Building Ventilation Systems and COVID-19

The Centers for Disease Control and Prevention (CDC) states that the risk of spreading the coronavirus through building ventilation systems is likely to be low. The CDC and Occupational Safety and Health Administration (OSHA) recommend considering the following actions for building ventilation systems:

- Routine system maintenance
- Increasing ventilation rates and the amount of outdoor air brought into buildings
- Maintain temperature and humidity at comfortable levels for occupants
- Installing high efficiency air filters

Normal maintenance of campus building ventilation systems has been continued over the summer, and all systems are operating normally, ready to support increased building occupancy.

Iowa State’s campus buildings, as would be expected for a 150-year-old campus, have a wide variety of ventilation systems including variable air volume systems; cold and hot deck constant air volume systems; and central ventilation air handlers with room level cooling and heating. Large academic and research buildings have equally large and complex inter-connected ventilation systems, with air-handling units that can fill an entire room.

Outdoor air intake
The ventilation rates and outdoor air supply on many of these systems can be adjusted to some degree. Significant changes, however, cannot be accomplished without re-balancing the flow of air throughout buildings, and may require the replacement of multiple system components. Facilities Planning and Management (FP&M) will monitor outdoor air supplies for proper operation, and increase outdoor air intake where possible, but their efforts will be limited by the need to maintain proper temperature and humidity for all building occupants, in particular during warm, humid summer weather and colder winter weather.

Air filters
Most building ventilation systems already have very efficient filter systems (known as “MERV-14” rated), which are regularly maintained by FP&M, but they are not intended to remove particles as small as the coronavirus (0.125 microns). The type of ultra-low particulate filter required to remove the virus would require the university to redesign and reconstruct its systems to be able to overcome the increased resistance of these filters to air flow.

Ultimately, the best way to prevent the spread of coronavirus remains maintaining the recommended 6-foot physical distance from others, wearing face coverings when such distance is not possible, washing hands frequently, and staying home when not feeling well.

Personal air filtration devices
Personal air filtration devices are permitted on campus under certain conditions. The devices should be UL listed and labeled, meaning they conform to widely established safety standards, and should only be plugged directly into a wall outlet, and not into an extension cord or power strip.

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