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Technical Update

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Improving air flow to Reduce COVID-19 Exposure

Increasing the airflow in buildings can improve air quality and reduce exposure to airborne viruses, like the one that causes COVID-19. In a position statement, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) states:

> *Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning (HVAC) systems, can reduce airborne exposures. Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life-threatening, and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.*

General Steps for HVAC Systems

In general, steps should be taken to increase the intake of outdoor air as much as possible. Because buildings, especially older ones, have HVAC systems with different capabilities, the ASHRAE recommends that an HVAC specialist or engineer be consulted to maximize the airflow and ventilation in each building area. Some general steps building personnel can take to improve air quality are as follows:

- Upgrade filters to MERV 13, which filters out particles down to 0.3–1.0 microns, if the system can handle the air resistance
- Change filters as needed
- Inspect, clean, and repair the entire HVAC system as needed
- Reduce recirculation of air, increase/maximize outside air
- Maintain humidity of 40-60%
- Bring in outside air two hours before and after building occupancy, especially while cleaning and disinfecting the space
- Inspect and maintain local exhaust ventilation in restrooms, kitchens, cooking areas, etc.
- Increase exhaust ventilation from restrooms above code minimums
- Work with building engineer or HVAC specialist to generate air movement that goes from clean-to-less-clean air through positioning of air supply and exhaust air diffusers and/or dampers
- If there are ceiling fans, reverse the flow direction to draw air upward or turn them off

General Steps for Buildings Without HVAC Systems

Even If a building does not have an existing HVAC system, there are still steps that can be taken to increase airflow, such as:

- Open window and doors if it safe and weather allows, allow building occupants more outside time during the day if possible
- Reduce occupancy in areas where outdoor ventilation cannot be increased to the optimal amount
- Use fans to increase the effectiveness of open windows. Position fans securely and carefully in or near windows so as not to induce potentially contaminated airflow directly from one person over another (strategic window fan placement in exhaust mode, e.g., blowing out of the window, can help draw fresh air into the room via other open windows and doors without generating strong room air currents).
- Ventilate the building or rooms 2 hours before and after occupancy
- If using fans to cool the area, ensure that they blow away from people

What This Means for Counties

County personnel should take steps to reduce the transmission of COVID-19 by increasing outside airflow in county facilities. Additional resources on maximizing airflow include The CDC's Interim Guidance for Businesses and Employers Responding to COVID-19 (May 2020) (https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html) and the ASHRAE Guidance for Re-Opening Buildings (https://www.ashrae.org/file%20library/technical%20resources/covid-19/guidance-for-re-opening-buildings.pdf). For more information, contact CTSI at (303) 861 0507.