



Introduction

Canada is home to many species of ticks, which are small 8-legged bugs related to mites, spiders, and scorpions. Some ticks can transmit pathogens to humans when they bite them. Pathogens are germs (e.g., bacteria, viruses, parasites) that cause disease. Lyme disease is the most common and well-known tick-borne disease in the country, but there are more diseases of concern, including anaplasmosis, babesiosis, Powassan virus disease, and tick-borne relapsing fever.

Many workers across Canada, especially those that work outdoors or in close contact with tick-infested animals (e.g., deer, rodents), are at increased risk of getting tick-borne diseases. Properly identifying ticks and preventing their bites can reduce the risk of contracting these diseases, and recognizing the signs and symptoms can help with getting the right treatment. This document describes how ticks spread pathogens, how workplaces can assess their risks, and suggests control measures that can be implemented to protect workers' health.

How Ticks Spread Pathogens

Ticks spread pathogens through their saliva while feeding on blood. When they find an animal to feed on, they attach their mouthparts to the skin and draw blood. If the animal they are feeding on is infected with a pathogen, the tick will ingest the pathogen along with the blood. Once the pathogen is inside the tick, they can bite other animals and spread the pathogen. Ticks require blood meals at certain times in their developmental cycle and will feed on animals like deer, rodents, and even humans. People may not notice a tick bite because ticks are tiny, and their bites are usually painless.

Tick-borne Diseases

It is important to know what type of ticks may be present in the workplace because different species transmit different pathogens. There are more than 40 types of ticks that live in Canada, but only a few of them can spread pathogens that can cause human disease. Some pathogens can be transmitted to humans shortly after a tick begins to feed, while other pathogens take several hours of continuous feeding to be transmitted. The risk of pathogen transmission generally increases the longer the tick is attached to the skin.

Tick-borne Diseases table

Type of Tick	Disease	Time it typically takes for a pathogen to be transmitted after tick is attached	Time from tick bite to symptoms (incubation period)
<ul style="list-style-type: none"> Blacklegged tick Western blacklegged tick 	<ul style="list-style-type: none"> Lyme disease 	<ul style="list-style-type: none"> Within 24 hours 	<ul style="list-style-type: none"> 3-30 days
<ul style="list-style-type: none"> Blacklegged tick Western blacklegged tick 	<ul style="list-style-type: none"> Anaplasmosis 	<ul style="list-style-type: none"> Within 24 hours 	<ul style="list-style-type: none"> 7-14 days
<ul style="list-style-type: none"> Blacklegged tick Western blacklegged tick 	<ul style="list-style-type: none"> Tick-borne relapsing fever 	<ul style="list-style-type: none"> Within 24 hours 	<ul style="list-style-type: none"> Days to weeks
<ul style="list-style-type: none"> Blacklegged tick 	<ul style="list-style-type: none"> Babesiosis 	<ul style="list-style-type: none"> 36-48 hours 	<ul style="list-style-type: none"> 7-28 days
<ul style="list-style-type: none"> Blacklegged tick Groundhog tick Squirrel tick 	<ul style="list-style-type: none"> Powassan virus disease 	<ul style="list-style-type: none"> As little as 15 minutes 	<ul style="list-style-type: none"> 7-30 days

Tick-borne Diseases



Type of Tick	Disease	Time it typically takes for a pathogen to be transmitted after tick is attached	Time from tick bite to symptoms (incubation period)
<ul style="list-style-type: none"> Rocky Mountain wood tick 	<ul style="list-style-type: none"> Rocky Mountain Spotted Fever 	<ul style="list-style-type: none"> 4-6 hours 	<ul style="list-style-type: none"> 3-12 days
<ul style="list-style-type: none"> Rocky Mountain wood tick 	<ul style="list-style-type: none"> Colorado tick fever virus 	<ul style="list-style-type: none"> Within 24 hours 	<ul style="list-style-type: none"> 1-14 days
<ul style="list-style-type: none"> Ornithodoros hermsi 	<ul style="list-style-type: none"> Tick-borne relapsing fever 	<ul style="list-style-type: none"> As little as 30 minutes 	<ul style="list-style-type: none"> 7 days

Symptoms of Tick-borne Diseases

Many tick-borne diseases have non-specific symptoms at the onset of illness. Common symptoms of tick-borne diseases include fever, chills, headache, fatigue, muscle aches, nausea, and vomiting. Some diseases, like Lyme disease, can produce an expanding rash at the site of the tick bite that is circular or looks like a “bull’s eye”.

Sources of Exposure and Assessing Risk

Anyone working outdoors, especially in areas with tall grasses, shrubs, or low-hanging branches, is susceptible to being bitten by a tick. Certain activities increase the likelihood of workers being exposed to ticks including working:

- In natural wooded areas (e.g., tall grass, weeds, trees), especially when there is moisture (e.g., leaf litter)
- In temperatures at 4°C and higher (usually spring, summer, and fall seasons when ticks are active)
- Near or with animals that ticks feed on (e.g., rodents, birds, and deer)

At-risk occupations include but are not limited to:

- Abattoir worker
- Butcher
- Construction worker
- Dog walker
- Farm worker
- Forestry worker
- Hydro worker
- Landscaper
- Land surveyor
- Logger
- Outdoor guide (e.g., workers participating in and leading tours, hikes, river expeditions, hunting, fishing, etc.)
- Taxidermist
- Telecommunications line worker
- Veterinarian
- Wildlife conservation or rehabilitation worker

Each workplace is unique, and the employer is required to take every reasonable precaution for the protection of workers. Most workers in Canada are not at risk of contracting a tick-borne disease while on the job. However, when workers are at higher risk of contracting a tick-borne disease, the employer must conduct a [risk assessment](#) and implement appropriate control measures. A risk checklist can help identify risks and suggested control measures.

Workplace Control Measures

Tick-borne Diseases



After identifying the risks to workers, employers must implement the most appropriate control measures with consideration given to the [hierarchy of controls](#). A layered approach where multiple control measures are applied at the same time is recommended since a single control measure alone is not likely to be very effective.

Some workplace control measures that can be implemented to control the spread of tick-borne diseases include:

- Avoid working at sites with woods, bushes, tall grass, and leaf litter, especially during tick season, where possible
- Manage landscaping around the work area by keeping trees pruned, grass mowed, and removing leaf litter
- Stay on well-cleared trails and maintained paths, whenever possible
- Provide training on how tick-borne diseases are spread, risks of exposure and infection, and workplace control measures
- Apply insect repellent containing DEET or Icaridin to clothing and exposed skin (always follow label directions)
- Wear permethrin-treated work clothing (always follow label directions)
- Wear closed-toe shoes
- Tuck shirts into pants, and pull socks over pant legs
- Wear light-coloured long-sleeved shirts and pantspull socks over pant legs
- Tie back long hair
- Do a full body tick check after working outdoors, concentrating on feet, armpits, back of knees, elbows, hair, and behind ears, waist, and groin areas
- Shower or bathe after working outdoors, as it can help you find unattached ticks
- Put dry work clothes in a dryer on high heat for at least 10 minutes to kill unattached ticks on your clothing, if your clothes are damp, you may need to dry them for longer
- If you wash your clothes, use hot water and dry on high heat as ticks can survive a cold/warm wash cycle
- If you find a tick attached to your skin, carefully [remove the tick](#) as soon as possible

Emergency Preparedness and Response Plan

An emergency preparedness and response plan should be tailored to the tick-borne disease that workers can reasonably become sick with. For example, there must be a Lyme disease-focused plan in place if work is conducted in an [area known to have ticks](#) that carry the pathogen causing Lyme disease.

Reporting and Support

Individuals exposed to tick-borne diseases while working may become ill, experience lost work time, or require medical attention. Any worker experiencing illness, even mild symptoms, after an occupational exposure to ticks should contact their employer and a health care professional. Notification to the [government department responsible for health and safety](#) and [worker's compensation board](#) may also be required. Workers who become sick should be encouraged to take time away from work (this can be supported by a sick leave policy).

Becoming ill with tick-borne diseases can impact a worker's health, including physical and mental health symptoms of increased stress, anxiety, and depression. Mental health resources and support should be provided to all workers, including access to an [employee assistance program](#), if available.

Refer to the following mental health information resources:

- [Mental health support: Get help](#) – Public Health Agency of Canada
- [Mental health and wellness](#) – Public Health Agency of Canada
- [Mental health](#) – Canadian Centre for Occupational Health and Safety

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