



# CIRSA HAZARD ALERT

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SAFER TOGETHER

## Hazard Alert – Safe Building Ventilation During COVID-19



### Introduction

If your entity has buildings that have been closed or partially occupied during the COVID-19 pandemic, you are now facing a long list of considerations before reopening. Building ventilation is likely one of them, as it will play a big part in this process. But, before considering any modifications to the Heating, Ventilation, and Air Conditioning (HVAC) system in the building, several preliminary steps should be taken. First gathering and incorporating information from various sources into a multifaceted Building Readiness Plan can help prioritize actions and conserve limited resources.

### Building Assessment & Readiness Plan

Listed below are some steps to consider when developing a systematic plan to safely reopen buildings. To facilitate this process, a Building Readiness Team should be put in place. Team members should include facilities maintenance staff; safety or risk management personnel; and mechanical, HVAC, or building automation contractors.

Suggested steps in developing a Building Readiness Plan include:

- Gather Building and Space Information – Use a building floor plan to identify all spaces and where air supply and return diffusers are located.
- Evaluate Space Utilization – Identify the types of occupancy (office, conference room, break room, etc.), occupant density, and duration of occupancy for each identified space.
- Develop and Implement Administrative Workplace Safety Plans – For example, prohibit High-Density Work Environments (follow the space requirements of the [Colorado Safer at Home Orders](#)), require face coverings, enhance cleaning and disinfection practices (focus on communal and high traffic areas), discourage the use of shared spaces, use signage to help maintain social distancing; provide occupant communication and training.
- Evaluate Current HVAC Operation – Conduct a baseline survey of the building's HVAC system to understand operational design. Identify all components of the HVAC system including filter rating, system capacity, location of supply and return diffusers, building automation and energy-saving technology, etc. Be sure to identify any known limitations or deficiencies.
- Conduct Space Risk Assessment – Assess which spaces pose the highest risk to occupants or guests and focus resources on those areas. For example, an office with one occupant is less of a risk than a customer service counter or break room.

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## *Safe Building Ventilation During COVID-19 (cont.)*

- Test Performance of HVAC Systems – Evaluate and test the current HVAC system to understand how the system currently operates and if it is operating as designed.
- Implement Applicable Safety Measures – Implement any changes to the HVAC system identified by the Building Readiness Team as appropriate.

### **Supplemental HVAC Technologies**

EPA, ASHRAE, and CDC recommend upgrading air filters to the highest compatible with the system and checking the filter fit to minimize filter air bypass. Should you decide to modify your building HVAC system here are some of the most referenced supplemental technologies:

- High-Efficiency Particle Air Filters (HEPA)
- Ultraviolet Germicidal Irradiation (UVGI)
- Ozone
- Bi-Polar Ionization.

Generally, increasing ventilation and filtration effectiveness is appropriate for most applications. It is suggested that when these actions are not possible or in a high-risk area such as a hospital waiting room, the use of supplemental technologies should be considered. Both EPA's and AHRAE's web pages contain information on the supplemental technologies listed above, including their effectiveness, advantages, disadvantages, and historical applications. Administrative controls such as limiting the number of people present in the building and encouraging people who feel ill to remain at home should also be considered and implemented if feasible. Current recommendations indicate that spaces that are not occupied for 7 or more days do not require additional SARS CoV-2 disinfection actions. In certain situations, keeping spaces unoccupied for 7 or more days may provide a low cost, non-technical solution.

### **Summary**

- The risk of exposure and transmission of COVID 19 indoors can be managed with the implementation of a multifaceted plan.
- Spaces can be evaluated to determine relative risk.
- Not all spaces will require change and the use of special measures.
- Tests and modeling can be applied to evaluate the effectiveness of HVAC systems to dilute and remove hazards.
- Coordination, communication, and training of building occupants are critical to success.

### **Additional Resources**

ASHRAE Resources - <https://www.ashrae.org/technical-resources/resources>

CDC COVID19 Resources - <https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html>

Social Distancing Space Calculator - <https://covid19.colorado.gov/safer-at-home/social-distancing-calculator-for-indoor-and-outdoor-events>

Planning for the Safe Reopening of Public Buildings - <http://mrsc.org/Home/Stay-Informed/MRSC-Insight/May-2020/Planning-for-the-Safe-Reopening-of-Public-Building.aspx>

Environmental Protection Agency (EPA) Indoor Air and Coronavirus (COVID-19) - <https://www.epa.gov/coronavirus/indoor-air-and-coronavirus-covid-19>