COVID-19 Air Ventilation Reopening Guide

for schools

https://www.airgradient.com/schools/

Introduction

This information is for school administrators who may have questions about ventilation and COVID-19 transmission risks.

COVID-19 spreads mainly in indoor spaces as people are in close contact with each other and there is less airflow to disperse and dilute viral particles.

Improvements of the inside air alone will not stop the spread of COVID-19, but can reduce the risk of COVID-19 transmission significantly. It is important to complement the improvements in fresh air ventilation with other actions, such as wearing a face covering, social distancing, frequent washing of hands, and cleaning and disinfecting surfaces that are touched a lot.

Increase ventilation with outside air

If your school has a central air condition / ventilation system

- Increase your outdoor air intake in your system to the maximum possible.
- Reduce the re-circulation of air within the building.
- If your system has demand control ventilation. This should be disabled during the pandemic or changed for maximum fresh air.
- Upgrade the filters to high performing HEPA filters or to the highest filter that your system allows.
- Regularly inspect filters to make sure they are installed and fit correctly, with no gaps or air bypass.
- Make sure that supply air diffusers, exhaust, and return grills in classrooms are not blocked. They should be clear, clean, and dry.

If your school does not have a dedicated ventilation system

- Implement a strict regime of opening windows regularly throughout the day in order to bring in more fresh air to increase natural ventilation.
- To further increase natural ventilation, a fan in a window may help.
- Keep an eye on the outdoor air quality. Opening windows could increase the classroom air pollution by bringing in polluted outside air.

Recirculate indoor air with air purifiers

Portable air purifiers are a good addition to the increased outside air ventilation described above. It is important to use only air purifiers with HEPA filtration. Ionizing units could potentially create ozone and be harmful to health.

- Ensure that the purifiers used have enough clean air delivery rate (CADR) for the size of the room.
- Consider using multiple purifiers in different areas of the room.
- Consider noise from the air purifiers when selecting or placing them inside a classroom.

Temperature and Humidity

Humidity range above 40% is the most unfavorable for survival of microorganisms and viruses. Thus humidity below this level is associated with three factors that increase transmission risk:

- Aerosols become lighter and thus stay in the air for longer. So any potential virus carried by the aerosol could travel longer distances and infect more people.
- Many viruses and bacteria are anhydrous resistant and have increased viability in low-humidity conditions.
- Your repository system (e.g. your nose) dries out and thus is more susceptible to receiving viruses

The Corona Virus survives longer the lower the temperature starting from about 25C.

How to **measure** the COVID-19 transmission risk?

It is extremely important that you know if the measures above are effective and sufficient enough to significantly reduce the transmission risk in classrooms.

It is not possible to directly measure the virus transmission risk (e.g. by detecting the airborne viruses) but a good proxy is the indoor CO2 concentration.

CO2 concentrations in unventilated spaces quickly rise when occupied. Bringing in outside air will reduce the CO2 concentrations significantly. Most US and European CDCs recommend schools to keep CO2 levels under 800-1000ppm during the pandemic.

Temperature and humidity should also be part of the evaluation of the COVID-19 transmission risks. Classrooms that are too dry or too cold have an increased risk.

How can AirGradient help

Our powerful air quality monitoring solution provides real-time air quality information for each classroom and calculates the COVID-19 transmission risk based on CO2, Temperature and Humidity.

This allows you to easily identify classrooms with an elevated COVID-19 transmission risk and the system also indicates the reason for potential elevated risk (e.g. high CO2 levels).

AirGradient also offers CO2 traffic lights for classrooms that indicate in real-time to the teachers when it is required to ventilate the classrooms.

More Information: https://www.airgradient.com/schools/
support@airgradient.com