



Unit	1080
Title	Recognize, Evaluate, and Control Hazards Related to Road Building
Document type	Learning Resource



BC **Forest Safety**

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Feedback is welcome and may be sent to training@bcforestsafe.org.

Table of Contents

Unit Introduction	5
What you will learn in this unit	5
Why it's important for you to learn this unit.....	5
Are you ready to take this unit?	5
Does this unit apply to you?.....	5
Section 1080-01: Recognize, Evaluate, and Control Hazards.....	6
Key Point 1.1: Hazard Process	7
The REC Process	7
R—Recognize the Hazard.....	7
E—Evaluate the Situation or Hazard.....	7
C—Control the Hazard	7
Recognize, Evaluate, and Control of Hazard Process—Self-Quiz	9
Recognize, Evaluate, and Control of Hazard Process—Self-Quiz Answers	10
Key Point 1.2: Overhead Hazards.....	11
Cranes.....	11
Powerlines	12
REC Process Overhead Hazards—Self-Quiz.....	20
REC Process Overhead Hazards—Self-Quiz Answers	21
Key Point 1.3: Ground Hazards	22
Roadside debris	22
Rock drilling and blasting	23
Blasting signals.....	23
Blasting safety	24
Other types of ground hazards	24
REC Process Ground Hazards—Self-Quiz.....	26
REC Process Ground Hazards—Self-Quiz Answers	27
Key Point 1.4: Tree and Log Hazards	28
Dangerous trees	28
Removing slash and debris	28
Tree and log hazards specific to road work	29
Roadside hazards section OHS Regulation (26.82).....	29
REC Tree and Log Hazards—Self-Quiz	31
REC Tree and Log Hazards—Self-Quiz Answers	32
Key Point 1.5: Poor Planning Hazards.....	33
REC Process Poor Planning Hazards—Self-Quiz	35
REC Process Poor Planning Hazards—Self-Quiz Answers	36
Key Point 1.6: Phase Congestion Hazards	37
Phase Integration.....	38
Phase Congestion.....	38

Stacking	38
REC Process Phase Congestion Hazards—Self-Quiz	39
REC Process Phase Congestion Hazards—Self-Quiz Answers	40
Section 1080-02: Risk	41
Key Point 2.1: Evaluating Long Term and General Risks Including Frequency and Probability.....	42
Managing risk	42
Controlling risk	43
Evaluate Long Term and General Risks—Self-Quiz.....	44
Evaluate Long Term and General Risks—Self-Quiz Answers.....	45
Key Point 2.2: Evaluating Immediate Risks Including Frequency and Probability	46
Risk	46
How to reduce risk	46
Falls.....	47
Risk	47
How to reduce risk	47
Ladders	47
Risk	47
How to reduce risk	47
Silica.....	47
Risk	47
How to reduce risk	47
Noise	47
Risk	47
How to reduce risk	47
Cold or Heat Stress.....	48
Risk	48
How to reduce risk	48
Cold or Hot Surfaces.....	48
Risk	48
How to reduce risk	48
Evaluate Immediate Risks—Self-Quiz	49
Evaluate Immediate Risks—Self-Quiz Answers	50
Key Point 2.3: How Change or Unexpected Events Affects Risk Level.....	51
Change and Unexpected Events—Self-Quiz	52
Change and Unexpected Events—Self-Quiz Answers	53

Unit Introduction

What you will learn in this unit

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

- Recognize, evaluate, and control hazards related to road building
- Risk

Why it's important for you to learn this unit

Road building in Forestry requires being alert to the risks and hazards. You need to be able to demonstrate knowledge of potential hazards and how to control them in road building. In addition to recognizing potential hazards, you need to be able to plan ahead to reduce risk.

Are you ready to take this unit?

Prior to starting this unit, it is recommended that you have completed the following unit:

- [1002 – Describe Forestry Industry](#)

Does this unit apply to you?

This unit is a component of the following occupations:

- All Road Building Equipment

Section 1080-01: Recognize, Evaluate, and Control Hazards

What you need to know about this section

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

- 1.1 Hazard process
- 1.2 Overhead hazards
- 1.3 Ground hazards
- 1.4 Tree and log hazards
- 1.5 Poor planning hazards
- 1.6 Phase congestion hazards

Key Point 1.1: Hazard Process

The REC Process

When working outdoors on resource roads or highways you will need to continuously recognize the hazards, evaluate the level of risk, then control them. It's called the REC process and it will help you:

- Stay on top of changing hazards
- Remove the element of surprise
- Adjust appropriately to added risk

Failure to recognize, evaluate, and control hazards can contribute to fatalities and serious injuries.

The REC process is a hazard assessment process that can be used to help safely address upset conditions and prevent incidents from occurring. The REC process has three steps:

1. Recognize the hazard
2. Evaluate the situation or hazard
3. Control the hazard

R—Recognize the Hazard

To help you recognize the potential hazards of any given situation, ask the following questions:

- What might pose a risk of injury to me or other workers?
- What hazards might my work environment create?

E—Evaluate the Situation or Hazard

Use your experience and knowledge, and that of others, to make a sound decision on how to proceed, based on the hazard.

Get qualified assistance if needed. Never feel as though you have to make the decision all on your own.

Remember there is strength in numbers. Learning from your co-worker's knowledge and experience can prevent a serious injury or fatality.

C—Control the Hazard

The best way to control a hazard is always to avoid or eliminate it. If this isn't possible, you can minimize the risk with safe work procedures, including the following:

- Take the time to do an accurate assessment of the situation
- Take the time to take extra steps or precautions

- Use site-specific procedures
 - Use proper personal protective equipment
 - Use proper body positions
 - Use your tools in a safe way
-



Reference WorkSafeBC

Review the WorkSafeBC links to health and safety information and resources for work in mechanical harvesting, yarding and skidding.

<https://www.worksafebc.com/en/health-safety/industries/forestry/types/mechanical-harvesting-yarding-skidding>

When you are finished, continue in this section.

Recognize, Evaluate, and Control of Hazard Process—Self-Quiz

1. What does REC stand for?

- ☐ Recognize, Evaluate, Control
- ☐ Review, Engage, Control
- ☐ Recognize, Engage, Capture



Now check your answers on the next page.

Recognize, Evaluate, and Control of Hazard Process— Self-Quiz Answers

1. What does REC stand for?

Answer: **Recognize, Evaluate, Control**

Key Point 1.2: Overhead Hazards



You should be aware of the following overhead hazards when working on a road building site:

- Power lines - **Look up**, and take every precaution to identify and avoid overhead lines. Fatalities may occur when heavy equipment or its load contacts an overhead power line. Maintain a safe working clearance of at least 10 meters from energized electrical lines.
- An operator's own equipment can create an overhead hazard if the boom is left in the up position or attachments or loads are elevated
- Landslides
- Trees falling as a result of damaged roots, decay or wind
- Roadside debris from a worksite [above](#)
- Rocks, falling debris

Cranes

Cranes are often used in forestry when installing bridges, removing bridges, and at log sorting sites. The cranes at log sorts are used to re-load the log truck trailers back into the truck for the trip back to the logging area.

Cranes are also used by crews and mechanics while working on forestry equipment in the field and in the shop because the components are so heavy. Cranes are also used to load logs at sawmills, and bundles of logs onto ships for transporting to mills or exporting.

Hazards include improper inspections, using the crane before it has been inspected, being struck by an overhead load, or being caught within the crane's swing radius.



Video 4:10

WorkSafeBC

Review Mobile Crane Failures: Why Maintenance and Inspections Are Critical This video provides an overview of cranes maintenance requirements.

<https://www.worksafebc.com/en/resources/health-safety/slide-shows/mobile-crane-failures-why-maintenance-and-inspections-are-critical?lang=en>

When you are finished, continue in this section.

Powerlines

Review the following safety alert for advice on working safely near powerlines.



Reference

BC Forest Safety

Read Safety Alert: Working Safely Around Power Lines

When you are finished, continue in this section.

Safety Alert of THE MONTH

Updated - Aug 2016

PLEASE PASS THIS ON TO PEOPLE AND ORGANIZATIONS IN BC'S FOREST INDUSTRY

Working Safely Around Power Lines

On February 26th, 2016, a worker was fatally injured when a super snorkel that was being moved on a lowbed came into contact with a power line. The worker was electrocuted when he approached and touched the lowbed, which provided the electricity a path to ground. The incident occurred near Port McNeill.

In July 2013, there were three close call incidents involving power lines that potentially could have been very serious:

- After unloading at a mill's log sorting yard, an empty self-loading log truck loaded its trailer and drove out of the yard with the crane boom still extended. The extended boom contacted overhead service lines, which pulled down the utility pole and attached high-voltage power lines.
- A track-mounted log processor was crossing under overhead conductors when the boom of the machine contacted a telecommunications cable. The overhead power lines were not contacted and no injuries were reported.
- A mechanic was testing the brakes on a mobile crane when he inadvertently contacted a 25-kV overhead power line.

Recommended Preventative Actions:

Remember the safe limits of approach. Electricity can arc or "jump" from the wire to a conducting object like a piece of equipment or a truck. When working around powerlines, follow the Minimum Approach Distances from the Occupational Health and Safety Regulations:

Table 19-1A

Column 1 Voltage	Column 2 Minimum approach distance for working close to exposed electrical equipment or conductors	
Phase to phase	Metres	Feet
Over 750 V to 75 kV	3	10
Over 75 kV to 250 kV	4.5	15
Over 250 kV to 550 kV	6	20



Safety Alert of THE MONTH

PLEASE PASS THIS ON TO PEOPLE AND ORGANIZATIONS IN BC'S FOREST INDUSTRY

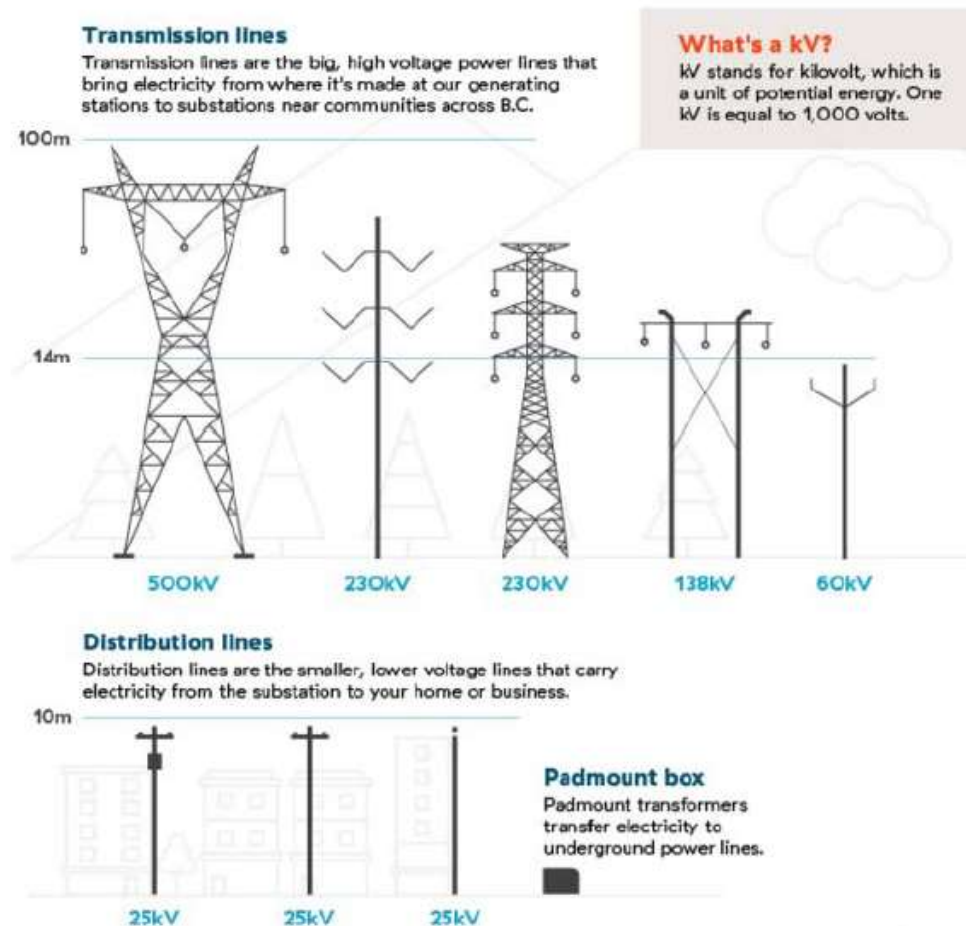
Care must also be taken when moving equipment parallel to a powerline. An arc can occur when equipment is moving parallel to the line and goes within the limits of approach.

If your operations are only moving equipment underneath the powerlines and not doing any work near the powerlines, the following table can be used.

Table 19-1B

Column 1 Voltage	Column 2 Minimum clearance distance for passing under exposed electrical equipment or conductors	
Phase to phase	Metres	Feet
Over 750 V to 75 kV	2	6.5
Over 75 kV to 250 kV	3	10
Over 250 kV to 550 kV	4	13

The following diagram provides a visual guide for estimating powerline voltage.



0-5-310



Safety Alert of THE MONTH

PLEASE PASS THIS ON TO PEOPLE AND ORGANIZATIONS IN BC'S FOREST INDUSTRY

Look up and live. Before you start work, look up and around the site and make sure you and your crew are aware of all overhead lines. Ladders, cranes and pipes are all good conductors of electricity, and remember, it doesn't need to be touching a power line to become energized.

Parking Near Powerlines. Equipment and vehicles with rubber tires can become energized when parked near high voltage powerlines even if they are not in contact with the lines. If someone touches the energized vehicle, this creates a path to ground for the electricity and a shock will result. Usually these shocks are minor, but the severity of the shock depends on the voltage of the lines, how close the vehicle is to the lines and other factors. Avoid this hazard by not parking vehicles or equipment near powerline right of ways.

Smoke and Weather Conditions. Particles from heavy smoke can act as a conductor which can result in electricity from powerlines arcing greater distances. Increase the approach distances when there is heavy smoke in the air or postpone the job until the conditions clear.

Highly humid weather conditions can also create greater arcing distances.

A downed power line is deadly. If you spot a fallen wire, keep at least 10 meters away, even if it doesn't appear to be live. If a wire falls across your vehicle or machine, don't get out—you could become a path for electricity if you touch the ground. If you must get out, hop out clear and land on both feet, then hop or shuffle until you are 10 meters clear of the vehicle.

Be aware of safety hazards below. Call before you dig, phone the local power company to avoid coming into contact with underground cables and service lines. The call is free, and it could save your life.

You hold their lives in your hands. Safety training is critical and as a supervisor or foreman, you hold your workers' lives in your hands. Don't put them at risk. Ensure that they have the critical safety training they need to go home safely to their families.



Recent incidents in BC's forest industry, in which trees being felled have contacted energized transmission lines, have led to the creation of some new documents by BC Hydro.



Reference

BC Forest Safety

Read Safety Alert: Are you logging near power lines

When you are finished, continue in this section.

Safety Alert of THE MONTH

PLEASE PASS THIS ON TO PEOPLE AND ORGANIZATIONS IN BC'S FOREST INDUSTRY

August 2017

Are you logging near powerlines?

Recent incidents in BC's forest industry, in which trees being felled have contacted energized transmission lines, have led to the creation of some new documents by BC Hydro. These new documents support discussions with forest companies/ harvesting contractors to ensure obligations to identify the hazardous areas associated with harvesting near powerlines are addressed. One of these documents, the Logging Near Powerlines Emergency Contact Form, focuses on strict compliance with current WorkSafeBC Regulations.

www.bcforestsafe.org/files/frm_BCHydroLoggingNearPowerlinesEmergencyContact.pdf

The specific WorkSafeBC Regulations that address working near powerlines include:

- Section 19.30, **Preliminary inspection**
- Section 19.31, **Work in a hazardous area**
- Section 26.2, **Planning and conducting a forestry operation.**

Electrical hazards

Electricity seeks the path of least resistance to the ground. That path could include a tree, mobile equipment, tools, or the human body. If any of these makes contact with an energized powerline, or if a broken powerline falls to the ground or lands on a vehicle or fence, electricity will flow to the ground and spread out in irregular concentric circles, in what is known as a ripple effect. The ripple effect can affect the ground for some distance away from the direct path of the electrical current, thereby posing a risk to workers and others nearby.

Responsibility for health and safety

Health and safety in forestry workplaces is the responsibility of all parties that have an influence on how work is carried out. Owners and licensees need to provide the employer or prime contractor with information necessary for identification and elimination or control of workplace hazards, including the location of powerlines in close proximity to the worksite. Planning of the operation needs to address how hazards are to be controlled and managed before work starts, and needs to be documented. Supervisors also need to ensure that workers are aware of the hazard that powerlines pose, and of the means to control the hazard.



Worksite inspections

Before any harvesting activities occur near powerlines, a qualified person authorized by the power company must inspect the worksite and assess the area for hazards. Hazards include situations where any part of a tree to be pruned or felled is within the limits of approach or may fall within that distance (limits of approach are defined in table 19-1A of the WorkSafeBC regulations).



Safety Alert of THE MONTH

PLEASE PASS THIS ON TO PEOPLE alert-header ORGANIZATIONS IN BC'S FOREST INDUSTRY

A qualified person must also inspect the worksite immediately before the work starts to ensure that the initial assessment is still valid and that no additional hazards are identified.

Eliminating electrical hazards

Where possible as part of the initial planning process ensure that cut block boundaries are well away from the powerline corridor. If it is determined that a tree is within the limits of approach or may fall within that distance then a plan must be put in place to eliminate the electrical hazard in order to conduct harvesting in a safe manner. Part of the plan shall include consulting with the power company about de-energizing the lines. If that is not possible, consider eliminating the hazard in another way such as topping the trees or creating a buffer zone.

If the hazard cannot be eliminated then the plan must include obtaining assurance from the power authority that any reclose feature has been disabled. This assurance must be held on site by someone authorized by the utility. Proper procedures must also be in place to conduct the harvesting in a safe manner. These procedures must include the requirements for proper training of all workers as well as the appropriate equipment and supervision to carry out the work safely.



Resources:

- BCFSC Working Near Powerlines: www.bcforestsafe.org/node/2845
- BC Hydro Logging Near Powerlines Emergency Contact Form: www.bcforestsafe.org/files/frn_BCHydroLoggingNearPowerlinesEmergencyContact.pdf
- WorkSafeBC Regulations: <https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-19-electrical-safety> and <https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-26-forestry-operations>

For clarification regarding requirements and related information when logging near powerlines please contact:

- **WorkSafeBC:** Don Schouten, Phone: 604-214-6989, Email: don.schouten@worksafebc.com
- **BC Hydro:** Phil Graham, Phone: 250-549-8545, Email: phil.graham@bchydro.com
- **BC Forest Safety:** Dustin Meierhofer, Phone: 250-562-3215, Email: dustin.meierhofer@bcforestsafe.org



The following video shows a situation of a crane making contact with high voltage power line with tragic results.



Video 1:50

BC Hydro

What can happen when you don't follow the 3 keys of electrical safety

www.youtube.com/watch?v=OQ1iJeWBuxs

When you are finished, continue in this section.

REC Process Overhead Hazards—Self-Quiz

1. Which of the following overhead hazards can also be a ground hazard?
 - ☐ A load being carried by a crane
 - ☐ Heavy equipment with boom left up
 - ☐ Power lines
 - ☐ Danger trees
2. What is the minimum distance that equipment has to stay away from powerlines?
 - ☐ 3 m
 - ☐ 6 m
 - ☐ 10 m
 - ☐ It depends on the voltage of the powerline



Now check your answers on the next page.

REC Process Overhead Hazards—Self-Quiz Answers

1. Which of the following overhead hazards can also be a ground hazard?

Answer: **Power lines**

2. What is the minimum distance that equipment has to stay away from powerlines?

Answer: **It depends on the voltage of the powerline**

Key Point 1.3: Ground Hazards



You should be aware of the following ground hazards:

- Roadside debris
- Rock drilling and blasting
- Other types of ground hazards

Roadside debris

One type of ground hazard that can occur around a forestry road building site is roadside debris that has accumulated during the road building phase.

This hazard is especially problematic when different groups, or phases, have been working simultaneously and there is a lack of communication among the different phases.

The following video discusses 7 recommendations that have been developed by the Coast Harvesting Advisory Group (CHAG) for preventing hazardous roadside debris.

The 7 recommendations outlined in this video are:

- Supervisors collaborate first
- Road centerline changes are discussed
- Fallers buck right-of-way timber
- Right-of-way wood loaded out prior to falling the setting
- Hazard reports are shared
- Supervisors train workers
- Supervisors evaluate roadside debris



Video 7:55

YouTube—BC Forest Safety Council
Hazardous Roadside Debris

<https://www.youtube.com/watch?v=2rANydlx-aA>

When you are finished, continue in this section.



Learning Point

One of the recommendations for preventing roadside debris is that *“all phases should provide hazard documentation to the following phase.”*

Rock drilling and blasting

Drilling and blasting are the controlled use of explosives and other methods to break rock for excavation. Blasting increases the hazard of slope instability.

Vibration can be a problem in unusually wet soil conditions and may induce falling rocks and overbreak (caving in of material near the edge of an excavation).

Flyrock is the excessive throw of rocks being blasted which can be caused by over-confinement. Over-confinement of the rock at any point within a blast may lead to poor fragmentation and cause flyrock. Hazards include rocks embedded in trees and rocks hung up on slopes.

Blasting signals

Signals are used during the blasting process:

- 12 short whistle signals must be sounded at 1 second intervals prior to the blast
 - A wait time of 2 minutes is required before blast proceeds
 - The exception is that 2 minutes is *not required* in congested areas if alternative warning procedures are developed and have been accepted by WorkSafeBC.
 - One prolonged whistle signal of 5 seconds must be sounded to signal that permission has been granted to return to the blasting area
-



Reference

[OHS Regulations – Part 21 – G21.69\(1\)](#)

Blasting Signals Section

<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-guidelines/guidelines-part-21>

When you are finished, continue in this section.

Blasting safety

The following are WorkSafeBC blasting safety recommendations:

- Blast must be adequately guarded to ensure danger area is clear of workers and other people
- Use adequate cover to control blast and contain flyrock
- Use spotters to keep people and traffic from entering the blast area
- Properly dispose of empty explosive containers

Other types of ground hazards

- Buried utilities like natural gas or powerlines
- Karst terrain are sinkholes caused by limestone erosion that creates unstable ground in logging area
- Swampy terrain
- Steep and unstable terrain that could lead to landslides
 - Locations should be noted in logging plan
- Ice on ground can cause slips and falls. The following safety alert describes a situation where a truck driver slipped and fell on ice around trailer loader



Reference

[BC Forest Safety](#)

Read Safety Alert: [Ground Hazard – snow and ice](#)

When you are finished, continue in this section.

SAFETY ALERT

Medical Aid

February 9, 2018

Potential Hazards

- Slipping & falling due to poor footing where ground is covered with snow & ice.
- Slipping & falling under a suspended trailer.
- Complacency and/or not keeping eyes on task when weather conditions have increased the slipping hazards in the log yard.
- Not reporting slippery conditions as a hazard.

Preventative Actions

- Be mindful of slippery conditions when walking and getting in/out of truck at scales, dewart stations, trailer hoists, and unloading site in log yards.
- All sites to review the effectiveness of their log yard maintenance programs to ensure all areas are maintained properly in a timely manner, especially after or during poor weather conditions.
- Sand boxes must be made available at higher risk locations for individuals to be able to directly spread sand when required
- Wear the required proper footwear with good tread whenever walking outside in the log yard.
- Report all incidents to log yard supervisor, including hazards such as slippery conditions so they can be properly addressed in time.

Incident Summary

- A log truck driver was loading his trailer in the log yard when the ground around the trailer loader was covered in snow & ice.
- The log truck driver slipped & fell on the concrete pad while the trailer was being suspended and sustained injuries to his back, left shoulder, wrist, and head.
- The driver went to the scale shack and filled out a "Property Damage" report before going to the hospital to be checked out.



Safety Contacts

Follow up questions to discuss with your worker:

- Can you tell me what you wear for footwear when you are walking in the logyard?
- How do you recognize slippery conditions and what do you do to help ensure you don't slip & fall?



REC Process Ground Hazards—Self-Quiz

1. The accumulation of roadside debris is dangerous because:
- ☐ It can cause landslides by plugging ditches and culverts
 - ☐ It can contribute to slips and falls and restricts access to the worksite in the event of an emergency
 - ☐ It creates a fire hazard
 - ☐ All of these answers
-



Now check your answers on the next page.

REC Process Ground Hazards—Self-Quiz Answers

1. The accumulation of roadside debris is dangerous because:

Answer: **All of these answers**

Key Point 1.4: Tree and Log Hazards

Dangerous trees

Dangerous trees have specific problems or features associated with them that create an overhead hazard. Forestry work areas must always be assessed for the presence of danger trees and other hazards.



For an overview of how to recognize and remove different types of danger trees, watch the following video. Here, dangerous tree specialist, Dean McGeough, provides an overview of how to recognize, assess and mark these trees.

The main points covered in this video are:

- Rotting root systems
- Hollow trunks
- Excessive sap
- Excessive lean
- Physical damage
- Deterioration of limbs, stem or root system



Video 7:36

YouTube—SAFER.ca

Danger Tree Assessment

<https://www.youtube.com/watch?v=hZX52D49QBg>

When you are finished, continue in this section.

Removing slash and debris

The following resource includes information on the proper method for removing or scattering slash and debris.



Reference

Government of BC

Forest Road Construction Handbook (PDF) - [pages 65 to 71](#)

<https://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/road/fr e2.pdf>

When you are finished, continue in this section.

Note: A professional Forester is required to create a slash and debris management plan for harvesting operations. This plan addresses the mitigation of fire hazards and may include piling and burning or scattering of slash that is a certain size, among other items.

Slash and debris must be disposed of by burning, burying, scattering, or end-hauling. Disposal sites must:

- Be located on stable terrain to support the resulting pile of debris
- Not fall into or block a stream, roadside ditch, or culvert inlet
- Have little or no impact on other forest resource values
- Be consistent with the Professional Foresters debris management plan for the site
- Not create or contribute to an increased wildfire hazard on the site

Scattering of debris can be done where sidecasting of debris will not increase the likelihood of landslides and where fire and pest hazards are low and aesthetic concerns are not a concern

Tree and log hazards specific to road work

The following two paragraphs describe the requirements for roads and road maintenance in Part 26 of the OHS regulations.

Roadside hazards section OHS Regulation (26.82)

(1) Dangerous trees, loose rocks, stumps, or other unstable materials that are hazardous to road users must be removed or cleared for a safe distance back from roadsides or roadside banks.

(2) Brush, foliage or debris which prevents an adequate view by a vehicle operator of traffic approaching at roadway intersections or on sharp curves must be cleared and all possible precautions must otherwise be taken to control the hazards created by limited sight distance.

(3) Warning signs and road km markers that alert drivers of hazards ahead must be posted and properly maintained



Reference

OHS Regulations – 26.82

Roadside Hazards

<https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs->

[regulation/part-26-forestry-operations#SectionNumber:26.82](#)

When you are finished, continue in this section.

REC Tree and Log Hazards— Self-Quiz

1. It is possible to turn a normal tree into a danger tree by driving heavy equipment over its root system.
 - ☐ True
 - ☐ False
 2. Which one of the following points indicates that a tree is dangerous?
 - ☐ Root rot or disturbed/excavated roots
 - ☐ A dead top or large dead limbs
 - ☐ Hollowed out trunk
 - ☐ High lean angle (especially if lean is towards work site)
 - ☐ All of these answers
-



Now check your answers on the next page.

REC Tree and Log Hazards— Self-Quiz Answers

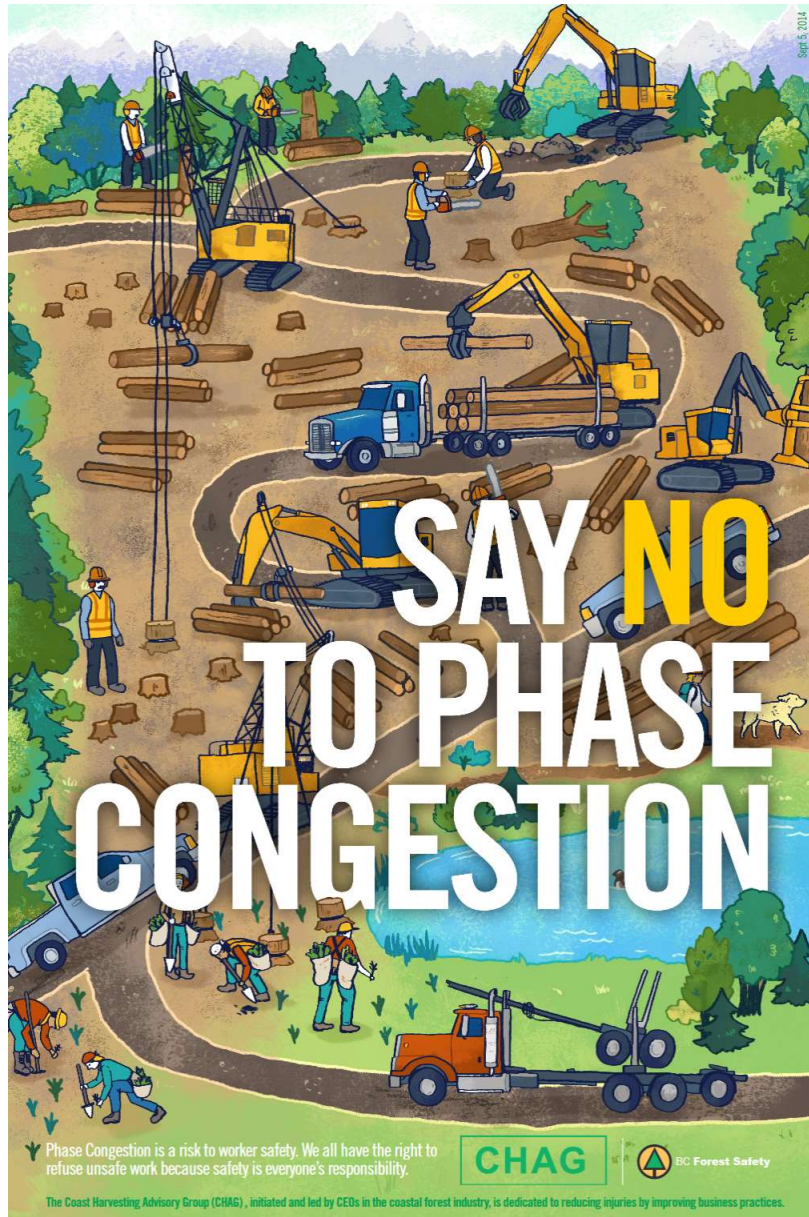
1. It is possible to turn a normal tree into a danger tree by driving heavy equipment over its root system.

Answer: **True**

2. Which one of the following points indicates that a tree is dangerous?

Answer: **All of these answers**

Key Point 1.5: Poor Planning Hazards



Proper planning and communication between different work phases, including where workers and heavy equipment are located at any point in time, are essential to reducing risks.

Communication is very important for controlling hazards and should be an essential part of the planning process.

Please watch the following BC Forest Safety Phase Congestion video from 2:15 to the end. This video outlines:

- How important planning and good communication are for efficiency and preventing safety accidents
 - The importance of pre-work and tailgate meetings are discussed
 - The process of “stacking” and the importance of communication are discussed (4:23 – 4:55 and 6:36 – 7:00)
 - A summary is provided at 7:01 minutes
-



Video 7:27

YouTube—BC Forest Safety Phase Congestion

<https://www.youtube.com/watch?v=1Ux13XTRSKU>

When you are finished, continue in this section.

It is also important to select an appropriate hazard control for the work being completed. The following video discusses:

- How to select an appropriate hazard control
 - Controlling a hazard means doing something that reduces either how serious the injury or damage might be or reducing the likelihood of it happening
 - The best control is one that works all the time
-



Video 2:58

Trucking Safety Council of BC

How to Select an Appropriate Hazard Control

<https://www.safetydriven.ca/resource/controlling-hazards/>

When you are finished, continue in this section.

The following video discusses important aspects of planning from a supervisor perspective:

- 1:23 – “planning is second to none”
 - Safety concerns include steep slopes, rock bluffs, blow down patches, danger trees, and other hazards
 - Assessing the work site for these types of hazards is part of the planning process
 - Be proactive and involve others in pre-work meetings and planning stages
-



Video 4:03

YouTube—BC Forest Safety

Supervisor Training - Planning

<https://www.youtube.com/watch?v=xZl4YB6c4RM>

When you are finished, continue in this section.



REC Process Poor Planning Hazards—Self-Quiz

1. Are the following preventative practices required or not required?
Communicating with other work groups; attending the pre-work meeting; scoping out danger trees in the work area; indicating safety concerns on the work area map.
☐ Required
☐ Not Required
2. What is phase congestion?
☐ When too much electricity flows through a powerline
☐ Occurs when one logging phase is too close to another and this cause problems
☐ When logs get backed up in a sawmill
☐ None of these answers



Now check your answers on the next page.

REC Process Poor Planning Hazards—Self-Quiz Answers

1. Are the following preventative practices required or not required?

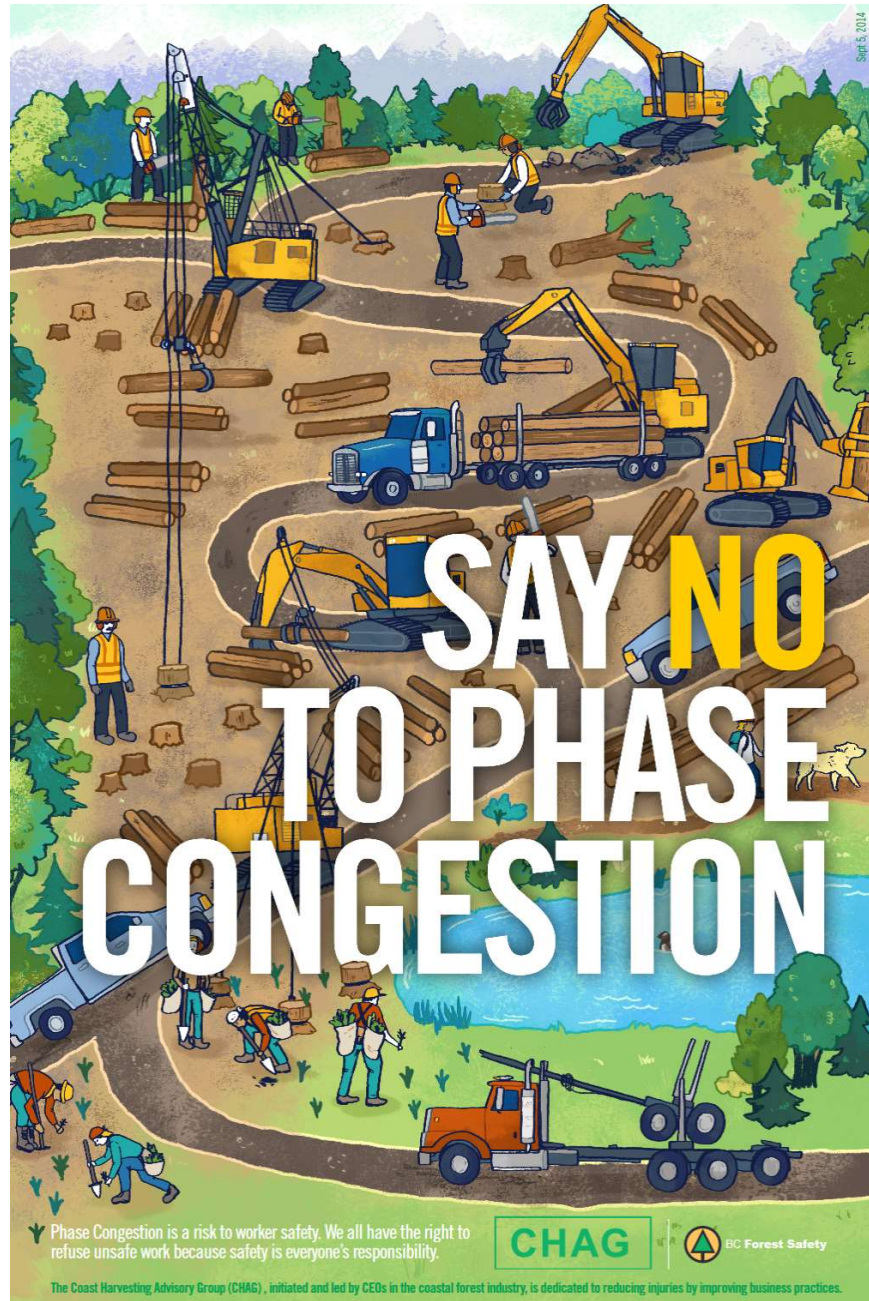
Communicating with other work groups; attending the pre-work meeting; scoping out danger trees in the work area; indicating safety concerns on the work area map.

Answer: **Required**

2. What is phase congestion?

Answer: **Occurs when one logging phase is too close to another and this cause problems**

Key Point 1.6: Phase Congestion Hazards



Phase Congestion resource from CHAG and BCFSC

Phase Integration

Phase integration refers to a situation where different phases are organized to operate simultaneously in a worksite as a single "integrated" phase.

Phase integration, while creating efficiencies, increases the complexity of the worksite and requires extra planning and awareness to ensure safety is maintained and desired efficiencies are actually achieved."

Phase Congestion

Phase congestion refers to phases that are unsuccessfully or poorly integrated. When phase congestion occurs, it can result in conflicting demands of different phases having a negative impact on operations. These negative impacts can create and increase both operational and safety risks.

Phase congestion in this context, means any situation where different logging phases, which are integrated together and operating simultaneously in a worksite, become bunched up, overcrowded, or jammed (aka congested) in a manner which compromises the safe and efficient operation of the work being performed.

Stacking

Stacking describes a scenario where phases are physically stacked on a slope. Stacking could refer to phases which are integrated, or phases which are not integrated. Stacking could even refer to the same phase where work is being performed in two locations on the same slope.

Stacking creates significant safety hazards and phase planning should strive to prevent any kind of stacking which creates safety risks.



Reference

BC Forest Safety
Phase Congestion Resources
<https://www.bcforestsafe.org/node/3109>

The following video talks about phase congestion. Watch from 11:13 to 13:10.



Video 19:33

CHAG – Coast Harvesting Advisory Group
Phase Congestion Update
<https://www.youtube.com/watch?v=ybUq9-l7eXc>
When you are finished, continue in this section.

REC Process Phase Congestion Hazards—Self- Quiz

1. True or False? Stacking is a type of phase congestion where an operation is taking place above another and there is a risk of logs, rocks or debris rolling down onto other workers.
 - ☐ True
 - ☐ False
2. Which of the following indicates that phase congestion may be starting to occur?
 - ☐ Bottlenecks when trying to get logs out of the worksite (for example, log trucks are backed up on the road waiting for loading)
 - ☐ Logging and hauling productivity are lower than expected for the day and rushing is starting to occur
 - ☐ Workers start taking unnecessary risks at the worksite in order to maintain productivity needed for the day
 - ☐ Feller Buncher and Hand Faller are working together in same area, and they must wait for each other to move a safe distance away before resuming work.
 - ☐ All of these answers



Now check your answers on the next page.

REC Process Phase Congestion Hazards—Self- Quiz Answers

1. True or False? Stacking is a type of phase congestion where an operation is taking place above another and there is a risk of logs, rocks or debris rolling down onto other workers.

Answer: **True**

2. Which of the following indicates that phase congestion is starting to occur?

Answer: **All of these answers**

Section 1080-02: Risk

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 Evaluating long term and general risks including frequency and probability
- 2.2 Evaluating immediate risks including frequency and probability
- 2.3 How change or unexpected events affects risk level

Key Point 2.1: Evaluating Long Term and General Risks Including Frequency and Probability

It is important to evaluate the long term and general risks of hazardous events, and to take steps to help prevent or reduce them from occurring on a construction site.

Risk (Long Term / General)	How to Evaluate (including Frequency and Probability)
Silica Dust (long term risk)	Exposure to activities that create silica dust in forestry such as from rock drilling (probability higher with more frequent exposure)
Training (long term risk)	Workers need proper training to avoid probability of causing or having accidents on the work site
Keeping work area free of debris (general risk)	Keep the road building area free of build up from bark and debris (probability is higher for issues such as landslides if the debris can build up over time)
Falling from heights (general risk)	Ensure proper safety gear is being used when working from heights (probability is higher when working on structures such as bridges)
Hot / cold stress	Ensure proper clothing and hydration (probability is higher with exposure to outdoor working conditions in hot and cold environments)

Managing risk

For example, on a forestry work site, risks can be managed by:

- Keeping the work area free from buildup of bark and other debris
- Controlling dust
- Providing training for every worker in a forestry operation so they can safely perform their duties
- Holding crew safety meetings to inform workers of any known or reasonably foreseeable risks in a new work location and the actions to be taken to eliminate or minimize those risks (OHS Regulation 26.5 - initial safety meetings)

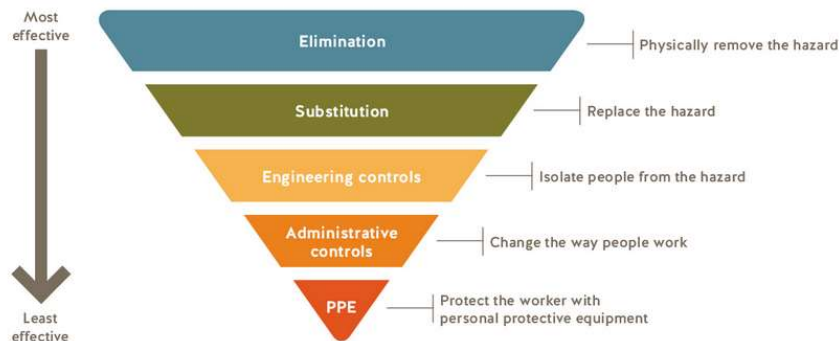
- Removing danger trees or completing a risk assessment by a person who has completed an acceptable training program

Controlling risk

When considering how to reduce the risk, there is a certain order you should follow. This is called the hierarchy of controls. It's important to follow the hierarchy, as shown below, rather than start with the easiest control measures.

- 1. Elimination (most effective)
- 2. Substitution
- 3. Engineering
- 4. Administrative
- 5. PPE (least effective)

Hierarchy of controls



Hierarchy of Controls – WorkSafeBC

If you are unable to eliminate a hazard or implement a safer alternative, then engineering controls are your next best option. This will usually involve some sort of physical change often by making alterations to the work environment. Examples include guardrails, barriers, or machine guards.



Reference – WorkSafeBC

Controlling Risks <https://www.worksafebc.com/en/health-safety/create-manage/managing-risk/controlling-risks>
When you are finished, continue in this section.

Evaluate Long Term and General Risks—Self-Quiz

1. What is the most effective action to take on the 5 points in hierarchy of controls?

- ☐ Substitution
- ☐ PPE
- ☐ Elimination
- ☐ Administrative control



Now check your answers on the next page.

Evaluate Long Term and General Risks—Self-Quiz Answers

1. What is the most effective action to take on the 5 points in hierarchy of controls?

Answer: **Elimination**

Key Point 2.2: Evaluating Immediate Risks Including Frequency and Probability

There are certain hazards that pose immediate risks on a road building construction site. These hazards include situations such as working in confined spaces, working from heights, silica dust, noise, heat or cold stress, and hot or cold surfaces.

Hazards include the following:

- Confined Spaces
- Falls
- Confined spaces
- Ladders
- Silica
- Noise
- Cold or hear stress
- Cold or hot surfaces

Risk

Confined spaces may contain hazardous atmospheres, including not enough oxygen, toxic air, or an explosive atmosphere. There may also be physical hazards that may result, for example, in workers falling, being crushed or buried, or drowning.

How to reduce risk

- Post warning signs and secure entry
- Determine the hazard for each space
- Communicate with workers
- For more information about confined spaces, refer to:

<https://www.worksafebc.com/en/health-safety/hazards-exposures/confined-spaces>



Video 3:25

YouTube—WorkSafeBC

Confined Spaces: Safe Yesterday, Deadly Today

<https://www.youtube.com/watch?v=rUM7tnYcOjQ&list=PLUyWkHwckhS5Xtr8ZZbqjZXdqKuiTH9jc&index=64&t=0s>

When you are finished, continue in this section.

Falls

Risk

- Falling from a height leading to injury or death

How to reduce risk

- Install guardrails
- Implement a fall restraint
- Implement a fall arrest system
- For more information about falls, refer to:
<https://www.worksafebc.com/en/health-safety/hazards-exposures/falls-from-elevation>

Ladders

Risk

- Falling off ladder; ladder fails

How to reduce risk

- Risk assessment checklist for ladder safety
- Evaluate all hazards associated with the environment before choosing a ladder to work with
- Click the link to download a risk assessment checklist for ladder safety <https://www.worksafebc.com/en/resources/health-safety/checklist/risk-assessment-checklist-for-ladder-safety?lang=en>

Silica

Risk

Respiratory condition and other illness

How to reduce risk

- Eliminate the source of exposure
- Look at other risk controls
- For more information about silica, refer to:
<https://www.worksafebc.com/en/health-safety/hazards-exposures/silica>

Noise

Risk

- Hearing loss

How to reduce risk

- Wear hearing protection

- For more information about noise, refer to:
<https://www.worksafebc.com/en/health-safety/hazards-exposures/noise>

Cold or Heat Stress

Risk

- Hypothermia and heat stroke

How to reduce risk

- Eliminate the source of exposure
- Be aware of the stages of hypothermia and heat stroke
- For more information about cold or heat stress, refer to:
<https://www.worksafebc.com/en/health-safety/hazards-exposures/cold-stress>

Cold or Hot Surfaces

Risk

- Burns to skin (from cold or heat)

How to reduce risk

- Be aware of surfaces and parts that can get hot or cold (such as radiator fluid)

Evaluate Immediate Risks— Self-Quiz

1. Nothing can be done to control immediate risks, instead they just have to be avoided.

☐ True

☐ False



Now check your answers on the next page.

Evaluate Immediate Risks— Self-Quiz Answers

1. Nothing can be done to control immediate risks, instead they just have to be avoided.

Answer: **False**

Key Point 2.3: How Change or Unexpected Events Affects Risk Level

Upset conditions are interruptions to the regular running of the work process, equipment, or other planned activity. They can affect the level of risk. Examples of upset conditions include:

- A breakdown occurs requiring unscheduled maintenance
- An unidentified hazard is encountered
- Anything that distracts you from the task at hand

Upset conditions greatly increase the risk of harm or injury while doing your work. Incident reviews suggest that you are up to 35 times more likely to be injured while working during an upset condition than during normal operating conditions.

A process called RADAR has been developed to respond to upset conditions, and reduce the risks involved when these types of conditions occur.

RADAR stands for:

- **R**ecognize the risk
- **A**ssess the situation
- **D**evelop a safe solution
- **A**ct safely to fix the problem
- **R**eport and record the upset condition



Reference

BC Forest Safety

This website provides information on the RADAR process.

http://www.bcforestsafety.org/Introduction_to_RADAR

When you are finished, continue in this section.

This video discusses the uncertainty that can arise from tree falling activities.



Video 4:21

YouTube—SAFER.ca

Unexpected Events

<https://www.youtube.com/watch?v=0Vh9Qkx-A7U>

When you are finished, continue in this section.

Change and Unexpected Events—Self-Quiz

1. Upset conditions include the following:

- ☐ Frustrated or tired workers
- ☐ Sudden changes to weather conditions
- ☐ Interruptions leading to lost focus
- ☐ All of these answers

2. Is the following statement true or false? Unexpected events cannot be eliminated entirely; however, it is possible to change how situations are reacted to. Therefore, the number of injuries and fatal accidents resulting from unexpected events can be significantly reduced or avoided.

- ☐ True
- ☐ False



Now check your answers on the next page.

Change and Unexpected Events—Self-Quiz Answers

1. Upset conditions include the following:

Answer: **All of these answers**

2. True or false

Unexpected events cannot be eliminated entirely; however, it is possible to change how situations are reacted to. Therefore, the number of injuries and fatal accidents resulting from unexpected events can be significantly reduced or avoided.

Answer: **True**