

## Ventilation Guidance

March 16, 2022

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The virus that causes COVID-19 is primarily transmitted by infected people through aerosolized droplets that enter the body of an uninfected person through ingestion, inhalation, or direct contact with mucus and eye membranes. Dartmouth has evaluated buildings on campus and has taken three ventilation-based approaches for keeping the Dartmouth Community safe: prevention of viral particles from entering a space, removal of viral particles from a space, and dilution of viral particles in a space. This Guidance is consistent with recommendations from the Centers for Disease Control and the American Society of Heating, Refrigeration and Air-Conditioning Engineers.

### PREVENTION OF VIRAL PARTICLES FROM ENTERING SPACES

The best way to prevent viral particles from entering spaces is to adhere to Dartmouth policies and wear face coverings (when and where applicable), avoid coming to campus if you are experiencing COVID-19 symptoms, follow the testing regimen, and, if possible, get vaccinated and be up to date on booster shots. When all faculty, staff and students adhere to these preventive measures, the potential for spread of the virus that causes COVID-19 is significantly decreased. As more people receive vaccination and booster shots, the potential for transmission continues to go down.

### REMOVAL OF VIRAL PARTICLES FROM SPACES

Dartmouth has evaluated buildings on campus and has broken them into the following four classifications related to ventilation:

- A. Laboratories: High ventilation rates (6 or more Air Changes per Hour) of 100% outdoor air
- B. Academic/ Residential buildings: heat wheels or energy recovery ventilators with 100% outdoor air
- C. Academic/ Residential buildings: central air handlers mixing outdoor air and return air
- D. Older buildings: no central air handling system, but with operable windows or small packaged air handlers

Outdoor air is generally free of COVID-19. For buildings where outdoor provides all ventilation, no additional action is needed related to the removal of viral particles. This includes buildings in classifications A and B.

### DILUTION OF VIRAL PARTICLES FROM SPACES

There are two ways to dilute viral particles in a building space. Either a building can have the ventilation rate increased (if feasible depending on the system capabilities) or, if the occupancy of a space is reduced, the space is effectively diluted. Dartmouth has evaluated all systems serving shared workspaces, classrooms, and laboratories on campus, and for spaces that are served by mechanical ventilation, we have been and will continue to take the following actions:

- Increase the outside air brought into the facility where possible.
- Operate the mechanical ventilation system continuously during regularly occupied hours.
- Operate systems for short durations of time pre and post occupancy to aid in flushing out the air in buildings.
- Improve filtration as outlined below.

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## Filtration

Recirculated air is filtered before it is delivered back to occupied spaces. The quality of a filter is based upon its ability to capture small particles. The MERV (Minimum Efficiency Reporting Values) rating is a measurement of a filter's ability to capture particles of a certain size and range from 1 to 16. The higher the MERV rating the better the filter is at trapping certain size particles. For air systems where air is recirculated, building maintenance crews have upgraded the air filters to MERV-13 or better. MERV-13 filters or better can capture airborne viruses like COVID-19. These upgrades have been performed in buildings where there are building-wide recirculated air systems that serve multiple occupants, and for spaces that have not been occupied during the pandemic will be complete soon prior to the building being fully open. Once installed, air filters are assessed, cleaned, and/or replaced on a regular basis by trained staff to ensure proper function.

## Open Windows, Fans and HEPA Units

There are several options for spaces that do not have central air handling systems and that have multiple occupants in a shared space. The occupants of these spaces can open the windows to provide natural ventilation (when the space is occupied), potentially have fans installed in the window to draw in additional fresh air, or these spaces could potentially have a portable High Efficiency Particulate Air (HEPA) unit deployed.

1. Occupancy in a room with no mechanical ventilation or operable windows is prohibited. These spaces can be assessed individually on a space-by-space basis to determine if they can support intermittent occupancy. This does not include corridors, storage rooms, closets and similar spaces that are not regularly occupied that can be used for the designated functions.
2. Spaces ventilated naturally using windows should have those windows opened to help reduce the potential for the virus to concentrate in the air, particularly if there is more than one occupant in the space. This can be done by opening and closing the window periodically during the day. Windows could also be left open just a crack (1-2") when the space is occupied.

The duration of how long to leave the window open will depend upon how hot/cold it is outside. In general, spaces should not become so uncomfortable they cannot be lived in or used, and the space should not be allowed to get so cold inside that it risks freezing pipes or damage to the facility.

3. Portable HEPA units may be deployed to spaces that rely on natural ventilation using windows and are classified as classrooms.

## **FOR MORE INFORMATION OR TO REQUEST ASSISTANCE**

Maintenance issues should be reported to Work Control at [Work.control.office@dartmouth.edu](mailto:Work.control.office@dartmouth.edu)  
Questions for Environmental Health and Safety should be sent to [ehs@dartmouth.edu](mailto:ehs@dartmouth.edu)