



## Introduction

This document provides information about the use of personal protective equipment (PPE) as a hazard control in the workplace to help protect workers from COVID-19.

For general COVID-19 prevention practices, both employers and workers can refer to the CCOHS resource [Protect Yourself and Others](#).

Refer to the Government of Canada [Personal protective equipment \(COVID-19\): Overview](#) and CCOHS [Designing an Effective PPE Program](#) for additional information about PPE.

## Consider the Risks

- COVID-19 spread occurs primarily when individuals are in close contact with an infected person. At close range, the virus may spread when large respiratory droplets fall through the air and land on mucous membranes of a person's nose, mouth, or eyes, and through inhalation of smaller respiratory droplets or particles (often referred to as aerosols). The virus may also spread when individuals touch surfaces or objects that have the virus on them, and then touch their mouth, nose, or eyes before cleaning their hands.
- The risk of spreading COVID-19 increases in situations where people are in closed spaces (with poor ventilation) and crowded places when with people from outside their immediate household. Risk is higher in settings where these factors overlap or involve activities such as close-range conversations, singing, shouting or heavy breathing.
- Each workplace is unique. Employers need to take every precaution reasonable in the circumstances to protect the health and safety of their workers. These precautions include [assessing the risks](#) of COVID-19 for their specific workplace and the activities conducted by their workers.
- Employers must then implement appropriate hazard controls using the [hierarchy of controls](#) (i.e., elimination, substitution, engineering controls, administrative policies, and the use of personal protective equipment). PPE is the last tier in the hierarchy of controls and should be used along with other workplace controls in a layered approach.

## Use of PPE

There are many different types of PPE. This tip sheet focuses on the following PPE that may be used to help prevent worker exposure to COVID-19 or other related hazards:

- medical masks
- eye protection (e.g., face shield, goggles)
- gloves
- gowns
- respirators

Select PPE based on the type of hazard and the risk of exposure to the worker. PPE requirements may also be specified in your [jurisdiction's](#) health and safety legislation.

Examples of when workers may be required to wear PPE are:

- providing direct care or medical treatment to a person suspected or confirmed as having COVID-19,
- performing other tasks that require workers to be in close contact with another person, or
- using cleaning and disinfecting products.

# COVID-19 and Personal Protective Equipment (PPE)



PPE is regulated by the government and is required to meet specific performance standards. In Canada, PPE sold for medical purposes are classified as [medical devices](#) and must comply with the [Medical Devices Regulations](#). In general, authorization by Health Canada is required before medical devices can be imported and sold.

Non-medical masks are not considered PPE. Non-medical masks should be properly worn, well-fitted, and well-constructed. For additional information on non-medical masks, refer to the CCOHS resource [Get the Facts on Masks](#).

## Procedures

- Develop procedures that describe the PPE that workers are required to use.
- Make sure that there are written measures and procedures about the selection, care and use of PPE.
- Outline how PPE will be made available to workers.
- Describe cleaning and disinfecting procedures for re-usable PPE. PPE should be cleaned and disinfected according to the manufacturer's instructions.
- Outline the steps for putting on (donning) and taking off (doffing) PPE.
- Make sure that workers are trained on the proper use, care and storage of PPE before they are required to wear the PPE.

## Medical Masks

- Medical masks are designed to block splashes and large particle droplets. However, unlike particulate filtering respirators, they are not designed to filter small particles from the air.
- Medical masks are sometimes referred to as surgical or procedural masks.
- They consist of 3 layers. The outer layer is made with a fluid-resistant material, the middle layer contains a filtration medium (polypropylene sheet), and the inner layer absorbs moisture produced by the wearer.
- They are classified by the American Society for Testing and Materials (ASTM):
  - Level 1 (low) - venous pressure splash
  - Level 2 (moderate) - arterial pressure splash
  - Level 3 (high) - high-velocity procedures, orthopedic surgery
- Medical masks are used in healthcare settings. However, they may also be required in other workplaces. For example, [Québec](#) requires the use of medical masks in the workplace when physical distancing of 2 metres is not possible.
- Early in the pandemic, one of the myths about medical masks use was debunked by the [World Health Organization \(WHO\)](#). The WHO clarified that the prolonged use of medical masks may be uncomfortable but does not cause carbon dioxide intoxication nor oxygen deficiency.
- Health Canada has advised Canadians not to use face masks that contain graphene unless [specifically listed](#) on their website. Graphene is a nanomaterial (material made of tiny particles). There is a potential to inhale graphene particles, which may pose health risks. For additional information, refer to the Government of Canada website [Face Masks that Contain Graphene May Pose Health Risks](#).

## Eye Protection

- Eye protection protects the eyes from hazards (e.g., splashes or sprays of blood or bodily fluids).
- They include face shields, goggles and safety glasses.
- Regular prescription eyeglasses are not considered PPE unless they meet specific requirements for protective eyewear.
- Eye protection is used by health care workers who are caring for patients who are suspected or confirmed to have COVID-19.
- Some jurisdictions require the use of eye protection for certain tasks. For example, in [Ontario](#) eye protection is required if a worker is providing services where they are required to come within 2 metres of another person



who is not wearing a mask, when in an indoor area, and not separated by a plexiglass barrier.

- Some chemical and disinfecting products are classified according to [WHMIS](#) as a health hazard (serious eye damage / eye irritation) and workers using these chemicals require eye protection.

## Gloves

- Gloves provide a barrier that protects the skin from exposure to a hazardous substance.
- Health care workers wear medical gloves when providing care to patients that are suspected or confirmed as having COVID-19.
- Medical gloves may be made of latex, vinyl, synthetic polymer or nitrile.
- Some workers may be allergic to the natural rubber latex used in some medical gloves. If workers are allergic, choose a suitable glove made from a different material.
- Health Canada recognizes a variety of different standards for medical gloves. For details refer to [Important Regulatory Considerations for the Supply of Medical Gloves During the COVID-19 Outbreak: Guidance to Industry](#).
- Gloves may be required when using cleaning and disinfecting chemicals. Review the manufacturer's safe-use instructions or [Safety Data Sheet](#) and select the appropriate type of glove that will protect against the chemical hazard. Gloves are made of different materials and one type of glove will not provide protection for all types of chemicals. For additional information refer to the CCOHS resource [Chemical Protective Clothing – Glove Selection](#).
- Make sure to provide a selection of glove sizes so each worker has the correct fit (e.g., not too tight or loose). Poorly fitted gloves can reduce dexterity or allow hazards to enter the glove at the wrist.
- Inspect all gloves prior to use and if there are concerns such as discoloration, visible holes or tears, it should be discarded.
- After use, it is important to carefully remove gloves and prevent skin contact with any contaminants on the outside of the gloves (see 'Doffing PPE' section of this tip sheet for details).
- Gloves may also be used to protect workers from other hazards in the workplace (e.g., sharp objects, heat, electricity). It is important that the correct type of glove is selected for the specific hazard.

## Medical Gowns

- A medical gown will help provide a physical barrier between the infectious material and the wearer's skin.
- Follow the manufacturer's instructions about when the medical gown should be removed and replaced (e.g., if the gown is torn, wet or soiled).
- There are 2 types of gowns: isolation and surgical. Isolation gowns are used by health care workers in workplaces such as hospitals, long-term care, ambulatory care and home care. Surgical gowns are sterile textile gowns that are worn during surgery.
- Medical gowns may be re-useable or disposable.
- Medical gowns should have long-sleeves, cover the body front and back from the neck to the thighs, overlap in the back, fasten at the neck and back, and be easy to put on and take off.
- [Health Canada](#) recognizes 3 standards for medical gowns:
  - Canadian Standards Association – CSA Z314
  - American National Standards Institute and Association of the Advancement of Medical Instrumentation – ANSI/AAMIPB70
  - European Standards – EN 13795
- Medical gowns are grouped by category and level of risk:
  - Level 1 – minimal risk; used for standard precautions and simple procedures
  - Level 2 – low risk; used for minimally invasive surgery



- Level 3 – moderate risk; used for open gastrointestinal surgeries
- Level 4 – high risk; used for open cardiovascular and trauma procedures.

## Respirators

- Particulate filtering respirators are a type of air purifying respirator. They protect the wearer by filtering particles out of the air when they breathe. The different types of particulate filtering respirators are:
  - Filtering facepiece respirators
  - Elastomeric respirators (half mask or full face) with particulate filtering cartridges
  - Powered air purifying respirators with particulate filtering cartridge
- The term “N95” describes two features:
  - “N” indicates that the respirator is not resistant to oil
  - “95” refers to the filtration efficiency where at least 95% of particles are filtered
- Medical filtering facepiece N95 respirators are also fluid resistant.
- Respirators are evaluated, tested, and certified by the U.S. National Institute for Occupational Safety and Health (NIOSH). Certified respirators must pass minimum performance requirements, such as fit testing, filter efficiency and breathing resistance. They also have an approval number stamped on the mask. All NIOSH approval numbers begin with the letters TC (testing and certification). For respirators with particulate filters, this approval is shown as TC-84A followed by four unique numbers (i.e., TC-84A-####). Health Canada accepts the NIOSH certification for respirators used for medical purposes.
- The Canadian Standards Association (CSA) Group also offers a [certification program](#) which provides an alternative to NIOSH for Canadian manufacturers of medical filtering facepiece respirators. The CSA Group certifies these respirators in accordance with [Health Canada's respirator guidance document](#). Respirators certified through this program are designated (e.g., 95PFE – 95% particulate filter efficiency). For additional information, about this and other standards, refer to the Government of Canada's website "[COVID-19 Medical Masks and Respirators. Information for Health Professionals](#)".
- Make sure that workers are fit tested before they are required to wear a tight-fitting respirator. Fit testing verifies that there is an effective seal between the respirator and the worker's face.
- Remind workers that they cannot have facial hair that comes between the sealing surface of the tight-fitting respirator facepiece and the face. Facial hair can cause respirators to leak around the face seal.
- Wearers should perform a positive and negative user [seal check](#) when they put on a tight fitting respirator.
- Filtering facepiece N95 respirators (or equivalent) may be worn based on the employer's risk assessment, a health care worker's point-of-care risk assessment, if an aerosol generating medical procedure is being performed, or if specified by local requirements. For example, in [British Columbia](#) paramedics are required to wear a N95 respirator when in close contact (within 2 metres) of a positive or suspected COVID-19 individual.

## Counterfeit Respirators

- Health Canada has issued warnings about counterfeit respirators. They are imitations of legitimate products and may not provide protection.
- Below are some [signs](#) that a filtering facepiece respirator may be counterfeit:
  - No markings on the respirator
  - NIOSH spelled incorrectly
  - No approval numbers
  - Presence of decorative fabric or other decorative add-ons (e.g., sequins)
- Health Canada has identified respirators that are being counterfeit on the Government of Canada website [Counterfeit Respirators](#). NIOSH also identifies counterfeit respirators on their website [Counterfeit Respirators / Misrepresentation of NIOSH-Approval](#).



- If your respirator is counterfeit, stop using it as it may not protect you against the virus that causes COVID-19.

## Donning PPE

- Identify and gather all the PPE that needs to be worn.
- Perform hand hygiene.
- Put on the medical gown (put arms in sleeves and secure all ties).
- Put on the medical mask or N95 respirator.
  - Medical mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If the mask has ear loops, hook them appropriately around your ears.
  - Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
- Put on the eye protection.
- Put on gloves. Gloves should cover the cuff (wrist) of the gown.
- If available, ask a co-worker to check your PPE.

## Doffing PPE

- More than one doffing method may be acceptable. Clearly outline the steps to take in a procedure.
- The outside of the PPE may be contaminated. Take care not to touch with your hands.
- Remove gloves:
  - Grab the outside edge near the wrist of one glove and peel it away, rolling the glove inside out.
  - Hold the balled-up glove in your gloved hand.
  - Slide two ungloved fingers under your other glove and remove it.
  - Drop both gloves into a proper waste container.
  - An instruction video by [Public Health Agency of Canada \(PHAC\)](#) is available.
- Wash or disinfect your hands with sanitizer.
- Remove gown:
  - Unfasten ties and pull ties forward.
  - Peel gown off shoulders and away.
  - Turn the contaminated side towards the inside, bundle and discard.
- Perform hand hygiene.
- Remove eye protection:
  - Use the earpieces or straps to pull the eye protection away from your face.
  - Clean and disinfect any reusable eye protection before reuse.
- Remove N95 respirator / medical mask:
  - Use the straps or ear loops to remove from the face in a downward direction.
- Perform hand hygiene.

## Heat Stress and PPE

- If workers are required to work in a hot environment, make sure that a heat stress control program is implemented
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- Use of engineering controls (e.g., air conditioning)
- Measuring the environment and following the appropriate [work-rest regime](#).
- Use of administrative controls (e.g., scheduling tasks to cooler parts of the day, providing water, increasing the frequency of breaks)
- Training workers on the signs and symptoms of heat stress
- Wearing light and breathable summer clothing (if possible)
- Acclimatizing workers to heat
- The American Conference of Governmental Industrial Hygienists (ACGIH) has a threshold limit value (TLV) for heat stress in units of WBGT (wet bulb globe temperature) degrees Celsius (°C). The calculation includes a [clothing adjustment factor](#) for various listed clothing types, which may add 0 to 11 °C to the WBGT in order to reflect the change in heat stress imposed by the clothing.
- The ACGIH does not recommend any adjustment for the use of face coverings and their heat stress TLV does not list a clothing adjustment factor for face masks. For additional information about heat stress and face masks refer to the CCOHS resource document [COVID-19 FAQs \(masks and PPE\)](#).

**If you or someone you know is in crisis, please contact your local hospital, call 911 immediately, or contact a [Crisis Centre in your area](#).**



It is important that mental health resources and support are provided to all workers, including access to an employee assistance program, if available.

For further information on COVID-19, refer to the [Public Health Agency of Canada](#).

Note that this guidance is just some of the adjustments organizations can make during a pandemic. Adapt this list by adding your own good practices and policies to meet your organization's specific needs.

**Disclaimer:** As public and occupational health and safety information is changing rapidly, local public health authorities should be consulted for specific, regional guidance. This information is not intended to replace medical advice or legislated health and safety obligations. Although every effort is made to ensure the accuracy, currency and completeness of the information, CCOHS does not guarantee, warrant, represent or undertake that the information provided is correct, accurate or current. CCOHS is not liable for any loss, claim, or demand arising directly or indirectly from any use or reliance upon the information.