

# Heating, Ventilation and Air Conditioning Systems (HVAC) Coronavirus FAQs

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## FAQS

### 1. What role do HVAC systems play in transmission of COVID-19?

There is strong evidence that HVAC systems are not a driver of COVID-19 transmission. The most important steps that can be taken from an HVAC standpoint are ensuring proper maintenance and maximizing filtration and ventilation. At UVA, Facilities Operations technicians and engineers have evaluated systems in all buildings across Grounds to optimize operation, and utilized enhanced filtration, increased ventilation, and other HVAC system modifications to mitigate risks of Covid transmission.

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

Most large HVAC systems bring in outside air, which dilutes any potential concentration of aerosols. All HVAC systems provide filtration, which can capture a portion of any circulating aerosols.

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

Facilities Management has performed air filter changes and completed mechanical systems maintenance in advance of full occupancy. Where feasible, enhanced filtration is being provided. 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 the American Society of Heating and Air Conditioning Engineers (ASHRAE) recommendations. By design, all mechanical systems are required to provide enough ventilation for a maximum occupancy of spaces. With reduced numbers of staff and students on Grounds, most building mechanical systems will have higher than designed amounts of fresh air.

### 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 including those building mechanical systems that have been programmed to “set back” during unoccupied hours.

### 6. Does UVA ever exceed mechanical code or ASHRAE standards?

Typically, filters must meet a minimum of MERV 8, which is effective against much larger particles (3 to 10 microns). Some older mechanical systems use MERV 8 filters. For many years now, the *UVA Facility Design Guidelines (FDG)* require that all new 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. Where feasible, FM is upgrading older systems to MERV 13 or higher.

## **7. Should only one person at a time be allowed in a restroom even if the restroom has six stalls?**

There is no CDC guidance or recommendation for limiting restroom occupancy to protect against the transmission of the coronavirus. Codes prescribe the number of bathroom fixtures that must be available for use at all times based on building occupancy. For those buildings with reduced occupancy levels, limiting the number of stalls in use may be possible, 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 adequate fresh air and filtration. Facilities Management does not recommend use of a PAC in most spaces, but if departments or schools wish to purchase equipment they should consider the following features:

- Purchase a PAC with a HEPA rated filter
- Select a PAC certified by the Association of Home Appliance Manufacturers
- Select a PAC certified by the California Air Resource Board
- 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 and industry best practices and standards concerning the design, maintenance, and operation of building 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 that 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. Additionally, 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 another 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 coronavirus is 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. Face coverings are highly effective in decreasing this person-to-person transmission.
- 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, but this has been shown to be extremely rare. Virtually all transmission is believed to be between people in close proximity to each other.

### 2. Relevant Links

[www.cdc.gov/coronavirus/2019-ncov/about/transmission.html](http://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html)

<https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/pdf/Higher-Education-Reopening-Guidance.pdf>

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

[https://www.nejm.org/doi/full/10.1056/NEJMc2004973?query=featured\\_home](https://www.nejm.org/doi/full/10.1056/NEJMc2004973?query=featured_home)

[https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/Reopening\\_America\\_Guidance.pdf](https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/Reopening_America_Guidance.pdf)

<https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>

<https://www.cdc.gov/coronavirus/2019-ncov/community/colleges-universities/considerations.html>

<https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/surface-transmission.html>