

ASHRAE on IAQ and COVID-19 September 2021

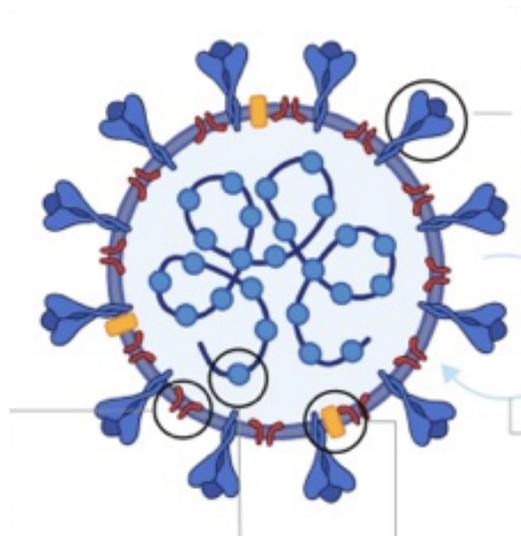
Beyond a year and a half and still engaged

As 2020 began, the identity of the virus causing COVID-19 was clear (SARS-CoV-2), but its means and rates of spread and lethality less so. Much of the work of finding, choosing, and implementing protection of occupants, or even whether to occupy indoor places of work, fell to facility managers (FM). More than a year and a half later, our understanding of many aspects of the pandemic has enlarged. Prominent for our purposes as FMs is internal air quality (IAQ.) The virus can be present and persist in air, suspended as an aerosol. Limiting its concentration and controlling distribution involves HVAC. Once viral particles are suspended in air, routing, diluting, deactivating, and removing are our options. This blog points out current ASHRAE guidance, after a brief orientation to operating against the virus.

Background - operating against spreading virus

While hand hygiene remains an important health practice, becoming infected by the virus causing COVID-19 by touching surfaces and objects now appears comparatively unlikely. Infection due to trajectory of large droplets has also reduced as a threat, absent unprotected close exposure to an infected person - especially if coughing and sneezing. Adoption of masks, social distancing, use of partitions (or in some instances face shields) stops projected droplets. Suspension in air as an aerosol affords the virus particle (virion, see figure below) mobility. Infection of someone breathing in virus particles depends upon various factors and is an inexact science, but higher concentrations in air favor infection.

Aerosols do not readily settle out. Barring deactivating - killing - the virion by means such as UV light, reducing risk comes down to filtering and diluting - ventilation - wholly or in part by HVAC.



SARS-CoV-2 particle (virion), dia. approx. 0.3 micron. Source: National Library of Medicine, NIH (USA), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7224694/>

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Currently from ASHRAE (early fall 2021)

ASHRAE, earlier the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, itself combined from professional technical groups going back to 1894, is a not-for-profit U.S. based enterprise of multiple entities and tens of thousands of members with worldwide notoriety and influence. (<https://www.ashrae.org/>) What follows is a guide to ASHRAE sources for FM convenience and practicality. A welcome feature is that ASHRAE articles show the date of issue.

A collective menu heading items 1 and 2 below aids in navigating among the various resources.



1. **FILTRATION / DISINFECTION** is a long scroll - an encyclopedic, current, fast, clear, and thorough initial learning or refreshment of pertinent topics, some surely too obscure or specialized - until you need them. "Transmission Through Air in Toilet Rooms" appears as prominently as "HVAC System Maintenance and Filter Replacement during the COVID-19 Pandemic." Links throughout lead to sources. This is a comprehensive and powerful presentation. If I had to choose just one for focus on the virus problem at hand, this is it. (<https://www.ashrae.org/technical-resources/filtration-disinfection>)
2. **CORONA VIRUS (COVID-19) RESPONSE RESOURCES FROM ASHRAE AND OTHERS** provides quick identification and access to current, vetted, information. This page serves like the entrance to the passenger terminal at a major airport. Go here for orientation if scrolling through FILTRATION / DISINFECTION above is more specific than you need. (<https://www.ashrae.org/technical-resources/resources>)
 - a. **COVID-19: ONE PAGE GUIDANCE DOCUMENTS** is a judiciously chosen, convenient, catalog of important knowledge and practice, in the form of one page articles, each accessed with a single click. For example, see **Does ASHRAE's guidance agree with guidance from WHO and CDC?** dated August 23,

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2021. (<https://www.ashrae.org/technical-resources/covid-19-one-page-guidance-documents>)
- b. **FAQ / GLOSSARY** The glossary merges terms from five well regarded sources to clarify terms that FM's may encounter. The FAQs are comparably selected and useful. (<https://www.ashrae.org/technical-resources/frequently-asked-questions-faq>)
 - c. **Core Recommendations for Reducing Airborne Infectious Aerosol Exposure** of the ASHRAE EPIDEMIC TASK FORCE is a one-page summary, a framework for configuring and managing HVAC. Recommend as a starting point or even an elevator speech if the elevator is not too fast. (<https://www.ashrae.org/file-library/technical-resources/covid-19/core-recommendations-for-reducing-airborne-infectious-aerosol-exposure.pdf>)
 - d. **Grand ASHRAE Infographic, Guide to the COVID-19 PAGES** is an overall map of all ASHRAE domains of knowledge and activities. A few interesting points are "ASHRAE RESOURCES", appearing in the lower left, and the smaller circle "FILTRATION DISENFECTION" immediately to its right. "ASHRAE.ORG / COVID19", on the upper right, is a broader view of ASHRAE in the current context of COVID-19. (<https://www.ashrae.org/file-library/technical-resources/covid-19/ashrae-covid19-infographic-.pdf>)
3. **ASHRAE Position Document on Filtration and Air Cleaning**, updated in February of 2021. Capped with six pages of references, this nonetheless brief (22 pages) document is worth scanning to give the FM an impression of the scope of ASHRAE work and study in this area. Two points of interest in view of FM in a pandemic are "Quality control of operation of filtration and air-cleaning technologies, especially regarding data on their long-term performance" and "Integration of different filtration and air-cleaning technologies." (pp. 15-16, items 1 and 4.) (<https://www.ashrae.org/file-library/about/position-documents/filtration-and-air-cleaning-pd-feb.2.2021.pdf>)

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