

UMD COVID-19 Guidelines for Building Systems (7/15/2020)

Background

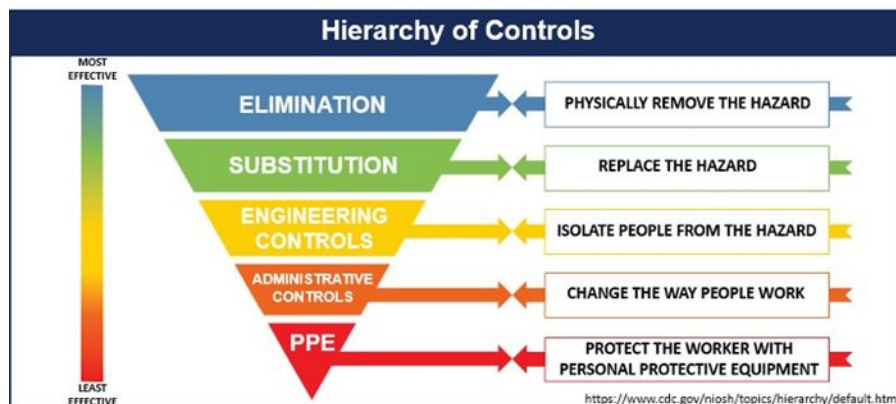
The primary route of transmission of the SARS-CoV-2 virus is through person to person contact, caused by respiratory droplets when a person breathes, talks, coughs or sneezes. According to the Centers for Disease Control (CDC), the more closely a person interacts with others and the longer that interaction, the higher the risk of COVID-19 spread. A “close contact” is defined by the CDC as any individual who was within 6 feet of an infected person for at least 15 minutes. Limiting face-to-face contact with others through physical distancing and mask use is the best way to reduce the spread of COVID-19.

General Guidance

The university community will follow state and local guidance and operate in accordance with CDC guidance and industry standards to reduce the potential for transmission of the virus through the following methods:

- physical distancing (specifically, staying at least 6 feet away from others when you must go into a shared space)
- frequently washing hands or using alcohol-based (at least 60% alcohol) hand sanitizer when soap and water are not available
- wearing a cloth face covering to reduce distribution of droplets potentially containing the virus (source control)
- avoiding touching eyes, nose, and mouth
- staying home when sick
- cleaning and disinfecting frequently touched objects and surfaces

These methods are intended to be used together and not independently whenever possible. Using multiple protective methods decreases the risk of virus transmission.



The University's Health, Safety and Risk Management Task Force advocates the use of the hierarchy of controls (above) for hazard prevention and control. Engineering facility controls are controls that remove hazardous conditions -- in this case, eliminating or reducing the droplet/aerosol spread of SARS-CoV-2 virus particles. Current guidelines from the CDC and American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) suggest the following:

- Increase ventilation rates
- Increase filtration efficiency, where possible
- Ensure heating, ventilation and air conditioning (HVAC) systems operate properly
- Domestic water system flushing in dormant buildings

The following provides guidance for operation, maintenance and modifications for building systems for University facilities organizations. Facilities organizations will evaluate occupied facilities' building systems to determine where modifications can be made consistent with this guidance and implement changes to operations or systems, as possible.

HVAC Systems

Facilities related research and guidance for COVID-19 is focused on managing the HVAC systems to mitigate the potential for airborne transmission of the virus. Given the complexity and diversity of types of systems, there is no one solution for all buildings. According to the CDC, "The risk of spreading the virus that causes COVID-19 through ventilation systems has not been studied, but is likely low." General guidance for prevention of transmission of the virus is for property owners to properly operate and maintain current systems in place and provide supplemental mitigations where possible.

Filtration

1. Increase filtration efficiency, where possible. Consideration should be given to the fan specifications prior to increasing filtration requirements to ensure the external static pressure does not exceed the fan performance curve.
2. Where filtration cannot be increased, ensure that routine preventive maintenance including inspection, operational testing, calibration, cleaning and filter changes is conducted to keep HVAC systems and units operating properly.

Increase Ventilation

Maximize outside air as much as possible while maintaining humidity within an acceptable range for indoor air quality. Outside air requirements for campus facilities may be met by natural or mechanical ventilation. During the hot and humid season, a balance must be maintained between humidity control and ventilation requirements.

1. UMD facilities organizations will evaluate buildings with central heating and air conditioning systems to determine the feasibility of increasing airflow and/or the

percentage of outdoor air. Any proposed modifications will be balanced with the need to control moisture, because of its potential to promote mold growth in the building.

2. In naturally ventilated facilities without air conditioning, the introduction of outdoor air is accomplished mainly through a negative pressure induced by exhaust fans in community bathrooms and air introduced through opened windows, doors and building leakage.
3. Communications to the campus community should encourage keeping windows open slightly in spaces without air conditioned spaces as weather permits. (Do not open windows and doors if doing so poses a safety or health risk (e.g., risk of falling, triggering asthma symptoms) to those occupying the facility.)

Environmental Conditions

1. Where feasible, monitor the temperature, humidity and carbon dioxide in facilities to ensure proper operation of HVAC systems. Values outside normal operating ranges will alert facilities managers to implement corrective measures.
2. Maintain proper pressurization within the building. In particular, managing exhaust within the buildings such as bathrooms, kitchens and laundry facilities. In high rise facilities, efforts should be made to mitigate stack effect due to pressurization changes, such as closing doors to stairwells, elevator lobbies and common areas.

Quarantine and Isolation Facilities:

1. Must be able to heat and cool through all seasons.
2. Where possible, uses spaces that have a dedicated HVAC system or zone that is controlled separately from others.
3. Ensure no mixing of air with other “clean” (non isolation or quarantine) spaces, such as common return air. Operate bathroom exhaust continuously.
4. If a COVID-19 positive occupant is isolated in a space, convert space from positive pressure to negative pressure. To the extent possible, increase air flow and open windows if negative.
5. Provide supplemental portable in-room HEPA filtration, as needed.

Detailed information regarding the campus isolation and quarantine procedures are found at:

[Procedure for Housing of Resident Students, Live in Staff, PUI and Individuals with confirmed COVID-19](#)

Domestic Water Systems

Bathrooms

The [World Health Organization \(WHO\)](#) and the [Centers for Disease Control \(CDC\)](#) indicate the risk of transmission of the coronavirus from toilets and their contents is minimal. Both organizations recommend frequent and proper hand hygiene to mitigate any risk.

No modifications are necessary for bathroom sanitary and domestic water systems; physical distancing should be practiced and face coverings used in accordance with University procedures.

Dormant Buildings

Water systems, fixtures and devices in facilities that have been closed for extended periods must go through a recommissioning process prior to being returned to normal operating status.

The water in these dormant systems may have aged to the point where most if not all of the disinfectant has been consumed or dissipated. The temperature of the water may also have facilitated the growth of biofilm and the potentially pathogenic bacteria that live there. Failure to properly perform a preventative maintenance function on these water systems may expose students, staff, and visitors to potentially harmful conditions.

UMD Facilities organizations will develop a comprehensive Water Management Program (WMP) for the water system in accordance with ANSI/ASHRAE Standard 188 and CDC guidance for building water systems.

References

[Considerations for Institutions of Higher Education, CDC](#) May 30, 2020

[Guidance for Building Operations During the COVID 19 Pandemic, ASHRAE](#) May 2020

[COVID-19: Discussing the CDC and ASHRAE Recommendations for HVAC Systems, ESMagazine](#)
April 21, 2020

[Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation, CDC](#) May
7, 2020

Initial Task Force Recommendations, UMD Health, Safety & Risk Management Task Force,
5/18/2020

ASHRAE Position Document on Infectious Aerosols, April 14, 2020