Heating, Ventilation and Air Conditioning Systems (HVAC)
Coronavirus FAQs  AUGUST 24, 2020

FAQS

1. What role do building heating, ventilation and air conditioning (HVAC) systems play in reducing the spread of COVID-19?

As of August 2020, the exact role that HVAC systems play in reducing the transmission of COVID-19 continues to be studied by the Center for Disease Control (CDC), the World Health Organization (WHO), the American Society of Heating and Air Conditioning Engineers (ASHRAE) and other professional organizations. All agree that non-HVAC measures such as teleworking, using face covers when not alone, staying at least six feet away from others and washing hands frequently are the most effective means of reducing transmission. Consensus is emerging that a properly functioning HVAC system can reduce the potential concentration of airborne particles through the principles of dilution and capture, which in turn can help lower the risk of transmission.

2. Do HVAC systems spread COVID-19 throughout a building?

There is no epidemiological evidence that HVAC systems spread the virus.

3. What is Facilities Management doing to prepare building HVAC/mechanical systems for reopening?

Facilities Management is using its computerized maintenance management system (CMMS) to ensure that critical work such as air filter changes and mechanical systems maintenance is completed on schedule. In addition, FM has structured its CMMS so that it incorporates manufacturers’ recommendations, industry best practices, and ASHRAE 180: Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems. The CMMS generates automatic work orders that ensure maintenance is state-of-the-art and completed on schedule.

FM is also using robust building automation systems to continuously monitor and maintain the mechanical systems to ensure that the HVAC systems are operating as designed and fresh air requirements are being met.

4. How do I know if my building HVAC/mechanical system provides enough ventilation and fresh air?

All buildings are designed to meet or exceed building mechanical code and ASHRAE recommendations. In addition, the UVA Facilities Design Guidelines provide rigorous prescription requirements for building HVAC/mechanical systems design, construction, commissioning, and turnover for maintenance to meet or exceed these requirements.

By design, all mechanical systems are required to provide enough ventilation for maximum occupancy of spaces. With reduced numbers of staff and students on Grounds, most building mechanical systems will have excess capacity.

5. How do I know if enough ventilation is being provided in my building, which has had its mechanical system “set back” to save energy?

All building mechanical systems are turned on up to two hours before occupancy and left running for up to two hours after buildings are closed even when buildings mechanical systems have been programmed to “set back” during unoccupied hours.
6. Does UVA ever exceed mechanical code or ASHRAE standards?
The UVA Facility Design Guidelines (FDG) include several requirements, many associated with LEED Certification, that exceed code and standards. For instance, the FDG requires that all air handling unit filters meet a minimum of MERV 13, which is 75% effective in removing particles as small as 0.3 microns such as those contained in a sneeze. Typically, filters need only meet a minimum of MERV 8, which is effective against much larger particles (3 to 10 microns).

7. Should only one person at a time be allowed in a restroom even if the restroom has six stalls?
There is no prescriptive CDC guidance or recommendation for limiting restroom occupancy to protect against the transmission of the coronavirus. The Virginia Mechanical Code prescribes exhaust rates per fixture, and by design, bathroom exhaust fans tend to have a higher number of air changes per hour to remove humidity and odors. The Virginia Mechanical Code also prescribes the number of bathroom fixtures that must be available for use at all times to be code compliant. Many bathroom doors are rated and any modification to the door may void its rating. Finally, stalls by default, provide physical separation.

Conclusion. Limiting the number of users in a restroom to the number of stalls may be good practice for those buildings with reduced occupancy levels, but would need to be approved, on an interim basis, by the UVA Building Official.

8. I have been reading a lot about air purifiers. Do I need an air purifier in my workspace?
Portable air cleaners (PACs), such as an air purifier with a HEPA filter, are effective at removing pollutants and aerosols. However, the majority of spaces on Grounds are supplied by central HVAC systems, which provide fresh air to spaces based on maximum occupancy levels (dilution) and clean the air supplied to a space by passing it through high performing filters (capture).

Voluntary Purchase:
If departments or schools wish to purchase a PAC, the following is recommended:
- Purchase a PAC with a HEPA rated filter
- Select a PAC certified by the Association of Home Appliance Manufacturers (AHAM)
- For a private office select a PAC with a minimum smoke Clean Air Delivery Rate (CADR) of 200 or higher. For a larger space like a classroom or conference room select a minimum smoke CADR of 500 or higher.
- Avoid PACs that utilize additional air purifying technology such as an ionizer, as they may generate ozone which is a respiratory irritant. PACs which have UV lights are also not necessary as research has shown they provide limited additional benefit in reducing aerosol transmission.

9. Does my building need an ultraviolet (UV-C) light disinfection system?
While upper room UV-C disinfection systems can be effective at inactivating viruses and can be found in high risk environments such as an infectious disease healthcare unit, these are not recommended for general use as they can cause eye and skin irritation through inadvertent exposure or over-exposure.
10. Will someone be monitoring changes in CDC and industry recommendations for managing HVAC/mechanical systems in response to the coronavirus pandemic?

A UVA HVAC Standing Task Force comprised of registered professional engineers, an industrial hygienist, and building code officials will be conducting ongoing reviews of CDC recommendations, industry best practices and standards concerning the design, maintenance, and operation of building heating, ventilation, and air conditioning (HVAC) systems for the duration of the pandemic.

11. While this is not an HVAC question, I would like to know if the water in my building is safe to drink after it has been unoccupied?

Facilities Management proactively manages building water systems and follows CDC guidance and ASHRAE Standard 188 for testing and flushing building water systems. In addition, the COVID-19 virus has not been detected in drinking water.

12. My office has a window air conditioner. Is it safe to work in my space?

Spaces with window air conditioning units typically do not have ventilation air provided by a central mechanical system, though some window air conditioners do have an outdoor air vent which can be opened with a switch. If more than one person occupies the space, limit the number of people and the time spent in these spaces.

13. Should I open my window if it is operable?

Opening a window does not guarantee that additional ventilation or benefit is being provided to your space. On the flip side, opening windows can reduce comfort, lead to increased outdoor noise, introduce pollen and other allergens into the building and could lead to building damage if left open overnight.

14. Who do I contact if I have additional questions?

Please contact your building coordinator or other point of contact for the coronavirus for your area who will ensure the question is sent to the UVA HVAC Standing Task Force.

RESOURCES AND REFERENCES

1. CDC Background

The Center for Disease Control (CDC) Considerations for Institutes of Higher Education lists the following information concerning the transmission of COVID-19:

- The virus is thought to spread mainly from person-to-person. Transmission occurs between people who are in close contact with one another (within about 6 feet) through respiratory droplets that are produced when an infected person coughs, sneezes, or talks. The infected person may not be showing symptoms.

- It may be possible for a person to get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. However, this is not thought to be the main way the virus spreads as the CDC is still learning more about how it spreads.
2. Relevant Links

www.cdc.gov/coronavirus/2019-ncov/about/transmission.html


https://www.vdh.virginia.gov/epidemiology/environmental-cleaning/


