

UPDATE ON COVID-19 AND EMERGING TECHNOLOGIES

JULY 16, 2020

As time progresses in the COVID-19 pandemic, our collective understanding of the virus, its transmission and its mitigation continue to evolve. Most recently, some studies now posit that aerosol transmission is possible. At C&W Services, we ask ourselves every day: **What can we do to help someone returning to work, to the mall, to a campus, an airport, or a museum feel safe?** Unfortunately, there is no magic bullet in the work to mitigate COVID-19 risk. Instead, we recommend our clients work with a layered defense, which combines actions on several fronts toward an outcome that is appropriately comprehensive, feasible, and sustainable.

As we evaluate approaches – whether modifying established protocols or analyzing emerging technologies – we ask three questions.

- What is the source of transmission?
- What controls can we put in place?
- How effective are they?

In general, we are focused on three primary sources of transmission: Contact or large droplet transmission, fomite (surface contaminated) transmission and the potential of airborne transmission. Each transmission method requires a different approach to mitigate the risk, and therefore, a multi-pronged approach helps decrease the opportunities for infection.

DEFENSES AGAINST DIFFERENT TRANSMISSION TYPES

Contact and Large Droplet

Let's start with approaches to the potential transmission through contact and large droplets, which has been widely covered in the media of late. According to the World Health Organization (WHO)'s Strategic Briefing update on July 9, 2020, *"Transmission of SARS-CoV-2 can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings."*

These transmission risks are the premise behind our current social distancing procedures, masks and face shields and physical barriers. As contact and large droplet transmission is generally considered the easiest method of contracting the virus, the procedures around distancing, crowd control and PPE should be the foundation to any collective defense strategy.

In the service industry, our employees are actively engaged in the cleaning, maintaining, repairing and supporting facilities throughout North America. We use enhanced procedures and technology that focus on the removal of scenarios where these types of close contact situations may occur. One method is the installation of sensors to continuously monitor equipment where technicians previously performed manual routes. Another is our Virtual Technician program where highly skilled engineers remotely support onsite personnel who are equipped with Augmented Reality headsets or wearable computers. Our Virtual Technicians leverage emerging technology to avoid travel restrictions and close-contact situations while continuing to provide technical support for maintenance, troubleshooting and repairs from anywhere in the world.

DROPLET OR AEROSOL?

RESPIRATORY DROPLETS

>5-10

nanometers in diameter.

AEROSOLS

<5

nanometers in diameter

Airborne Transmission

Current discussions are occurring in the scientific and medical communities around the potential of the virus being airborne. We know that airborne transmission of SARS-CoV-2 can occur during medical procedures that generate aerosols, and the WHO is evaluating whether it may be similarly spread through airborne transmission in other situations. In response to these concerns, several emerging technologies are increasingly being utilized as a potential means of mitigating the risk of the virus via the HVAC systems that circulate indoor air.

Our first and strongest recommendation is to use a building's air intake system to **bring more fresh air into the building**, thus reducing the concentration of any viral air contaminant. While not all existing building systems allow a 100% fresh air intake, even increasing the fresh air intake by 50% can result in an additional 5 to 8 air changes per hour. [ASHRAE](#) states that ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air.

When it comes to filters, we recommend installing the highest possible MERV rated filter your system can handle per its specifications, but at least to MERV-13. The higher the reporting value of the filter, the better the filtration efficacy will be. HEPA filters provides a much greater efficiency in filtration, but they should not be installed in the HVAC unless the system allows for it. But no matter which filter is used and regardless of the rating, there will always be a risk of the filter not “catching” the virus.

Filters play another important role. When you're bringing more outdoor air into a building, you are also potentially introducing more dust, pollution, etc. so we recommend more frequent air filter changes to address non-virus air quality issues. Filter changes should also be conducted with more controlled procedures and precautions due to the risk of them containing pathogens.

Ultraviolet Light (UV) is proven to kill bacteria, mold and viruses on stationary targets like HVAC coils and equipment where the light can sit on the surface for a lengthy period of time. UV-C is generally the light of choice for these types of applications. However, it is not fast acting enough to deactivate a virus in a moving air stream. FAR-UV, which operates with a different wavelength, is emerging as a potential solution and is showing promising results as the smaller wavelength penetrates much more quickly. Once peer-reviewed and proven, FAR-UV may be a game-changer in virus protection in HVAC systems.

Ionization systems have been proven to improve indoor air quality by reducing odors, contaminants and pathogens. Until recently, ionization's applicability was limited because the process of ionization would also create harmful ozone, hazardous even in the smallest of quantities. However, new solutions have emerged that provide all the benefits of ionization and are certified UL 867 as Ozone Free. C&W Services is currently supporting numerous design and installations for redevelopment and retrofit projects in several cities including Denver, Miami and Washington D.C.

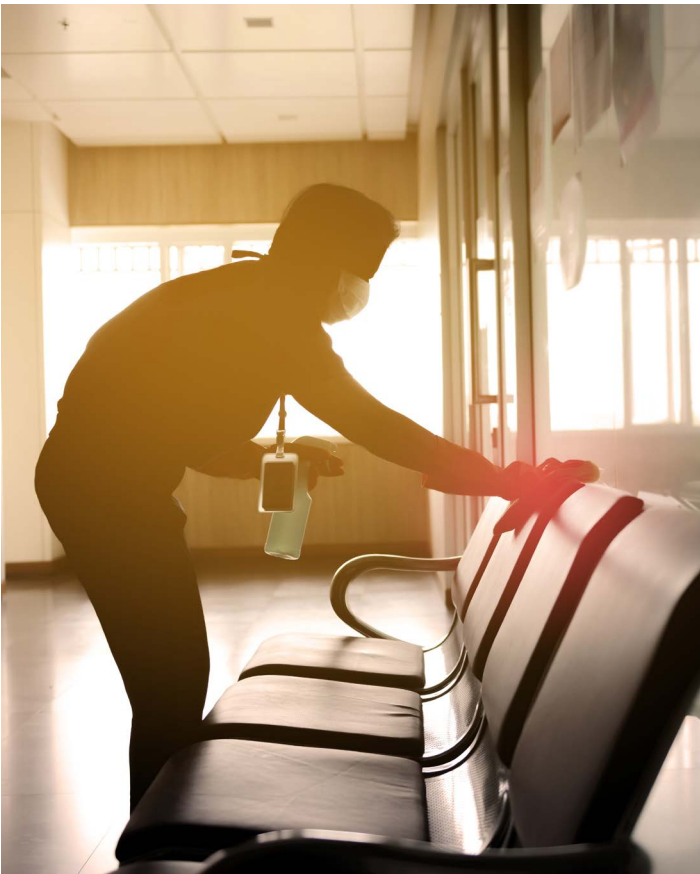
Fomite Transmission

Cleaning and Disinfecting Surfaces

Strong protocols for cleaning and disinfecting surfaces are outlined in detail in [C&W Services' Return to the Workplace Guide](#), and include increased focus on high touchpoint surfaces; transition of cleaning crews from night to daytime cleaning; use of no-touch dispensers and receptacles; and centralized waste and recycling to reduce exposure to potential contaminants.

Beyond these protocols, new technologies are boosting the ability to control contaminants on surfaces. For disinfecting occupied spaces, we are using **electrostatic, misting, ultra-low volume (ULV), and atomizing spray systems** with EPA registered disinfectants for killing the virus. Kill times and applications vary, from 1 minute to about 10. This is a level of sanitization that many occupiers have not routinely used in the past but should be considered as an option to keep employees and visitors safe and secure. We're already putting them in place at client corporate headquarters in California and Texas, at a major New England medical institution, and at airports on both coasts.


A promising new study addresses the effectiveness of self-cleaning **nanotechnology** materials on surfaces. These are adhesive materials that can be applied to high-touch areas like door push bars. The study was conducted by a manufacturer of self-cleaning materials and has been certified by an independent biotechnology lab. C&W Services is currently using these materials at client sites including corporate headquarters, malls, banks, and pharmaceutical manufacturing facilities.



DON'T FOREGO THE BASICS

Fundamental to any layered defense strategy are the basic cleaning and hygiene protocols that limit viral presence in the public places.

- Frequent hand washing
- Wearing a face covering in public
- Maintaining proper social distancing
- Appropriately controlling access to public spaces
- Enabling/enforcing policies to help people remain at home when they feel sick



C&W Services and our parent, Cushman & Wakefield, have made all our insights on COVID-19 available to the public.

Our most recent thought leadership on this topic include a July 15 [segment on CNBC](#), our [Emerging Technologies Podcast](#), and [20 Questions](#) that any landlord or facility provider should be able to answer about returning to work. Additional resources can be found at [cwservices.com](#) and [cushmanwakefield.com](#).

