Workers Health & Safety Centre

# COVID-19



# RESPIRATORY AND EYE PROTECTION

## *Safeguarding workers confronting COVID-19*

### TRANSMISSION OF THE COVID-19 VIRUS

**The COVID-19 virus is believed to be contracted by:**

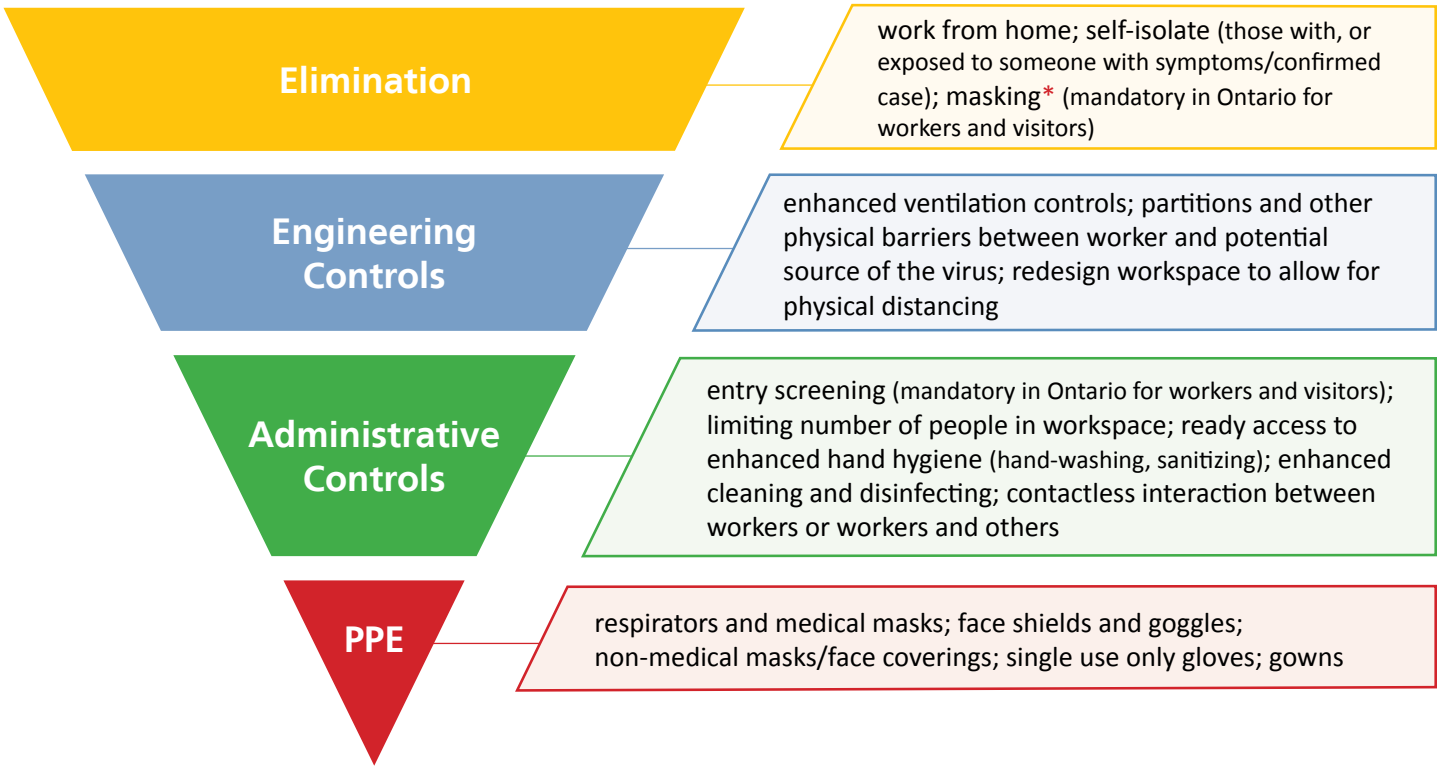
- Inhaling large respiratory droplets generated by an infected person when in their immediate vicinity;
- Inhaling smaller respiratory droplets (also known as aerosols) from an infected person; and
- Touching a contaminated surface, then transporting the virus to the mouth, nose or eyes.

Of these transmission routes aerosol transmission has received perhaps greatest concern, as smaller respiratory droplets are able to stay suspended in air and be transported well beyond two metres from the infected person. With growing **research evidence** supporting aerosolized transmission 239 scientists signed on to a **statement urging proper control measures** in indoor spaces, including workplaces. Public health authorities internationally and now here in Canada have acknowledged and support the need to address this route of transmission among other things via enhanced ventilation and respiratory protection in the form of respirators and masks.





## HIERARCHY OF CONTROLS




* *Non-medical masks and face coverings provide some protection for the wearer (the better the design and fit, the better the protection), and act as a source control when worn properly by infected individuals.*

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While the range of respiratory protection offers important safeguards against COVID-19, depending on the work being conducted, these too should be situated within a larger range of controls. Aided by **hazard assessments and inspections** of joint health and safety committees (JHSCs) or worker health and safety representatives (HSRs), workplaces should examine all the ways workers may be exposed to the COVID-19 virus and determine all appropriate measures they will need to implement to protect workers. Guiding this process should be the hierarchy of controls as depicted here.

Regardless, when it comes to respiratory protection this assessment process will also help guide its selection.

It should be noted in Ontario health care settings, in addition to JHSC and worker HSR hazard assessments, regulated health professionals (i.e. nurses, doctors and dentists) and unregulated health care workers (i.e. personal support workers, environmental service workers, porters) can also gain the respiratory protection they require as a result of **Point of Care Risk Assessments (PCRAs)**.

For regulated health professionals once they have conducted the assessment and in their professional and clinical judgement they determine they need a level of personal equipment higher than what is being offered (i.e. N95 mask), the employer cannot deny it. For unregulated health care workers where there is no outbreak they will need a PCRA conducted by a regulated health professional to secure access to a N95 mask. However, in an outbreak situation no PCRA is required and they can simply insist on a fit-tested N95 mask. For greater clarity see the province's explanation of their **amended Public Health Directive #5**.

Tools and explanations for PCRAs are also available. The following are resources from **Shared Health Manitoba** and the **Canadian Federation on Nurses Unions**.

## SELECTION, USE AND CARE

### N95 RESPIRATORS




There is little debate these respirators, also referred to as N95 masks offer effective protection from airborne contaminants, including the COVID-19 virus (When workers are fit-tested and properly trained on their usage as required by law.). The "N" is the respirator rating letter class. It stands for "non-oil." This means the mask can be used in a work environment where no oil-based particulates are present. The "95" means the mask is 95 per cent efficient. Though with limited supplies, this form of respiratory protection for the most part has been reserved for health care workers and first-responders.

For **tips on fit and proper use of N95s** be sure and check out the US Centres for Disease and Prevention dedicated web page.

### OTHER RESPIRATORS



Health Canada regulates medical devices in Canada. They accept the NIOSH certification provided for N95 masks or respirators. They also accept equivalent respirators approved under standards used in other countries, as long as the manufacturer can provide evidence demonstrating testing to the appropriate standards. This is especially important in light of N95 mask shortages. Other respirators of **equivalent standard approved** for use in Canada include:

- FFP2 and P3 (Europe)
- PFF2 and PFF3 (Brazil)
- P2 and P3 (Australia)
- Specialist 1 (Korea)
- N95, R95 and P95 (Mexico)
- KN/KP95 and 100 (China).

As of September 22, 2020, and again important because of N95 scarcity, Ontario's COVID-19 Response: Personal Protective Equipment (PPE) Committee edited among other things their information regarding reusable elastomeric respirators in a document entitled, ***Optimizing the Supply of Personal Protective Equipment During the COVID-19 Pandemic***. In it they acknowledge elastomeric respirators are "a reusable equivalent to the more commonly known disposable N95 respirator."

Among other things, this same document also considers the limited situations for decontamination, reuse and extended use of personal protective equipment, including disposable N95 respirators. The U.S. **Centres for Disease Control and Prevention** (CDC) offer similar, more detailed advice for respirators.

An **independent investigation** on Canada's handling of the pandemic commissioned by the Canadian Federation of Nurses Unions and conducted by Mario Possamai, former senior advisor to the Ontario SARS Commission also looked at elastomeric respirators and concluded: "Recognizing that while sufficiently protective, N95s have their draw backs, including comfort, the federal and provincial governments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like **elastomeric respirators, that protect as the same level or better than N95s**, and that, evidence suggests, may have comfort and cost advantages."

Although the U.S. Centres for Disease Control and Prevention suggest using elastomeric respirators only when N95s are in short supply, they offer extensive **guidance on their use and care**.

Some have expressed concerns about elastomeric respirators with exhale valves, especially in surgical situations. They have also recommended against their use for source control. In response, **Shared Health Manitoba** recommends wearing a surgical mask overtop of the respirator, in a vertical position between the cartridges to cover the exhale valve.

## MEDICAL MASKS

Also known as surgical or procedural masks, these masks are not respirators and do not form a seal on the face. As such they are **not as protective**, especially when it comes to protection against aerosolized transmission of smaller respiratory droplets. Like N95 respirators though, they are by and large reserved for first responders and workers in health care facilities, including long-term care and retirement homes.

**This said, the World Health Organization also recommends their use for:**

- COVID-19 patients isolating at home
- Those providing direct care to patients at home
- People experiencing symptoms who will be in close contact with others, including leaving home to access testing or medical care
- People living or working in areas where COVID-19 is wide-spread and physical distancing cannot be achieved
- People 60 and over
- People with pre-existing, underlying health conditions.

Medical masks though are not created equally. They are manufactured to three levels of protection, low, moderate and high. **Careful selection** among these is essential too. Ensuring these masks are certified by **American Society for Testing and Materials** (ASTM) or another recognized standard setting organization is also critical.





## NON-MEDICAL MASKS AND CLOTH FACE COVERINGS

Use of these has evolved significantly over the course of the pandemic, especially in non-health care work settings and public spaces. As of October 2, 2020, the wearing of a mask or face covering that covers the nose, mouth and chin is **mandatory in almost all public indoor situations and settings** across Ontario, including workplaces and businesses.

Individuals who feel they are unable to use respiratory protection need to seek accommodation, particularly now that masks or face coverings are mandatory. Just the same, if people are in the workforce, and working without a mask, they should be working in areas remote from others, so as not to potentially spread the virus.



Although non-medical masks and cloth face coverings don't provide the same protection as certified medical masks, researchers first found they **function as source control** in community settings. An **international study** analyzing data for 194 countries, reported deaths related to COVID-19 were reduced when masks were worn. They function by helping to reduce the likelihood of the person wearing the mask from spreading infectious droplets into the surrounding environment. Mandating use then is critical considering an infected person can spread the virus even when they are unaware of their infection and have no symptoms (pre-symptomatic and asymptomatic).

Mounting research evidence is also finding non-medical masks can **reduce the wearer's exposure** to infectious droplets as well. On November 10, 2020 the **CDC issued a statement** to this effect, saying masks in some cases filtered nearly 50 per cent of fine particles for the wearer. They added however the level of mask protection is dependent on design, fit and materials used.

Regardless, they concluded, "Experimental and epidemiological data support community masking to reduce the spread of SARS-CoV-2 [the virus that causes COVID-19]. **The prevention benefit of masking is derived from the combination of source control and personal protection for the mask wearer.** The relationship between source control and personal protection is likely complementary and possibly synergistic, so that individual benefit increases with increasing community mask use. … Adopting universal masking policies can help avert future lockdowns, especially if combined with other non-pharmaceutical interventions such as social distancing, hand hygiene, and adequate ventilation."

The **World Health Organization** (WHO) is one of many public health authorities offering guidance on the **construction of mask and face coverings**. The following are just a few key things to consider in terms of selection.

- Mask should be comprised of at least three layers of fabric (nylon blends, polyester, cotton).
- Mask outermost layer should use a fabric that is water resistant (such as polypropylene, polyester, or their blends) and innermost layer consisting of cotton or cotton blend.
- Avoid use of elasticized materials, when they stretch droplet filtration is less effective.
- Use ties or adjustable ear loops to ensure tighter/secure fit on the face.
- Do not use masks designed with exhalation valve (this will spread the virus from infected individuals).

Masks designed with exhalation valves may assist the wearer with breathing, they do not however, protect others from COVID-19. As such they are not generally recommended for use. However, again as Shared Health Manitoba and others have suggested the wearer could wear a mask over the exhale valve and achieve necessary protection.

For those who have already purchased two layer masks **Public Health Canada advises** these may be salvaged if the wearer inserts a polypropylene filter in between the layers. Disposable filters can be purchased or home made.

## SAFE USE OF MASKS

Medical masks are designed for single-use and will deteriorate with prolonged use. While many cloth non-medical masks are designed for reuse.

**Regardless of the mask or face covering, the following should be considered for safe use.**

- Prior to putting it on, clean hands with soap and water or sanitizer.
- Inspect for damage (holes or tears) or dirt (replace if either uncovered).
- Identify the inside and the top of the mask.
  - In some cases, as in medical masks, the top is fitted with a metal piece to form around the nose.
  - The white, smooth side of medical masks should be next to the wearer's skin.
  - For non-medical masks, the cotton inner layer should be next the wearer's skin, as it will absorb moisture.
- Secure the mask covering the nose, mouth and chin ensuring a tight fit and no gaps.
- The mask should not impede breathing
  (Decreased breathability can lead to unfiltered air escaping into the surrounding environment venting through perimeter of mask.).
- The mask should not impede vision.
- Do not share the mask.
- Do not touch the front of the mask during use or removal
  (If you do, perform hand hygiene immediately.).







- Do not pull mask down and secure under the nose or chin.
- Remove as soon as possible if dirty, damp or worn.
- Remove safely by adhering to the following.
  - Clean or sanitize hands prior to removal.
  - Remove by grasping the straps and move mask away from the face.
  - Do not shake the mask.
  - Properly discard it if disposable (into an enclosed bin).
  - If reusable, clean/launder daily (Use hot water and soap or detergent, or boil for one minute. Remember it must maintain shape after washing and drying.)
  - If reusable, store in a clean, dry container (paper bag or envelope that doesn't retain moisture causing bacteria and clearly mark with user's name and date).
  - Perform hand hygiene again, immediately.



**For clarity about safely using a medical mask view this video. For additional clarity about safely using a non-medical mask view this video.**

## FACE SHIELDS



This protective equipment is often used as a **supplement to face masks**. For instance, through out the pandemic many health care workers and first responders have used face shields in addition to face masks, especially when in close contact with a person needing care, or if there is a chance of splashing or spraying their mask.

In Ontario, in addition to covering the nose and mouth, now **all persons providing services are required to wear equipment to protect their eyes** as well,

- if they come within two metres of another person who is not wearing a mask or face covering during any period when they are indoors,
- or where they are not separated by plexiglass or some other impermeable barrier (See Regulations **263/20** and **264/20**).

Restaurant servers for instance would require eye protection.

However, face shields **should not be used a substitute to face masks**. The Centers for Disease Control and Prevention (CDC) and others suggest face shields **should not be relied upon** to provide adequate respiratory protection from the COVID-19 virus. In fact, the World Health Organization and the CDC note face shields alone do not perform as well as masks to limit transmission,.

When worn alone, shields do not offer a close face seal, and as a result, aerosols and droplets can be emitted. While face shields block the initial forward motion of a cough or a sneeze, the expelled droplets are still able to move around the visor and spread out over a large area in an environment.

**These are just a few other key considerations when selecting and using a face shield.**

- Ensure it covers the sides of the face extending to the ear and below the chin and no gaps between the forehead and the shield.
- Do not touch the front of the shield during use or removal (if you do perform hand hygiene immediately).
- Remove safely
  - clean or sanitize hands prior to removal
  - remove away from the face
  - discard if disposable (into an enclosed bin)
  - if reusable, follow manufacturer instructions or **CDC cleaning and disinfecting recommendations**
  - perform hand hygiene again, immediately.

## OTHER EYE PROTECTION

Emerging research suggests eye protection may be more important than at first thought. A study out of China published by the **Journal of the American Medical Association** in September 2020, tells us, "The proportion of inpatients with COVID-19 who wear eyeglasses for extended daily periods was lower than that of the general population, suggesting that daily wear of eyeglasses is associated with less susceptibility to COVID-19 infection." Another study published in **The Lancet** also concluded eye protection was associated with less infection.

The **CDC warns** however, "Workers should understand that regular prescription eyeglasses and contact lenses are not considered eye protection."

As a result, **Ottawa's Public Health Unit** has weighed in on COVID-19 eye protection. They advise, "**Goggles provide the most reliable eye protection** from splashes, sprays, and respiratory droplets with the snug fit around the eyes. (The characteristics of the goggles that make them the most reliable protection for wearer do result in the concerns with comfort during extend periods of use.)"





**PLEASE NOTE:**

Workers required to wear respirators, masks, eye protection and other PPE for protection against workplace hazards other than the COVID-19 virus must continue use and ensure their careful disposal/cleaning.

## TRAINING AND INFORMATION

Keeping workers, their representatives, supervisors and visitors informed about the most current information about COVID-19 including precautionary measures is critical. Employers should consider posting in well-travelled areas of the workplace notices on social distancing, proper hand hygiene and cough and sneeze etiquette, their screening protocol along with essential masking protocol.

In addition, workers required to use a mask, face covering or eye protection, **must be provided** training on proper use, care and limitations. Employers also have a general requirement to provide information, instruction, **competent supervision**, and take all reasonable precautions to protect workers from hazards, including the COVID-19 virus. Training, and not just the sharing of information, is a key way employers meet this obligation. WHSC ***COVID-19 Training***, offered through WHSC virtual classrooms, can assist workplaces seeking to achieve compliance. Properly trained, **certified JHSC members** are also mandatory and critical to securing safer, healthier workplaces.

### Further questions or concerns?

We offer an extensive **library of COVID-19 resources** to help ensure workers, supervisors, joint health and safety committee members, health and safety reps and others have ongoing access to a trusted source of information.

If these resources don't suffice contact one or our **training service representatives**, **submit your inquiry** via our website, send us an email at **contactus@whsc.on.ca** or call us at **1-888-869-7950**.