THE UNIVERSITY OF TENNESSEE KNOXVILLE

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Update on Consideration of CDC and ASHRAE Guidance on Ventilation

Facilities Services has continued to monitor guidance from the Centers for Disease Control (CDC) and American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) concerning building system operations to mitigate the spread of COVID-19.

The guidance from these sources is very similar and falls into three basic categories: increasing the amount of outside air being delivered to spaces, using high efficiency filtration in systems that circulate air between large numbers of spaces, and maintaining temperature and humidity levels within spaces.

As Facilities Services considers how to comply with this guidance, the limitations of existing systems are carefully considered. In many systems, limitations on heating and cooling capacities prevent simultaneously increasing the outside air while maintaining appropriate temperature and humidity levels. In other systems, the increased air pressure drop from higher efficiency filters will limit airflow unacceptably or cause equipment damage.

Keeping these system limitations in mind, Facilities Services is implementing strategies to follow CDC and ASHRAE guidance as much as possible. The amount of outside air supplied per person has been increased in some of the newer systems. Some of these systems are also programmed to flush the spaces with outside air for a period of time each night.

ASHRAE guidance is to use MERV-13 or better filtration, where possible, in systems circulating air between large numbers of spaces. Facilities Services had previously standardized on this level of filtration for large systems. Facilities Services replaced all air filters in these systems prior to the 2020 fall semester. In smaller systems, increasing the filtration level would result in a loss of airflow (ventilation) to the spaces served, which can also damage some systems, so this has not been able to be done. In some of our systems that only have MERV-8 filtration we upgraded to MERV-9 prior to the 2021 spring semester as this could be accomplished with no loss in airflow.

Data is not clear on what temperature and humidity limits are most effective in mitigating COVID-19. However, there are other airborne contaminants (molds, other viruses, and bacteria) that must continue to be controlled. Some research indicates that relative humidity levels between 40%-60% help to maintain control of these contaminants. Spaces are maintained within these ranges where possible.

ASHRAE and CDC have recommended consideration of various technologies including UV and ION systems. We have been studying these systems and are installing ION systems in limited areas. We have applied for HEERF funding to allow us to expand application of ION systems.

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As of this date, we have not seen any evidence of transmission of COVID-19 through HVAC systems. Concern of transmission affected by the HVAC system has been centered around movement of air within individual spaces, and specifically when within close proximity to an infected individual. Any concerns with the HVAC systems are being addressed as they are brought to our attention.

ASHRAE has provided a guidance document on maintenance to be performed on systems during reopening. The maintenance as described is already being performed at UTK.

In general, Facilities Services does not recommend opening windows. However, if windows are opened the user must assure the outside air conditions are not at an extreme that could create other problems with mold, dust, pollen, freezing, etc. Care should also be given to not create additional heating or cooling load on the HVAC system. Users should also be cognizant of how the air is flowing. Is air flowing from another space, to the user space, to the window, or from the window, into the user space, then into another space.

Facilities Services will continue to stay abreast of changing CDC and ASHRAE guidance and will make adjustments, where possible, within the capabilities of the systems on campus.