

Indoor Ventilation and Reducing Transmission of COVID-19 (SARS-CoV-2)

Hazard Identification & Assessment

The COVID-19 pandemic has put increased burdens on health and safety management systems. Prevention of workplace-related illness and injury begins with identifying hazards, assessing risks and implementing sound control measures. Hazards are best controlled by removing or eliminating the source of the problem(s). In the case of COVID-19 that means reducing the number of potential sources of transmission through reductions of workforce numbers (e.g., via remote working), instituting new policies and procedures (e.g., scheduling, new workflow patterns) and providing front-line protections for workers (e.g., personal protective equipment or PPE). **Relying solely on PPE should never be the first course of action.**

Indoor Ventilation & COVID-19

Emerging research suggests that SARS-CoV-2 (the coronavirus that causes COVID-19) can be transmitted through the air in the form of small particles - especially indoors. Every workplace should aim to control airborne exposure to the virus by adjusting ventilation and using practices known to break down small particles and filter them out of well-circulated air. This factsheet outlines essential steps employers and workers can take to improve their ventilation systems, enhance indoor air quality, and minimize airborne viral transmission.

Viral Particle Size & Indoor Airflow

- Sneezing and coughing produces large droplets AND small airborne viral particles.
- Large particles fall to the floor within 6 feet of a person. Small particles can travel further depending on airflow.
- Small particles can be inhaled from across a large room. For example, in at least one documented case, an air conditioner blew infectious particles across a crowded restaurant.
- Smaller particles can penetrate deeper into lung tissues and may increase the risk of infection.
- It is not fully understood (yet) how particle sizes and concentrations increase likelihood of viral infection.

Best to Play it Safe!

Researchers are continuing to investigate how particle size and exposure concentrations affect viral transmission rates. Until we know more it is prudent to take **extra** precautions to prevent airborne transmission of small viral particles.

Hazard Control: Tips for Workplaces

At the Source

Ideally all symptomatic persons should stay away from the workplace. SARS-Cov-2 may also be transmitted asymptotically so 100% removal of the source is impractical. Implement workflow protocols that reduce the number of persons physically in the workplace. Consider remote work options especially for workers who have special health concerns or fears.

Along the Pathway

Implementing engineering control measures will further limit viral transmission. These include mechanical and structural improvements to air recycling (change-over) and filtering out of viral particles. Other control measures include signage and enforcement of room capacities, social distancing (minimum 6 feet), use of facial masks in shared spaces, routine cleaning and disinfecting of shared surfaces and stations.

At the Worker Level

Employers should provide all necessary PPE for frontline workers who face high-risk exposure to the virus. This may include the use of respirators depending on the required needs and assessed risk. PPE itself is less effective than using higher level control measures and should never be the first line of defense.

Increase Indoor Airflow & Ventilation

To break apart small airborne viral particles follow these tips:

- Check your heating ventilation and air conditioning (HVAC) controls.
- Set HVAC fan settings to “always on” or “circulate”
- When possible set HVAC settings to “outdoor air” to further dilute particles.
- Upgrade to high efficiency HVAC filters (MERV 13 or higher).
- Consider using portable high-efficiency particulate air (HEPA) filters in spaces with suspected higher concentrations of air contaminants (e.g., higher trafficked rooms).
- Clean your HVAC filters on a regular basis and ensure cleaners wear PPE when changing-out and disinfecting HVAC components.
- Monitor your indoor humidity levels. The virus thrives in low-humidity environments. Aim for 40 - 60% humidity.

About Portable Air Purifiers

For some workplaces (especially those with older HVAC systems, such as some schools) consider using portable air purifiers to remove airborne viral particles. Choose purifiers that have HEPA filters rated at MERV 13 or greater. Ensure correct room placement (most often in the middle). Continue to follow regular surface cleaning guidelines, clean filters carefully (do not touch them) and use a surgical mask when cleaning or replacing filters. Dispose of used filters in a sealed plastic bag. Go [HERE](#) to access an online tool for calculating room size, air changes (aim for 5 per hour) and product comparisons.

Advocate for Comprehensive Protections

Workers should feel free to openly express concerns about their COVID-19 risk with their supervisors and joint health and safety committee. Although small-particle airborne transmission of SARS-Cov-2 does not appear to be the primary route of infection, there remains many unanswered questions. Ventilation controls should be part of every comprehensive COVID-19 safety plan legally required of every workplace. Public health authorities and government jurisdictions across the world have been slow to act on this issue. Ethically speaking, in the absence of 100% certainty the ‘precautionary principle’ should be followed dictating that employers use maximum hazard control measures.

Contact Us for More Information

The MFL Occupational Health Centre (OHC) is here to answer your questions about any occupational health and safety-related topic. Promoting the highest level of health and safety is a shared responsibility but the employer is ultimately responsible to take charge. Individual workers are encouraged to contact the OHC or make an appointment with one of our physicians to discuss an injury, illness, or occupational health concern. The OHC is also available to assist workplace joint health and safety committees through skills training and capacity building. A skilled and confident health and safety committee is a powerful tool to effectively identifying, assessing, and controlling workplace hazards.

Please send requests for more information to:

mflohc@mflohc.mb.ca

Additional Resources

Please visit our website for additional resources related to ventilation and COVID-19

<http://mflohc.mb.ca/covid-19/ventilation-resources/>

For a checklist to assist your workplace in assessing its ventilation system, go [HERE](#).