous substances in the workplace. While ACGIH values are referenced in legislation, these values do not guarantee safety for all workers under all conditions.

Other occupational exposure standards have also been questioned. Some standards are measurements of "comfort" levels, not safety levels. When measurements are made in your workplace, compare the results to the best standards available, not just the legal ones. Always keep in mind that occupational standards for airborne contaminants are not fine lines between safe and unsafe levels of exposure. CUPE Health and safety specialists can assist gathering information on standards, limits and testing methodology.

Confidentiality

When personal information is collected in an investigation, it is important to respect confidentiality, both for legal and ethical reasons. Individual names should not be used without permission when reporting or discussing results.

Disease or illness reports are not only about cancer clusters, or other conditions in the workplace that affect multiple workers. It can be about one person catching a really bad infection, or a person having a bad allergic reaction.

Reports should include only the number of people with specific problems as well as the problem or symptoms. This emphasizes any workplace links. It also helps with arguments against "individual susceptibility" which claim that there are personal peculiarities or "lifestyle" causes that make it more likely for a specific individual to be affected. If you need to be able to tell people apart, it is a good practice to use initials or a code to refer to a particular individual in a report. In this way, you can maintain confidentiality and still report all the information clearly.

Analysis

Investigating work-related health problems means merging information about people's work with reported symptoms, medical diagnoses, information obtained from other workplace studies, fact sheets and reports.

You are looking for patterns that could help explain reported symptoms or complaints. Individuals may react differently when exposed to hazards, but patterns of similar reactions emerge when you look at groups of people or when you group events.

One pattern we know about is that workers in a building with little fresh air often have a high incidence of headaches and tiredness; the less fresh air there is, the larger the number of

[6] http://www.acgih.org/

people with symptoms, especially later in the workday. Another is that cleaning products are a common cause of skin problems for custodial staff.

For example, if you have 1 person in an office of 50 that has a headache, it's difficult to pinpoint what the problem could be. But if in that same office, you have 20 people having a headache late in the day, or if that 1 person always complains of headaches after using the photocopier, then you have more information to consider which can help you figure out what might be going on, what the pattern could be about.

Diagrams of work areas or risk maps may help to demonstrate patterns. The diagrams can have symbols or other marks to represent the location of hazards, types of symptoms, number of people affected, movement of workers and materials, location of air ducts, aisles and stairways. Have a key that explains the symbols used in the diagrams.

Conclusions and Recommendations

This part of the investigation should pay special attention to presenting links between the health problem and the workplace. Focus on trying to show:

- workers are suffering from symptoms of disease or illness;
- there is a cause and effect relationship between the hazard and workers' symptoms;
- workers were exposed to the hazard(s) on the job; and
- exposure at work was enough to cause disease or illness.

Remember that definitive proof is not always needed to draw conclusions and make recommendations. You can make assumptions based on the evidence, just as incident investigators do. After all, investigations are supposed to prevent further problems, not lead to ignoring problems for lack of "absolute proof". Remember that the precautionary principle is that in the absence of scientific certainty of safety, you should exercise the highest level of precautions.

Recommendations should follow the hierarchy of controls by first focusing on preventative measures such as removing the source of the problems, then on controls to reduce the risk of exposure. The recommendations should cover short and long-term measures.

Quite often the simplest (and the quickest) way to learn if working conditions are causing health problems is to make a change in the conditions. For example, if workers using cleaning agents have complaints of headaches and dizziness, it may be simpler to try safer substitutes or to implement ventilation controls than to do an intensive investigation.

Additional information on application of the precautionary and the hierarchy of controls can be found in CUPE's Health and Safety Committee Resource Kit.

Be wary of recommending more studies. Further studies for "truth" and "proof" only allow unhealthy or unsafe exposure to continue and delay preventive measures. Also, be careful. An indoor air quality study of the workplace may not detect a localized emission that may be causing a really bad reaction to workers who are inhaling it.

Report and Follow-Up

Follow a format similar to that used in incident investigations; it is especially important that the report documents:

- the extent of the problem in your workplace
- the possible long-term health consequences and
- how to solve the problem

Reports are often the first step in a campaign to solve problems. Follow-up to ensure that recommendations are implemented and effective. Ensure that the report is shared with those that "need to know". If the finding will be shared with a broader audience, it is a good idea to produce a summary report that ensures no details are released that will allow people to be identified.

SECTION 4 – TAKING ACTION

Maintaining Your Perspective

It is essential to generate worker support and involvement for investigations. If management believes only a few workers are concerned about an incident or disease, they will likely ignore you or try to divert you away from the issue.

Don't leave the investigations solely to management or count on them to do proper incident or occupational disease investigations. They may not understand the full scope of the problem nor do the research necessary or may rely on outdated or inaccurate information. Remember, it is the role of the health and safety committee to participate in investigations. If you're not directly involved in the investigation, you can ask questions about the process, about the testing and have management explain how the results were analyzed and how the conclusions are supported by information. Keep in mind that while management is responsible for and directs work and workers, the true experts of how the work is done in real time are the workers doing the work.

Besides any information supplied by management, check all union sources of information as well. The research you do publicizes the problem and will be useful in future prevention.

Develop an Action Plan

The first step towards ensuring that incident and occupational disease investigations are properly carried forward once completed and involve workers is to develop an action plan. An action plan is a written, specific description of problems and solutions that will be implemented in the workplace. It will help the local to ensure all your efforts to improve the workplace are successful.

A good action plan has two parts. The first part is a list of actions needed or changes or improvements needed to ensure that incident or occupational disease investigations will be effective, implemented or made part of the health and safety program in the workplace. Each

item is assigned a priority and a target date for completion. A person or group of people is assigned to co-ordinate and monitor each action.

The second part of an action plan involves taking each item on the list and working out a specific plan for each change or improvement. The simplest way to do this is to write out what needs to be accomplished, who will be responsible and a time-line of when you plan to finish.

Getting Support

Inside the Workplace

Find a way to communicate to co-workers about the progress of an investigation. Use regular union meetings to keep members informed about investigations and to discuss problems and possible solutions. Consider holding lunch-time information sessions, having work area meetings, or inviting speakers to special meetings.

Legislation

The law can be used to support the need for an investigation or ensure recommendations are implemented. Call for government inspectors to enforce the law. Insist they write orders and that they be enforced. Demand the prosecution of employers who fail to follow the orders made by inspectors.

Use leaflets, posters and articles in the local's newsletter to inform, alert and organize the members. Local union newsletters or newspapers are good places to talk about hazards affecting the membership and the action needed to resolve the problems. Share the posters or leaflets with other union locals fighting the same issue.

Collective agreement language

Where employers are, reluctant or unwilling to include incident and disease investigations as part of a health and safety program, bargaining may be the answer or at least part of the answer. You can start by negotiating with broad health and safety clauses. The union may want to negotiate more specific language that requires:

Additional information on bargaining health and safety clauses into the local's collective agreement can be found in the Health and Safety Committee Resource Kit.

- training of workers in investigations;
- immediate notification of union health and safety committee representative and union representative after a serious incident;
- the right to access the workplaces for union joint committee members, union representatives and union health and safety committee representatives;
- investigations to cover deaths, disabling injuries, collapses or failure of structures, equipment, or machinery and other near-misses;
- the employer to respond to investigation reports within a specified period of time, and provide reasons, in writing, for any refusal to accept recommendations;

- the right for union joint committee members, union representatives and union health and safety committee representatives to fully participate in investigations;
- the right to ask questions, take notes, and either take photographs or have photographs taken during an investigation;
- access to documents and evidence needed for investigations, such as government, employer or consultant's reports and related recommendations;
- the right to review information useful for an investigation: drawings; blueprints; operating logs; purchasing records; previous reports; maintenance, inspection and test records; alteration to designs; records of worker and supervisor training and laboratory tests;
- recognition that time spent conducting investigations, researching information, preparing reports or attending inquests is time spent working, therefore workers will be compensated for wages;
- the right for workers and/or union representatives to attend inquests.

Outside the Workplace

Political pressure

Outside support can come from community groups, other unions, federations of labour, or politicians. If you work in a health care setting, clients or patients and their families can be asked for support. Consider taking issues to organization's director or boards and other elected bodies, for example municipal councils, school boards and boards of governors.

Develop strategies involving politicians who will push for open debate or criticize employers for lack of action or commitment. Urge politicians to talk about investigations in the federal or provincial legislature.

Political pressure does not necessarily have to be public. Politicians can write letters to pressure employers and government Ministers. Lobbying the government, standard-setting agencies or boards of governors is a task that needs commitment and organization, but the results are worth it.

Publicity

Publicity outside the workplace may force employers to deal with a problem. Make sure you involve your National Representative if you're thinking of doing this. CUPE has its own communications and public relations staff who can provide assistance. They can help you develop a media strategy to do this. Include labour-friendly media organizations, as well as the regular media in your community.

Making issues public – inside or outside a workplace – is an important way to gain support to solve health and safety problems. You can do this several ways, including:

- information leaflets;
- posters;
- letter-writing or petition campaigns;
- articles in local or national union newsletters and newspapers;
- press releases or conferences for local media;
- talking to local reporters about issues;
- holding demonstrations or events;
- submitting briefs to governments; and
- holding public hearings.

Petitions and letter-writing campaigns can show elected officials your union is not alone, and that others want changes too. Make public events of presenting petitions or letters. Use press conferences and press releases to inform reporters about when and how you will do this.

Labour reporters can be provided information that they can investigate. They may be able to assist you by finding information about similar problems in other workplaces.

Before any media strategy is adopted, it is crucial that you work with your executive. They have important links and access to additional resources from CUPE.

As a union health and safety representative, you have a credible position and status within the community. This is something that local labour reporters will pay attention to and value.

When getting a story out, remember some of these tips:

- Reporters appreciate printed copies of important facts and points, reports, Ministry documents and medical information.
- Spell out the names and addresses for reporters. Check with your contacts before going to the media to confirm that they are willing to speak publicly.
- Reporters need angles. If you can suggest ways in which your story affects other people or ties in with broader news issues, it is more likely to be printed or aired.
- Reporters may be sceptical. Be as factual as possible and let the reporter draw his or her own conclusions. Give them copies, for instance, of medical or scientific information that demonstrates the link between exposure and possible disease. Just make sure that the information doesn't contain names or identifying information of people who do not want to be named.

Before any media strategy is adopted, it is crucial that you work with your executive. They have important links and access to additional resources from CUPE.

Conclusion

Work-related injuries, illnesses and diseases can be prevented. When preventive measures fail, or don't exist, investigations are after-the-fact attempts to prevent further incidents, illnesses or diseases. They are organised searches for facts and information, from which conclusions and recommendations can be made to make the work safer.

This guide was developed to help CUPE locals conduct incident or disease with investigations. It should be used to encourage discussion and as a starting point for the development of comprehensive investigation programs.

It is crucial that the local health and safety committee be in the forefront of this process and that they apply the information to their individual workplaces. It is hoped that this guide will help CUPE members take the necessary first steps towards this process.

Effective investigations can help make our work and workplaces safer and healthier – for current and future workers.

APPENDIX A: USING STATISTICS

Mark Twain once said that there are "lies, damned lies, and statistics!"

Making sense of numbers can sometimes be intimidating. But using statistics is like other investigative skills. With some practice, you can learn to determine injury rates and figure out if there are an unexpected number of illnesses or diseases in your workplace.

Statistics are tools to assist investigators in identifying unusual conditions or to show historical trends. However, statistics must be analyzed and interpreted with care. They say nothing about questions that are not asked. They are sometimes used unfairly to "prove" problems do not exist and can be manipulated to back specific views.

Reports or studies are often not clear about the figures used in their calculations. The most important thing to figure out is who or what the numbers include, and who or what they exclude. Sometimes key information is deliberately omitted in a report. Missing information is sometimes called an "error of omission". Always read the fine print in a report, even if you think it's not important.

Relate the results of surveys or questionnaires to real workplace life. Injury rates are usually expressed as a percentage, where the number of injured workers is divided by all the workers who could have been injured, and then multiplied by 100 (to get the percentage figure).

For example, a report may say that only seven workers out of 500 in the workplace were injured in a year. The 1.4% injury rate (7 divided by 500 and multiplied by 100 equals 1.4%) seems low.

However, a closer look may reveal that all seven of those workers come from a work area with only 21 employees. The incident rate then becomes 33%! (7/21 X 100%). If these seven injuries had occurred on the same shift, the statistics become even more important.

Experts in statistics argue about studies all the time – are they done properly? Are the results significant? Are the conclusions backed by the results? You don't need to be an expert to ask sensible questions about statistics. Like other research work, know the questions to ask and insist answers are given in a way that everyone can understand.

Remember that help is available to assist you in interpreting results from complicated studies. Contact the National Health and Safety Department or the National Health and Safety Representative in your region.

APPENDIX B: INTERVIEWING

This section provides a few tips for conducting an effective interview. It must be noted, that while these are general tips, everyone will have their own style and technique. The most important skill to performing an interview is to practice. Most people have never performed an interview, and like any skill it takes time to learn. CUPE has course on incident investigation and other that can build your skills in investigation and documentation processes. To access these courses, speak with your local executive or CUPE National Servicing Representative.

Initial Planning

The investigation teams should consider the following while developing their interview plan:

Timing. Interviews should be conducted as soon as possible, and the people should be kept from communicating with each other before the interview takes place.

Condition of interviewee. The physical and mental state of the interviewee(s) must be considered. If the interviewee(s) are experiencing trauma or shock from the event, the investigation team should ensure that they are provided the appropriate resources and are safe before performing an interview

Safety. Interviews should be conducted in a safe, comfortable place that is private (away from other interviewees) and frequent breaks should be provided if needed. If appropriate the interview can take place at the scene of the incident, but only if it is safe, and doesn't cause further injury (mental or physical).

Anonymity. Should be provided for the interviewee if requested. Situations can arise, however, where the investigation team is compelled to disclose the source of information. If complete anonymity is impossible (e.g., during legal proceedings), the investigation team should discuss such possibilities with the person who requested anonymity and agree on the limits of the request.

Representation. Interviews with CUPE members should be conducted in the presence of an executive member, a steward, or a member of the health and safety committee that is not on the investigation team.

Team effort. When possible, conduct the interview with two people so that one person can be the primary who focuses on the questions and the other can focus on note taking. Note that before the interview, it should be decided how the work will be divided (i.e., who will be the primary speaker, who will take notes, etc.)

Special Considerations. Not all interviews will be performed face to face, and there may be additional circumstances to consider. When uncommon issues arise, the team should determine how each situation is best handled before the interview begins. Special circumstances could include:

- phone interviews when face to face is not available or possible;
- age considerations (e.g., young or elderly);
- impairment (e.g., drugs or alcohol);
- cognitive issues;
- hearing impaired individuals;
- language concerns where language interpretation could be required;

- multicultural considerations.

Conducting an Interview

To conduct a good interview, you should:

- identify yourself, your position and describe what you are doing;
- don’t provide information to the interviewee;
- emphasize the real reason for the investigation, to determine what happened and why;
- if you want to record the interview, ask for permission and explain how it will be used;
- be sensitive to the emotions and feelings of the person being interviewed;
- put the witness, who is probably upset, at ease;
- avoid interrupting;
- let the witness talk, while you listen;
- ask for clarification if you don't understand an answer;
- respect a person's request for anonymity, but explain that it may not be protected under all circumstances;
- confirm that you have the statement correct;
- make short notes or ask someone else on the team to take them during the interview;
- try to sense any underlying feelings of the witness;
- ask people to write down anything they remember after the interview and report it to you;
- do not ask someone to sign anything at first, instead arrange to meet later;
- provide your name and a phone number where people can reach you; and
- tell people you will let them know the results of the investigation and follow up with your promises;
- close on a positive note.

Avoid:

- intimidate the witness;
- insulting the sick/injured person;
- badgering the person, you're talking to;
- prompting, or asking leading questions;
- asking questions which suggest the answer you want;
- arguing with the interviewee;
- show your own emotions;
- jump to conclusions.

Who to Interview

The investigation team should interview any individual who can contribute relevant information to the causal or contributing factors, and subject matter expert(s).
Examples of these individuals could include:

- injured worker(s);
- eye witnesses to the event;

- union representative(s);
- co-workers (with and without knowledge of the work);
- manager(s) or supervisor(s) including senior management;
- workers who perform similar jobs in other departments or on different shifts;
- engineers or others who have organizational technical expertise;
- maintenance personnel;
- emergency personnel and first aid attendants;
- medical personnel with speciality in the disease you are investigating;
- equipment suppliers;
- external experts (engineers, subject matter experts, consultants, etc.); and
- family members of the injured worker(s).

Sample Questions

Unless clarifying a point, it is usually best to ask open-ended questions that cannot be answered by simply "yes" or "no".

Examples:

Tell me the details about what happened? (This question is followed by the investigator not asking any more questions until the interviewee has finished their narrative.)

After the narrative follow up with any of the following that have not been answered. Remember to only ask only one question at a time and don't interrupt while they answer. Allow the interviewee to pause and think about their answer without moving on to the next questions.

Where were you at the time of the incident?

What were you doing at the time?

What did you see, hear?

What did you do?

What was (were) the injured worker(s) doing at the time?

Who is injured?

Who are the witnesses?

Who else was in the area?

When did the incident occur?

When was it noted?

When was it reported, and by whom?

Was there any changes to the way the work was done?

What else was going on…

around the worksite?
in the building?
in the organization?

What were the weather conditions? Did they change through the day?

Where did the incident happen?

Note1: if you have access to the site it may be useful to have the person do a walk through, otherwise the use photographs and drawings can provide additional information

Note 2: if the incident was very serious, taking the witness to the scene or showing pictures may be traumatizing. Appropriate steps should be taken to ensure no additional mental damage is done to the witness.

An excellent follow-up after the interviewee is describing an event is to ask, 'and then what happened?'.

Additional follow-up questions could include:

What training has been provided?
How much experience do you have?
What can you tell me about supervision?
What procedures are in place…
for the work you were doing?
for emergencies?
for reporting health and safety issues?

After the narrative and follow-up questions, there may be some potential contributing or casual factor or conditions starting to appear. It is important to try and get to the bottom of why these factors or conditions were present. Asking the question Why? (and why not?) the factors that were present will provide additional information. The interviewer should continuously ask why something happened or did not happen until all avenues are exhausted.

A note 'why' or 'how'. Who / what / where / when – these are all questions that ask a witness to provide information related to facts. Asking 'why' or 'how', if not related specifically to factual information can lead a witness to start to speculate as to why or how. While this information is valuable, it must be noted when a witness is speculating versus information that they received directly from their senses.

Finally, as many of the witnesses will be familiar with the work, it may also be useful to ask:

- In your opinion, what caused the incident?
- How might similar incidents be prevented in the future?
- Can you think of any other details that are relevant such as of any equipment, machinery, chemicals, and manual materials handling involved?
- Is there anything else that you would like to add that was not asked?

Additional Considerations

To maximize the information obtained through the interview process, good investigators will frequently use the following techniques:

- Enough time should be allocated to carry out a proper interview, and the interview should not be rushed.
- The date and time of the interview and who was present should be recorded.

- Plan the general questions that will be asked, but the investigation team should be flexible in their questioning.
- Once the investigation team believes that they have gained all the data required, the investigation team should place the collected data into a logical sequential order. The investigation team should then retell the narrative to the interviewee and ask them to interrupt if anything is out of sequence or if any details are missing.
- The investigation team should have the full statement of the interviewee documented and allow the witness the opportunity to review for accuracy.

APPENDIX C: INVESTIGATION BIAS

All humans are influenced by decisional bias. In basic terms this occurs because there is simply too much information for anyone to be capable of processing everything, to make a perfect decision every moment of their lives. As such, the human brain has developed short cuts that allow us to move through life and not be paralyzed by every basic decision that needs to be made. While this is useful for everyday life, these short-cuts can lead to bias in our decision-making processes in an incident investigation. All individuals, regardless of experience level, can be potentially affected by biases in both their thought and decision making processes. It is important to note that an individual's observations and decisions might be biased yet they will still feel that they are acting impartially and objectively. *Investigational biases are not the same as willfully ignoring evidence.*

Listed below are many potential sources of bias that all lead to the same result: conclusions that lack objectivity. As will be shown, the effect of many of these biases is to frequently see a worker as greater causal factor than their non-human situational variables. This has lead to the commonly used 'blame the worker' mentality of the past.

The following is a list of some of the more common types of bias to be aware of:

Hindsight bias. The tendency to interpret (or reinterpret) information after the fact, with new and current information. Also, known commonly as 20/20 hindsight. This leads the investigators to perceive an event as more predictable and foreseeable after the outcome becomes known than it was at the time. This is the most common bias towards blaming workers as we frequently hear expression like, "they should have known that doing X would cause them to get hurt."

Correspondence bias. The tendency of an investigator to draw an incorrect inference about a person's nature from behaviors that can be accurately explained by the situations in which the behaviour occurs if all the facts are known. For example, talking with a person who is confused and deducing that they are under the influence when in fact they have suffered a head injury.

Confirmation bias. The tendency for investigators to seek and interpret information consistent with their preconceived notions and ignore or discredit other information. For example, an investigator who has developed a theory about a worker error may disregard testing showing a safety system on a machine was not working properly.

Anchoring bias. The tendency for investigators to rely too heavily on the first piece of information offered (the "anchor") when making decisions.

Allegiance or affiliation bias. The tendency of an investigator to favour a perspective in which they are invested. For instance, if the investigator knows that their organization has spent a lot of time and effort on a particular control method, the investigator might be more likely to discount a failure of the new system.

All investigators are susceptible to rendering biased decisions and all investigation teams are susceptible to bias, regardless of how objective an individual or team believes they are. Preventing bias from affecting an investigation can be challenging, but if the investigator is

aware of the most common types, steps can be taken to mitigate their effects. As the investigation proceeds, the team should check in with each other to ensure that:

- The questions they are asking witness are not influenced by bias;
- Hypotheses, theories and conclusions are not being given undue weight;
- Alternate considerations are given adequate considerations before being dismissed.

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