

Guidelines to Protect Workers Related to Coronavirus in Plumbing and HVAC Systems

Purpose

To provide guidance to protect the health of workers performing work on plumbing and HVAC systems from the COVID-19 virus and other biohazards.

What is COVID-19

Coronaviruses are a large family of viruses found mostly in animals. In humans, they can cause diseases ranging from the common cold to more severe diseases such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The disease caused by the new coronavirus has been named COVID-19. While many of the characteristics of COVID-19 are still unknown, mild to severe illness has been reported for confirmed cases.

BC, Canada and many other countries, continue to be in active containment mode through a series of public health measures including physical distancing, business and school closures, to detect cases and respond to prevent the virus from spreading. Every health region in British Columbia now has patients with COVID-19. For more information in this area, check out [Case Counts and Press Statements](#) page on the BC Centre for Disease Control website.

What are the symptoms?

The symptoms of COVID-19 are similar to other respiratory illnesses, including the flu and common cold. They include cough, sneezing, fever, sore throat and difficulty breathing. Anyone concerned that they may have been exposed to, or are experiencing symptoms of the novel coronavirus, should contact their primary care provider, local public health office, or call 8-1-1.

The [BC COVID-19 Self-Assessment Tool](#) is available for anyone that develops symptoms and can be used to help determine if you need further assessment or testing for COVID-19.

How does it spread?

Influenza viruses like coronavirus are spread via droplet transmission when an infected person coughs or sneezes. The large respiratory droplets generally travel only a short distance (less than 2 m) through the air, and then settle out of the air quickly.

A person can catch influenza from direct or indirect contact. Direct contact includes physical contact with an infected person, including contact with their blood or **body fluids**.

Indirect contact happens when infected respiratory-tract secretions filled with the virus are left on the hands (due to poor handwashing practices) or the surrounding area (droplets from sneeze or cough). The virus can live for hours on doorknobs, telephones, faucets, toilets, tools, or other areas that an infected person passed. A person can become infected by touching any of these surfaces and then touching their eyes, nose, or mouth.

Can it be spread through drinking water?

According to the Centers for Disease Control and Prevention (CDC), the COVID-19 virus has not been detected in drinking water.

What are biohazards?

Biological hazards (biohazardous materials or biological agents) are microorganisms, nucleic acids or proteins that cause, or are a probable cause, of infection, with or without toxicity, in humans or animals. Included in this hazard class are bacteria, viruses, fungi and parasites.

Human fecal material may contain a variety of biohazards. Pathogens potentially present in human feces include *Bacterioides spp.*, *Salmonella*, *Shigella*, *Yersinia*, *Campylobacter*, *Aeromonas*, *Candida*, *E. coli O157:H7*, *Klebsiella*, *Cryptosporidium*, *Entamoeba histolytica*, viruses including Norovirus and Hepatitis A, and intestinal parasites. Additionally, visible blood in feces may indicate the presence of bloodborne pathogens including HIV, Hepatitis B, and Hepatitis C.

Human urine is typically not hazardous. It can be potentially hazardous if there is visible blood or if originating from an individual with a urinary tract infection.

Is the COVID-19 virus found in feces?

According to the CDC, the virus that causes COVID-19 has been detected in the feces of some patients diagnosed with COVID-19. The amount of virus released from the body (shed) in stool, how long the virus is shed, and whether the virus in stool is infectious are not known.

The risk of transmission of COVID-19 from the feces of an infected person is also unknown. However, the risk is expected to be low based on data from previous outbreaks of related coronaviruses, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). There have been no reports of fecal-oral transmission of COVID-19 to date.

Can the virus spread through sanitary drainage and vent systems?

According to the CDC, at this time, the risk of transmission of the virus that causes COVID-19 through sewerage systems is thought to be low. Although transmission of COVID-19 through sewage may be possible, there is no evidence to date that this has occurred.

According to the World Health Organization (WHO), the COVID-19 virus is an enveloped virus, with a fragile outer membrane. Generally, enveloped viruses are less stable in the environment and are more susceptible to oxidants, such as chlorine. While there is no evidence to date about survival of the COVID-19 virus in water or sewage, the virus is likely to become inactivated significantly faster than non-enveloped human enteric viruses with known waterborne transmission (such as adenoviruses, norovirus, rotavirus and hepatitis A).

However, the WHO also acknowledged that faulty plumbing and a poorly designed air ventilation system were implicated as contributing factors to the spread of the aerosolized SARS coronavirus in a high-rise apartment building in Hong Kong in 2003. Similar concerns have been raised about the spread of the COVID-19 virus from faulty toilets in high-rise apartment buildings.

Therefore, the precautionary principal should be followed: **it should be assumed by anyone working on a sanitary drainage system that the virus is present.**

What is required to prevent exposure to biohazards transmitted by contact?

Workers that may be exposed to biohazards, including human waste/sewage (e.g. wastewater, sanitary drains, plumbing venting systems, rooftop HVAC equipment, specifically exhaust fans, etc.) must use routine practices, practice basic hygiene precautions, and wear personal protective equipment appropriate to the biological agent.

Employers must do a risk assessment, create an exposure control plan and then educate their workers about the plan, safe work practices and proper use (including putting on/taking off) of protective clothing and equipment.

Engineering controls

The most effective way to control exposure to biological hazards is to have a physical barrier between the worker and any potential hazard.

Administrative controls

Administrative controls involve changes to scheduling, job rotation, or work procedures to reduce exposure.

Routine practices are an approach to infection prevention and control in which all blood and body fluids are presumed to carry infectious pathogens. This approach consists of a collection of safe work procedures that helps prevent the transmission of infectious diseases in the workplace.

- Educate workers about how to put on, fit check, use, and remove PPE so that these protective barriers are not breached
- Ensure clean and sanitary washrooms and hand-washing facilities are provided
- Follow proper hand washing procedure, including before and after eating, before and after wearing gloves and other PPE, etc. Workers should wash hands, arms and face (in that order) with soap and water for at least 20 seconds immediately after removing PPE.
 - Wash hands with soap and water is preferred.
 - If not possible, provide 60% alcohol-based hand rubs.
- Cover your cough and/or sneeze with your bent elbow
- Educate workers about social distancing of at least two meters (six feet) between people in their course of work
- Clean and disinfect all potentially contaminated surfaces (recommended twice daily), including toilets, tools, and equipment, with soap and water, drying thoroughly. Alternative, use a solution of 1 part household bleach to 10 parts water, mixed fresh daily
- Avoid touching eyes, nose, and mouth
- Ensure all open sores, wounds or cuts are covered with clean, dry bandages
- Before eating, remove soiled work clothes and eat in designated areas away from human waste and sewage-handling activities.
- Do NOT smoke or chew tobacco or gum while working on a sanitary waste and vent system

- Avoid sharing of tools or equipment with coworkers to the greatest extent possible.
- Educate staff about safe work practices, the availability of a hepatitis B vaccine, the importance of reporting incidents and near misses, and their responsibilities for creating a safe workplace.
- All workers who handle human waste or sewage should receive training on disease prevention. The training should include information on basic hygiene practices; use and disposal of personal protective equipment; and proper handling of human waste or sewage. Workers must also be urged to promptly seek medical attention if displaying any signs or symptoms of fever, cough, vomiting, stomach cramps and watery diarrhea.
- Ensure staff who have signs and symptoms of illness know they must stay home and report the illness to their employer
- Remove rubber boots and work clothes before leaving worksite

Personal Protective Equipment

Personal protective equipment (PPE) is considered the last line of defense and should only be used when other controls are not practicable or in addition to other controls. The following PPE is required when potentially touching blood or body fluids, handling contaminated items and when there is a risk of splash or spray of body fluids.

- disposable, water-proof gloves
 - Rubber outer gloves (cut-resistant) – to prevent exposure to human waste or sewage
 - Nitrile inner gloves – to prevent exposure when removing PPE and cleaning tools
 - After tool cleaning, remove by rolling inside-out to remove, careful not to touch contaminated areas
- protective outerwear: liquid-repellent coveralls (such as Tyvek)
 - After tool cleaning, remove by rolling inside-out to remove, careful not to touch contaminated areas
- rubber boots
- eye protection (goggles)
- splash-proof face shields
- respiratory protection: NIOSH approved N95 facemask (surgical masks)
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WorkSafeBC Regulation

OHS Regulation Part 4: General Conditions

[4.48 Eating areas](#)

(1) Workers must not keep or consume food in an area of a workplace where it could become unwholesome because of workplace contaminants.

[4.85 Washing facilities](#)

(1) Except as provided by subsection (2), the employer must ensure that a sufficient number of plumbed washroom facilities are readily available for workers.

(2) If plumbed washroom facilities cannot be provided because of the nature of the workplace or the nature of the work in which the worker is involved, the employer must

(a) provide access to portable washroom and hand-washing facilities, or

(b) make such other reasonable arrangements to accommodate workers as the circumstances allow, if access to portable washroom and hand-washing facilities cannot be provided.

(3) If washroom facilities are provided they must be

(a) maintained in proper working order,

(b) kept clean and sanitary, and

(c) provided with the supplies necessary for their use.

[4.86 Change areas](#)

If the employer requires the worker to change into protective work clothing at the workplace, the employer must ensure that adequate change areas are provided.

OHS Regulation Part 5: Chemical Agents and Biological Agents

[5.1.1 Designation as Hazardous Substances](#)

For the purposes of sections 5.2 and 6.33 to 6.40 and Part 30, the following biological agents are designated as hazardous substances:

(a) a liquid or solid material that is contaminated with a prion, virus, bacterium, fungus or other biological agent that has a classification given by the Public Health Agency of Canada as a Risk Group 2, 3 or 4 human pathogen that causes an adverse health effect;

[5.2 General Information Requirement](#)

OHS Regulation Part 6: Substance Specific Requirements

[6.33-6.40 Biological Agents](#) – requirements for exposure control plan, risk identification, controls

WCB guideline-[G6.34-6: Exposure control plan - Pandemic influenza](#)

WCB guideline-[Table 2: Personal protective measures for pandemic influenza](#)

OHS Regulation Part 8: Personal Protective Clothing and Equipment

[8.14 Eye protection](#)

[8.17 Face protection](#)

[8.19 \(2\) Limb and body protection](#) (includes gloves and other protective clothing)

[8.32-8.35 Respiratory protection](#) (includes facemasks)

Other WorkSafeBC Information

Publication-[Protecting Workers from Infectious Disease](#)

Construction and COVID-19 safety

<https://www.worksafebc.com/en/about-us/covid-19-updates/covid-19-industry-information/construction-information>

Additional References and Resources

COVID-19 Information, BC Center for Disease Control

<http://www.bccdc.ca/health-info/diseases-conditions/covid-19/common-questions>

Water Sanitation Hygiene, World Health Organization

<https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19>

Resources for Pandemics, including free training, Canadian Centre for Occupational Health and Safety
<https://www.ccohs.ca/topics/hazards/health/pandemics/>

Biohazardous Infectious Materials pictogram, Canadian Centre for Occupational Health and Safety
<https://www.ccohs.ca/oshanswers/chemicals/howto/biohazardous.html>

Guidance for Reducing Health Risks to Workers Handling Human Waste or Sewage, US Centers for Disease Control
https://www.cdc.gov/healthywater/global/sanitation/workers_handlingwaste.html

COVID-19 and Solid Waste and Wastewater Management Workers and Employers, US Occupational Safety and Health Administration
<https://www.osha.gov/SLTC/covid-19/controlprevention.html#solidwaste>

COVID-19 Information, US Centers for Disease Control
<https://www.cdc.gov/coronavirus/2019-ncov/index.html>