Unit	1003
Title	Describe Personal and Worksite Safety
Document type	Learning Resource

BC **Forest Safety**

In consultation with industry subject matter experts, the BC Forest Safety Council (BCFSC) facilitated the production of this material.

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Unit Introduction

By the end of this unit you will be able to demonstrate knowledge of:

- Use, maintenance, and storage of Personal Protective Equipment (PPE)
- How to walk in the bush safely
- Regulation related to working alone or in isolation
- Regulation and the process to refuse unsafe work
- Weather-related shutdown criteria
- Requirements for signage, access, and control of work area
- Safe zones and hazard zones

Section 1003-1: Personal Safety

What you need to know about this section

By the end of this section you will be able to demonstrate knowledge of the following key points:

1.1 Use of, maintenance, storage and removal of PPE

1.2 Importance of walking safely in the bush

1.3 Regulations related to working alone or in isolation

1.4 Regulations related to the right to refuse unsafe work

Key Point 1.1: Use of, Maintenance, Storage and Removal of PPE

Personal protective equipment (PPE) is crucial to working safely anywhere, but particularly in the forestry environment. Each piece of equipment, clothing, or device has a function that contributes to your overall safety. It is your responsibility to inspect, use, maintain, and store your PPE correctly.

PPE can greatly reduce the likelihood and severity of an injury, but do not rely on PPE alone to be safe.

All PPE must meet CSA or ANSI standards. Always follow the manufacturer's instructions for use, maintenance, storage and removal of PPE.

Personal Protective Equipment

Common PPE covered in this section includes the following:

- Hard hat
- Eye and face protection
- Hearing protection
- Hand protection
- Leg protection
- Safety footwear
- Hi-vis apparel

Hard hat

A hard hat is required under WorkSafeBC Regs 8.11, 26.7 (2).

Types and use

- Hard hats must be worn on any worksite where there is a danger of head injury from falling, flying or thrown objects, or other potentially harmful contacts
- If there is possible exposure to an electrical hazard, the hard hat must have a non-conductive rating
- If the work involves climbing **or** work from heights beyond 10 ft (3 m), or if there is exposure to high winds, chin straps or earmuffs must be used to hold the hard hat in place
- Hard hats must be high visibility that contrast with background such as red, orange or lime green
- Suspension must be ANSI or CSA compliant
- Never press anything between the shell and the suspension (pressure dressing or gloves, for example) as it can negate the effectiveness of the suspension

- Adjust the suspension periodically to accommodate hair growth or a hat liner
- If working in the oil and gas industry, you must use a CSA side impact hard hat

Maintenance and removal

- Check the suspension regularly and replace it if It is damaged or brittle. Manufacturers also provide a schedule for changing out suspensions and for changing out the shell
- Never use your hard hat if damaged or missing a component
- Never modify the hard hat shell in any way. This includes removing paint and/or stickers.
- Damaged hard hats or hard hats with missing, mismatched or modified components must be retired from service
- Regularly clean and check the shell for holes, cuts, cracks, or dents
- Flex the shell regularly to make sure it hasn't become brittle from exposure to the sun, and replace it if necessary
- Store your hard hat in a cool shaded environment
- Always replace your hard hat if it receives a severe impact
- The service life of the shell and the suspension harness will vary, so check the manufacturer's instructions for both

Figure 1: Compliant hard hats

Figure 2: Non-compliant hard hats

Eye and face protection

Eye and protection are required under WorkSafeBC OHSR 8.14-8.18.

Types and use

- You must wear properly fitting safety eyewear if there is a risk of exposure to materials that can injure or irritate the eyes
- You must wear safety eyewear if you have 20/20 or less vision in either eye, or are blind in either eye
- Face protection is mandatory when operating a chainsaw even if you are wearing glasses
- If you wear bifocals or trifocals, you must wear impact-rated goggles
- If you wear contact lenses, you must take suitable precautions if there's a risk of exposure to harmful materials
- Safety glasses or goggles alone do not provide enough protection as they don't protect the face from flying or falling debris. Your eyewear must be fitted with side shields or suitable face protection that meets CSA or ANSI standards
- Wear safety-lens sunglasses to reduce glare when working in snow
- Keep in mind, safety glasses can be a hindrance if they fog up, are covered with sawdust, become wet from the rain, or are scratched
- Where possible, eye protection should be UV rated and if needed, use anti-fog lenses

Maintenance and removal

- If you are using a face screen, you must replace it if it is torn or there are open holes
- Eye protection should be removed from service if it causes impaired vision including excessively scratched or foggy lens

Hearing protection

Hearing protection is required under WorkSafeBC OHSR Part 7, Division 1—Noise Exposure.

Types and use

- You must wear hearing protection if you are exposed to noise levels above 85 dBA Lex daily noise exposure level, or 140 dBC peak sound level
- If you are exposed to noise levels beyond the noise exposure limits, you must take an initial hearing test as soon as is practical after your employment and a test at least once a year from then on
- If noise is a hazard, your employer is required to post warning signs and provide hearing protection that meets CSA standards
- If you are working in a noise hazard area, you must wear hearing protection
- Earmuffs are recommended over earplugs. They are easier to put on and take off. They protect the outer ear, side of face and head and they provide warmth in cold and rain

Maintenance and removal

- Do not modify the earmuffs in any way, by drilling holes in them for ventilation
- Always replace the cushions/pads if they become hard, damaged, deteriorated, or if they are cut/nicked. Replacement of pads usually happens once a year.
- Replace the dome immediately if cracked or punctured
- Recommend that the entire set of earmuffs be replaced every two years
- Keep earmuffs clean and dry

Figure 3: Earmuffs

Hand protection

Hand protection is required under WorkSafeBC OHSR 8.2.

Types and use

- Gloves protect hands against abrasions, cuts, scrapes, cold and wet.
- Gloves are important when handling a chainsaw or other equipment where injury may occur
- They also provide grip on a chainsaw
- Use a heavier glove when working with cable
- For cold weather, insulated mitts and gloves will keep hands warm

Maintenance and removal

- Replace gloves if they are worn, have holes or expose skin

Figure 4: Gloves

Leg protection

Leg protection is required under WorkSafeBC OHSR 8.21.

Types and use

- Protective pants are mandatory for anyone operating a chainsaw. The pants are constructed of loosely woven Kevlar thread and are designed to move freely. When they come in contact with a moving chain, the threads get pulled into the sprocket and tip, causing the chain to stop
- Protective pants can prevent abrasions and bruising, or other leg injuries due to contact with a moving saw chain
- Leg protection must be either the pant type, where the protective pad is held in place by the trousers; the apron type, where the protective pad is held in place by an apron worn outside the pants and secured around the waist and legs; or the chap type, also worn outside the pants and secured around the legs
- Protection must meet the current Threshold Chain Speed rating specified in the standard, a minimum 3600. For bars longer than 28”, 4100 TCS is recommended
- Leg protection must not restrict movement
- The protective pad must be at least 711 mm (28”) long and cover 180 degrees in the front of both legs from inseam to outseam, plus 100 mm (4”) on the left side of both legs
- The protective pad must also extend, at a minimum, from the crotch to within 75 mm (3“) of the ankle

Maintenance and removal

- Leg protection must not shrink more than 10 percent during its lifetime, when cleaned according to manufacturer’s instructions
- Always replace torn or damaged pants or repair them according to the manufacturer’s instructions. You can use a

heat seal to control fraying, but you should check the seals regularly to make sure they are still effective
- Pants with damage to Kevlar pad should be removed from service

Figure 5: Protective pants

Safety footwear

Safety footwear is required under WorkSafeBC OHSR 8.22, 8.23.

Types and use

- Wear well-constructed work boots with toe and ankle protection, as well as with puncture resistant soles
- Uppers must be a minimum of 8” (20 cm) in height for good ankle support
- Use “Logger’s Tie” to keep the boots laced up to the top
- Use caulked boots when walking on logs, poles, pilings or other round timbers (rubber, leather or insulated)

Maintenance and removal

- Regularly inspect caulks to ensure they are sharp, and replace laces as needed
- Footwear should not be used if dull caulks, or worn grip or soles
- Replace if ankle support is not provided

Figure 6: Well-constructed work boots with caulks and "Logger's Tie"

Hi-vis apparel

Hi-vis apparel is required under WorkSafeBC OHSR 8.24 and 8.25. The regulation describes the requirements of high visibility garments in the WCB Standards. The Standard identifies three types of garments that are acceptable in a forestry environment; Type 1 and 3 are best practice.

Type 1 Garments

- The garment background must be fluorescent lime yellow, fluorescent yellow, or fluorescent orange colored.
- The minimum vertical length for both front and back of the garment is 0.61 metres (24 inches).
- The minimum background area for either the front or the back of the garment is 0.13 square metres (200 square inches).
- The fluorescent portion of the VE trim for either the front or the back of the garment must have a minimum area of 0.05 square metres (80 square inches).

Type 3 Garments

- The garment background must be fluorescent lime yellow, fluorescent yellow, or fluorescent orange colored.
- The minimum background area for either the front or the back of the garment is 0.064 square metres (100 square inches).

- The minimum vertical length for both front and back of the garment is 0.51 metres (20 inches).
- The fluorescent portion of the VE trim for either the front or the back of the garment must have a minimum area of 0.064 square metres (100 square inches).
- The garment must be designed so that there is color contrast along the entire length of at least one side of the VE trim.

Types and use

- Hi-vis is mandatory for workers whose location must be checked regularly, or when working close to moving equipment or other workers
- Wear a hi-vis vest over your clothing
- It must be a color that contrasts with the environment and have at least 775 sq cm (120 sq. in.) of fluorescent trim for daytime. At night, use retro-reflective trim on both the front and back

Maintenance and removal

- Hi-vis should be replaced if it has become faded or discolored or has become permanently dirty overtime

Figure 7: Compliant hi-vis apparel

Figure 8:Non-compliant hi-vis apparel

Dressing for the weather

When working outdoors, it is important to dress for the weather and work activity. This includes:

- Being equipped with full body protection (such as a raingear) for any anticipated weather conditions
- Wearing layers that can be removed to regulate your body temperature
- Wearing wool in cool or wet conditions. It is durable and insulates even when wet
- Using a neck shade or protector to prevent sunburns, or snow from falling down the neck
- Having a change of clothes readily available

What should I wear, and when?

Summer	Winter
Neck shade or bandana to protect the neck from sunburn. This reduces the chances of skin cancer and protection from damaging solar radiation.  Neck shade	Neck shade to keep snow or rain from running down the neck
Layered lightweight shirts	Layered garments, starting with a synthetic or wool undergarment, then a heavier wool or fleece shirt and wool sweater
Lightweight pants	Winter-lined falling pants, or long underwear with a lightweight falling pant and rain pants
Lightweight wool or anti-blister socks	Heavyweight wool socks
Lightweight gloves	Winter gloves or mitts
Lightweight hi-vis jacket	Lined rain jacket
Hi-vis rain gear	Full raingear for rain and snow conditions
Gaiters	Gaiters to keep lower legs and feet warm and dry in snow, or rain conditions

Signs that your PPE needs maintenance or removal

Remember the following signs that tell you that your PPE needs maintenance or removal.

Leg protection

- Cuts and/or tears to Kevlar pad
- Improper repair or modification that impedes the effectiveness or movement

Hearing protection

- Nicks, cuts, punctures or cracks to pads

Footwear

- Worn, dull or missing caulks or worn grip
- Lack of ankle support

Hi-Vis

- Faded, torn, discolored or permanently dirty

Head protection

- Dents/cracks, modifications
- Suspension damaged or brittle

Eye and face protection

- Impaired vision/scratched or foggy lens
- Face screen torn or open holes

Hand protection

- Holes or exposed skin
- Worn

Key Point 1.2: Walking in the Bush Safely

One of the most common risks forestry workers face are injuries resulting from slips, trips, and falls. From the moment you step out of the vehicle you must be aware of the hazards. Dress appropriately and plan accordingly.

Let's start with planning the route in and out of a worksite, and how to prevent slips, trips, and falls while walking in the bush.

Planning your route in, and out

Whenever walking in the bush, it is important to know where you are going, what the potential risks are on route and to plan accordingly. Estimate how long it will take you to get from point 'A' to point 'B', without having to rush while considering the season and weather conditions. Build in enough time at the end of the day to get back to point 'A' before dark and by the scheduled time.

Consider following before heading into the woods:

- What are the weather conditions?
- Is it raining or snowing?
- Will the conditions slow me down?
- What time of day does it get dark?
- Is it avalanche season and am I in avalanche territory?
- Are there creek crossings where I'm headed?
- Is there a slide risk due to heavy rainfall?
- Will I have to cross an active falling area where there might be machinery in operation or trees falling?
- Am I in bear territory and if so, do I have my bear spray? Should I walk with my axe?
- Do I have enough water and nutrition to sustain me for the day?
- Do I need a navigation device such as a map, compass, tablet or GPS?
- Do I have the necessary form of communication (such as a radio or phone) in the event something unforeseen happens?
- Do I have a change of clothing?

Gear checklist

Below is a list of gear you should have with you when walking in the bush.

- ☐ Adequate water and nutrition
- ☐ A navigation device
- ☐ A communication device
- ☐ Bear spray
- ☐ An axe
- ☐ Change of clothing for anticipated weather

Avoiding slips, trips, and falls

Once you are in the bush, every step is a safety decision.

Safety guidelines:

- Inspect the worksite to identify hazards which could cause slips, trips and falls. Look at all working and walking surfaces
- Plan the safest route
- Keep your eyes on the path
- Use handholds
- Be aware of slippery conditions and take actions to remove hazards
- Be aware of changes in terrain that can become hazardous

If the surface is unstable and uneven:

- Wear appropriate footwear
- Be aware of muscle imbalance
- Be aware that joint stiffness can cause decreased mobility
- Be alert and aware of your surroundings
- Do not rush! Focus on what you are walking on

Minor accidents and long-term injuries have resulted from seemingly minor slips to falls from heights greater than 10 feet (3m) onto irregular surfaces. Slips, trips and falls are a constant hazard for workers in forested environments and are preventable through work area planning and ergonomic work habits.

Slips can result from walking on loose ground or, if walking on a felled tree, loose bark. They can happen quickly without giving you time to react. Often the consequences are minor, but they can become a longer-term injury if not treated with rest and proper care.

Trips are often a result of not clearing the work area and believing that your ability to move around is sufficient—often true until your focus is directed elsewhere or the need for rapid action is suddenly and unexpectedly required. Trips can become especially hazardous when you are packing heavy loads and your ability to brace against a trip is impeded.

CAUTION!

Falls on uneven terrain from heights above 10 ft (3m) can result in serious injury. If working above 10 ft (3m), you are expected to have fall protection gear on.

To prevent injury it is recommended that workers avoid situations that expose them to falling hazards.

Carrying heavy loads

Be careful when carrying heavy loads as you can strain your back, arms, and legs. For example:

- Hook tenders carrying a haulback block.
- Driller/blasters carrying heavy bags of blasting powder
- Mechanics carrying heavy pieces of equipment when fixing/replacing parts.
- Fallers carrying chainsaws and other equipment

Never lift more than you are able. Ask for help when required and use alternate means if possible. Always bend your knees when lifting to reduce strain on your back.

Take time to secure each foot placement by locking your back leg for a moment before taking your next step. Mountaineers call this the “Rest Step” and it is provent to assist in endurance in carrying heavy loads a long distance.

Key Point 1.3: Regulations Related to Working Alone or in Isolation

When working in the woods, It is not always possible to avoid working alone or in isolation. Part 4 (4.20.1) of the OHS Regulation requires forestry operations to have working-alone or working-in-isolation policies and procedures in place. Your responsibility is to know the regulation and follow the written procedures. Your employer's responsibility is to review the policy or procedure with you and to ensure your health and safety.

From a regulatory standpoint, to work alone or in isolation means to work in circumstances where assistance is not readily available to the worker. Readily available is defined as 10 minutes surface travel time for an injury or emergency.

Let's start by defining the difference between working alone and working in isolation.

Working alone is:

- Working by yourself in a work area (not permitted for a faller)
- Working where other workers or assistance are not readily available

Working in isolation is:

- Working alone or in a group that is cut off from outside help by an avalanche, ravine, or road closure, for example, and access is only available by plane, helicopter or boat

Safe work practices

Safe work practices when working alone or in isolation include:

- Having a man-check system in place and being familiar with it. A man check must be completed every 20-30 minutes for Fallers and at pre-arranged intervals for workers on the ground and/or every 2 hours for machine operators or field workers that are working alone.
- Conducting man checks more often when risk level increases.
- Checking in more often if you are working alone, or in isolation.
- Knowing emergency first aid procedures, including evacuation procedures if you are working in isolation.
- Having evacuation equipment on hand.
- Always identify appropriate access and escape routes.
- Knowing how to call for help if you are injured, using a whistle, or radio for example.

- Pre-planning for the circumstances or potential hazards that could isolate you.
- Planning to have another qualified, experienced worker nearby and available that can come to your aid if necessary.
- Having emergency survival gear on hand.

Learning Point

You are working in a separate block from your partner who is more than 30 minutes surface travel walking time from your location.

Is this considered working alone or working in isolation? Why or why not?

Remember, working alone or in isolation is working in circumstances where assistance is not readily available to the worker.

Key Point 1.4: Regulations related to Right to Refuse Unsafe Work

As an employee, if you believe that performing a certain task puts you or someone else in harm's way you have the right to refuse unsafe work. In fact, it is your responsibility according to Part 3 of the OHS Regulation. These regulations are designed not to find fault, but to resolve any valid safety issues.

When a person exercises their right to refuse unsafe work, the employer cannot take discriminatory actions.

Note: Because contractors are bound by contracts, they do not have the same rights when it comes to refusing unsafe work.

What constitutes unsafe work?

The OHS Regulation states that "A person must not carry out or cause to be carried out any work process or operate or cause to be operated any tool, appliance or equipment if that person has reasonable cause to believe that to do so would create an undue hazard to the health and safety of any person." Unsafe work falls into two categories:

- Work that does not comply with OHS Regulations
- Work that goes beyond a worker's abilities

The OHS Regulation is on your side. You cannot be fired or discriminated against for bringing up health and safety issues.

Learning Point

You are asked to do an activity, but you don't feel confident or experienced enough to do it safely.
Is it your obligation to refuse this work? Why or why not?

Procedures for refusing unsafe work

1	Report the unsafe condition or procedure. • You must immediately report the unsafe condition to a supervisor or employer. • The supervisor or employer must investigate the matter and either remedy it, or, if they decide your concern is unwarranted, report back to you.

2	Formally investigate. • If you continue to refuse to perform the task, the supervisor or employer must investigate the problem in your presence, as well as in the presence of a worker representative from the health and safety committee or a worker chosen by a trade union representing the worker.
3	Notify WorkSafeBC. • If the hazard remains unchanged, you and your supervisor or employer must notify a WorkSafeBC officer who will investigate and take whatever steps are necessary to resolve the matter.

REMEMBER

Every employee has the right and the responsibility to refuse unsafe work if they come across a situation where they feel uncomfortable or unsafe

- Unsafe conditions should be reported immediately to your supervisor or employer
- If there is no resolution in the workplace, WorkSafeBC can assist with finding a resolution to the unsafe condition

Contractors and the right to refuse unsafe work

It is important to note that the OHS Regulation related to the right to refuse unsafe work is geared towards the employee/employer relationship, and it doesn't necessarily protect contractors from punitive action by the employer or contract manager.

WorkSafeBC is limited by the contract in place between the contractor and the employer or contract manager. In effect, a contractor who is asked to perform unsafe work has only two options:

- Renegotiate the contract
- Refuse unsafe work and risk losing future work from that employer

Consider including specific terms in the contract that protect you in the event that you refuse unsafe work. Keep this in mind before making the decision to become a contractor; you won't be legally protected when it comes to refusing unsafe work unless it is clearly identified in your contract.

Section 1003-2: Work Area Safety

What you need to know about this section

By the end of this section, you will be able to demonstrate knowledge of the following key points:

2.1 Weather-related shutdown criteria

2.2 How to control access to a working area

2.3 Safe zones and hazard zones

2.4 MSI in forestry

Key Point 2.1: Weather-related Shutdown Criteria

Forestry work is mostly performed outdoors and because of this, you and your coworker's safety can be directly affected by the weather. For example, the way you work will change if it is raining, snowing, foggy or frosty, hot or smoky. Often the only way to be safe is to stop what you are doing until weather conditions improve, or to shut down operations altogether.

The decision to shut down operations will be dependent on the company's policies and procedures. If the company does not have specific shut down criteria for weather events, stop work and discuss the situation with your Supervisor. Remember a worker or supervisor can make the decision to shut down the work activity due to a weather event.

Let's start with the impact of adverse weather conditions and the steps you need to take to minimize the impact.

Weather conditions worksheet

 **Recognize weather conditions**	 **Evaluate impact on activity**	 **Control hazards/identify safe practices**
Rain	• Reduces visibility and makes it harder to assess hazards and to see other workers • Muffles sounds • Can impact access areas: swollen creeks, road washouts, landslides, and flooding, for example • Can cause unstable terrain • Heavy rain can affect visibility and impact an air evacuation in the event of an emergency • Heavy rain can also cause washouts and/or pooling of water on roads	• Maintain a safe distance from other workers and equipment • Perform man-check procedures • If terrain is assessed as unstable due to the rain (there's a danger of mud/rock slides or debris torrents, for instance), implement shutdown procedures in consultation with the supervisor

		• Do not leave your operating area until all workers are accounted for. Move to a safe location to wait for them. • Know evacuation and First Aid procedures
 Figure 9: Mud slide due to excessive rain		
Fog	• Fog reduces visibility and muffles sounds • Fog can directly impact an air evacuation in the event of an emergency	• Maintain a safe distance from other workers and equipment • Ensure that man-check procedures are still effective in the fog • If fog prevents you from accurately assessing the worksite and surrounding areas, stop working until conditions improve

Figure 10: Fog on a hillside

Smoke	• Smoke reduces visibility • Smoke can directly impact an air evacuation in the event of an emergency	• Maintain a safe distance from other workers and equipment • If working in heavy smoke, take breaks in clear areas • Maintain a safe distance from other workers and equipment (minimum two-tree lengths). • If smoke prevents you from accurately assessing the surrounding area, stop working until conditions improve
Wind	• Can bring down trees • Can dislodge overhead hazards	• Move to an area protected from the wind. • Stop working if you aren't able to move to an area protected from the wind

Figure 11: Windfall trees

Lightning	• Can kill or cause serious injury • Can be a fire hazard	• Stop working until the lightning storm is over. • Find cover in a safe shelter: a hard-top vehicle, or thick canopy of immature trees for example. • Stay away from water and metal objects, such as tools, chainsaws, and mobile and yarding equipment. • Do not stand in a group and stay at least 10 m (33 ft.) away from the highest potential conduction point. • Avoid open areas such as meadows, ridges, and mountain tops

Figure 12: Lightning

Frost/Ice/Snow	• Snow reduces visibility, and muffles sounds • Frost, ice, or snow, result in less secure footing, and increased risk of slipping, and tripping • Hides ground debris, and pivot points, such as jagged limbs, loose logs, and holes • Can cause dangerous trees to fall unexpectedly • Heavy snow fall can directly impact an air evacuation in the event of an emergency	• Maintain a safe distance from other workers and equipment • Perform man-check procedures more often than usual as cold weather reduces an injured worker's chances of survival. • Wear rubber soled caulk boots as the snow sticks to leather soles • Keep the caulks sharp and clean • Be aware of hidden hazards when walking in the bush • Check surrounding area • If snow is especially heavy and wet, or the conditions are extremely cold, implement shutdown procedures in consultation with the supervisor • Do not leave your operation area

		until all workers have been accounted for
Avalanches	• Can be triggered in an instant without warning	• Be aware of avalanche risks • Do not enter gullies, steep slopes, and known avalanche chutes over 50% when snow depths are higher than 30” (75 cm), especially when temperatures are rising • If conditions change suddenly, and avalanche risk becomes apparent, implement shutdown procedures in consultation with the supervisor

Heat

British Columbia forests may be exposed to excessive heat during the summer. Excessive heat can limit access to the forest due to the increased potential of forest fires inadvertently caused by a spark from a piece of equipment or vehicle. Shutdown procedures would be implemented in consultation with the supervisor and may take into account licensee, company or land owner requirements.

Cold

Cold weather can impact a logging operation. When the temperatures are extreme, it impacts humans, equipment and operations. Shutdown procedures would be implemented in consultation with the supervisor.

Break-up

Break-up is the transition between winter and spring when melting snow creates soft soil conditions.

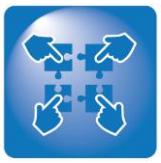
Figure 13: Road conditions during break-up

During the day, roads can go from frozen to saturated making driving difficult. Stable, frozen ground capable of supporting equipment and trucks could turn muddy, or soggy making forest operations road travel hazardous.

Shutdown procedures would be implemented in consultation with the supervisor and would take into consideration the level of disturbance to the worksite.

Figure 14: Break-up road conditions

Learner Activity



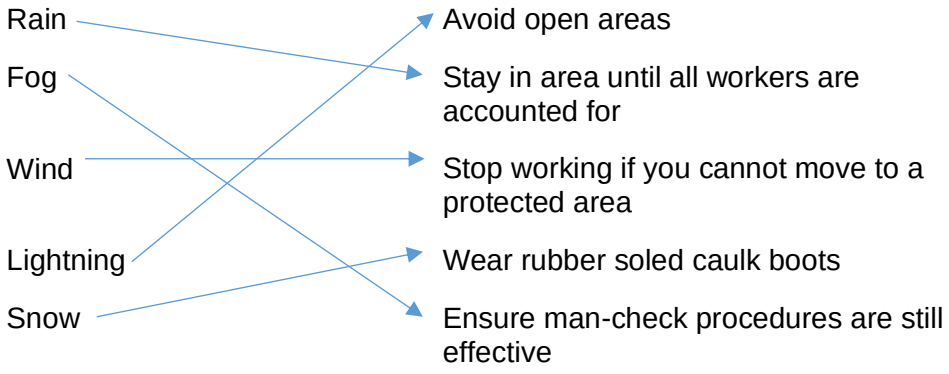
Match the weather criteria with the control or safe practice.

Rain	Avoid open areas
Fog	Stay in area until all workers are accounted for
Wind	Stop working if you cannot move to a protected area
Lightning	Wear rubber soled caulk boots
Snow	Ensure man-check procedures are still effective

Now check your answers on the next page.

Answer

Match the weather criteria with the control or safe practice.



Key Point 2.2: How to Control Access to a Working Area

As a forestry worker, you have a responsibility to control access to your worksite and follow procedures for accessing someone else's worksite. Fulfilling that responsibility is crucial to keeping you and your co-workers safe.

Under OHS Regulation there are two possible ways to control access to a worksite:

- Barricade the road, using a gate or rope, including posting signage with site contact information or;
- Traffic control using a flag person at both ends of the road

Worker Responsibilities

The worker has a responsibility for the safety of all other workers, including supervisors while they are in the worksite and the active working area.

You must always know where other workers are before starting work and during work.

The worker can grant permission for someone else to enter the work area only when all activity has stopped, and clear direction has been given to the other party on how to approach. This can be done by either radio or voice contact if people are close enough to each other.

Entering a Worksite

If you need access to a worksite, follow the safe entry and exit plan for the work area that includes these safe work practices:

1. Contact the worker by radio.
2. Wait for the worker to stop and either shut off the chainsaw or their equipment. Then call out and establish eye contact and if applicable, identify yourself.
3. Ask the worker if it is safe to enter.
4. Confirm with the worker the safest route through the area. If changes are made to the route as you make your way through, notify the worker.
5. The worker stops all work while you or machines are moving through the area; a logging truck passing by a processor for example.
6. Notify the worker when you are clear of the working area.

Learning Point

Upon receiving permission to enter the area from the worker, the operator starts the chainsaw.
Should you continue entering the worksite?

Barricading an Active Worksite and Posting Signs

It is the supervisor's responsibility to barricade an active worksite and post signs. The supervisor may delegate that responsibility to workers and ask them to post signs and create barricades to protect their worksite.

Follow these safe work practices:

1. If the work underway creates a hazard for road traffic, close and barricade the road. Block entry into the worksite by posting a sign that identifies the worksite as active and that no entry is permitted.
    - Tie a rope across the roadway as a barrier and mark it with flagging tape for high visibility. Hanging the sign from a rope is acceptable.

Figure 15: An active worksite sign

2. If the work being conducted doesn't create a hazard for road traffic, you still need to post a sign that reads "Caution—Active Worksite."
3. Use a flag person(s) to control traffic.
    - If it is not possible to close a road, use flag persons to ensure safe passage by road traffic. Flag persons must follow the two-tree-length rule.

Note: In an active falling area, the sign must say ***Active Falling****.*

Key Point 2.3: Safe Zones and Hazard Zones

There is no way around the fact that working in the woods comes with significant risks. Hand falling, for example, is one of the most dangerous professions in BC. Every day, you will make many critical decisions to do the work safely and productively.

The risk only increases as you enter the work area, pick up a chainaw, or climb into a piece of machinery. When using machinery pay careful attention to the warnings provided by the equipment manufacturer. For example, signs that say “stay back 300 ft.”

It is important to know where the safe zones and hazard zones are so that appropriate caution can be taken.

Safe Zones

A safe zone is any area not affected by the work going on in an active work area. A safe zone does NOT mean there are no risks. It means the risks are more manageable and less likely to result in serious injury or a fatality.

A safe zone can take the form of muster points and/or safe areas where all workers on the jobsite can identify a location that is assessed to have managed worksite hazards for unprotected worker safety.

Hazard Zones

There is no shortage of potential hazards in the woods, from wildlife to natural disasters such as slides and avalanches, to overhead and ground hazards. Examples of hazard zones may include but are not limited to:

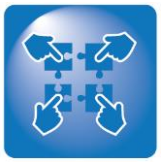
- low side of equipment
- well sites and pipelines
- low side of workers
- two-tree lengths (or 60 meters, whichever is greater, for the Oil & Gas Industry) radius from other workers and equipment
- low side of log decks
- uphill of active wildfire
- low side of roadside debris
- standing within swing radius of equipment
- runaway zones
- highway/public roads
- blast radius
- overhead hazards (lines, rigging, trees)

Best Practices when Working Around Hazard Zones

Best practices when working around hazard zones include the following:

- Never enter an active worksite without verbal permission from the other worker
- Never work or travel through an area directly below another worker or piece of equipment
- Stop all work while individuals or machinery are moving through an active work area
- Ensure there is proper barricading, flagging, and signage around a work area or hazard zone

Learner Activity



Select the four hazard zones from the following list.

- ☐ High side of equipment
- ☐ Low side of workers
- ☐ 1 to 1.2 tree lengths radius from equipment
- ☐ Low side of log decks
- ☐ Downhill of active wildfire
- ☐ Low side of road debris
- ☐ Standing within sight of equipment
- ☐ Access/egress trail

Now checkyour answers on the next page.

Answer

Select the four hazard zones from the following list.

1. Low side of workers
2. 1 to 1.2 tree lengths radius from equipment
3. Low side of log decks
4. Low side of road debris

Key Point 2.4: MSI in Forestry

The OHS Regulation defines Musculoskeletal Injury (MSI) as an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels, or related soft tissue, including a sprain, strain, and inflammation, that may be *caused or aggravated by work.*

Some of the tasks you perform at work, such as *lifting*, *reaching*, and *repeating the movements*, can strain your body. In some situations, these tasks can result in an injury to the muscles, tendons, ligaments, nerves, blood vessels, and joints of the neck, shoulders, arms, wrists, legs, and back. This type of injury is called a musculoskeletal injury, or MSI.

The following can contribute to musculoskeletal injuries:

- lifting
- reaching
- repetitive motions
- cutting with the chainsaw
- walking on logs and uneven terrain
- vibration

MSI is a common type of workplace injury in all industries in British Columbia. MSI claims resulting from overexertion and repetitive motion accidents account for about one-third of claims accepted by WorkSafeBC. In some industries, this proportion is much higher.

Signs and Symptoms of MSI

Workers may notice pain, numbness, tingling, or weakness while on the job. Sometimes pain is just part of the normal human condition and can be ignored. Other times, it can be a manifestation of an injury or disease.

To lessen the likelihood of an injury or disease, it may be necessary to reduce exposure to physical movements at work that have the potential to place workers at risk of injury (like strain) or disease (like tendinitis or carpal tunnel syndrome). Each individual's response to a physical exposure is different. The human body was designed to be active, so eliminating all physical activity is also unhealthy.

It is important for employees to recognize the signs and symptoms that could indicate an MSI.

- **Signs** (which can be observed) could include swelling, redness, and/or difficulty moving a particular body part.
- **Symptoms** (which can be felt but not observed) could include numbness, tingling, and/or pain.

Signs and symptoms of MSI may appear suddenly – for example, from a single incident – or they may appear gradually over a longer period.

If you are experiencing signs or symptoms of MSI, inform your supervisor and report to the first aid attendant. An MSI may be treated more effectively if it is discovered and reported early.

MSI Risk Factors and Risk Control Measures

Let's look at some common musculoskeletal injury risk factors and some control measures you can use to mitigate the risk of injury.

Walking

MSI Risk Factors	Risk Control Measures
Inflexibility in the hip flexors and hamstrings tends to produce a forward lean when walking. Back muscles counteract by producing tension and become susceptible to strain. This leads to a shortened stride.	• Walk and climb hills with an upright stance rather than a forward lean • Thoroughly warm up and stretch the hips, knees, ankles, and back muscles before starting work • Avoid swaying from side to side when walking
Over striding while walking through dense brush or on steep side hills causes shock to the joints of the lower leg.	• Take shorter strides • Wear properly fitting boots that provide maximum shock absorption
Carrying equipment can force awkward movements, leading to stress on muscles and joints.	• Be sure to follow safe work procedures for the equipment you are carrying • Create a well-established trail • If necessary, take two trips
Slips, trips, and falls	• Establish good access/egress trails • Wear properly fitting boots • Caulked footwear is recommended and is required when walking on logs or wood in the bush
Inflexibility in the hip flexors and hamstrings tends to produce a forward lean when walking. Back muscles counteract by producing tension and become susceptible to strain. This leads to a shortened stride.	• Walk and climb hills with an upright stance rather than a forward lean • Thoroughly warm up and stretch the hips, knees, ankles, and back muscles before starting work • Avoid swaying from side to side when walking
Over striding while walking through dense brush or on steep side hills	• Take shorter strides • Wear properly fitting boots that

MSI Risk Factors	Risk Control Measures
causes shock to the joints of the lower leg.	provide maximum shock absorption
Carrying equipment can force awkward movements, leading to stress on muscles and joints.	• Be sure to follow safe work procedures for the equipment you are carrying • Create a well-established trail • If necessary, take two trips
Slips, trips, and falls	• Establish good access/egress trails • Wear properly fitting boots • Caulked footwear is recommended and is required when walking on logs or wood in the bush

Practice Safe Movement Habits

To prevent musculoskeletal injuries, remember to:

- move your body to minimize wear and tear, for example, do not jump
- warm-up and stretch to prepare your body for activity.
- incorporate lower body stabilization exercises into your regular routine.
- practice specific trunk (core) exercises to help support the low back

There are certain types of MSI that are more common in the forestry sector than other sectors. These include, but *are not limited to*:

- Repetitive strain injury
- Tendinitis
- Hearing loss
- Tenosynovitis
- Raynaud's syndrome

Repetitive Strain Injury (RSI)

Repetitive strain injury (RSI) is any of a group of injuries caused by cumulative damage to muscles, tendons, ligaments, nerves, or joints (for example, the wrist, arm, or shoulder) from *highly repetitive movements*. This can also be called cumulative trauma disorder, repetitive motion injury, repetitive stress injury, or repetitive stress syndrome.

An example of RSI for a bucker could be a wrist strain caused by repeated motion with the chainsaw while cutting up fallen trees. A faller might get RSI in his neck from always checking for overhead hazards during falling.

Figure 16: Repetitive strain injury

Tendinitis

Tendinitis is a painful condition in which a tendon (the band of tissue that attaches muscle to the bone) becomes inflamed, swollen, or irritated, for example in the wrist or elbow. This can occur either because of repetitive, minor impact on the affected area, or because of a sudden, more serious injury.

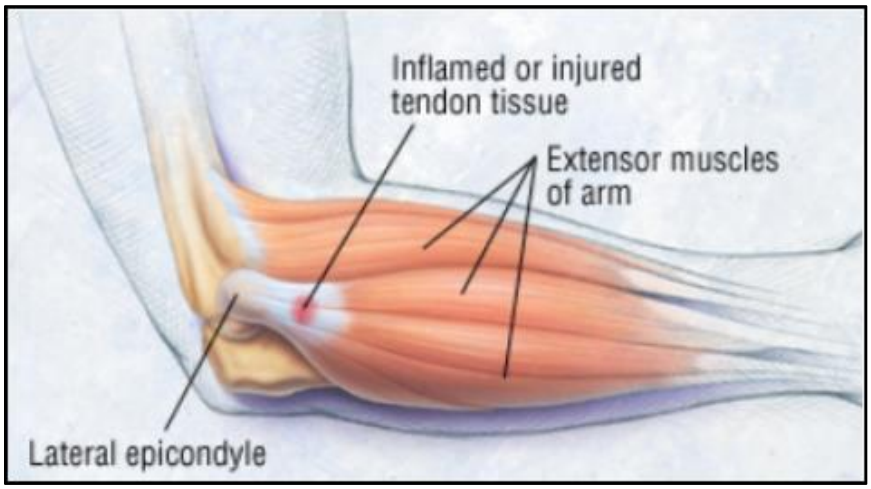


Figure 17: Tenditis

Tenosynovitis

Tenosynovitis (ˈte-nō-ˌsi-nə-ˈvī-təs) is the inflammation of a tendon and its fluid-filled sheath (synovium), usually in the hands and wrists, or feet and ankles. It can be caused by trauma, repeated strain, or disease, such as rheumatism or infection.

Symptoms include pain, swelling, and difficulty moving the particular joint where the inflammation occurs. In some cases, movement of the tendon cases a crackling noise. It may also cause a painful lock-snap

sensation, which keeps the affected body part partially flexed or extended, for example, trigger-finger.

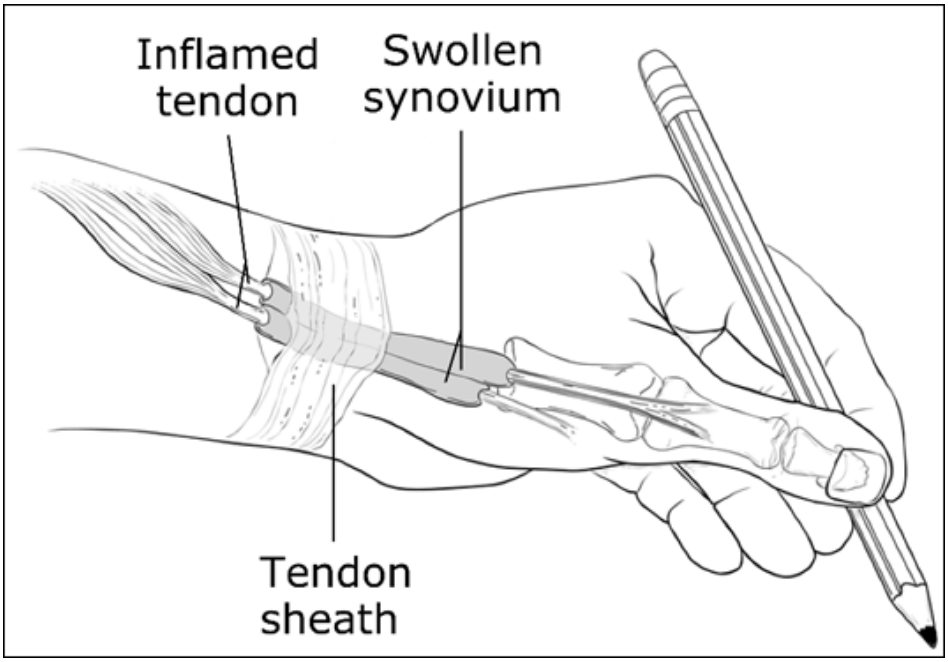


Figure 18: Tenosynovitis

Hearing Loss

Hearing loss may be caused by exposure to loud noise, such as a chainsaw or mill equipment. This is especially true if the exposure is repetitive over a period of time.

Raynaud's Syndrome

Raynaud's syndrome is a disorder that affects the arteries and the blood supply to certain parts of the body, usually the fingers and toes. It is also called Raynaud's phenomenon, Raynaud's disease, just Raynaud's or vibration white finger which is also known as hand-arm vibration syndrome.

Both vibration white finger and hand-arm vibration syndrome are secondary forms of Raynaud's syndrome, an industrial injury triggered by continuous use of vibrating hand-held machinery.

Working in cold conditions, as out in the forest in winter, or working with vibrating tools (such as a chainsaw, for example) over a long period of time can cause Raynaud's syndrome.

With this condition, little or no blood flows to the affected body part and the skin may turn white or blue for a short time. Then, as blood flow returns, the affected areas may turn red and throb, tingle, burn, or feel numb. Even mild or brief changes in temperature can cause this to occur.

Figure 19: White finger disease

Self–Quiz

1. What colour is recommended for a hard hat used in Forestry? (1003.1.1)
   - ☐ Red or orange or contrasting with environment
   - ☐ Orange or white or contrasting with environment
   - ☐ Yellow or red
   - ☐ Yellow or orange
2. How many inches minimum must work boot uppers be to provide proper ankle support? (1003.1.1)
   - ☐ 4”
   - ☐ 6”
   - ☐ 8”
   - ☐ 10”
3. By regulation, how much of hi-vis clothing must be covered with fluorescent trim for monitoring of workers? (1003.1.1)
   - ☐ 80 sq. in.
   - ☐ 100 sq. in.
   - ☐ 120 sq. in.
   - ☐ 140 sq. in.
4. Fallers being the exception, what is a common pre-arranged safety “check-in” interval for forestry workers working alone? (1003.1.3)
   - ☐ Every 20 minutes
   - ☐ Every 30 minutes
   - ☐ Every 1 hour
   - ☐ Every 2 hours
5. Who ultimately will arbitrate an escalating dispute in the workplace regarding unsafe work? (1003.1.4)
   - ☐ Licensee
   - ☐ Provincial OHS Regulator
   - ☐ Supervisor
   - ☐ Prime Contractor

6. An employee comes across a situation that makes him/her feel uncomfortable. What is the employee's legal responsibility? (1003.1.4)

   ☐ Proceed with caution

   ☐ Do the best they can with someone watching

   ☐ Ask for another position

   ☐ Refuse the work or ask for assistance

7. Under which conditions should shutdown procedures be implemented? (1003.2.1)

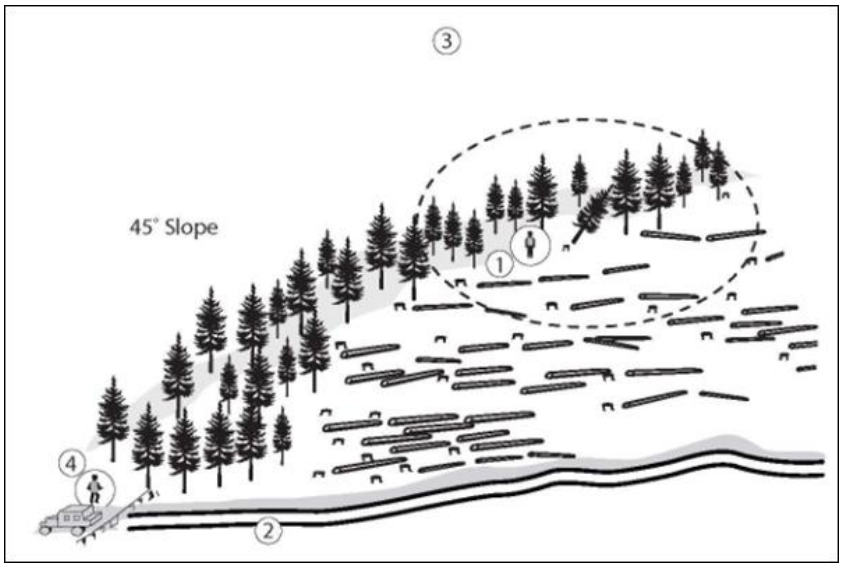
   ☐ Temperature falls below – 20 Celsius

   ☐ Temperature rises above +30 Celsius

   ☐ Weather affects access roads

   ☐ Storms in the immediate vicinity

8. Refer to the figure below. From which position should the faller be hailed? (1003.2.2)



   ☐ 1

   ☐ 2

   ☐ 3

   ☐ 4

9. What is a common cause of MSI? (1003.2.4)

   ☐ Working in inclement weather

   ☐ Wearing incorrect PPE

- ☐ Exposure to toxins in the workplace
- ☐ Repetitive motion

10. What is Raynaud's syndrome caused by? (1003.2.4)
    - ☐ Restricted blood flow to fingers
    - ☐ Inflammation of the tendon and its sheath
    - ☐ Exposure to noise
    - ☐ Injury by cumulative damage

Now check your answers on the next page.

Self-Quiz–Answers

1. What colour is recommended for a hard hat used in Forestry? (1003.1.1)

   Answer: **Red or orange or contrasting with environment**

2. How many inches minimum must work boot uppers be to provide proper ankle support? (1003.1.1)

   Answer: **8”**

3. By regulation, how much of hi-vis clothing must be covered with fluorescent trim for monitoring of workers? (1003.1.1)

   Answer: **120 sq. in.**

4. Fallers being the exception, what is a common pre-arranged safety “check-in” interval for forestry workers working alone? (1003.1.3)

   Answer: **Every 2 hours**

5. Who ultimately will arbitrate an escalating dispute in the workplace regarding unsafe work? (1003.1.4)

   Answer: **Provincial OHS Regulator**

6. An employee comes across a situation that makes him/her feel uncomfortable. What is the employee’s legal responsibility? (1003.1.4)

   Answer: **Refuse the work or ask for assistance**

7. Under which conditions should shutdown procedures be implemented? (1003.2.1)

   Answer: **Weather affects access roads**

8. Refer to the figure below. From which position should the faller be hailed? (1003.2.2)

   Answer: **3**

9. What is a common cause of MSI? (1003.2.4)

   Answer: **Repetitive motion**

10. What is Raynaud’s syndrome caused by? (1003.2.4)

    Answer: **Restricted blood flow to fingers**