



Interim Guidance for Ventilation/Indoor Air Quality

December 31, 2020

Guidelines for Ventilation and Indoor Air Quality: Any scenario in which people gather together poses a risk for COVID-19 transmission. SARS-CoV-2 spreads between people more readily indoors than outdoors since indoor environments lack natural airflow resulting in increased viral particle concentration. Ventilation and indoor air quality strategies are not a substitute for other measures and should be used to help mitigate SARS-CoV-2 transmission as part of a layered approach that includes social distancing, wearing face masks, and hand hygiene.

Heating, Ventilation and Air-Conditioning (HVAC) Measures

Note that implementation of some ventilation measures outlined below require technical expertise, and consultation with a HVAC specialist is highly recommended.

- Consult with a certified HVAC professional familiar with engineering controls as well as the HVAC unit currently installed in your office, business, school, child-care center, etc., and have the system assessed for proper operation for the type of building and expected occupancy. Consider system upgrades and improvements.
- To increase outdoor air circulation, run HVAC systems two hours before and after occupancy and increase fresh outdoor airflow into HVAC systems when spaces are occupied.
- Turn off or disable demand-controlled ventilation systems that reduce air supply based on occupancy or temperature during occupied hours.
- In buildings or homes that are controlled by standard thermostat, set fan position to “on” instead of “auto” so that air will continue to move even when heated or cooled air is not needed.
- Install filters in the HVAC system with the highest performance that the system can handle. The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) recommends installing filters with at least a Minimum Efficiency Reporting Value (MERV) of 13, provided there is no substantial impact on HVAC performance or occupant comfort. Change filters according to manufacturer’s recommendations to improve indoor air quality.
- Maintain relative humidity at 40-60% and temperature within 68-78°F (ASHRAE guidance for residential). For schools, ASHRAE’s winter classroom guidelines recommend 72°F and 40-50% humidity.

Indoor Air Considerations and Non-HVAC Measures

HVAC systems operate by bringing fresh air from outdoors into a building, while about 80% of the air is recirculating. Avoid or minimize situations where indoor air is recirculated and unfiltered without introducing fresh outdoor air and increase the mix of outdoor air when the building is occupied if possible. If a HVAC system is not installed or operating, the concentration of airborne

contaminants will increase. The following are additional recommendations that may be used to augment HVAC measures or implemented in settings with limited or nonexistent HVAC systems.

- ❑ When weather conditions allow, increase flow of outdoor air into indoor spaces, by opening doors and windows. Use caution if outdoor air quality is poor and avoid opening windows and doors that may create a safety hazard.
- ❑ Decrease occupancy in areas where air circulation is low or outdoor air cannot be incorporated.
- ❑ Ensure exhaust fans in restrooms, kitchens, or any other exhaust fans are operational and are running when buildings are occupied.
- ❑ Use indoor fans to facilitate air flow and to increase the effectiveness of open windows. Avoid placing fans in a way that they are likely to cause contaminated air to flow from one person to another. Placing a fan securely in a window to exhaust room air to the outdoors will help draw outside air from other open windows.
- ❑ Consider purchasing portable high-efficiency particulate air (HEPA) fan/filtration systems for high-risk areas. Examples of high-risk areas might include nurses' stations in schools or child-care facilities, waiting areas in businesses where people may congregate, and screening or isolation areas in businesses.
- ❑ Portable HEPA-equipped systems have a Clean Air Delivery Rate (CADR) measured in cubic feet per minute (cfm) that reveals how quickly the unit can remove airborne particles in a room of a given size. Ensure the CADR is appropriate for the intended space.
- ❑ Some portable HEPA-equipped systems include UV-C light, which may assist in disinfection of air. Consider this additional measure when purchasing portable HEPA-equipped systems.

Other Measures and Information

- ❑ Other systems, such as Ultraviolet Germicidal Irradiation, may also be used; however, they can be costly, and it is recommended that you consult with a HVAC professional to ensure it is appropriate for your location.
- ❑ Many air disinfection devices are being marketed (e.g., ionization, dry hydrogen peroxide devices), so please exercise caution and consult with a HVAC professional if considering the acquisition of such devices. At a minimum, ensure equipment meets UL 867 standard certification for production of acceptable levels of ozone (or preferably UL 2998 for zero ozone emissions) or that other harmful products are not generated by such equipment.
- ❑ For more detailed information please consult [CDC Ventilation in Buildings](#) and ASHRAE's [Guidance for Building Operations During the COVID-19 Pandemic](#).



#StayStrongNC

**Staying apart brings us together.
Protect your family and neighbors.**

Learn more at nc.gov/covid19.



**NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES**