

# Focus on Safety

**Safe Work Practices for Film and  
Television Production in B.C.**



**WorkSafe**



**WORKERS'  
COMPENSATION  
BOARD**  
OF BRITISH  
COLUMBIA

## About the WCB

Preventing on-the-job injury and disease is the first priority of the Workers' Compensation Board (WCB) of British Columbia. WCB officers inspect worksites in B.C. to make sure they comply with the Occupational Health and Safety Regulation, which sets out minimum workplace standards for health and safety. The WCB also investigates serious workplace accidents and consults with employers, supervisors, and workers to promote health and safety in the workplace.

Under the requirements of the *Workers Compensation Act*, a worker must report an injury or a disabling occupational disease as soon as possible to the employer. The employer must report work-related injuries, occupational diseases, and work-related deaths to the WCB within three days. A worker may not make an agreement with the employer to give up WCB benefits.

If a worker suffers a work-related injury or illness, the WCB provides fair compensation that may include medical costs, loss of earnings, physical rehabilitation, and pensions. The WCB also works with employers to help injured workers return to work. If a worker is killed on the job, counselling and financial help are made available to the victim's family. For more information on requirements or eligibility for WCB coverage, contact the WCB office nearest you.

## WCB Prevention Information Line

The WCB Prevention Information Line can answer your questions about workplace health and safety, worker and employer responsibilities, and reporting a workplace accident or incident. The Prevention Information Line accepts anonymous calls.

Phone 604 276-3100 in the Lower Mainland, or call 1 888 621-7233 (621-SAFE) toll-free in British Columbia.

To report after-hours and weekend accidents and emergencies, call 604 273-7711 in the Lower Mainland, or call 1 866 922-4357 (WCB-HELP) toll-free in British Columbia.

## About SHAPE

SHAPE (Safety and Health in Arts Production and Entertainment) is an industry association dedicated to promoting health and safety in film and television production, theatre, music, and other performing arts industries in British Columbia. SHAPE provides information, education, and other services that help make arts production and entertainment workplaces healthier and safer. SHAPE is funded by the Workers' Compensation Board of B.C.

For more information, contact:

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Safe Work Practices for  
Film and Television Production in B.C.



**SHAPE**  
SAFETY & HEALTH IN ARTS  
PRODUCTION & ENTERTAINMENT

**WorkSafe**<sup>TM</sup>

WORKERS' COMPENSATION BOARD OF BC

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## WCB publications

*Focus on Safety* is available on the WCB web site and the SHAPE web site. For a printed copy, contact SHAPE (see inside front cover). To obtain copies of other WCB publications, contact:

Publications and Videos Distribution

Toll free: 1 866 271-4879

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## Who should use this manual

This manual is for employers (production companies) and workers in British Columbia's film and television production industry. Production companies will find information to help them maintain healthy, safe workplaces. Workers will find safe work practices and safety tips to help them work safely and avoid workplace injuries and diseases that result from accidents.

**This manual does not replace the Occupational Health and Safety Regulation or the *Workers Compensation Act*.** This manual does explain many of the workplace health and safety requirements that apply to film and television production in B.C., but employers and workers should always refer to the Regulation for specific requirements that apply to their production activities.



## What's inside

This manual provides basic information about how to work safely and prevent common injuries and diseases in the film and television production industry. The manual has eight parts.



**Part 1, The Basics**, discusses potential hazards in film and television production and describes typical health and safety responsibilities and tasks. This part also provides information about the right of workers to refuse unsafe work, as well as basic information about call sheets, safety talks, health and safety programs, joint health and safety committees, and risk assessments.

**Part 2, General Safe Work Practices**, describes basic safe work practices for lifting and for using ladders, scaffolds, and fall protection equipment, as well as electrical safety.

**Part 3, Craft-Specific Safe Work Practices**, describes basic safe work practices for the construction, painting, and lighting departments.

**Part 4, Equipment and Vehicles**, describes basic safe work practices for cranes and elevating work platforms, mobile equipment, insert-camera cars, and traffic control.

**Part 5, Locations**, describes basic safe work practices to follow at common locations, including buildings, city streets, wilderness locations, and water locations.

**Part 6, Special Effects, Props, and Stunts**, describes basic safe work practices for working with or around pyrotechnics, smoke and fog, mechanical devices and articulated sets, polyurethane and polyester resins, firearms, and aircraft, as well as for skydiving and underwater diving.

**Part 7, More Health and Safety Information**, provides further information about first aid, hazardous materials, workplace inspections, and incident reporting and investigation.

**Part 8, Resources**, includes additional health and safety resources available to production companies, cast, and crew.



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# 1

**The basics**

# Overview

This part describes basic workplace health and safety information for employers and workers. The information is divided into the following sections:

- Potential hazards in film and television production
- Health and safety responsibilities and task assignments
- Refusing unsafe work
- Call sheets
- Safety talks
- Your health and safety program
- Your joint health and safety committee
- Risk assessments

## **Occupational Health and Safety Regulation and Workers Compensation Act**

This manual includes a number of references to sections of the Occupational Health and Safety Regulation and the *Workers Compensation Act*. An electronic version of the Regulation is available on the WCB Web site at [www.worksafebc.com](http://www.worksafebc.com). A print copy of the Regulation is available from Publications and Videos (see "WCB of B.C. Resources" on page 123).

Sections of the *Workers Compensation Act* (excerpts and summaries) as well as policies and guidelines that deal with the interpretation and application of specific sections of the *Act* and the Regulation are also on the Web site. The excerpts and summaries of the *Act* are available in print in the introductory pages of Book 1 of the Regulation.

Use the electronic version of the Regulation and the *Workers Compensation Act* to search for terms or to download and print sections that are relevant to your workplace. The electronic version will be kept up-to-date as amendments are made and new policies and guidelines are added.

# Potential hazards in film and television production

Almost everyone involved in film and television production will encounter potential hazards on the job.



*Film and television production may present many health and safety concerns for both cast and crew.*

During pre-production, construction crews need to be aware of potential hazards when using ladders, scaffolds, or power tools. Paint crews need to know how to work safely with hazardous materials such as paints and solvents.

During production, the cast and crew may encounter potential hazards when filming at unusual locations or in remote areas.

Abandoned buildings or warehouses may lack structural stability. They may also contain hazardous materials such as lead paints and asbestos, as well as rodent or bird droppings that could cause viral infections. Wilderness locations may present complications such as severe weather, dangerous heights, animal bites, and insect bites. In some urban locations, discarded hypodermic needles and street crime are concerns.

Stunts and special effects can also be dangerous, especially if they are poorly planned, if communications about them are unclear, or if they are performed by inexperienced people.

And, of course, everyone on a set encounters numerous day-to-day potential hazards, such as cables (a tripping hazard), heavy gear and equipment (a lifting hazard), and street traffic.

## **Avoid accidents and injuries**

You can avoid accidents and injuries during film or television production by working safely. To reduce your chances of getting hurt on the job, follow the safe work practices outlined in this manual and the requirements in the Occupational Health and Safety Regulation. Work safely – make health and safety your number one priority.

## Common concerns and safety tips

Here are a few safety tips for potential hazards you may encounter during production.

**Concern** Lifting heavy or awkward objects such as lights, camera equipment, and props

**Safety tip** Use safe lifting techniques and get help if you need it. For more information, see “Lifting” on page 28.

**Concern** Working with paints, solvents, and other hazardous materials

**Safety tip** Make sure painting areas are well ventilated and wear respiratory protection as required by the Regulation. For more information, see “Painting” on page 48 and “Hazardous Materials” on page 107.



**Concern** Working at heights

**Safety tip** Wear appropriate personal fall protection equipment. For more information, see “Ladders” on page 31, “Scaffolds” on page 33, “Fall Protection Equipment” on page 35, “Cranes and Elevating Work Platforms” on page 56, and Part 11 of the Regulation.

**Concern** Slipping on wet surfaces or tripping over cables and other obstructions

**Safety tip** Keep work areas clean, dry, and clear of obstructions. Secure loose cables by taping them down, covering them with mats, or running them through cable troughs. Watch your step.

**Concern** Being struck by falling, flying, or shifting objects

**Safety tip** Wear appropriate personal protective equipment such as workboots, a hard hat, and safety glasses or a face shield. For more information, see Part 8 of the Regulation.

*Overexertion is one of the leading causes of injury in the film and television production industry.*

## Wear protective footwear

Generally, film and television production workers must wear appropriate protective footwear such as CSA-approved safety-toe leather boots with ankle protection. If potential electrical hazards are present, workers may be required to wear footwear that has dielectric protection. For more information, see Sections 8.22 and 8.23 of the Regulation.

Almost all B.C. workers, including part-time and contract workers, are entitled to workers' compensation benefits in the event of a work-related injury or illness.

- Concern** Working near busy streets  
**Safety tip** Remain aware of your surroundings at all times and use traffic control when necessary. For more information, see "Traffic Control" on page 62.
- Concern** Working with or around pyrotechnics  
**Safety tip** Make sure pyrotechnics are well planned by skilled, certified workers, and keep all unnecessary cast and crew away from the pyrotechnics area. For more information, see "Pyrotechnics" on page 80.
- Concern** Operating cranes or elevating work platforms near power lines  
**Safety tip** Stay outside the limits of approach specified in Sections 19.24 to 19.29 of the Regulation. For more information about the safe operation of cranes or elevating work platforms, see "Cranes and Elevating Work Platforms" on page 56.

## Potential fire hazards on interior sets

Electrical equipment, hot lights, and combustible materials increase the chances of fire on interior sets. Emergency routes may be hard to access if they are not clearly marked or they are blocked by equipment. Fire extinguishers are sometimes hard to find.

Make sure you know where emergency exits and fire extinguishers are located, as well as how to use these fire extinguishers. Keep exits clear and make sure they are well marked. Maintain a 1.2-m (4-ft.) emergency exit path around sets.



*Know where fire extinguishers are located and how to use them.*

# Health and safety responsibilities and task assignments

Everyone involved in film or television production – including the production company, cast, and crew – plays a role in workplace health and safety. This section outlines basic health and safety responsibilities for production companies, cast and crew, and joint health and safety committees.

This section also includes an example of how a production company may assign typical tasks during the course of a production.

## **Responsibilities under the *Workers Compensation Act***

In British Columbia, the *Workers Compensation Act* specifies the rights and responsibilities of employers and workers with respect to health and safety.

The *Workers Compensation Act* describes the following basic responsibilities:

- Employers (production companies, for example) must ensure the health and safety of their workers, inform workers of potential hazards, and remedy hazardous workplace conditions and practices.
- Workers must follow established safe work procedures, use any required personal protective clothing and equipment, and report potential hazards to their supervisor or employer.
- Supervisors (department heads, for example) must ensure the health and safety of all workers under their direct supervision and inform those workers of potential hazards.
- Suppliers must provide directions for any tool, piece of equipment, machine, device, or physical agent they are supplying and must also ensure that the item is safe when used as specified by the supplier.

For detailed responsibilities, see the *Workers Compensation Act*, Part 3, Division 3 – General Duties of Employers, Workers and Others, Sections 115 to 124.

## Production company

The production company is responsible for the health and safety of cast and crew members.

The production company must:

- Develop and implement a health and safety program
- Set up a joint health and safety committee, if required (see page 19)
- Provide first aid equipment and emergency procedures for workers
- Provide personal protective clothing and equipment for workers where required by the Regulation
- Hire qualified, competent workers (for example, only trained workers who have received a ticket from the Explosives Regulatory Division of Natural Resources Canada are allowed to work with pyrotechnics)
- Report all incidents involving medical treatment or lost time from injury or disease to the WCB (for a definition of *incident*, see page 115)
- Investigate all incidents, including near misses
- Ensure that cast and crew follow all WCB, municipal, provincial, and federal requirements

### Defining the word *qualified*

According to the Occupational Health and Safety Regulation, *qualified* "means being knowledgeable of the work, the hazards involved and the means to control the hazards, by reason of education, training, experience or a combination thereof."

## Cast and crew

All cast and crew must:

- Follow safe work procedures
- Wear personal protective clothing and equipment when required
- Alert the supervisor or production company to potential hazards
- Immediately report work they consider to be unsafe to their supervisor

## Joint health and safety committee

The joint health and safety committee (or worker health and safety representative, if a committee is not required) must:

- Identify potential hazards or unsafe work practices, and recommend ways to improve conditions
- Consider and respond to health and safety recommendations from the cast and crew
- Make sure regular workplace inspections are carried out
- Make sure incidents are investigated

For more information about joint health and safety committees and their responsibilities, see “Your Joint Health and Safety Committee” on page 19.

## Task assignments — Example

Production companies typically assign health and safety tasks to supervisors and workers. Individual production companies may differ in how they delegate specific tasks. The table on pages 10–11 is intended as an example only.

For a detailed list of individual duties for your specific production, see your production’s health and safety program. For more information about health and safety programs, see “Your Health and Safety Program” on page 17.

### **Safety talks versus safety meetings**

*Safety talks* are brief, informal meetings with the cast and crew held at the start of a day’s filming, when filming at a new location, and immediately before filming under potentially hazardous or special circumstances (for example, before filming near a cliff or performing a stunt).

*Safety meetings* are more formal, scheduled meetings in which safety issues — including special effects and stunts — are discussed with department heads and documented further in advance of the filming of a scene. These safety meetings are separate from joint health and safety committee meetings.



*Example of production company task assignments*

<b>Position</b>	<b>Task</b>
Production manager	<ul style="list-style-type: none"><li>• Ensure that cast and crew follow safe work procedures.</li><li>• Ensure that safety talks are held.</li><li>• Ensure that sets and locations are inspected for potential hazards and that potential hazards are eliminated or controlled.</li><li>• Ensure that personal protective clothing and equipment is provided and used by workers where required.</li><li>• Ensure that first aid services are provided as required.</li></ul>
Production coordinator	<ul style="list-style-type: none"><li>• Schedule meetings.</li><li>• Coordinate the flow of health and safety documents and incident reports.</li><li>• Coordinate the distribution of information to cast and crew members and departments.</li><li>• Communicate with SHAPE and the WCB.</li></ul>
Director	<ul style="list-style-type: none"><li>• Make the health and safety of the cast and crew a priority when planning and filming scenes.</li><li>• Support assistant directors in their occupational health and safety responsibilities.</li></ul>
First assistant director	<ul style="list-style-type: none"><li>• Hold safety talks with the cast and crew whenever filming has moved to a new location and in any circumstance that presents potential hazards (for example, when aircraft or exotic animals will be used).</li></ul>
Second assistant director	<ul style="list-style-type: none"><li>• Help the first assistant director with the distribution of safety information.</li><li>• Include safety information on call sheets.</li><li>• Lead safety talks for extras.</li></ul>

<b>Position</b>	<b>Task</b>
Director of photography	<ul style="list-style-type: none"> <li>• Ensure the safety of the camera and lighting crew.</li> <li>• Make safety a priority when placing cameras and setting up lighting.</li> </ul>
Department heads	<ul style="list-style-type: none"> <li>• Ensure the health and safety of department crew members.</li> <li>• Hold safety meetings and ensure that they are documented.</li> </ul>
Construction coordinator	<ul style="list-style-type: none"> <li>• Ensure that safe work practices are followed in all construction areas.</li> <li>• Ensure that the construction mill has a first aid facility stocked with appropriate supplies.</li> <li>• Coordinate activities with other departments (for example, the painting department).</li> </ul>
Location manager	<ul style="list-style-type: none"> <li>• Assess all locations for potential hazards (starting at the time of the initial scout).</li> <li>• Advise the production company of identified potential hazards and take steps to eliminate or control them.</li> </ul>
Special effects and stunt coordinators	<ul style="list-style-type: none"> <li>• Hold safety meetings and prepare written risk assessments prior to any scheduled special effects or stunts. (Meeting topics should include testing, rigging, and performing the special effect or stunt safely.)</li> <li>• Hold safety talks immediately before any scheduled special effects or stunts.</li> </ul>

# Refusing unsafe work

**In the Regulation**  
See Sections  
3.12 and 3.13,  
Refusal of  
Unsafe Work.

All B.C. workers – including film and television workers – have the right to refuse work they believe is potentially hazardous to their own health and safety or that of other workers. In fact, according to the Regulation, workers not only have the right to refuse dangerous work, they *must not* carry out or cause to be carried out any task that they have reasonable cause to believe would endanger the health and safety of any person.

## What if you are faced with unsafe work?

If you discover an unsafe condition, or believe that a task you are expected to perform is unsafe, inform your supervisor or production company. The supervisor or production company must immediately investigate the matter and make sure the unsafe condition is remedied without delay.

## What if your supervisor or production company disagrees?

Sometimes your supervisor or the production company may not agree that a task is unsafe. If there is a disagreement, the supervisor or production company must investigate the matter in your presence and in the presence of one of the following:

- A worker member of the joint health and safety committee (or the worker health and safety representative)
- A worker selected by your trade union
- If there is no joint committee and you are not represented by a trade union, any other reasonably available worker whom you select

If the matter is still unresolved after this investigation, both you and the supervisor or production company must immediately notify a WCB officer. The officer will investigate the matter and issue any necessary orders.

## Call sheets

Call sheets are a great way to communicate important health and safety information to the cast and crew. Use daily call sheets to alert cast and crew to potential hazards for that day's shooting schedule and to tell workers which safety precautions they need to take. Include safety bulletins, memos, and other pertinent information.

### What to include on call sheets

List the following details on call sheets:

- Scheduled stunts (for example, underwater filming, skydiving, or vehicle action sequences)
- Special effects that will be used (for example, fire, explosions, smoke, or fog)
- Scheduled use of firearms
- Potential hazards specific to the location
- Required personal protective clothing and equipment and how workers can get it
- The name, contact number, and location of the first aid attendant
- The location of the first aid kit or facility
- The location of the nearest hospital or emergency facility
- Any other health and safety concerns the cast and crew need to be aware of

### Include safety guidelines with call sheets

Attach safety guidelines to call sheets. For example, if firearms will be used on the set, attach a safety guideline for handling firearms. You can get safety guidelines for a variety of topics from SHAPE. For ordering information, see "SHAPE Resources" on page 122.

List all potential hazards and safety precautions on call sheets.

## Call Sheet

Title of Production:

Telephone:

Fax:

Set Cell:

Set Pager:

Scene	Set Description	D/N	Cast	Pages	Location

\*Please wear appropriate footwear & clothing at this location. The location is currently under construction. All cast and crew must wear footwear with ankle support. All construction crew must wear steel-toe workboots. Thank you.

**No forced calls without prior approval of production manager** 7/8 Day Page Count

Cast	Cast & Stunts	Character	Stat	Pick-up	M-M-V	On Set	Remarks

Stand Ins	On Set	Remarks	Stand Ins	On Set	Remarks
"Utility" S.I.	1000	Report to Loc.	"Utility" S.I.	1000	Report to Loc.
<b>Atmosphere</b>			<b>H-M-WD</b>		
<b>On Set</b>			<b>Remarks</b>		

### ADVANCE SCHEDULE

Day 31, Thursday, May 25, 2000

Scene	Set & Scene Description	D/N	Cast	Pages	Location

Day 32, Sunday, May 29, 2000

Production Manager	1st AD	2nd AD	Location MCA	Asst. Loc. Manager	Transport Coord.

Director	Pick-up	Day	Date

<b>Production</b>	<b>On Set</b>	<b>Art Department</b>	<b>On Set</b>	<b>Costumes</b>	<b>On Set</b>	<b>Transportation</b>	<b>On Set</b>
<b>Camera</b>	<b>On Set</b>	<b>Set Decorators</b>	<b>On Set</b>	<b>Hair</b>	<b>On Set</b>	<b>Special Equipment</b>	<b>On Set</b>
<b>Visual FX</b>	<b>On Set</b>	<b>Props</b>	<b>On Set</b>	<b>Make Up</b>	<b>On Set</b>	<b>Picture Vehicles</b>	<b>On Set</b>
<b>Lighting</b>	<b>On Set</b>	<b>Construction</b>	<b>On Set</b>	<b>Stunts</b>	<b>On Set</b>	<b>Production Office</b>	<b>On Set</b>
<b>Grips</b>	<b>On Set</b>	<b>Paint</b>	<b>On Set</b>	<b>Additional Labour</b>	<b>On Set</b>	<b>Post Production</b>	<b>On Set</b>
<b>Special Effects</b>	<b>On Set</b>	<b>Greens</b>	<b>On Set</b>	<b>Helicopter Unit</b>	<b>On Set</b>	<b>Accounting</b>	<b>On Set</b>
<b>Sound</b>	<b>On Set</b>	<b>Caterers</b>	<b>On Set</b>	<b>Locations</b>	<b>On Set</b>	<b>Casting</b>	<b>On Set</b>
<b>First Aid/Craft Service</b>	<b>On Set</b>						

### DEPARTMENT NOTES

Props:		
SPFX:		
Stunts:		
Locations:		
Camera:		
Art Dept:		
Grips:		
Transport:		
Notes:		
Transport Car # 1:		
Nearest Hospital:		
Assistant Director:	Production Manager:	Approved:

# Safety talks

Informal safety talks let the cast and crew know about potential hazards and safety precautions during production. Hold a brief safety talk with all cast and crew in each of the following circumstances:

- At the start of each day's filming
- When filming at a new location
- When filming at potentially hazardous locations such as caves, pits, cliffs, or other elevated surfaces
- Immediately before performing a stunt or special effect, or using aircraft
- When special rigging or other equipment is being used

## Who leads the safety talk?

The first assistant director usually leads the safety talk. If the safety talk is about a stunt or special effect, the stunt or special effects coordinator should lead the talk. If the safety talk is related to the use of aircraft, marine craft, or other unusual equipment, the pilot or operator should lead the talk.

## What should a safety talk include?

If you are leading a safety talk, you should:

- Discuss the potential hazards or safety concerns
- Explain the safety precautions in place and the safety procedures that the cast and crew must follow
- Encourage the cast and crew to voice their safety concerns and any safety recommendations they may have

Typical topics you need to discuss include stunts, special effects, firearms, aircraft, and locations. Before filming a stunt or special effect, perform a dry run so everyone knows what to expect and what they need to do to ensure their own safety and the safety of those around them. Designate safe areas and discuss emergency procedures.

Make sure everyone understands the safe work procedures they must follow. For example, if you are filming around helicopters, explain how to approach helicopters safely and provide workers with safety glasses to protect their eyes from flying debris. If you are setting up a hazard area around a pyrotechnic effect, make it clear that only authorized people are allowed to enter the hazard area and that smoking is not permitted in the hazard area.

Tell everyone how to get first aid or emergency medical treatment and explain emergency exit routes and evacuation procedures.

## **Distribute personal protective clothing and equipment**

During the safety talk, distribute any required personal protective clothing and equipment and instruct workers about how to use it. For example, camera operators may need earplugs if they will be

filming close to discharging firearms. If filming on or near water, crew members may need to wear personal flotation devices.

Remember that people who miss the safety talk, such as late calls and extras, must be fully briefed when they arrive on the set.



*Safety talks let the cast and crew know what to expect at the start of each day and, for example, before filming a stunt or special effect.*

# Your health and safety program

An effective occupational health and safety program can help reduce workplace incidents, injuries, and diseases.

## When do you need a health and safety program?

All film and television production companies that employ 20 or more workers must develop and implement a *formal* health and safety program and must train their cast and crew in relevant sections of the program.

If you employ fewer than 20 workers, you are required to initiate and maintain an *informal* program based on regular (at least monthly) health and safety meetings with workers. In some cases, a WCB officer may require a production with fewer than 20 workers to develop and implement a formal health and safety program.

## Elements of a health and safety program

A formal health and safety program must include the following elements:

- A written occupational health and safety policy that:
  - States your commitment to making health and safety a priority
  - States the program's objectives
  - Defines the roles and responsibilities of the production company, cast, and crew for ensuring a safe production
- Written safe work procedures and emergency response procedures
- Education and training for cast and crew
- Regular workplace inspections (the definition of *regular* depends on the conditions at each individual production site)
- Regular (at least monthly) health and safety meetings
- Incident investigations
- Records and statistics (for example, reports of inspections and incident investigations)
- A joint health and safety committee consisting of employer and worker representatives (see page 19)

**In the Regulation**  
See Sections 3.1 to 3.4, Occupational Health and Safety Programs.



## **You must develop your own health and safety program**

It is important to remember that every production is different. Although the general elements listed on page 17 are common to other health and safety programs, you cannot simply copy another production's program.

Instead, you must develop and implement a health and safety program unique to your own production. The scope and content of your health and safety program will depend on the potential hazards facing your specific production.

For more information about health and safety programs, see the WCB publications *How to Implement an Effective Occupational Health and Safety Program* and *Effective Health and Safety Programs: The Key to a Safe Workplace and Due Diligence*.

For a sample health and safety program you can use as a model for your own program, contact SHAPE.

### **Discuss safety at pre-production and production meetings**

Make sure you discuss safety issues at your pre-production and production meetings. Go over your health and safety program and clarify important health and safety information such as how to report a potential hazard, how to report an incident, and how or where to contact the first aid attendant. Make it clear that safety is a priority for your production.

When reading through the script, point out any safety concerns and suggest ways to eliminate or control risks. For example, discuss any concerns you have about dangerous locations, stunts, or special effects.

# Your joint health and safety committee

Your joint health and safety committee helps create a safe work environment, recommends ways to improve your health and safety program, and promotes compliance with the Occupational Health and Safety Regulation and the *Workers Compensation Act*.

## When do you need a joint health and safety committee?

All film and television production companies that regularly employ 20 or more workers must establish and maintain a joint health and safety committee. (*Regularly employed* means employed for at least one month, whether full-time or part-time.)

Production companies that regularly employ fewer than 20 workers are usually required to have a worker health and safety representative rather than a joint health and safety committee. In some cases, however, a WCB officer may require a production with fewer than 20 workers to establish and maintain a joint health and safety committee.

## Committee members and responsibilities

Your joint health and safety committee must include at least four members – usually two crew representatives and two production-company representatives.

Committee members (or the worker health and safety representative) are responsible for:

- Identifying situations that might be unhealthy or unsafe for workers
- Recommending ways to eliminate or control potential hazards
- Recommending ways to improve the production's health and safety program and the overall work environment
- Considering and responding to health and safety complaints or recommendations from the cast and crew

### **In the Act**

See the *Workers Compensation Act*, Part 3, Division 4—Joint Committees and Worker Representatives, Sections 125 to 140.

- Promoting safe work practices
- Making sure regular workplace inspections are carried out
- Making sure incidents are investigated
- Participating in workplace inspections and incident investigations

## **How often should the committee meet?**

Your joint health and safety committee must meet at least once a month. The committee may require additional meetings to review incident investigations or discuss other health and safety issues. For short-duration productions such as movies-of-the-week, the committee may only be able to meet twice – once at the start of the production, then again at wrap.

Make sure that brief, factual minutes are recorded for each meeting. Meeting minutes provide a permanent record to which the production company, cast, and crew can refer. The committee must give copies of the minutes to the production company.

# Risk assessments

You can prevent most workplace injuries and diseases by identifying and dealing with potential workplace hazards and unsafe work practices. An effective way to deal with potential hazards and unsafe work practices is by conducting risk assessments.

## When do you need to conduct a risk assessment?

You need to conduct a risk assessment for each potentially hazardous activity or situation involved in your production. For example, conduct risk assessments for:

- Stunts
- Special effects
- Water work
- Helicopters, fixed-wing aircraft, and gliders
- Exotic or domestic animals and reptiles
- Potentially hazardous locations

## Conducting risk assessments

Risk assessments consist of three basic steps:

1. Identify potential hazards and unsafe work practices.
2. Assess the risks associated with the potential hazards or unsafe work practices.
3. Deal with the potential hazards or unsafe work practices.

It is important that you write your risk assessments on paper. That way you can attach the risk assessments to call sheets, and have the assessments available in case you need to refer to them later.

## 1. Identify potential hazards and unsafe work practices

Go over every aspect of your production and consider anything that could possibly go wrong. Involve cast and crew members in the process of identifying potential hazards.

Look for potential hazards in these categories:

- Workplace actions (for example, working without a hard hat)
- Workplace environment (for example, cables and other obstructions on the floor)
- Harmful substances (for example, hazardous materials such as paint thinner or asbestos)

## 2. Assess the risks

Assess each potential hazard and unsafe work practice to determine its risk level.

Deal with higher-risk potential hazards first to avoid serious injuries, diseases, or death. Examples of higher-risk potential hazards are unguarded power saws or floor openings.

Some lower-risk potential hazards such as repetitive motions and high noise levels have a gradual impact over time and are harder to detect.

## 3. Deal with potential hazards or unsafe work practices

After identifying and assessing risks, eliminate or control each potential hazard and correct each unsafe work practice.

### **Eliminating potential hazards**

Wherever possible, eliminate potential hazards by substituting different work processes or substances; find safer ways to carry out tasks and use less-harmful chemicals. Make sure the substitutions do not create new potential hazards.

Examples of work process substitutions include:


- Selecting a safer location
- Changing camera placement
- Using miniatures or computer simulations instead of special effects

### **Controlling potential hazards**

If you cannot eliminate a potential hazard, find a way to control it and minimize worker risk. Some things you can do to control potential hazards include:

- Building enclosures or guards around power saws
- Guarding floor openings and installing handrails on stairways
- Providing workers with detailed written safe work procedures for the job and making sure they are followed
- Making sure workers use appropriate personal protective clothing and equipment
- Ventilating work areas when chemicals are used and providing respirators (if necessary)
- Ensuring that material safety data sheets (MSDSs) are available to your crew for all the hazardous materials they use
- Having only experienced and qualified people perform stunts or special effects (for a definition of *qualified*, see page 8)

For a sample risk assessment, contact SHAPE.



# **General safe work practices**

# Overview

This part describes general safe work practices that may apply to some or all cast and crew members on a production. The information is divided into the following sections:

- Lifting
- Ladders
- Scaffolds
- Fall protection equipment
- Electrical safety



# Lifting

Sprains and strains are the most common type of work-related injury in film and television production. Strains and sprains and other injuries to the muscles, tendons, and joints are known as musculoskeletal injuries (MSIs). Most MSIs result from overexertion accidents, and many of these are associated with lifting tasks.

For lifting tasks, you need to think about the force required to lift the load and about your posture. Muscles and tendons can be overloaded when you apply a strong force to lift a heavy object or if you use an awkward posture when lifting.

## In the Regulation

See Sections 4.46 to 4.53, Ergonomics (MSI) Requirements.



*Lift smoothly,  
without twisting  
your body.*

## Principles for preventing injuries from lifting

Follow these safety principles when moving heavy or awkward objects:

- Where possible, avoid lifting and carrying heavy or awkward objects. Instead, use mechanical devices such as forklifts, hoists, carts, or dollies.
- Get help from others if you need it.
- Lift smaller loads by planning and adjusting weight distribution ahead of time.
- Hold the object you are lifting as close to your body as possible.
- Avoid awkward work postures such as bending, reaching, and twisting. Try to keep the load between your knees and shoulders, without twisting your body. Pivot with your feet instead of twisting your back.
- Bend at your knees, not at your waist. This will help you keep your centre of balance and let the strong muscles in your legs do the lifting.
- Lift smoothly and slowly.
- Get a good grip. Use your hands, not just your fingers, to grip the load. Wear gloves to protect your hands if necessary.
- Avoid doing physically demanding lifting tasks for a long period. If possible, vary the task with another activity that uses different muscles.



*Handles provide a good grip. Keep the load as close to the body as possible.*

## **Musculoskeletal injury (MSI) risk assessments**

Strains and sprains are known as musculoskeletal injuries (MSIs). MSI claims resulting from overexertion and repetitive motion accidents account for about one-third of WCB claims.

Employers must conduct risk assessments that evaluate how work is organized and performed and that identify potential MSI hazards. After identifying potential hazards:

- Assess the risks to workers
- Eliminate or minimize the risks
- Educate and train workers in safe work practices and procedures

For more information about preventing musculoskeletal injuries, see these WCB publications:

- *Back Talk: An Owner's Manual for Backs*
- *How to Make Your Computer Workstation Fit You*
- *Ergonomics Commentary 1 – Back Belts*
- *Ergonomics Commentary 2 – Wrist Braces*
- *Ergonomics Commentary 3 – PC Mouse*
- *Understanding the Risks of Musculoskeletal Injury (MSI)*
- *Preventing Musculoskeletal Injury (MSI)*

# Ladders

## Use approved ladders

Use ladders that meet CSA or ANSI standards. Do not use metal ladders near electrical wires or equipment.

## Inspect ladders before use

Before using a ladder, always inspect it:

- Remove a ladder from service if it has a loose or broken rung, a split side rail, or any other defect.
- Make sure the ladder is free of grease, oil, mud, and other slippery substances.

## Set ladders firmly

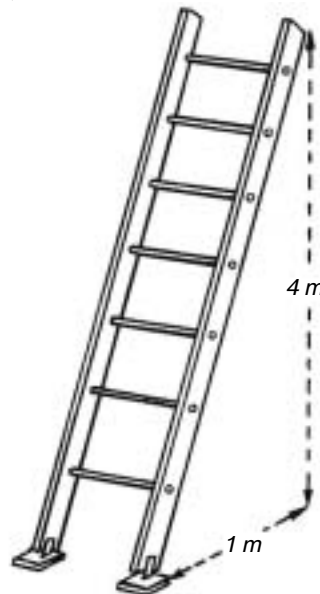
When using a straight or extension ladder, follow the 4 to 1 rule: For every 4 m the ladder rises, place the bottom of the ladder 1 m away from the wall. Or, for every 4 ft. the ladder rises, place the bottom of the ladder 1 ft. away from the wall. For example, if the ladder touches the wall 6 m (20 ft.) above the ground, place the bottom of the ladder 1.5 m (5 ft.) from the wall.

In addition, follow these safety guidelines when setting a straight or extension ladder:

- Set the ladder on a firm and level base. Do not place the ladder on other materials (for example, apple boxes) to gain extra height.
- Set the ladder against a firm, solid wall or support. The ladder should extend at least 1 m (3 ft.) above any landing.
- Tie, block, or otherwise secure the ladder to keep it from slipping.



*Use ladders that meet CSA or ANSI standards.*



*Remember the 4 to 1 rule: For every 4 m (12 ft.) the ladder rises, place the bottom of the ladder 1 m (3 ft.) away from the wall.*

### **In the Regulation**

See Part 13:

Ladders,

Scaffolds and

Temporary Work

Platforms.

## **Use ladders safely**

Follow these safety guidelines when climbing or working on a ladder:

- Face the ladder while climbing and maintain your centre of gravity – keep your belly button or belt buckle between the ladder rails.
- Grip both rails firmly while climbing and maintain three-point contact at all times (two feet and one hand or one foot and two hands).
- Do not lean over the side of the ladder, overreach, or “walk” the ladder. Instead, climb down and reposition the ladder.
- Do not stand or sit on the top two rungs, unless the ladder was designed for this purpose.
- Do not overload the ladder. Only one person at a time should use a ladder.
- Never use ladders outdoors in high winds.

### **Wear a hard hat for protection from falling objects**

A grip was asked to secure a ladder for a lighting person. The lighting person dropped a 5" x 2" round light lens onto the grip's head from 6 m (20 ft.) up. The grip was not wearing a hard hat and received a cut that required stitches.

# Scaffolds

## Erect scaffolds safely

A qualified worker (for a definition of *qualified*, see page 8), usually the construction coordinator or key grip, must supervise scaffold erection and dismantling. Scaffolds must meet the safety standards specified in Section 13.17 of the Regulation.

Follow these safety guidelines when erecting scaffolds:

- Follow the manufacturer's instructions and meet WCB requirements.
- Erect scaffolds on solid footings.
- Use screw jacks to level scaffolds – do not use apple boxes, wedges, or 246s.
- Secure and rigidly brace the poles, legs, and uprights to prevent swaying and movement. If a scaffold is higher than three times its minimum base dimension, secure the scaffold to the structure or use guylines.
- Do not erect scaffolds near power lines or other high-voltage energized electrical conductors.
- Install any required guardrails or toeboards.
- Do not mix and match components. Keep erection drawings on-site.
- Use fall protection equipment when erecting or dismantling scaffolds. For more information, see "Fall Protection Equipment" on page 35.

**In the Regulation**  
See Part 13:  
Ladders,  
Scaffolds and  
Temporary  
Work Platforms.

### **Make sure scaffolds are stable**

Scaffolds are often draped with blacks. On exterior sets, the blacks can catch the wind and act like a sail, causing the scaffold to tip over. If a scaffold is draped or covered in any way, bracing must be installed according to the instructions of a professional engineer.

Lights mounted on scaffolds can disrupt the scaffold's weight balance, making it unstable. Use counterweights or bracing if necessary. Never overload scaffolds.



*Inspect scaffolds daily before use and after any modification.*

## Inspect scaffolds before use

Inspect scaffolds daily before using them and after any modification. Follow the manufacturer's instructions and replace any damaged components.

## Use scaffolds safely

Follow these safety guidelines when climbing or working on a scaffold:

- If guardrails cannot be installed on the scaffold, use appropriate personal fall protection equipment. For more information, see "Fall Protection Equipment" on page 35.
- Use a ladder, stairway, or other safe means to access the scaffold's working landings (see Section 13.28 of the Regulation). Do not climb the outside of scaffold frames between landings.
- Never overload a scaffold with materials or people. Do not exceed the manufacturer's load specifications.
- Do not remain on a rolling scaffold while others are moving it if the scaffold is higher than twice its minimum base dimension.
- Do not remain on a rolling scaffold if you are moving it and the platform is higher than 1½ times the scaffold's minimum base dimension.
- Do not work on a draped scaffold in windy conditions unless a professional engineer has determined that it is safe to do so in those conditions at that particular site. Remember that tarps and drapes hung from the scaffold can catch the wind and topple the scaffold.

# Fall protection equipment

## When do you need to use fall protection equipment?

You must use a fall protection system when working at heights of 3 m (10 ft.) or more, or when a fall from a height of less than 3 m (10 ft.) carries an unusual risk of injury.

You may need to use fall protection equipment:

- During set construction
- When erecting or dismantling scaffolds
- When working on elevated platforms (including scaffolds that lack guardrails)
- When working at elevated locations such as on roofs or cliffs, or in pits, wells, or mine shafts
- During stunts and other filming activities

If you are working at heights of 7.5 m (25 ft.) or more and are not protected by permanent guardrails, your production will need a written fall protection plan.

## Train workers

Before allowing cast or crew into an area where a potential falling hazard exists, the supervisor must ensure that workers have been trained in the fall protection system being used for that area and that workers understand the procedures they need to follow. Keep training records.

## Fall restraint systems

Whenever possible, use a fall restraint system to prevent workers from getting into a situation in which they can fall. Guardrails are the preferred type of fall restraint.

If guardrails are not practicable, each worker can use a safety belt or harness attached to a securely anchored lanyard. The lanyard limits the distance that the worker can move and prevents the worker from getting too close to an edge.

**In the Regulation**  
See Part 11: Fall Protection.



### **Use barriers to warn workers of floor openings**

A lighting crew member seriously injured his back when he fell through a skylight hole. The hole had been covered with black cotton for lighting purposes. There were no barriers in place to prevent the accident.

### **Fall arrest systems**

If a fall restraint system is not practicable, use a fall arrest system instead. A fall arrest system will not prevent a fall from occurring in the first place, but it will stop a worker's fall after a short distance, preventing the worker from hitting the surface below.

When using a fall arrest system, the worker must wear a safety harness attached to a securely anchored lanyard that will limit the fall to a safe distance. Safety harnesses are specially designed to help protect the worker against internal injuries if a fall occurs – do not use safety belts in fall arrest systems.

If a fall arrest system is not practicable, suspend a safety net below the work activity. You may also need to set up a control zone and a safety monitoring system.

### **Use fall protection equipment to prevent injuries**

A gaffer told a lighting crew member to climb onto a set roof to set up a 12K lamp. The lighting crew member crashed through the false roof and landed 4 m (12 ft.) below on a walkway. He was lucky not to fall all the way to the concrete floor 8 m (25 ft.) below.

In this case, the construction department should have informed the crew of the roof's weight load limit and fall protection equipment should have been provided.

## Fall protection equipment standards

All fall protection equipment – including anchors, harnesses, shock absorbers, and safety nets – must meet the requirements of the Regulation. Some mountain climbing gear may meet these requirements. Climbing gear may need to be certified by a professional engineer.

## Inspect fall protection equipment

Before equipment is used on each work shift, a qualified person (for a definition of *qualified*, see page 8) must inspect all safety belts, harnesses, lanyards, lifelines, connecting hardware, anchors, and other fall protection devices. Also, crew members must personally inspect their own fall protection equipment before each use. Keep inspection records.

## Maintain and store fall protection equipment safely

To keep all fall protection equipment in good working order, take the following steps:

- Remove defective parts from service immediately.
- After a fall protection system has arrested a worker's fall, remove it from service and have it inspected and re-certified by the manufacturer or a professional engineer.
- Keep safety belts, harnesses, lanyards, lifelines, connecting hardware, anchors, and other fall protection devices free from dirt, grease, chemicals, ultraviolet (UV) rays, and other conditions that could contribute to their deterioration.
- Store fall protection equipment in a box or locker away from sharp tools, equipment, and other objects that may damage the fall protection equipment.

# Electrical safety

## In the Regulation

See Part 10:

De-energization  
and Lockout

and Part 19:

Electrical Safety.

## Who is in charge of electrical safety?

Gaffers, best boys, and generator operators are in charge of electrical activity at the production site. They have the authority to cancel any activity under their control. Consult them before using any electrical system, including on-set practicals.

## Who can work on electrical systems?

Only qualified electricians should work on or tie in to electrical systems. Gaffers, best boys, and generator operators will require Full Entertainment (FE) certification or Limited Entertainment (LE) certification. If the work requires more than FE or LE certification, an electrician with British Columbia Tradesperson Qualification (BCTQ) certification is required.

At least one certified electrician (FE certified, LE certified, or BCTQ certified) is required for every two uncertified workers.

## De-energize and lock out electrical equipment

Remember to de-energize and lock out machinery and equipment before performing any maintenance. In some cases, this is as easy as unplugging the machine and keeping the plug in view while you work on the machine. In other cases, you may need to apply locks and tags at the power box. For more information, see the WCB publication *Lockout*.



## Report potential electrical hazards

When you see a potential electrical hazard, report it to a gaffer, best boy, or generator operator immediately. Typical electrical hazards include:

- Shocking, sparking, overheating, or smoking machines, equipment, or power tools
- Corroded outlets, switches, and junction boxes
- Extension cords in permanent use
- Exposed wiring, broken plugs or outlets, or missing box covers or faceplates
- Electrical equipment used in damp areas without ground fault circuit interrupters (GFCIs)
- Overhead power lines

## Inspect equipment and power cords

Before using electrical equipment, check the equipment and power cords (cables and plugs) for any signs of excess wear, frayed cords, or exposed current-carrying parts. If you find a defect, remove the equipment or power cord from service and replace or repair it.

## Do not misuse power cords and cables

Never kink, tie, crush, cut, or bend power cords or cables. This damages the insulation and may cause a short-circuit, fire, or electric shock. When using cords or cables in high-traffic areas, tape the cords or cables securely to the floor, or use mats or cable troughs.



*Protect cables in high-traffic areas by using mats, cable troughs, or other protective devices.*

For more information on electrical safety, see the WCB publication *Working Safely Around Electricity*.

## Make sure equipment is grounded

Always use a GFCI in situations where you or the electrical equipment you are using could make contact with moisture on the ground. For example, you need to use GFCIs when using temporary lighting outdoors.

As an alternative to GFCIs, you may implement an Assured Grounding Program. For more information, see the WCB WorkSafe bulletin *GFCIs and Assured Grounding Program*.

## Watch out for overhead power lines

Workers have been killed or seriously injured as a result of contact with high-voltage electrical conductors. Always check for overhead power lines before setting up or using cranes, scaffolds, and other elevated equipment. When working near power lines, stay outside the limits of approach specified in Sections 19.24 to 19.29 of the Regulation.

### Use generators safely

Only qualified operators should operate and maintain generators (for a definition of *qualified*, see page 8).

The following are basic guidelines for safe operation of a generator:

- Follow the manufacturer's instructions.
- Set up the generator in an open space to allow good ventilation. Do not set it up near building air intakes.
- Make sure the generator is well grounded and that it has ground fault indicators.
- Start and stop the generator under no-load conditions.
- Supervise the generator at all times while it is running.





**Craft-specific  
safe work practices**

# Overview

This part describes safe work practices that apply to specific crafts. The information is divided into the following sections:

- Construction
- Painting
- Lighting

# Construction

## Inspect the work area and deal with potential hazards

Before work begins, the construction coordinator and construction crew members should inspect the construction area to identify potential hazards.

For an inspection checklist, contact SHAPE or download the checklist from their Web site (see "SHAPE Resources" on page 122).

After identifying potential hazards, try to eliminate them. If you cannot eliminate the potential hazards, implement controls to minimize the risks to workers.

## Secure the work area

Set up signs or barriers to keep people from wandering into the construction area. Make sure visitors wear hard hats, safety footwear, eye protection, and hearing protection when required.

## Wear personal protective equipment

Personal protective equipment is required for most construction tasks. The following table specifies the types of personal protective equipment you should wear when you are working in a construction area.

<b>What to wear</b>	<b>When to wear it</b>
A hard hat	Whenever there is a risk of falling objects
Safety footwear	Whenever there is a risk of foot injuries
Safety glasses, goggles, or a face shield	When using machines and tools
An approved respirator, if required	When welding, spray painting, handling insulation, and carrying out activities involving exposure to wood dust
Earplugs or earmuffs	When working where noise levels are high



## Make sure excavations are sloped and shored before entering

Never enter an excavation deeper than 1.2 m (4 ft.) unless it is sloped and shored as required by the Regulation. For more information, see Sections 20.78 to 20.95 of the Regulation.

## Use respiratory protection

Wear an approved respirator whenever it is necessary. Be aware of the following respiratory concerns:

- Hardwood dusts can cause nasal cancer and other respiratory problems.
- Cutting Plexiglas generates methyl methacrylate, a nasal irritant and sensitizer.
- Handling insulation can release glass particulates, which can cause lung irritation.



## Use equipment safely

Use only equipment and machines you are trained to use. Check your work materials for nails, bolts, and other flaws before running the materials through table saws, planers, sanders, routers, or other machines.

When working in construction areas, do not wear loose clothing, rings, or jewellery – they could get caught in equipment or machines.

Keep all equipment in good operating condition:

- Make sure machines are safely guarded.
- Do not remove guards.
- Keep cutting tools sharp.

Follow lockout procedures when performing maintenance or repairs on equipment. For more information about lockout, see the WCB publication *Lockout*.

*Wear appropriate personal protective equipment when building sets.*

## Compressed air can cause serious injury

A worker was attempting to connect the couplings of two sections of air hose under pressure. One of the sections slipped from his hand and a stream of air, water, and dirt struck him. The worker suffered an air embolism (an air bubble obstructing blood flow in a blood vessel) and required several operations to remove substances from his body.

Follow these guidelines to prevent similar accidents:

- Operate air systems within the recommended maximum working pressure.
- Check hoses periodically to make sure they are in good condition.
- Keep quick connect–disconnect couplings clean and in good working order.
- Keep hose couplings tight.
- Never use compressed air to clean your clothing or skin.
- Grip air hoses firmly when making connections.

## Use power tools safely

Follow these safety guidelines when using power tools:

- Inspect tools before each use. Make sure electrical cords are in good condition. Follow the manufacturer's instructions.
- Wear safety glasses, a face shield, and other required personal protective equipment.
- Before plugging a tool in (or inserting a battery, if it is cordless), turn the power switch off.
- Before performing maintenance on a tool or changing a blade or bit, unplug the tool (or remove the battery, if it is cordless).



*When using power tools, use face shields and other required personal protective equipment.*

When using power tools outdoors or in damp environments, you must use ground fault circuit interrupters (GFCIs). As an alternative to GFCIs, you may implement an Assured Grounding Program. You may also need to use insulating platforms, rubber gloves, or rubber mats. For more information, see the WCB WorkSafe bulletin *GFCIs and Assured Grounding Program*.

## **Weld safely**

Follow these safety guidelines when welding or burning:

- Wear required personal protective clothing and equipment, including flame-resistant clothing, leather gauntlet gloves and arm protection, a leather apron, safety footwear, and a welder's face shield. A respirator may also be required.
- Do not weld, cut, or braze near painting areas or other areas where flammable materials are used or stored.
- Eliminate or control all potential fire hazards.
- Keep a fire extinguisher of a suitable type and capacity available at all times.

## **Control airborne contaminants when welding**

Welding and burning generate a number of airborne contaminants such as metal fumes, ozone, and nitrogen dioxide. These contaminants are toxic and must be controlled.

Make sure you have sufficient ventilation for welding. All fixed workstations must include local exhaust ventilation to remove contaminants. If it is not possible to use local exhaust ventilation, workers must wear approved respirators.

Whenever possible, before welding or cutting base metal, remove coatings that could emit harmful contaminants such as lead, chromium, organic materials, or toxic-combustion products.

## **Practise good housekeeping**

Practise good housekeeping on sets and locations:

- Keep work areas clean and free of spills and debris.
- Make sure work areas are well lit.
- Cover or barricade floor openings.
- Clean up wood chips, dust, and other combustible materials – they are potential fire hazards.
- Put away tools at the end of each work day.

# Painting

## Limit access to painting areas

Keep people away from painting areas, especially when you are using flammable liquids or toxic materials such as quick-drying paints.

Follow these safety guidelines to keep people away from painting areas:

- Post "Wet Paint" signs around the painting area.
- If possible, block off the painting area until painting is complete, the paint is dry, and the area has been ventilated.
- Do not allow crews into the painting area if harmful vapours are present.
- Schedule painting activities so other crews are not exposed to harmful vapours.

## Use less-hazardous materials whenever possible



*Use water-based paints instead of oil-based paints whenever possible.*

Many paints, lacquers, varnishes, and pigments are toxic if inhaled or ingested. Many painting materials can irritate the eyes or skin.

Whenever possible, use less-hazardous materials:

- Use water-based paints instead of oil-based paints.
- Use liquid or pre-mixed materials instead of powders to prevent powder inhalation. For example, use liquid dyes and pre-mixed wall filler. If you must use powders, mix them in an enclosed container and wear a respirator.
- Use hand cleaner, baby oil, or mineral oil instead of solvents to clean your hands or clothing. If you must use solvents, wear gloves to avoid skin contact.

## Work safely with paints and thinners

A material safety data sheet (MSDS) that gives safety information for that product is available for every paint and thinner and other hazardous materials.

Follow these safety guidelines when working with paints and thinners:

- Keep MSDSs on-site for all hazardous materials used in your production.
- Review safe handling requirements with all workers who will work with or around the hazardous materials.
- Follow written safe work procedures for cleaning up spills.
- Make sure emergency eyewash facilities are available.

For more information, see "Hazardous Materials" on page 107.

## Use ventilation and respiratory protection

Make sure all painting areas are well ventilated.

Follow these safety guidelines when spray painting:

- Use a well-ventilated designated spraying area or a booth with local exhaust ventilation. A tarped-off corner does not provide adequate ventilation or protection.
- Wear an approved respirator. An organic vapour cartridge with a pre-filter is generally appropriate for spray painting. Check the MSDS or check with the respirator supplier. For more information, see the WCB publication *Breathe Safer*.
- Consider using a high velocity/low pressure (HVLP) system to limit overspraying.



### In the Regulation

See Sections 12.127 to 12.141, Painting, Coating and Working With Plastics and Resins.

*Wear an approved respirator when spray painting.*

## Maintain communication between departments

While preparing an interior set, a group of painters encountered noxious vapours. They later discovered that the set-decoration department had hired a subcontractor to resurface an old bathtub with ultra-quick-drying materials. The set-decoration department had not communicated their work plans to the painting department.

## Control potential fire hazards

Spraying flammable paint materials in an area where there is standard electrical equipment or other sources of ignition can lead to an explosion.



*Store paints and solvents in a cabinet designed specifically for such storage.*

Follow these safety guidelines to control potential fire hazards when painting:

- Turn off lamps used for set lighting.
- Make sure your ventilation systems include electrical and mechanical systems designed to control all potential ignition sources. All ventilation systems must meet the requirements of the *Electrical Safety Act* and regulations made under it.
- Do not allow anyone to smoke in painting areas (areas where anything larger than one spray can is being used).

## Store paints and solvents safely

Store paints and solvents in storage cabinets designed for flammables. Keep containers closed when not in use.

# Lighting

## Set up lighting safely

Follow these safety guidelines when setting up lighting:

- Use appropriate fall protection equipment when setting up lighting. For more information, see “Fall Protection Equipment” on page 35.
- Make sure all lighting fixtures are supported so they will not fall. Use safety wire or chain to suspend fixtures. Use safety straps as backup protection.
- Make sure all lighting stands are weighted with sandbags so they will not tip over.
- Cover arc-type lamps such as HMIs in wet weather to prevent rain from entering the unit and ballast.
- When using open-faced lighting units, provide protection from shrapnel in case the bulb explodes. This is particularly important when people are working nearby.
- Make sure scaffolds or other metal grids used to support lighting are grounded.
- Before using any grounded equipment, test for continuity between the ground pin on the plug and the metal parts of the lighting equipment.
- Before relamping or repairing a light, turn it off and disconnect it from the power source.



*Test grounded equipment before using it.*

## Protect workers

Follow these safety guidelines to protect workers against potential lighting hazards:

- Before striking an HMI or similar light source, make sure no one is in contact with the unit, the supports, or the ballast.
- Keep workers away from the lamp head of an HMI or similar light source in damp or humid conditions. Rain and humidity increase the conductivity of the air and increase the likelihood of arcing.
- Protect workers against skin and eye damage. Arc-type lamps such as HMIs emit greater amounts of ultraviolet (UV) light than tungsten lamps.



# 4

## **Equipment and vehicles**

## Overview

This part describes basic safe work practices for working with or around equipment and vehicles. The information is divided into the following sections:

- Cranes and elevating work platforms
- Mobile equipment
- Insert-camera cars
- Traffic control

# Cranes and elevating work platforms

## In the Regulation

See Part 13: Ladders, Scaffolds and Temporary Work Platforms and Part 14: Cranes and Hoists.

## Use approved cranes and elevating work platforms

Cranes and elevating work platforms such as scissor lifts and aerial extensible-boom platforms must meet CSA or ANSI standards and WCB requirements.

If equipment is in any way modified from the original manufacturer's design, the modifications must be authorized by the manufacturer or by a professional engineer.

## Inspect the equipment

Key grips or camera crane grips should inspect cranes and elevating work platforms before each use, and take the following steps to ensure safe operation:

- If you find any defects that might endanger the cast or crew, repair the equipment immediately or tag it and remove it from service.
- Keep inspection and maintenance records for each crane or elevating work platform. Cranes and elevating work platforms

must be certified annually. Check the equipment decal to ensure the certification has not expired.



*Inspect cranes before every use.*

## Inspect the area and establish a safe operating zone

Before using cranes or elevating work platforms, check the area in which you will be operating for potential hazards, including:

- Traffic
- Overhead power lines
- Holes in the pavement
- Ditches and slopes

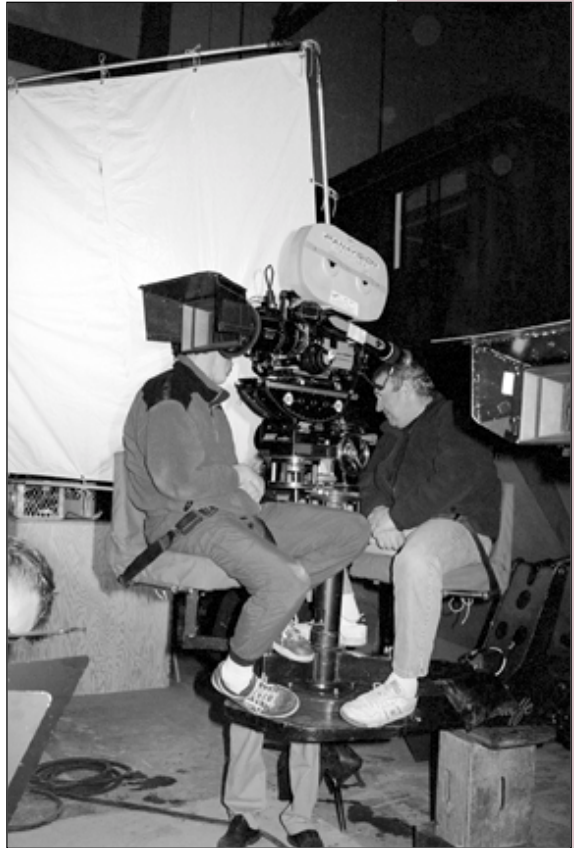
Establish a safe operating zone around the equipment. Mark the zone with flags, signs, or traffic cones, or use other means of traffic control.

## Operate the equipment safely

Only trained crew members should operate cranes and elevating work platforms.

Follow these safety guidelines:

- Follow the manufacturer's instructions. Keep the operating manual on-site.
- Make sure the crane base and the supporting ground are levelled and plumbed. On inclined surfaces, use wheel chocks and blocking.
- Look out for overhead power lines. When working near power lines, stay outside the limits of approach specified in Sections 19.24 to 19.29 of the Regulation.
- Use appropriate fall protection equipment. For more information, see "Fall Protection Equipment" on page 35.
- Never sit or climb on the rails of a basket or platform. Never travel with a crew member in a basket.



*Use seat belts when sitting in camera crane chairs.*

- Do not step off a camera-crane platform arm until the arm has been balanced and it is safe to do so.
- Set the braking system when elevating crew members.
- Do not overload the equipment. Never exceed the manufacturer's specified load limit.
- Do not try to increase equipment height by placing ladders, planks, or other objects on top of the platform.
- Avoid working from aerial platforms in extreme weather conditions such as thunderstorms, heavy rain, or high winds.

### **Never exceed working load limits for equipment**

A worker tried to secure a camera crane loaded beyond the manufacturer's specified load limit by putting sandbags over the tail of the crane. The crane tipped and the camera end of the crane hit a key grip in the head. The key grip required stitches.

# Mobile equipment

Film and television productions often use mobile vehicles and equipment such as forklifts, Winnies, honey wagons, and temporary wardrobe units.

## Mobile equipment operators

Mobile equipment operators must have training and authorization appropriate for the intended use of the equipment.

Mobile equipment operators are responsible for:

- Operating the equipment safely
- Maintaining full control of the equipment
- Complying with laws governing the operation of the equipment

The operator's supervisor must ensure that the operator is fully capable of operating the equipment safely and that the health and safety of other workers are not compromised.

## Keep equipment in safe operating condition

Follow these safety guidelines to ensure the safety of the cast and crew:

- Inspect, repair, and maintain mobile equipment according to the manufacturer's instructions.
- If you find any defects that might endanger the cast or crew, tag the equipment and remove it from service. Do not use unsafe equipment until it is repaired.
- Keep inspection and maintenance records for each piece of mobile equipment.
- Make sure rented equipment is in safe operating condition before using it.

**In the Regulation**  
See Part 16:  
Mobile  
Equipment.

## Operate mobile equipment safely

Follow these safety guidelines when operating mobile equipment:

- Follow the manufacturer's operating instructions.
- Do not leave the controls unattended unless you have secured the equipment against inadvertent movement.
- When transporting material or equipment, make sure the load is secure.
- Avoid operating internal-combustion engines indoors and near building air-intake systems.

# Insert-camera cars

Insert-camera cars must be engineered specifically for film and television production. If the insert-camera car operator believes that the vehicle is unsafe in any way, the operator has the authority to suspend operation of the vehicle.

## General guidelines

Follow these safety requirements when working with insert-camera cars:

- Inspect the car – including the brakes, tires, electrical system, and towing equipment – before and after each use.
- Qualified, experienced workers must rig the car (for a definition of *qualified*, see page 8).
- When using an insert-camera car at night, install two portable tail lights on the towing vehicle.
- Do not transport crew members or equipment not directly needed for the shot sequence.
- Do not ride on the tow bar or on the exterior of the towed vehicle. Crew members may ride on a towed camera platform specifically designed for this type of work, as long as they use the necessary restraints and harnesses.
- In most cases, insert-camera cars require a police escort during operation.



# Traffic control

**In the Regulation**  
See Part 18:  
Traffic  
Control.

## When do you need traffic control?

Set up effective traffic control in areas where vehicle traffic is a potential hazard to workers. Traffic control procedures must meet Regulation requirements and the requirements of the *Traffic Control Manual* issued by the B.C. Ministry of Transportation and Highways.

If you need to redirect road traffic during production, prepare a traffic control plan in advance. The production manager or location manager usually prepares the plan.

## Responsibilities of the traffic control supervisor

A traffic control supervisor, usually the production manager or location manager, oversees traffic control operations.

The traffic control supervisor is responsible for making sure that:

- Required traffic control devices such as cones and signs are in place
- Traffic control persons (TCPs) use the required personal protective clothing and equipment, including high-visibility apparel
- TCPs are safely positioned
- TCPs perform their duties competently and safely

## Responsibilities of the traffic control persons

TCPs must be adequately trained in the work procedures described in the *Traffic Control Manual*.

TCPs must follow these safety requirements when directing traffic:

- Use the standard signals specified in the *Traffic Control Manual* and Part 18 of the Regulation.
- Use required personal protective clothing and equipment such as high-visibility apparel, a hard hat, a traffic control paddle, and safety footwear.
- Stand in a safe position on the driver's side of the lane under your control. Make sure you are clearly visible and have an unobstructed view of approaching traffic.

## Set up designated walkways

Whenever possible, set up designated walkways to separate pedestrian traffic from work zones in which mobile equipment is being operated. Designated walkways must provide a safe walking surface. For example, make sure cables are taped down, covered by mats, or run through cable troughs.

# 5 Locations

# Overview

This part describes basic safe work practices for working on locations. The information is divided into the following sections:

- Buildings
- City streets
- Wilderness locations
- Water locations

Any unusual location (for example, a rooftop or tunnel) may present potentially hazardous conditions.

# Buildings

## Inspect the location and eliminate or control potential hazards

Before filming, a production company representative needs to inspect buildings to identify potential hazards. Inspections should always be done by someone who can identify health and safety concerns, including the presence of materials that may contain asbestos, lead, or PCBs.

Follow these general guidelines when inspecting a building location:

- Before arriving at the site, ask the building owner about the presence of any hazardous materials or other health or safety issues at the location.
- Make sure the ceilings, walls, floors, and stairways are structurally sound. If necessary, have a professional engineer evaluate the building.
- In old buildings, look for asbestos-containing materials, lead paint, and transformers that may contain PCBs. Asbestos is especially hazardous because it can cause cancer and asbestosis.
- If you find asbestos-containing materials, have a qualified person assess whether the asbestos is safely enclosed or poses any risk. You may need to choose another location or hire a qualified asbestos contractor to remove or enclose the materials.
- If you find lead paint, hire a qualified contractor to remove any loose or flaking paint that is a hazard or if the lead paint is going to be disturbed (for example, by sanding).
- In abandoned buildings, particularly warehouses, look for waste chemicals that may present potential fire and health hazards. Contact the B.C. Ministry of Environment, Lands and Parks or the local fire department for guidance in removing and disposing of hazardous chemicals.
- Keep a written record of the building inspection and any consultants' reports.

For an inspection checklist, contact SHAPE or download the checklist from their Web site (see "SHAPE Resources" on page 122). For more information about hazardous materials, see "Hazardous Materials" on page 107.

## Clean up biological hazards

Mould, pigeon or mouse droppings, dust, and other biological hazards can cause allergic reactions or illnesses. If necessary, have the set area cleaned and disinfected before filming. You may need to contact an occupational hygiene consultant to determine the risks and necessary precautions.

Do not draw drinking water from the building unless the water has been tested and proven safe. For more information, contact the local health department.

## Make sure rigging is supported

Follow these safety guidelines when hanging lights or other equipment:

- Make sure beams, pipes, and fixtures are structurally sound and capable of supporting the weight. Check the building plans or consult a professional engineer.
- Do not hang lights or equipment from sprinkler pipes.
- Do not drill holes for rigging in beams.
- If drilling for anchors, do not disturb any asbestos or lead paint.
- If asbestos insulation is wrapped around pipes, make sure it is not disturbed (broken) by any rigging.

## City streets

### Contact local community groups

It is a good idea to contact local community groups before filming in their community. They can alert you to potential hazards and neighbourhood concerns, and help you avoid confrontations with local residents. For example, when filming in Vancouver's downtown eastside, contact the Downtown Eastside Residents Association (DERA).



*Watch out for telephone poles and overhead power lines when filming on street locations.*

### Inspect the location and identify potential hazards

Before filming on a city street, a production company representative should inspect the location and identify potential hazards.

Consider these questions:

- Are there any telephone poles or overhead power lines that could interfere with camera cranes, rain machines, and other equipment?
- What is the physical condition of the street? Potholes or high curbs can be potential hazards for moving vehicles, as well as for cast and crew, who could trip or twist an ankle.
- Is there a lot of vehicle traffic? If so, arrange for traffic control. See "Traffic Control" on page 62.

For an inspection checklist, contact SHAPE or download the checklist from their Web site (see "SHAPE Resources" on page 122).

## Handle used hypodermic needles with care

Used hypodermic needles litter some city parks and alleys. These needles can carry bloodborne pathogens that can give you HIV or cause serious diseases.

Follow these safety guidelines when dealing with used hypodermic needles:

- **Never pick up needles with your bare hands.** Use tongs or wear suitable waterproof gloves.
- Dispose of needles in a suitable waste container recommended by your safety supplier.
- After disposing of needles, dispose of your gloves and wash your hands immediately.

For more information, see the WCB publication *HIV/AIDS, and Hepatitis B and C: Preventing Exposure at Work*.



*Used hypodermic needles can carry dangerous bloodborne pathogens.*



For more information about preventing workplace violence, see the WCB manual *Take Care: How to Develop and Implement a Workplace Violence Prevention Program*.

## Prevent violence

In some urban locations, violence is an unfortunate possibility. Incidents of violence include:

- Attempted assaults
- Actual assaults
- Any threatening statement or behaviour directed at a cast or crew member

Incidents of violence do not always occur at the production site. For example, cast and crew members may face risks walking to or from a bus stop or parking lot on their way to or from a location – especially late at night.

The production company is responsible for the health and safety of cast and crew members.

The production company must do the following:

- Determine if there is any risk of violence at the location. If cast or crew members will interact with people not associated with the production and there is any potential for threats or assaults, conduct a risk assessment. See “Risk Assessments” on page 21.
- After identifying and assessing risks, develop a violence-prevention program to eliminate or minimize the risks to the cast and crew.
- Instruct the cast and crew about the potential for workplace violence and train them in appropriate responses to violence. For example, if crew members are responsible for protecting equipment from thieves and vandals or for keeping street people from entering the filming area, the crew members need to know how to handle the kinds of situations that can occur with such people.

# Wilderness locations

## Identify potential hazards

Wilderness locations in B.C. offer spectacular scenery, but they also present a number of potential natural hazards.

Examples of hazardous locations, situations, and elements include:

- Mountains and cliffs
- Avalanches and rock slides
- Caves
- Glaciers
- Thin ice on lakes
- Whitewater streams
- Dangerous trees (snags)
- Forest fires
- Insects and wild animals

Production companies should hire an experienced guide or consultant who knows the potential dangers in the area and any special precautions that may be necessary.

Production companies should hire an experienced guide or consultant to help identify potential wilderness hazards and ensure the safety of cast and crew.

Do not drink water from lakes, rivers, or streams. Organisms in untreated water can make you ill.

## General guidelines

Follow these safety guidelines before filming at wilderness locations:

- Contact the local weather authorities to check weather conditions. Authorities can inform you of potential storms or avalanches. Make sure everyone at the location is dressed for the weather.
- Provide cast and crew with survival gear and make first aid equipment available at the location.
- Explain safety precautions to all cast and crew.
- Remind the cast and crew not to drink untreated water from lakes, rivers, or streams. Untreated water may contain dangerous organisms.
- Contact local rescue authorities such as Parks Canada or the RCMP to let them know where you will be filming.
- Set up a means of contacting people outside the location in case of an emergency. In remote locations, you may need a short-wave radio or a satellite cellphone.
- Prepare an emergency rescue plan tailored to your location and filming activity. Explain emergency procedures to all cast and crew.

# Water locations

## Determine the environmental conditions

Before filming on water, consult local authorities and weather sources to get information about water conditions, including:

- Strength of currents
- Potential underwater hazards
- Potential flash-flood hazards
- Other potential natural hazards
- Potential upstream hazards such as dams and waste-disposal sites

If people will be filming in the water, consider the water temperature. Cold water presents a risk of hypothermia.

After determining the environmental conditions of the location in which you are planning to film, conduct a risk assessment. See “Risk Assessments” on page 21.

## Establish and maintain good water quality

Before filming in a swamp, bog, pond, or pool, take water samples and have them tested at a laboratory. If tests reveal unsafe levels of impurities or contaminants such as fecal coliform, or unsafe pH levels, control the potential hazard or choose another location.

If you are using small controlled ponds, tanks, or vessels in the studio, keep them drained until immediately before use. Do not allow water to sit for long periods of time.

Keep all potential contaminants – including paints, thinners, repellents, gasoline, and oils – away from water.

## Wear personal protective clothing and equipment

If you are working near water and there is a risk you could drown, you must wear a personal flotation device (PFD) or life jacket. You should also feel comfortable working around water. Let your supervisor know if you cannot swim.

Wear a personal flotation device or life jacket whenever there is a risk of drowning.

If you will be working on a boat, wear non-slip shoes. Avoid clothing that will hamper boat-to-boat transfers and clothing that can get caught in on-deck machinery.

For information about underwater diving, see page 98.

## Use boats safely

Follow these safety guidelines when using a boat:

- Follow all boating regulations.
- Make sure the operator knows how to operate the boat competently and safely.
- Make sure that the boat is seaworthy and that all machinery and equipment on board meets WCB requirements.
- Know the boat's load capacity; do not overload the boat.
- Allow only essential cast and crew members on the boat. All others should remain on land.
- Do not smoke on board. Fire at sea is a serious potential hazard.

On the boat, practise good housekeeping:

- Put equipment and tools in their place.
- Secure hatch covers so they will not slide or shift.
- Keep passageways clear and do not block emergency exits.
- Keep the deck clear of potential slipping and tripping hazards.

## Prepare emergency backups

Have emergency backups in place so you will be ready if anything goes wrong during filming.

Emergency backups include:

- A reliable communication system
- Safety lines, nets, observers, or divers for filming in rivers or other bodies of water where potentially hazardous conditions exist (for example, swift currents, thick underwater plant life, or rocks)
- Stationing emergency rescue workers downstream or having a safety boat nearby



**Special effects,  
props, and stunts**

# Overview

This part describes basic safe work practices for working with or around special effects, props, and stunts. The information is divided into the following sections:

- Pyrotechnics
- Smoke and fog
- Polyurethane and polyester resins
- Mechanical devices and articulated sets
- Firearms
- Aircraft (airplanes and helicopters)
- Skydiving
- Underwater diving

# Pyrotechnics

**In the Regulation**  
See Part 21:  
Blasting  
Operations.

## Who can work with pyrotechnics?

Only trained and certified workers can plan, rig, and detonate pyrotechnic special effects.

The Explosives Regulatory Division of Natural Resources Canada issues four classes of pyrotechnic special effects certification:

- Theatrical user
- Assistant
- Pyrotechnician or special effects pyrotechnician
- Authority having jurisdiction (for example, a fire chief or fire protection officer)

For more information about pyrotechnic special effects certification, contact the Explosives Regulatory Division of Natural Resources Canada.

## Who is in charge of pyrotechnics?

The special effects coordinator for a production has final authority on all safety matters related to pyrotechnics used in that production. The special effects coordinator must remain on the set at all times during the preparation, placement, testing, and firing of any pyrotechnic special effect.

## Follow all laws and requirements

Before using pyrotechnic special effects, get all the required licenses and permits.

Use, handle, store, and transport pyrotechnic materials in accordance with all applicable federal, provincial, and municipal laws such as the *Canada Explosives Act*, the *Transportation of Dangerous Goods Act*, and the Occupational Health and Safety Regulation.



## Conduct risk assessments

If you plan to use pyrotechnics, determine the potential hazards and conduct a risk assessment for each potential hazard. See “Risk Assessments” on page 21.

Avoid the following common pyrotechnic mistakes:

- Triggering the pyrotechnic effect prematurely
- Using more pyrotechnic material than necessary
- Not having fire extinguishers of a suitable type and capacity available
- Assigning duties to inadequately trained or inexperienced pyrotechnicians or assistants
- Entering danger areas before the special effects coordinator has inspected them and the all-clear signal has sounded

### **Work safely to achieve realism**

The quest for realism in stunts and special effects can put cast and crew at risk. Many modern stunts and special effects can be simulated without limiting creativity, sacrificing quality, or increasing cost.

When planning stunts and special effects, always look for the safest way to execute the scene. Consider using scale models and computer simulations as replacements for live stunts and pyrotechnics.

## Inform the cast and crew

On call sheets, include safety information related to pyrotechnic special effects. Specify restricted or no-access areas as well as viewing locations, if they are available.

Hold a safety talk and dry run before filming a pyrotechnic special effect. If you make changes to scheduled pyrotechnics, hold another talk to explain the changes and any revised safety precautions. For more information, see “Safety Talks” on page 15.

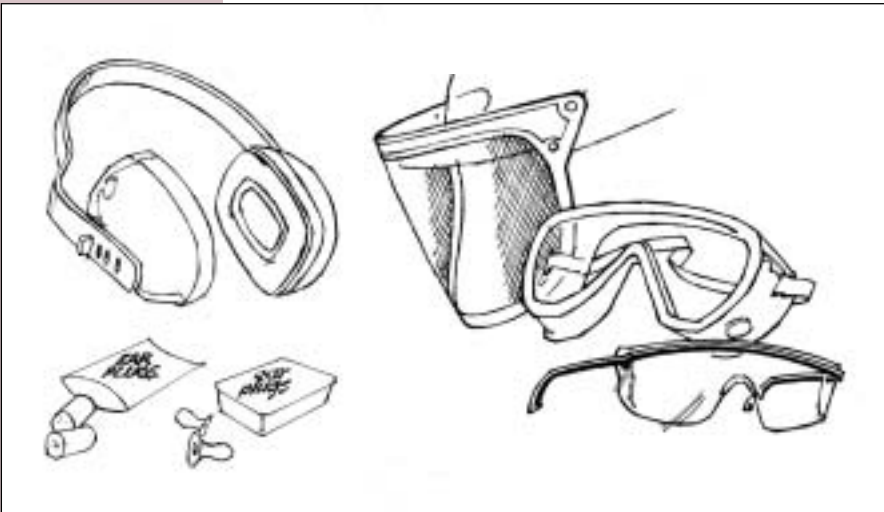
## Secure the danger area

Set up a danger area around the pyrotechnic special effect. Follow these safety guidelines to keep cast and crew safe:

- Allow only cast and crew authorized by the special effects coordinator to enter the danger area.
- Keep minors off the set completely, well away from potential danger.
- Post warning signs to prevent people from unintentionally entering the danger area.
- If necessary, post security guards around the danger area.

## Wear personal protective equipment

Anyone in or near the danger area must wear appropriate personal protective equipment such as safety glasses and hearing protection.



*Wear safety glasses, hearing protection, and other appropriate personal protective equipment near pyrotechnic special effects when required.*

## Prepare for emergencies

Make sure workers and equipment are ready for emergencies. Follow these guidelines to prepare for emergencies:

- Have emergency workers and fire extinguishers standing by.
- Check emergency equipment to make sure it is in good operating condition.
- Make sure crew members are trained in the proper use of emergency equipment.

### **Report serious incidents to the WCB immediately**

If a serious incident (an injury or other accident) occurs, the production company must report it to the WCB immediately. For more information, see "Incident Reporting and Investigation" on page 114.

## Eliminate possible ignition sources

Smoking and open-flame ignition sources are strictly prohibited within 15 m (50 ft.) of all pyrotechnic areas.

Post "No Smoking" signs in all areas where pyrotechnic materials are used, stored, or handled.

Turn off all radio transmitters, including cellular phones, in pyrotechnic areas. Because it may be difficult to ensure that all possible transmitter sources are turned off, it is a good idea to prohibit all radios and cellular phones near pyrotechnics.

The special effects coordinator should remind the cast and crew in a safety talk that they must not smoke or use radios or cellular phones near pyrotechnics.

## Inspect the blast site for unexploded charges

After pyrotechnic charges have been fired, a pyrotechnician must thoroughly assess the blast site to make sure there are no unexploded charges, but only when the pyrotechnician is confident that all devices have detonated.

If there is a possible misfire, the pyrotechnician must wait for a mandatory minimum of 10 minutes (if using electrical methods) before assessing the blast site. In some situations, the pyrotechnician may need to wear personal protective equipment during the inspection.

No one else should enter the danger area until the pyrotechnician declares it is safe.

## Use open flames safely

Follow these safety guidelines when working with open flames such as torches, candles, or fireplaces:

- Notify the local fire department.
- Use approved gas lines that meet building and fire codes.
- Assign a responsible crew member to handle, place, and control open flames.
- Ensure that all workers who are working with open flames are trained in firefighting techniques.
- Explain emergency procedures (including escape routes) to cast and crew.
- Keep flammable materials away from open flames.
- Apply a fire-retardant material to greenery and other combustible materials.
- Keep fire extinguishers of a suitable type and capacity ready and make sure you know how to use them.
- Make sure fire exits are clear.

# Smoke and fog

The following substances are typically used to create smoke or fog:

- Propylene glycol, dipropylene glycol, butylene glycol, and polyethylene glycol
- Glycerin products
- Highly refined mineral oils
- Cryogenic gases such as carbon dioxide or liquid nitrogen

The choice of substance depends on whether it will be used indoors or outdoors, and whether the cast or crew will be exposed to it for significant periods of time.

Make sure you follow the manufacturer's guidelines when using any of these substances. You should not alter the mix. Never heat substances above the temperatures specified in the guidelines.

## Keep exposures to a minimum

Use the minimum chemical concentration for the minimum time necessary to achieve the desired fog or smoke effect. Check the Table of Adopted Values and the Table of Exceptions\* to see if the substance you are using has an exposure limit. Do not exceed exposure limits or reduce the oxygen concentration in the air below the normal level.

If necessary, have an occupational hygienist assess ways to reduce exposure and confirm that the oxygen concentration in the air is sufficient.

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\* The Table of Adopted Values is available in Guideline G5.48-1 to Part 5 of the Occupational Health and Safety Regulation on the WCB web site: <http://regulation.healthandsafetycentre.org/s/GuidelinePart5.asp?ReportID=32895>

The Table of Exceptions is available in *Prevention Manual* Policy Item R5.48-1 available on the WCB web site: <http://regulation.healthandsafetycentre.org/s/Policies-Part5.asp#SectionNumber:R5.48-1>

### In the Regulation

See Part 5: Chemical and Biological Substances.

Dry ice is the safest way to generate fog, except in enclosed spaces where carbon dioxide can accumulate to dangerously high levels.

## Smoke and fog health issues

Some artificial-smoke liquids (notably glycols) absorb water and may cause drying of the throat, nose, and sinuses. Artificial-smoke liquids may cause irritation to children, the elderly, and people with allergies or asthma or other respiratory disorders.

Prolonged release of cryogenic gases such as carbon dioxide can displace oxygen from an area. Make sure the oxygen concentration of air is not being depleted, especially in confined or enclosed spaces. Make sure cryogenic gases are not allowed to pool in lower areas such as orchestra pits.

Children, the elderly, and people with allergies or asthma or other respiratory problems may find it difficult to breathe in smoke or fog. These people should take precautions to avoid smoke and fog or limit their exposure to them.

## Keep MSDSs on-site

Keep material safety data sheets (MSDSs) on-site for all hazardous materials used during production, including substances used to create smoke or fog. For more information, see "Hazardous Materials" on page 107.

## Inform the cast and crew

On call sheets, provide safety information about the use of smoke or fog, including:

- When and how the smoke or fog will be used
- The type of product that will be used to create the smoke or fog
- The name of the person responsible for providing local exhaust ventilation and respirators

Hold a safety talk with the cast and crew to explain how smoke or fog will be used, the potential hazards, and any necessary safety precautions. Tell the cast and crew when they must wear respirators. For more information, see "Safety Talks" on page 15.

Post notices at set entrances to let everyone know that smoke or fog is being used inside. Keep all non-essential cast and crew away from the set.

## Provide approved respirators, if required

If respirators are required, the production company must provide respirators approved by the National Institute for Occupational Safety and Health (NIOSH). Check the material safety data sheets for the products you will be using to determine the appropriate type of respirators to use.

If the organic fluids used to generate the fog cause headaches or respiratory irritation, use combination organic vapour, acid gas cartridges with HEPA filters.

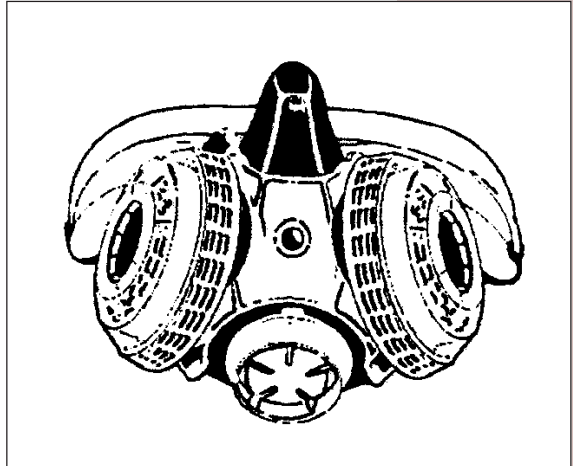
## Ventilate interior sets

When using smoke or fog on an interior set, periodically ventilate the set to exhaust the smoke or fog and keep workers' exposures to it as low as possible. Often, the most practical way to ventilate an interior set is to open the doors and turn on fans.

Evacuate nearby areas, such as dressing rooms, in which stray smoke or fog could accumulate.

## Take precautions on exterior sets

When using smoke or fog at an exterior location, take reasonable precautions to prevent the cast and crew from inhaling the smoke or fog. Make appropriate respirators available to workers, if required.



*Workers must be clean-shaven to ensure a good fit when using a respirator.*

## Polyurethane and polyester resins

Paints, expansion foams, and adhesives used in building props may contain isocyanate, a hazardous chemical. Isocyanate, which may be used to speed the curing process, is often found in the activator or hardener component of two-part paints.

Until the paint or foam is hardened and cured, workers may be exposed to isocyanates. Isocyanates are irritating to the eyes, lungs, and skin. Continued exposure can result in the worker becoming sensitized. When that occurs, the worker may have a severe asthmatic reaction to even very low level exposures.

Polyester resins, which also contain strong irritants, are other products often used in props and sets. If your production is using isocyanate-containing products or using polyester resins, your health and safety program must include appropriate written safe work procedures for using these materials.

### **Wear personal protective clothing and equipment**

Refer to the MSDS for specific information on required personal protective clothing and equipment. For example, workers spraying products containing isocyanates will need to wear an approved, air-supplied respirator and other personal protective clothing to prevent absorption into the body. Isocyanates also react with moisture, causing irritation to the eyes, lungs, and skin.

Make sure unprotected workers who may be nearby are not exposed to emissions. Use local exhaust ventilation or schedule the building of props or models to take place when other workers are not around. Building large props requiring the use of polyurethanes or polyester resins is best done at a site where good ventilation is available to control the vapours, such as at an autobody spray paint booth.



# Mechanical devices and articulated sets

## Using mechanical devices or articulated sets

If a mechanical device or articulated set is used in a production, the production company must ensure that:

- The device or set is capable of safely performing the functions for which it is used
- Workers operate the device or set in accordance with the manufacturer's instructions, safe work practices, and the requirements of the Regulation
- The device or set is properly inspected, tested, and maintained

## Creating mechanical devices or articulated sets

If a production company requires a mechanical device or articulated set to be created for a production, the production company is considered the supplier of that device or set. As a supplier, the production company must provide directions for the safe use of the device or set and must ensure that the device or set is safe when used as specified. Such directions could be developed in consultation with a qualified person such as a professional engineer.

**In the Regulation**  
See Sections  
4.1 to 4.12,  
Buildings,  
Structures and  
Equipment.

# Firearms

## Responsibilities of the firearms handler

The firearms handler is responsible for the following tasks:

- Take charge of all firearms and ammunition and keep an inventory of them.
- Know all the requirements for handling, transporting, and storing firearms, ammunition, and black powder.
- Comply with all local, provincial, and federal regulations for firearms.
- Be familiar with the specific firearms being used and their safety requirements. Know how to load, unload, dismantle, clean, and reassemble the firearms.
- Check firearms before and after each use.
- Clean all firearms daily after use.
- Load and unload all firearms (if this is not practical, supervise the handling, loading, and unloading of firearms by designated, trained assistants) as follows:
  - Use the lightest load of blank ammunition necessary for the scene.
  - Allow any actor who will be standing near the line of fire to witness the loading of the firearms.
- Train actors and stunt performers in the safe use of firearms.
- Take firearms away from actors and stunt performers between takes whenever possible.

Use blank ammunition when working with firearms. Live ammunition should not be used in film and television production.

## Inform the cast and crew

On call sheets, specify when a weapon is scheduled to be fired on the set. Attach a firearms safety guideline to the call sheets.

Hold a safety talk with the cast and crew to explain the type of firearms and blank ammunition that will be used, the potential hazards, and any necessary safety precautions. For example, actors must be trained in safe handling of firearms and camera operators may need to wear eye and hearing protection. For more information, see "Safety Talks" on page 15.

## Use protective equipment

When firearms are being used, protect cast and crew members according to the following guidelines:

- Place  $\frac{3}{8}$ " polycarbonate shields (such as Lexan) between crew members and any firearm discharged in their direction.
- Use shields or other appropriate personal protective equipment for camera operators whenever they are working near a point-blank shot.
- Make sure cast and crew members wear eye and hearing protection when necessary.

### Blanks can kill

A blank is essentially a bullet without the projectile. The blank shell is filled with smokeless powder or some other propellant and topped with a wax-paper wad.

When the gun is fired, the smokeless powder ignites, causing a flash of hot gases and the sound of a gunshot. If the barrel is not blocked, the wax-paper wad is ejected at high velocity.

Blanks have killed performers. Never point a firearm at anyone, including yourself.

## Use firearms safely

Follow these safety guidelines when working with firearms:

- Always treat firearms as if they are loaded.
- Never point firearms at anyone, including yourself, even during a scene.
- Do not hand a firearm to a person barrel-first.
- Leave the safety engaged until immediately before using the firearm.



- Do not place your finger on the trigger until you are ready to shoot. Keep your finger alongside but off the trigger.
- Know where and what your intended target is. Do not fire toward another person.
- Do not discharge a firearm that has dirt, sand, or any other substance blocking the barrel.
- Immediately report a misfire or jam to the firearms handler. Remove the firearm from service until it is repaired.

*Always treat firearms as if they are loaded.*

# Aircraft (airplanes and helicopters)

## Who is in charge of the aircraft?

The pilot is the final authority on all flight operations.

Both the pilot and the stunt coordinator have the authority and responsibility to abort a stunt if it is unsafe. Any change in a preplanned stunt requires the authorization of the pilot and the stunt coordinator.

## Hire certified, experienced pilots

When hiring a pilot, make sure the pilot has all the required Transport Canada registration documentation and operating certificates. Also, make sure the pilot is experienced in film or television work.

Before performing a flight involving an unusual activity (for example, a stunt), the pilot must get the necessary waivers and certificates. Keep all waivers and certificates on-site.

## Follow Transport Canada regulations

All flights must meet Transport Canada regulations. Contact Transport Canada in writing at least two weeks before using aircraft in your production.

## Conduct risk assessments

If you plan to use aircraft, determine if there are any potential hazards and conduct a risk assessment for each potential hazard. See "Risk Assessments" on page 21.

## Inform the cast and crew

On call sheets, note any scheduled use of aircraft. Attach safety guidelines and risk assessments to call sheets.

Hold a safety talk with the cast and crew to explain the filming sequence, the potential hazards, and any necessary safety precautions. For example, review safety and emergency procedures for approaching and working near aircraft. For more information, see "Safety Talks" on page 15.

When filming stunts, the camera crew may be at risk because they are so close to the action, or even part of the action. Take special precautions to ensure the safety of camera operators.

## Set up two-way communication

Set up single-channel, dedicated two-way communication between the ground and the aircraft. Maintain communication at all times during aircraft operation.

## Set up a hazard area

Follow these safety guidelines to establish a hazard area when working with aircraft:

- Keep all non-essential cast and crew members at least 150 m (500 ft.) away from the aircraft. Allow only essential workers in the hazard area.
- Do not allow smoking within 30 m (100 ft.) of the helicopter, plane, or support truck.
- Protect workers and equipment from debris that may be thrown back by helicopter rotors or by airplanes taxiing or taking off.
- Secure lights with sandbags.



*Allow only essential cast and crew in the hazard area around the aircraft.*

## Work safely around running engines

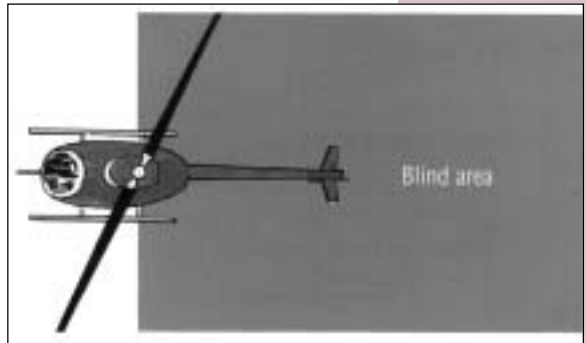
If you are filming an aircraft with the engine running, take adequate safety precautions:

- Always remain aware of the location of the propellers.
- Make sure the pilot is in the pilot's seat and in control of the aircraft at all times when the engine is running.
- Anchor the aircraft to prevent forward movement.

## Approach helicopters safely

Follow these safety guidelines when approaching a helicopter:

- Make eye contact with the pilot before you approach the helicopter. Proceed only after the pilot has acknowledged your presence and waved you forward.
- Approach and leave the helicopter from the front.
- Do not walk around the tail section of the helicopter.
- Do not walk downhill toward the helicopter or uphill away from the helicopter.
- Crouch as you approach and leave the helicopter.
- Carry all objects horizontally below waist level – not upright or over your shoulder, where the objects could hit the rotor.



*Approach and leave the helicopter from the front, where the pilot can see you.*

## Clear landing and takeoff areas

Follow these safety guidelines when working around landing and takeoff areas:

- Clear non-essential workers from the runway during takeoff and landing.
- If you are filming the takeoff or landing, consider safety when deciding on camera placement.
- Keep landing and takeoff areas free of debris.
- Wear eye protection when working near a helicopter that is landing or taking off.
- Do not wear a hat or loose clothing.

## Secure camera operators and cameras

When a camera will be operated in an aircraft with the door open, the camera operator must wear a seat belt and use a safety harness. The camera must be secured separately from the camera operator.

Use a locked-off camera if the pilot has any safety concerns involving an aerial filming sequence in which the aircraft will be flying low and banking so the camera will be on the underside of the aircraft.



# Skydiving

## Hire trained, certified skydivers

Skydivers working in film and television production must have a current certificate issued by a nationally or internationally recognized certification organization such as the Canadian Sport Parachuting Association. For more information about certification requirements, contact Transport Canada and the Canadian Sport Parachuting Association.

## Inform the cast and crew

On call sheets, note any scheduled skydives and attach safety guidelines.

Hold a safety talk and dry run with the cast, crew, and pilots involved in the scene. Explain the filming sequence, potential hazards, and any necessary safety precautions. For more information, see “Safety Talks” on page 15.

# Underwater diving

## In the Regulation

See Part 24:  
Diving, Fishing  
and Other  
Marine  
Operations.

## Hire trained, certified divers and divers' tenders

In most cases, anyone using diving equipment while filming or being filmed underwater must be certified as an occupational diver (see "Uncertified Principal Performers Working Underwater" on page 99 for exceptions).

Certified occupational divers must:

- Meet the requirements of *CSA Standard Z275.4-97 Competency Standard for Diving Operations*, or another standard acceptable to the WCB
- Be competent with all the equipment they will use during the production
- Have current medical certification from a physician knowledgeable and competent in diving medicine (contact the WCB or SHAPE for a list of such physicians)

Divers and divers' tenders must be certified in:

- Cardiopulmonary resuscitation (CPR)
- Oxygen management
- Dive-accident management

## Uncertified principal performers working underwater

Principal performers are sometimes needed for underwater close-ups, yet few performers are certified occupational divers. In some circumstances, the WCB may issue a variance allowing a principal performer to film an underwater close-up.

In certain underwater filming situations at shallow depths, the principal performer may be allowed to film underwater without a WCB variance. If the following conditions are met, an uncertified principal performer will be allowed to work underwater:

- A certified occupational diver assesses the principal performer's ability and considers the performer competent to perform the underwater shots.
- A certified occupational diver accompanies the principal performer at all times while the performer is underwater.
- If the principal performer has a valid recreational diver's certificate, the performer goes no deeper than 4.5 m (15 ft.).
- If the principal performer does not have a valid recreational diver's certificate, the performer goes no deeper than 2 m (7 ft.).
- The principal performer is only in the water for as long as is necessary to perform the underwater shot.

The dive supervisor must check the principal performer's health and fitness each day before the performer dives. Performers should not dive if they are suffering from a respiratory infection, cold, or flu.



**More health and  
safety information**

# Overview

This part includes additional health and safety information and requirements. The information is divided into the following sections:

- First aid
- Hazardous materials
- Workplace inspections
- Incident reporting and investigation

# First aid

In the Regulation  
See Part 33:  
Occupational  
First Aid.

## Provide appropriate first aid equipment, supplies, facilities, and services

All B.C. workplaces – including film and television production sites – must provide appropriate first aid equipment, supplies, facilities, and services. The type of first aid equipment, supplies, facilities, and services your production needs depends on the:

- Hazard classification of the production
- Travel time to a hospital from each production site
- Number of workers on each shift

To determine the first aid requirements specific to your production, see Part 33 of the Regulation.

### Hazard classifications

The WCB assigns a hazard classification – “A,” “B,” or “C” – to each workplace in B.C. The most-hazardous workplaces receive an “A” classification, the least-hazardous receive a “C” classification.

Generally, film and television productions receive a “B” classification unless a particular activity, such as pyrotechnic effects, upgrades the production to an “A” classification.

Typical first aid requirements for a film or television production include the following:

- Maintain an appropriate first aid kit. Keep your first aid supplies clean and dry in a weatherproof container.
- Designate a certified occupational first aid attendant.
- Set up a dressing station or first aid room as close to the work area as possible.

If a honey wagon is used as a first aid facility, it must meet the requirements of the Regulation, Sections 33.8 to 33.10, as appropriate. Mobile first aid facilities can be rented.

In some cases, such as when filming stunts or special effects, you may also want to have a paramedic or other emergency medical provider standing by.

## First aid at remote locations

When working at remote locations (more than two hours' surface-travel time from a hospital), provide appropriate first aid facilities and a two-way communication system. As in any location, plan for emergency transportation to the nearest hospital.

## First aid when working alone

Location scouts and other workers who are working alone more than 20 minutes' surface-travel time from first aid supplies must carry a personal first aid kit. Part 33, Schedule 2, of the Regulation lists the required contents of the kit.

## Inform the cast and crew

Make sure the cast and crew are aware of emergency first aid information and procedures, including the following:

- Name, contact number, and location of the first aid attendant
- Location of the first aid kit, dressing station, or first aid room
- Route and method of transportation to the nearest hospital
- Emergency phone numbers for the fire department, local police or RCMP, ambulance, and other emergency services
- How to operate communication systems in remote locations

Explain first aid procedures at safety meetings and include details on call sheets. Also, post emergency first aid procedures at sets and locations.



*First aid rooms should be as close to the work area as possible.*

## First aid records

Workers are required to immediately report all injuries and illnesses to the first aid attendant or supervisor.

Keep a first aid treatment record book documenting all injuries or diseases that occur for your production. Keep the first aid record book on file for at least 10 years.

Each entry in the first aid record book must include:

- The full name of the injured worker
- The date and time of the injury or report of illness
- The date and time the injury or illness was reported to the production company or the production company's representative
- The names of any witnesses
- A description of how the injury or illness occurred
- A description of the nature of the injury or illness
- A description of the treatment given and any arrangements made relating to the injured worker
- A description of any subsequent treatment given for the same injury or illness
- The signature of the first aid attendant or other person giving first aid and, if possible, the signature of the injured or ill worker



# Hazardous materials

Exposure to hazardous materials can contribute to serious health problems such as kidney or lung damage, sterility, cancer, burns, and dermatitis. Some materials can cause fires or explosions.

## Examples of hazardous materials

Hazardous materials are common in film and television production. Here are just a few examples:

- Painters and set builders use toxic solvents, lacquers, paints, dyes, pigments, and varnishes.
- Props builders sometimes use plastic resins, catalysts, adhesives, and expandable foams.
- Special effects workers handle pyrotechnic materials.
- Abandoned buildings and warehouses used as locations sometimes contain biological hazards such as rodent or bird droppings, or chemical hazards such as asbestos, lead paint, or PCBs.

**In the Regulation**  
See Part 5:  
Chemical and  
Biological  
Substances and  
Part 6:  
Substance  
Specific  
Requirements.

### Hair and makeup hazards

Many hair and makeup products contain solvents, dyes, pigments, preservatives, oils, or waxes that can cause dermatitis, cosmetic acne, rashes, conjunctivitis (eye irritation), and other skin irritations or allergic reactions.

Many artificial facial and body parts contain latex rubber that can irritate the skin and cause serious latex allergies in some people.



## **What is the Workplace Hazardous Materials Information System (WHMIS)?**

The Workplace Hazardous Materials Information System (WHMIS) is a nationwide program providing information about the use of hazardous materials in the workplace.

WHMIS refers to hazardous materials as *controlled products*.

### **How to get information about controlled products**

Suppliers must provide a material safety data sheet (MSDS) and WHMIS label for each controlled product that they sell or produce. An MSDS is a technical bulletin that provides detailed hazard and precautionary information for a controlled product. An MSDS supplements the alert information provided on the WHMIS label. Keep MSDSs on-site for all controlled products (see sample on pages 110–111).

Production companies must ensure that workers are educated and trained so they will understand the information on MSDSs and WHMIS labels and follow safe work procedures.

### **How to meet WHMIS requirements**

When using, storing, handling, or disposing of hazardous materials, follow WHMIS requirements. The following four basic steps will help your production company meet WHMIS requirements.

#### **1. Check WHMIS labels and MSDSs**

When you receive a controlled product, make sure the supplier has provided a WHMIS label and MSDS. Make sure the MSDS for the product meets Canadian requirements.

Keep copies of the MSDS at the worksite and at the production office as long as the controlled product is in use. Make MSDSs readily available to workers. If an MSDS is three years old and you are still using the controlled product, get an up-to-date MSDS from the supplier.

Replace WHMIS labels if they become illegible or are accidentally removed.

## **2. Implement written safe work procedures and emergency procedures**

Prepare written safe work procedures explaining how to work safely with and prevent exposure to controlled products and listing any personal protective clothing and equipment required. Also prepare emergency procedures, including procedures for cleaning up after a spill. Include all written procedures in your production's health and safety program.

## **3. Educate and train crew members**

Make sure that all crew members are educated and trained in the safe handling of specific products and that they understand WHMIS labels and MSDSs. Evaluate your WHMIS education and training program at least once a year to determine if it is still effective or if it needs to be revised.

## **4. Use safe work procedures**

Make sure that all crew members who work with or near controlled products handle them according to safe work procedures and use any required personal protective clothing and equipment.

For more information about WHMIS, see the WCB publication *WHMIS at Work*.

### **Provide proper ventilation for the costume department**

Costume-department workers are often required to dye, age, and dry clean leather and fabrics. Because many of the chemicals used for these tasks are hazardous, the production company must provide these workers with proper ventilation or, if required, with respiratory protection. Small, unventilated basement rooms are unsuitable for this kind of work.

# MATERIAL SAFETY DATA SHEET – 9 Sections

## SECTION 1 – PRODUCT INFORMATION

Product Identifier <b>Acetone</b>		WHMIS Classification (optional) <b>B2, D2B</b>	
Product Use <b>Solvent, general-purpose cleaning of adhesives, contact cements, printing inks, gums, waxes, resins, greases, and oils</b>			
Manufacturer's Name <b>Happy Chemical Company</b>		Supplier's Name <b>Big Chemical Company</b>	
Street Address <b>5556 Helium Lane</b>		Street Address <b>123 Nitro Avenue</b>	
City <b>Gaseous Bay</b>	Province <b>BC</b>	City <b>Vapour Town</b>	Province <b>BC</b>
Postal Code <b>X0X 0X0</b>	Emergency Telephone <b>(604) 234-5678</b>	Postal Code <b>X5X 5X5</b>	Emergency Telephone <b>(604) 345-6789</b>

## SECTION 2 – HAZARDOUS INGREDIENTS

Hazardous Ingredients (specific)	%	CAS Number	LD <sub>50</sub> of Ingredient (specify species and route)	LC <sub>50</sub> of Ingredient (specify species)
Acetone	99-100	67-64-1	5,800 mg/kg (oral, rat)	30,000 ppm (inhal., 4 hrs.)

## SECTION 3 – PHYSICAL DATA

Physical State <b>Liquid</b>	Odour and Appearance <b>Clear, colourless liquid with mildly pungent, sweet and fruity odour</b>		Odour Threshold (ppm) <b>62 (average)</b>
Specific Gravity <b>0.791 at 20° C</b>	Vapour Density (air = 1) <b>2.0</b>	Vapour Pressure (mmHg) <b>24-24.7 kPa</b>	Evaporation Rate <b>5.6 (n-butyl acetate=1)</b>
Boiling Point (°C) <b>56.2</b>	Freezing Point (°C) <b>-94.6</b>	pH <b>n/ap</b>	Coefficient of Water/Oil Distribution <b>0.58</b>

## SECTION 4 – FIRE AND EXPLOSION DATA

Flammability <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, under which conditions? <b>Flammable liquid</b>		
Means of Extinction <b>Carbon dioxide, dry chemical powder, "alcohol" foam, polymer foam. Water may be ineffective because it will not cool acetone below its flashpoint.</b>			
Flashpoint (°C) and Method <b>-18° C (cc)</b>	Upper Flammable Limit (% by volume) <b>12.8% at 25° C</b>	Lower Flammable Limit (% by volume) <b>2.5% at 25° C</b>	
Autoignition Temperature (°C) <b>465° C</b>	Explosion Data – Sensitivity to Impact <b>No</b>	Explosion Data – Sensitivity to Static Discharge <b>Yes</b>	
Hazardous Combustion Products <b>Carbon monoxide and carbon dioxide</b>			

## SECTION 5 – REACTIVITY DATA

Chemical Stability <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If no, under which conditions?		
Incompatibility with Other Substances <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, which ones? <b>Acids (for example, nitric acid); Strong oxidizing agents (for example, hydrogen peroxide); Bases (for example, sodium hydroxide)</b>		
Reactivity, and under what conditions? <b>Attacks many forms of plastics and rubber, including rayon</b>			
Hazardous Decomposition Products <b>Carbon monoxide from prolonged exposure to sunlight</b>			

**Product Identifier** Acetone

### SECTION 6 – TOXICOLOGICAL PROPERTIES

Route of Entry <input checked="" type="checkbox"/> Skin Contact <input type="checkbox"/> Skin Absorption <input checked="" type="checkbox"/> Eye Contact <input checked="" type="checkbox"/> Inhalation <input checked="" type="checkbox"/> Ingestion	
Effects of Acute Exposure to Product Irritation; possible effects on central nervous system (CNS); at air concentrations above 8,000 ppm may cause drowsiness, incoordination, loss of reflexes, unconsciousness, and respiratory failure	
Effects of Chronic Exposure to Product Dermatitis. No significant harmful effects from oral or inhalation exposures.	
Exposure Limits (value, source, date) 250 ppm, 8-hour exposure limit (WCB)	Irritancy (if yes, explain) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Severe eye irritant, skin and respiratory irritant
Sensitization (if yes, explain) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Carcinogenicity (if yes, explain) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Reproductive Toxicity (if yes, explain) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Teratogenicity (if yes, explain) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Mutagenicity (if yes, explain) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Synergistic Products (if yes, explain) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Chlorinated solvents, ethyl alcohol

### SECTION 7 – PREVENTIVE MEASURES

Personal Protective Equipment <input checked="" type="checkbox"/> Gloves <input checked="" type="checkbox"/> Respirator <input checked="" type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input type="checkbox"/> Other	
If checked, specify type Butyl rubber gloves. NIOSH-approved respirator with organic vapour cartridge for air concentrations up to 2,500 ppm. Splash-proof chemical safety goggles or face shield.	
Engineering Controls (specify, such as ventilation, enclosed process) Use mechanical ventilation to reduce exposure. Use non-sparking and grounded ventilation system.	
Leak and Spill Procedure Eliminate all ignition sources. Wear adequate protective equipment. Contain spill with absorbent material and place in a suitable covered and labelled container for disposal.	
Waste Disposal Check with federal, provincial, and local government requirements for disposal.	
Handling Procedures and Equipment Use in a well-ventilated area, away from heat and all ignition sources (including sparks, open flames, and hot surfaces). Do not use with incompatible substances. Use grounded and non-sparking equipment.	
Storage Requirements Store in cool, well-ventilated area out of direct sunlight, away from heat and ignition sources. Storage facilities should be made from fire-resistant materials.	
Special Shipping Information TDG shipping name: Acetone, Classification 3, Flammable liquid, Packing Group II	PIN 1090

### SECTION 8 – FIRST AID MEASURES

Inhalation	Remove source of contamination or move victim to fresh air.
Ingestion	If conscious, have victim rinse mouth thoroughly with water; do not induce vomiting; have victim drink 240-300 mL of water. Obtain medical attention immediately.
Skin Contact	Flush with water for 15 minutes.
Eye Contact	Immediately flush contaminated eye(s) with lukewarm, gently flowing water for 20 minutes, while holding eyelids(s) open. Obtain medical attention immediately.

### SECTION 9 – PREPARATION INFORMATION

Prepared by (Group, Department, etc.) Sally Safemeister	Telephone Number (604) 123-2222	Preparation Date January 4, 1999
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# Workplace inspections

**In the Regulation**  
See Sections 3.5 to 3.8, Workplace Inspections, and Sections 3.9 to 3.11, Correction of Unsafe Conditions.

One of the best ways to ensure the health and safety of your cast and crew is to conduct regular workplace inspections that include all sets and locations. Workplace inspections will help you to identify potential hazards so you can eliminate or control them before they cause an injury or other incident.

## When to conduct workplace inspections

Inspect your workplace at the beginning of production. For example, inspect construction areas before the crew starts building sets. Always inspect new locations before filming.

In addition, inspect your workplace daily during production – conditions can change rapidly in film and television production. For example, take the time to inspect construction areas at the start of each work shift to make sure no new potential hazards have developed.

Finally, inspect your workplace when there has been an incident or you have added a new work process.

## Who should conduct workplace inspections

Department heads and members of the joint health and safety committee (or worker representative) should conduct initial workplace inspections together. For example, the construction coordinator should inspect the construction area with committee members. The location manager should inspect locations with committee members.

Department heads or supervisors should conduct daily inspections of their respective departments.

## How to conduct workplace inspections

During an inspection, identify unsafe conditions and work practices that could cause injury so you can take corrective measures.

Look at how work is being performed and make sure that:

- Hazardous materials are safely used and stored
- Crew members follow safe work practices and use required personal protective clothing and equipment
- Appropriate first aid is available
- Your production is complying with all WCB requirements

Use an inspection checklist to help guide you through the inspection. For inspection checklists that cover a variety of situations, contact SHAPE or download checklists from their Web site (see "SHAPE Resources" on page 122).

Fill out an inspection report. Describe any potential hazards you find and write down the name of the person responsible for eliminating or controlling each potential hazard. For an inspection report form, contact SHAPE or download the form from their Web site (see "SHAPE Resources" on page 122).

Follow up by making sure that potential hazards are eliminated or controlled.

## Eliminate potential hazards whenever possible

Many potential hazards can be eliminated on the spot, during the inspection. For example, if you find unauthorized workers in a pyrotechnics danger area, ask them to leave the area and post guards to keep other unauthorized people from wandering into the area. If you find unsecured cables or other potential tripping hazards, have them taped down or cleaned up immediately.

Remedy serious potential hazards or unsafe work practices immediately. Deal with other potential hazards as soon as possible.

# Incident reporting and investigation

Workers are required to report all incidents, including near misses, to their supervisor or the production company. (A *near miss* is an incident that caused no visible injury or damage but that could have resulted in a serious injury, death, or property damage.)

## Incidents you need to report to the WCB

Production companies must *immediately* report serious incidents to the WCB Prevention Division. Serious incidents include any incident that:

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

In the event of a serious incident, the incident scene must be secured and left undisturbed until a WCB officer releases it.

To report a serious incident, contact your nearest WCB office, or call 604 276-3100 in the Lower Mainland or 1 888 621-SAFE (7233) toll-free in B.C. To report an incident after normal business hours, call 604 273-7711 in the Lower Mainland or 1 866 922-4357 (WCB-HELP) toll-free.

## Employer's injury report

As part of a WCB compensation claim, production companies must report all work-related injuries and diseases that result in medical treatment or lost time to the WCB within three days of the injury's occurrence or notification of the disease. Submit Form 7 to Compensation Services.

**In the Act**  
See the  
*Workers  
Compensation  
Act, Part 3,  
Division 10—  
Accident  
Reporting and  
Investigation,*  
Sections 172  
to 177.



Here are examples of injuries that production companies must report:

- A worker is injured and loses consciousness.
- A worker is sent for medical treatment by a first aid attendant or supervisor.
- A worker has an injury or disease that needs medical treatment.
- A worker states that he or she is going to get medical treatment or has already received medical treatment for an injury or disease.

### **What is an incident?**

The Occupational Health and Safety Regulation defines an *incident* as "an accident or other occurrence which resulted in or had the potential for causing an injury or occupational disease." Incidents include the following:

- Accidents in which a worker is injured or killed
- Near misses
- Accidents in which no one is hurt but equipment or property is damaged

## **Incidents you need to investigate**

Production companies must investigate all incidents, including near misses. (A *near miss* is an incident that caused no visible injury or damage but that could have resulted in a serious injury, death, or property damage.) Motor-vehicle accidents on public streets or highways involving a worker on duty are usually investigated by the RCMP or local police. Production companies do not need to do an on-site investigation, but they are expected to have details of the accident for their records.

## **Why you need to investigate incidents**

Incident investigations help you to determine why the incident happened so you can take steps to ensure that it will not recur. Incident investigators (for example, department heads, supervisors, and joint health and safety committee members) recommend steps to prevent similar incidents.

For more information about investigations, see the WCB publication *Investigation of Accidents and Diseases: Reference Guide and Workbook* and the WCB video *Investigating an Accident*.

## Conducting investigations

Production companies must initiate investigations immediately. The department head or supervisor of the area where the incident occurred initiates the investigation.

As far as possible, the investigation must:

- Determine the causes of the incident
- Identify any unsafe conditions, acts, or procedures that contributed to the incident
- Recommend corrective actions to prevent similar incidents

## Preparing an investigation report

After completing an investigation, investigators need to prepare an incident investigation report.

Send copies of the completed report to each of the following:

- The WCB Prevention Division
- Your joint health and safety committee or worker representative

**Note:** Incident investigation reports should not be confused with Form 7 reports, which are needed to start a WCB injury claim. Send incidents investigation reports to the WCB Prevention Division. Send Form 7 reports to WCB Compensation Services.

For investigation report forms, contact SHAPE or download the forms from their Web site (see "SHAPE Resources" on page 122).

## Investigation responsibilities

This section describes basic incident-investigation responsibilities.

### Production company

The production company is responsible for:

- Making sure that the production's written health and safety program clearly states the roles and responsibilities of supervisors, cast, and crew in incident investigations
- Educating and training workers who may have to investigate incidents
- Allowing enough time for incident investigations
- Making sure corrective actions are taken
- Following up to make sure that corrective actions are effective

### Department heads and supervisors

Department heads and supervisors are responsible for:

- Instructing workers about how to report incidents
- Initiating incident investigations immediately
- Notifying the WCB Prevention Division of serious incidents (see page 114)
- Informing workers affected by the incident of investigation results and explaining the corrective actions taken

### Joint health and safety committee

The joint health and safety committee is responsible for:

- Making sure the investigation is initiated immediately
- Participating in the investigation
- Making sure workers affected by the incident are informed of investigation results and that corrective actions are taken

### **Cast and crew**

Cast and crew members are responsible for:

- Getting first aid or medical attention if necessary
- Reporting incidents to their supervisor immediately
- Not disturbing an incident scene until the investigation is complete
- Filling out investigation and first aid report forms provided by their supervisor or first aid attendant

# 8

## **Resources**

# Overview

This part provides information about health and safety resources available to production companies, cast, and crew. The information is divided into the following sections:

- SHAPE resources
- WCB of B.C. resources
- B.C. Ministry of Skills Development and Labour resources
- Other resources

## SHAPE resources

In addition to distributing general WCB materials, SHAPE (Safety and Health in Arts Production and Entertainment) offers resources specific to the arts production and entertainment industries. Many of these industry-specific manuals, pamphlets, safety bulletins, and forms are free to B.C. workers and employers. SHAPE also maintains a video lending library. To order or borrow health and safety publications or videos, contact:

SHAPE (Safety and Health in Arts Production and Entertainment)  
Suite 280 – 1385 West 8th Avenue  
Vancouver, BC V6H 3V9  
Phone: 604 733-4682 in the Lower Mainland  
1 888 229-1455 toll-free  
Fax: 604 733-4692  
E-mail: [info@shape.bc.ca](mailto:info@shape.bc.ca)  
Web site: [www.shape.bc.ca](http://www.shape.bc.ca)

Contact SHAPE for more information about ongoing safety courses in First Aid, WHMIS, and Safety Awareness.

# WCB of B.C. resources

## Publications and videos

The Workers' Compensation Board of British Columbia is one of North America's leading publishers of workplace health and safety materials. Many WCB brochures, posters, and booklets are free to B.C. workers and employers. Videos can be borrowed or purchased.

To order the WCB Publications Catalogue, WCB Video Catalogue, or any of the publications or videos listed in the catalogues, contact:

Publications and Videos Section  
Workers' Compensation Board of B.C.  
PO Box 5350 Stn Terminal  
Vancouver, BC V6B 5L5  
Phone: 604 276-3068 in the Lower Mainland  
1 800 661-2112, local 3068, toll-free in B.C.  
Fax: 604 279-7406  
E-mail: [pubvid@wcb.bc.ca](mailto:pubvid@wcb.bc.ca)

### **WorkSafe**

The bimonthly WCB magazine *WorkSafe* provides occupational health and safety news and other information to B.C. employers and workers. For your free *WorkSafe* subscription, call 604 231-8690 in the Lower Mainland or call toll-free 1 800 661-2112, local 8690, in B.C.

## WCB Web site

The WCB Web site ([www.worksafebc.com](http://www.worksafebc.com)) has a health and safety centre with performing arts and film as an industry centre. Visit the site for more health and safety information and for links to other relevant sites.

The Occupational Health and Safety Regulation and many other WCB publications are available on the Web site.



## WorkSafe Education Network

To increase the accessibility of health and safety education and training, the WCB has partnered with B.C. education institutions to provide community-based courses.

Participating institutions include all B.C. community colleges, the British Columbia Institute of Technology (BCIT), the University of British Columbia (UBC), Simon Fraser University (SFU), and the University of Northern British Columbia (UNBC).

The one-day WorkSafe Education Network courses available at time of publication are:

- Hazard Recognition and Control
- Investigating and Controlling Sprains and Strains
- Joint Health and Safety Committee Training
- Occupational Health and Safety in Small Business
- Preventing Workplace Violence
- Supervisor Safety Management

Other courses are being developed. For more information, or to register for a WorkSafe course, call the campus nearest you. You can also find more information, including a complete list of participating institutions, by visiting the WCB Web site at [www.worksafebc.com](http://www.worksafebc.com).

# B.C. Ministry of Skills Development and Labour resources

## Employers' Advisers

The Employers' Advisers office is a branch of the B.C. Ministry of Skills Development and Labour, independent of the WCB. Employers' advisers provide advice, assistance, representation, and training to employers about workers' compensation legislation, decisions, appeals, and policies. Employers' advisers have a right to access WCB information on your behalf. This service is available at no cost.

Employers' advisers also conduct educational seminars for employers about topics such as occupational health and safety requirements, claims management, and assessments.

The Employers' Advisers can be reached at seven locations:

### **Richmond**

4003 – 8171 Ackroyd Road

Richmond, BC V6X 3K1

Phone: 604 660-7253 in the Lower Mainland

1 800 925-2233 toll-free

Fax: 604 660-7498

### **Abbotsford**

Phone: 604 870-5492

1 866 870-5492 toll-free

### **Kamloops**

Phone: 250 828-4397

1 866 301-6688 toll-free

### **Kelowna**

Phone: 250 717-2050

1 866 855-7575 toll-free

### **Nanaimo**

Phone: 250 741-5500

1 866 827-2277 toll-free

### **Prince George**

Phone: 250 565-4285

1 888 608-8882 toll-free

### **Victoria**

Phone: 250 952-4821  
1 800 663-8783 toll-free

For on-line information about the Employers' Advisers branch, visit [www.labour.gov.bc.ca/eao/](http://www.labour.gov.bc.ca/eao/) or e-mail [eao@eao-bc.org](mailto:eao@eao-bc.org).

## **Workers' Advisers**

The Workers' Advisers office is a branch of the B.C. Ministry of Skills Development and Labour, independent of the WCB. Workers' advisers provide workers with advice and assistance about WCB benefits, policies, and the interpretation of the *Workers Compensation Act*.

The Workers' Advisers can be reached at five locations:

### **Richmond**

3000 – 8171 Ackroyd Road  
Richmond, BC V6X 3K1  
Phone: 604 660-7888 in the Lower Mainland  
1 800 663-4261 toll-free  
Fax: 604 660-5284

### **Kamloops**

Phone: 250 371-3860  
1 800 663-6695 toll-free

### **North Vancouver Island**

Phone: 250 741-5504  
1 800 668-2117 toll-free

### **Prince George**

Phone: 250 565-4280  
1 800 263-6066 toll-free

### **South Vancouver Island**

Phone: 250 952-4393  
1 800 661-4066 toll-free

For on-line information about the Workers' Advisers branch, visit [www.labour.gov.bc.ca/wab/](http://www.labour.gov.bc.ca/wab/) or e-mail [wao@wao-bc.org](mailto:wao@wao-bc.org).

## Other resources

### U.S. safety bulletins

The Industry Wide Labor-Management Safety Committee has produced a number of safety bulletins to be used as guidelines by the U.S. motion picture and television industry. These bulletins cover a wide variety of topics and provide information that is also useful to Canadian film and television production companies. Contact the Industry Wide Labor-Management Safety Committee directly at:

Industry Wide Labor-Management Safety Committee  
Contract Services Administration Trust Fund  
15503 Ventura Boulevard  
Encino, CA 91436-3140  
Phone: 818 995-0900

You can also download individual safety bulletins from the Contract Services Administration Trust Fund (CSATF) Web site at [www.csatf.org](http://www.csatf.org).

### Other publications

The following publications may be useful to your film or television production:

*British Columbia Employment Standards Act*

Crown Publications Inc.

521 Fort Street

Victoria, BC V8W 1E7

Phone: 250 386-4636

Fax: 250 386-0221

Web site: [www.crownpub.bc.ca](http://www.crownpub.bc.ca)

#### **Hiring child and infant actors**

Special labour laws and health and safety requirements apply to the employment of child and infant actors in film and television production. For more information, see *Conditions for Employment of Children in the Film, Television and TV and Radio Commercial Industry* and the *British Columbia Employment Standards Act*.

*Conditions for Employment of Children in the Film, Television and TV and Radio Commercial Industry* (on-line manual)

British Columbia Ministry of Skills Development and Labour

Web site: [www.gov.bc.ca/lab/](http://www.gov.bc.ca/lab/)

*Health and Safety Guidelines for the Nova Scotia Film and Video Production Industry*

Nova Scotia Department of Environment and Labour

Occupational Health and Safety Division

Phone: 902 424-5400

1 800 9-LABOUR (1 800 952-2687) toll-free

Fax: 902 424-3239

E-mail: [labrohs@gov.ns.ca](mailto:labrohs@gov.ns.ca)

Web site: [www.gov.ns.ca/enla/ohs/](http://www.gov.ns.ca/enla/ohs/)

*Introduction to Modern Atmospheric Effects*, 3<sup>rd</sup> ed.

ESTA Publications

6443 Ridings Road, Suite 134

Syracuse, NY 13206-1111 USA

Phone: 315 463-6467

Fax: 315 463-6467

E-mail: [tsppublications@esta.org](mailto:tsppublications@esta.org)

Web site: [www.esta.org](http://www.esta.org)

*Safety Guidelines for the Film and Television Industry in Ontario*, 4<sup>th</sup> ed.

Ontario Ministry of Labour

Publications Section

400 University Avenue, 7th Floor

Toronto, ON M7A 1T7

Phone: 416 326-7731

1 800 268-8013, local 6-7731, toll-free in Ontario

Fax: 416 326-7745

E-mail: [pubsale@gov.on.ca](mailto:pubsale@gov.on.ca)

Web site: [www.gov.on.ca/LAB/main.htm](http://www.gov.on.ca/LAB/main.htm)





## WCB offices

Visit our web site at [www.WorkSafebc.com](http://www.WorkSafebc.com)

### Abbotsford

2774 Trethewey Street V2T 3R1  
Phone 604 276-3100  
1 800 292-2219  
Fax 604 556-2077

### Burnaby

450 – 6450 Roberts Street V5G 4E1  
Phone 604 276-3100  
1 888 621-7233  
Fax 604 232-5950

### Coquitlam

104 – 3020 Lincoln Avenue V3B 6B4  
Phone 604 276-3100  
1 888 967-5377  
Fax 604 232-1946

### Courtenay

801 30th Street V9N 8G6  
Phone 250 334-8765  
1 800 663-7921  
Fax 250 334-8757

### Kamloops

321 Battle Street V2C 6P1  
Phone 250 371-6003  
1 800 663-3935  
Fax 250 371-6031

### Kelowna

110 – 2045 Enterprise Way V1Y 9T5  
Phone 250 717-4313  
1 888 922-4466  
Fax 250 717-4380

### Nanaimo

4980 Wills Road V9T 6C6  
Phone 250 751-8040  
1 800 663-7382  
Fax 250 751-8046

### Nelson

524 Kootenay Street V1L 6B4  
Phone 250 352-2824  
1 800 663-4962  
Fax 250 352-1816

### North Vancouver

100 – 126 E. 15th Street V7L 2P9  
Phone 604 276-3100  
1 888 875-6999  
Fax 604 232-1558

### Prince George

1066 Vancouver Street V2L 5M4  
Phone 250 561-3700  
1 800 663-6623  
Fax 250 561-3710

### Surrey

100 – 5500 152 Street V3S 5J9  
Phone 604 276-3100  
1 888 621-7233  
Fax 604 232-7077

### Terrace

4450 Lakelse Avenue V8G 1P2  
Phone 250 615-6605  
1 800 663-3871  
Fax 250 615-6633

### Victoria

4514 Chatterton Way V8X 5H2  
Phone 250 881-3418  
1 800 663-7593  
Fax 250 881-3482

### Head Office / Richmond Prevention:

8100 Granville Avenue  
Phone 604 276-3100  
1 888 621-7233 (621-SAFE)

### Administration:

6951 Westminster Highway  
Phone 604 273-2266

### Mailing Address:

PO Box 5350 Stn Terminal  
Vancouver BC V6B 5L5

### After Hours

### Health & Safety Emergency

604 273-7711  
1 866 922-4357 (WCB-HELP)



