

## Prevention and Control of Hazards

# Respiratory Protection Against Airborne Infectious Agents for Healthcare Workers

### On this page

[Do healthcare workers need respiratory protection?](#)

[Do surgical masks protect workers?](#)

[What kind of respirator should healthcare workers use?](#)

[Is it necessary to have a respiratory protection program?](#)

[What should healthcare workers do if a respirator is required?](#)

[Are there recommendations for respirators when working in healthcare for COVID-19?](#)

---

## Do healthcare workers need respiratory protection?

To minimize exposure to airborne infectious agents, healthcare facilities use control measures such as isolation rooms, negative pressure ventilation, air filtration, and disinfection. However, in certain settings, these engineering and administrative controls may not adequately protect healthcare workers from infectious airborne particles, also known as aerosols, that can remain suspended in the air for an extended duration.

Therefore, when there is a potential for exposure to airborne infectious agents, in addition to routine practices, healthcare workers should follow airborne precautions, including the use of respiratory protection. These precautions are especially important for protection against infectious agents that are easily transmitted through the air (e.g., tuberculosis), and during aerosol-generating medical procedures (AGMPs) (e.g., intubation, bronchoscopy, sputum induction, non-invasive positive pressure ventilation, and other procedures).

---

## Do surgical masks protect workers?

Healthcare workers routinely use surgical masks as part of their personal protective equipment. However, [surgical masks are not respirators](#) and are not certified as such. They do not protect the wearer from inhaling small particles that can remain airborne for long periods of time.

Surgical masks are effective barriers for retaining large droplets which can be released from the wearer through talking, coughing, or sneezing. Surgical masks are useful in many patient care areas. In fact, they may reduce wound site contamination during surgical or dental procedures. However, surgical masks cannot be used as protection from many airborne particles or droplets. The filter material of surgical masks does not retain or filter out submicron particles. In addition, surgical masks are not designed to fit tightly, meaning they do not eliminate air leakage around the edges.

---

## What kind of respirator should healthcare workers use?

Respirators used in healthcare settings should be selected according to the filtering efficiency of the respirator, the potentially infectious agents, and other hazards that are present, and according to the type of procedure to be carried out.

When respirators are required to be worn, only respirators that are required by your jurisdiction's occupational health and safety legislation should be used. Respirators must be approved by Health Canada, including:

- NIOSH N95 respirators with an approval number stamped on the device represented as TC-84A-#####n
- 95PFE products or CSA-certified CA-N95 and CA-N99 type respirators as marked according to the CSA Z94.4.1 standard
- KN95 respirators that meet standard GB 2626-2019
- KF94 respirators that meet standard KMOEL-2017-64
- FFP2 respirators that meet standard EN 149-2001

Surgical respirators are considered to be a class I medical device and must be approved for import, distribution and manufacture by [Health Canada](#).

Procedures for selecting the appropriate respiratory protection, as well as other requirements for respirator use, should be identified in the respiratory protection program.

As stated in the [Canadian Biosafety Handbook Second Edition](#), "Where applicable, respiratory protection should conform to standard CSA Z94.4, Selection, Use and Care of Respirators" and "Using the wrong respirator or misusing one can be as dangerous as not wearing one at all." No single respirator (or any type of personal protective equipment (PPE)) can be expected to provide protection against all types of hazards. Be sure you are wearing the correct PPE for the task and hazards.

One of the most common respirators used in healthcare facilities is the type N95 disposable respirator. These respirators used to be called dust/fume/mist (DFM) masks that were certified under a previous standard. N95 filters belong to a group of air-purifying particulate filters. NIOSH (National Institute for Occupational Safety and Health in the U.S.) certifies these respirators (and other respirators), and these certified products are used in Canada.

The "N95" is one of three types of filters - N, R and P. These designations refer to the type of resistance they have to the degrading of their filtering efficiency when exposed to different kinds of airborne particulates, mists, etc. To help people remember which filters can be used for protection against different kinds of airborne particulates (e.g., dust, fume and mist). NIOSH provides the following guide:

**N** - Not resistant to oil

**R** - Somewhat **R**esistant to oil

**P** - Strongly resistant to oil (oil **P**roof)

The "95" in N95 refers to the filter efficiency. There are three levels of filter efficiencies - 95% (N95), 99% (N99), and 99.97% (N100 or HEPA filter) tested against aerosol (fine mist) droplets 0.3 microns in diameter. N95 type respirators are the respirators recommended by the Government of Canada and the U.S. Centers for Disease Control and Prevention (CDC) for use by healthcare workers in contact with patients with infections that are transmitted from inhaling airborne droplets (e.g., tuberculosis (TB)); also recommended for healthcare staff working with patients having or suspected of having SARS, severe acute respiratory syndrome).

High-risk procedures such as bronchoscopy and autopsy, or when the virus is unknown, may require additional protection. For example, protection may include using full facepiece negative-pressure respirators, powered air-purifying respirators, and positive-pressure airline respirators equipped with a half-mask or full facepiece. A supplied air respirator or powered air-purifying respirator with a hood may be needed for staff who cannot be properly fitted with respirators with a facepiece.

In medical procedures that generate aerosol mists, goggles or face shields (with safety glasses or goggles) should also be used to prevent eye contamination. Full facepiece respirators can also be worn to prevent eye contamination.

[Laser Plumes - Health Care Facilities](#) has some additional, related information on controlling exposure to certain airborne contaminants in healthcare facilities.

---

## Is it necessary to have a respiratory protection program?

If healthcare workers need to use a respirator, then a respiratory protection program is necessary. The program should include the following procedures on

- Hazard identification, assessment, and control.
- Selection and use of respirators.
- Respirator user training.
- Respirator fit testing.
- Inspecting, cleaning, maintaining and storing respirators.

In addition, CSA standard Z94.4 requires that the employer ensure the individual is medically approved to wear a respirator. It is important to refer to the occupational health and safety legislation in your jurisdiction for additional requirements for respirator use.

Other OSH Answers documents [Designing an Effective PPE Program](#), [Respirator Selection](#), and [Respirator Care](#), have additional informational information that will assist in setting up a respiratory protection program.

---

## What should healthcare workers do if a respirator is required?

As listed in the Canadian Biosafety Handbook:

- Complete respirator training and ensure proper fit through qualitative or quantitative fit-testing before beginning any activities that require a respirator.
- Perform a seal check every time the respirator is worn.
- Prevent the filters or cartridges from becoming wet during decontamination.
- Replace cartridges that are near the end of service life.
- Never reuse disposable respirators or masks unless directed by the manufacturer or public health authority. Decontaminate used respirators and masks before disposal.
- Inspect the respirator after use. Dispose of or repair any defective parts.
- Remove respiratory protection at the point at which a risk assessment deems it safe to do so upon exit from the containment zone.
- Clean and sanitize or decontaminate the respirator after every use according to the manufacturer's instructions or safe operating procedures, even if it is stored in the containment zone.
- Reusable respirators should be stored so that they are protected from hazards that may affect the respirators (e.g., dust, sunlight, heat, extreme cold).

---

## Are there recommendations for respirators when working in healthcare for COVID-19?

COVID-19 can be transmitted from an infected individual to others through respiratory particles, which vary in size from large droplets that fall right to the ground immediately (within seconds to minutes) to smaller particles (aerosols) that may linger in the air.

The risk of contracting 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 and/or involve activities such as close-range conversations, singing, shouting or heavy breathing (e.g., during exertion). Many medical procedures would also be considered to be activities that involve a higher risk of transmission.

It is important for healthcare workers to follow the appropriate infection control measures required by their employers and public health authorities. Recommendations for healthcare workers may include masking for the full shift (e.g., use of medical masks as there is evidence that transmission can occur from others who have few or no symptoms) or the use of N95 or equivalent respirators during aerosol-generating medical procedures (AGMPs) on patients that may potentially have COVID-19. N95 respirators may be necessary in other situations based on a point-of-care risk assessment.

Note that guidance for respiratory protection as it relates to COVID-19 may be adjusted to match the level of risk in the workplace or community. Also, the use of respirators or masks is in addition to other droplet and contact precautions that may be required.

---

Fact sheet last revised: 2024-03-22

## **Disclaimer**

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.