# Ventilation in Homes during COVID-19 – Guidance for First Nations

This guidance provides information for First Nations community leadership and housing administrators on how indoor ventilation, in combination with other recommended public health measures, can reduce the spread of COVID-19. The guidance may be shared directly with residents where deemed appropriate.

The virus that causes COVID-19 is spread from an infected person to others through large respiratory droplets that can travel through the air and land on a susceptible person's nose, mouth and eyes. It can also be spread by inhaling small respiratory droplets (often referred to as aerosols), which can linger in the air especially when ventilation is inadequate. The virus may also spread when a person touches a surface or an object that has the virus on it, and then touches their mouth, nose or eyes with unwashed hands.

Transmission of the virus depends on multiple factors. The following settings are particularly risky: **indoor spaces**, **crowded places**, and **close interactions (e.g., close-range conversations**). Risk is higher in settings where these factors overlap and/or involve activities such as singing, shouting or heavy breathing (e.g., during exercise).

## How can the risk of COVID-19 transmission be reduced in homes?

Based on what we currently know about the transmission of COVID-19, you can:

**Limit indoor gatherings:** Visitors from outside your immediate household increases the opportunity for the virus to be brought into the home.

- Follow local and provincial public health guidelines for COVID-19 where they restrict public gatherings and limit private gatherings to only the immediate household in order to reduce the spread of the virus.
- If public or private gatherings are supported by local public health authorities, maintain physical distancing, keep visits short, and have visitors and household members wear a mask to protect each other.
- It is even more important to follow these measures when an elder or other person who is specifically vulnerable to the virus is present. As an alternative, meet outside whenever possible.

**Limit indoor air pollutants:**

- Avoid smoking indoors. Exposure to indoor air pollutants can increase risks associated with respiratory infections such as COVID-19.

**Address overcrowding:** Higher number of people in a space increases the likelihood that an infectious individual is present, as well as the number of people who may get infected. Over-crowded and multi-generational households may result in more contacts outside of the household, further increasing the likelihood of exposure to the virus. Poor indoor ventilation in overcrowded spaces is especially a concern.

- Look to reduce overcrowding where possible.

- If options to reduce occupancy are not available, proper ventilation must be maintained.

As options to address overcrowding may vary based on location, contact your regional Indigenous Services Canada Regional Operations office for options related to ventilation, or your First Nations Inuit Health Branch office in the event of a COVID-19 case in a home where there is no ability to self-isolate and access to temporary accommodations is needed.

**Improve ventilation**: Ventilation can improve indoor air quality by bringing in fresh air from outside and removing pollutants and small respiratory particles that may contain the virus from the home. However, improving ventilation alone cannot protect people from exposure to the virus, particularly when they are within 1–2 metres of each other or when touching contaminated surfaces. Ventilation is complex and no single approach is available to cover all residential situations. A layered approach helps to reduce the risk of transmission, where ventilation is used along with personal preventative practices.

**What is ventilation?**

Ventilation describes the movement of air into or out of homes and proper ventilation is a key component of good indoor air quality.

When used along with existing personal preventative practices such as ***frequent hand hygiene, maintaining a physical distance of at least 2 metres and the proper use of well-constructed and well-fitted masks,*** ventilation is recognized as an important element in reducing the spread of COVID-19 and can help to reduce the risk.

## How can I improve the ventilation in my home?

The following actions may not be practical or suitable for every situation, but each can help reduce the risk of transmitting COVID-19 in the home. Contact your local Environmental Public Health Officer and/or local health office for supporting or additional information.

- Airing indoor spaces by opening windows and doors is the simplest way to improve ventilation, when outdoor conditions permit and when there are no safety concerns (e.g., injury or security).
- Increasing airflow from outdoors is particularly important when:
    - Visitors (when permitted by local public health guidelines) or tradespeople such as contractors are in the house.
    - Someone from a support bubble is meeting with a household member indoors.
    - A care worker is providing assistance at the client's residence.
    - Someone in the household has or is suspected to have the COVID-19 virus.
- Opening multiple windows promotes cross-ventilation and increases airflow.
- When opening windows or doors, consider the impact on health (e.g., allergens, thermal comfort), as well as energy use.
- Run the bathroom and kitchen exhaust fans if they vent to the outside. When running exhaust fans or box fans in windows for extended amounts of time, open a window to avoid drawing in contaminated air from crawlspaces or combustion appliances.
- Close the toilet seat lid before flushing to prevent releasing aerosol droplets into the air.
- Avoid using portable or ceiling fans or single-unit air conditioners, as they only circulate air and do not exchange air or improve ventilation. If you must use them, aim the airstream away from people.
- Use a box fan in a window, with air blowing either into the room, or to the outside. Make sure that they are not blowing air directly between people, as this can increase the risk of aerosol

transmission. Use fans with care and prevent safety hazards. Use fans with shielded blades, out of reach of small children, and that do not easily fall over.

## Is my existing mechanical ventilation system sufficient?

- For houses with a heating, ventilation, and air conditioning (HVAC) system, such as forced-air (furnace) or heat recovery ventilation (HRV), ensure that the system is properly maintained and operated. Review the operational manual and consult an HVAC professional or your local housing authority (if applicable) for information on how to operate it effectively.
- Ventilation systems must be regularly maintained to operate properly. Ensure that filters are routinely cleaned and/or changed, according to manufacturer's instructions. Wear gloves and an appropriate face covering (approved mask or respirator) when changing or cleaning the filter. Review the operational manual for detailed instructions on cleaning/changing filters or consult your local housing authority.
- An HVAC professional can assist to determine the highest efficiency filter your system can accommodate without impeding airflow (i.e., as indicated by the minimum efficiency reporting value "MERV" rating). Increase air exchanges by operating the system continuously or more frequently and for longer periods.
- Turn off any demand-controlled ventilation (DCV) controls that reduce air supply based on occupancy or temperature during occupied hours. In homes and buildings where the HVAC fan operation can be controlled at the thermostat, set the fan to the "on" position instead of "auto," which will operate the fan continuously, even when heating or air conditioning is not required.
- Keep areas near air vents clear.
- Arrange furniture away from air vents and high airflow areas.
- Heat Recovery Ventilation (HRV) and Energy Recovery Ventilation (ERV) are an important ventilation appliance, ensure they are properly installed, maintained and operated. Other than during servicing, the HRV or ERV should be running continuously.

## Can a portable air cleaner or air purifier improve ventilation in my home?

> There is currently **no evidence** to support that portable air cleaners/air purifiers on their own are effective in reducing the spread of COVID-19. However, air cleaning devices can generally improve indoor air quality, especially in areas with no air circulation.

When considering the use of air cleaning devices to supplement existing ventilation, please consider the following:

- Air cleaners that use high-efficiency particulate air (HEPA) filters remove particles from the air, including particles of the size carrying the virus. However, they do not prevent transmission associated with close contact interactions, the primary route of COVID-19 transmission.
- Ensure air cleaning devices are the appropriate size; select a unit that has a Clean Air Delivery Rate (CADR) large enough for the room where it will be used.
- Depending on the intended use and claims associated with a device and/or product, it may be subject to oversight as a COVID-19 medical device or as a pest control product. Check to see if products and devices have been approved and for what uses.
    - The list of authorized COVID-19 devices is available here: https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/authorized/other.html

    - The list of authorized pest control products is accessible through the Pesticide Product Information Database: https://pesticide-registry.canada.ca/en/index.html
- Follow the manufacturer's recommendations for operating, maintaining and cleaning the unit. Replace filters as per manufacturer's instructions.
    - If using a portable air cleaner, it should be run continuously, and placed so that the device's air intake is unobstructed by furniture or walls and the device's exhaust can move air as far as possible before being deflected. Position the air cleaner to minimize the amount of air blown directly from person to person.
    - Avoid air cleaners that produce ozone, such as ozone generators, or electrostatic precipitators, which create ozone as a by-product.

## Is humidity important?

Yes, it is important to maintain humidity between 30–50% relative humidity (RH). Low humidity can cause droplets to shrink, allowing them to stay suspended in the air for longer. Low humidity can also dry our airways, potentially reducing our natural defences against respiratory infections. Avoid high humidity, as this can lead to condensation and result in mould growth. Use the kitchen hood fan when cooking foods that generate a lot of steam, such as boiling and canning.

## Are there special considerations for multi-dwelling buildings, such as condos and apartments?

In addition to ensuring the mechanical ventilation is operating as intended and the filters are clean, ensure corridor pressurization (if in place) is sufficient to prevent air from infected units flowing out into corridors where other residents are present and avoid using the HVAC system's recirculation mode.

## What do I do if I or someone is self-isolating in my home?

When a household member is known or suspected to be infected with COVID-19, additional precautions are required to prevent spreading the virus to other household members.

- Refer to detailed guidance on how to self-isolate: https://www.canada.ca/en/public-health/services/publications/diseases-conditions/coronavirus-disease-covid-19-how-to-self-isolate-home-exposed-no-symptoms.html
- When a household member is isolating in a room: Keep the room door closed, open the windows to air the room as often as possible, and open the air vents in the room (if present). Where possible, place a fan at the window to draw air out of the room.
- If isolating in a separate room is not possible, contact your health centre or local public health authority for available community isolation centres.

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