Reducing the Risk of COVID-19 Transmission in Schools 2021-2022

Improving Ventilation

Information for School Administrators & Maintenance Staff

A layered approach is recommended to reduce the risk of transmission of COVID-19 in Schools. This layered approach includes:

- Vaccination of all eligible students, teachers, staff and volunteers;
- Screen…Test…Isolate;
- Wear non-medical masks indoors;
- Physical distancing and cohorts;
- Hand hygiene;
- Environmental cleaning and disinfection; and,
- Improved ventilation.

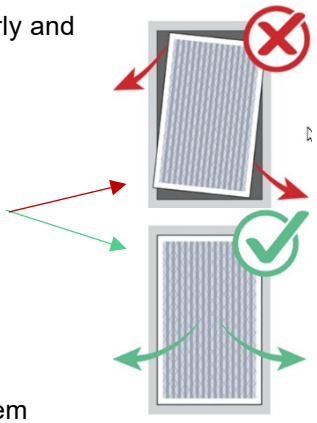
What role does Ventilation have in reducing the risk of transmission of COVID-19?

- COVID-19 viral particles spread between people more readily indoors than outdoors.
- When indoors, improved ventilation can help reduce viral particle concentration.
- The lower the concentration, the less likely viral particles can be inhaled into the lungs (potentially lowering the inhaled dose); contact eyes, nose, and mouth; or fall out of the air to accumulate on surfaces.

While most cases of COVID-19 are from close contact with an infected person, improved ventilation can help reduce possible exposures.

What can school staff do to improve ventilation?

The first thing that you should do is check that the system is operating properly and is maintained.



- Are the filters changed as recommended by the manufacturer?
- Are the filters properly seated in the rack so that no return air is bypassing them?
- Are the fresh air dampers operating properly?
- Are the supply and return air grilles clean and unobstructed?
- Are the exhaust fans in Washrooms and Kitchens working?
- Are there areas of “stale” air? (If there are, you should have the system tested and rebalanced by a qualified HVAC Technician.)

Once the system is operating properly you should consider what further steps you can take to improve ventilation.

What further steps can the school take to improve ventilation?

The additional steps you can take range from ones that are easy to implement to ones that should only be done in consultation with a Journeyperson Refrigeration & Air Conditioning Mechanic or a Mechanical Engineer.

1. **Flush In/Flush Out**
   Flush In: start the system two hours before the school opens and bring in as much fresh air as possible. **Flush Out**: run the system for two hours after the building is empty to remove virus particles.
2. **Keep it Fresh**
   Bring in as much fresh air as possible while the school is occupied. Open outdoor air dampers to reduce or eliminate the recirculation of indoor air. (Of course, this may not be feasible during winter or when the outside air is of poor quality, such as when there is smoke from wildfires or there are high levels of allergens, like pollen.)
3. **Open Windows**
   When the weather and environmental conditions allow, open windows in classrooms. If the room has more than one openable window use a window fan, placed safely and securely in a one, to exhaust room air to the outdoors. This will help draw outdoor air into the room via other open windows and doors without creating strong room air currents.
4. **Keep it Running**
   - Keep the Ventilation System running. If possible, turn off any Demand-Controlled Ventilation (DCV) controls that reduce air supply based on occupancy or temperature during occupied hours.
   - Run kitchen and bathroom exhaust fans continuously while the building is occupied.

The following improvements should only be done in consultation with a Journeyperson Refrigeration & Air Conditioning Mechanic or a Mechanical Engineer. If done incorrectly, these changes may lead to problems with system operation and indoor air quality.

5. **Speed it Up**
   Can the system be sped up to move more air through the system without creating drafts and turbulence?
6. **Improve Filtration of Recirculated Air**
   Consider increasing filter efficiency to MERV 13 which will help reduce viruses in the recirculated air.
   - If the ventilation system also filters the fresh air, from the outside, before it mixes with the recirculated air, you do not need to increase the efficiency of these fresh air filters.
     - Fresh air, from the outside, will not have virus particles.

What can we do in areas where changes to the ventilation system will not improve air quality?

Portable HEPA Filtration Air Cleaners can be used to supplement the school's system and improve filtration of the air in areas with poor ventilation.

If you decide to use portable units please keep the following in mind:

Only use units with HEPA filtration, which will remove particles, including those containing viruses and other microorganisms—some units will also include pre-filters such as activated charcoal, which will remove odours;

- Avoid units that include other technologies like UV, Ionization or UV-PCO as they may cause additional problems and may cost more to operate and maintain;
- The unit should be sized to provide 5 Air Changes per Hour —the supplier should be able to help you find the unit with the necessary air filtering capacity
    - Make sure the supplier knows the dimensions of the room—width, length and height—the unit will be placed in.
    - You may need more than one unit to achieve the 5 ACH in larger spaces.
- The units can be noisy. Sound is measured in decibels (dB). Normal conversation produces approximately 60 dB of sound. A lawnmower produces roughly 90 dB of sound. Look for units that will provide the 5 Air Changes per Hour at a sound level at or below 60 dB, lower is better.
- When positioning the units remember:
    - Follow the manufacturer's recommendations
    - Do not block air intakes and discharge vents
    - Placed so they are not drawing or blowing respired droplets/aerosols from one person across the breathing zone of another.

The units must be maintained to be effective. You have to replace any pre-filters and HEPA filters as per the manufacturer's directions. Follow the manufacturer's instructions on the removal and disposal of pre-filters and HEPA filters.

For more information call your local Environmental Public Health Officer.

The information on the Ventilation is adapted from advice from the Public Health Agency of Canada and US Centre for Disease Control and Prevention:

https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/guide-indoor-ventilation-covid-19-pandemic.html

https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.htm

The information on the Portable HEPA Filtration Air Cleaners is adapted from various government and non-government organizations.