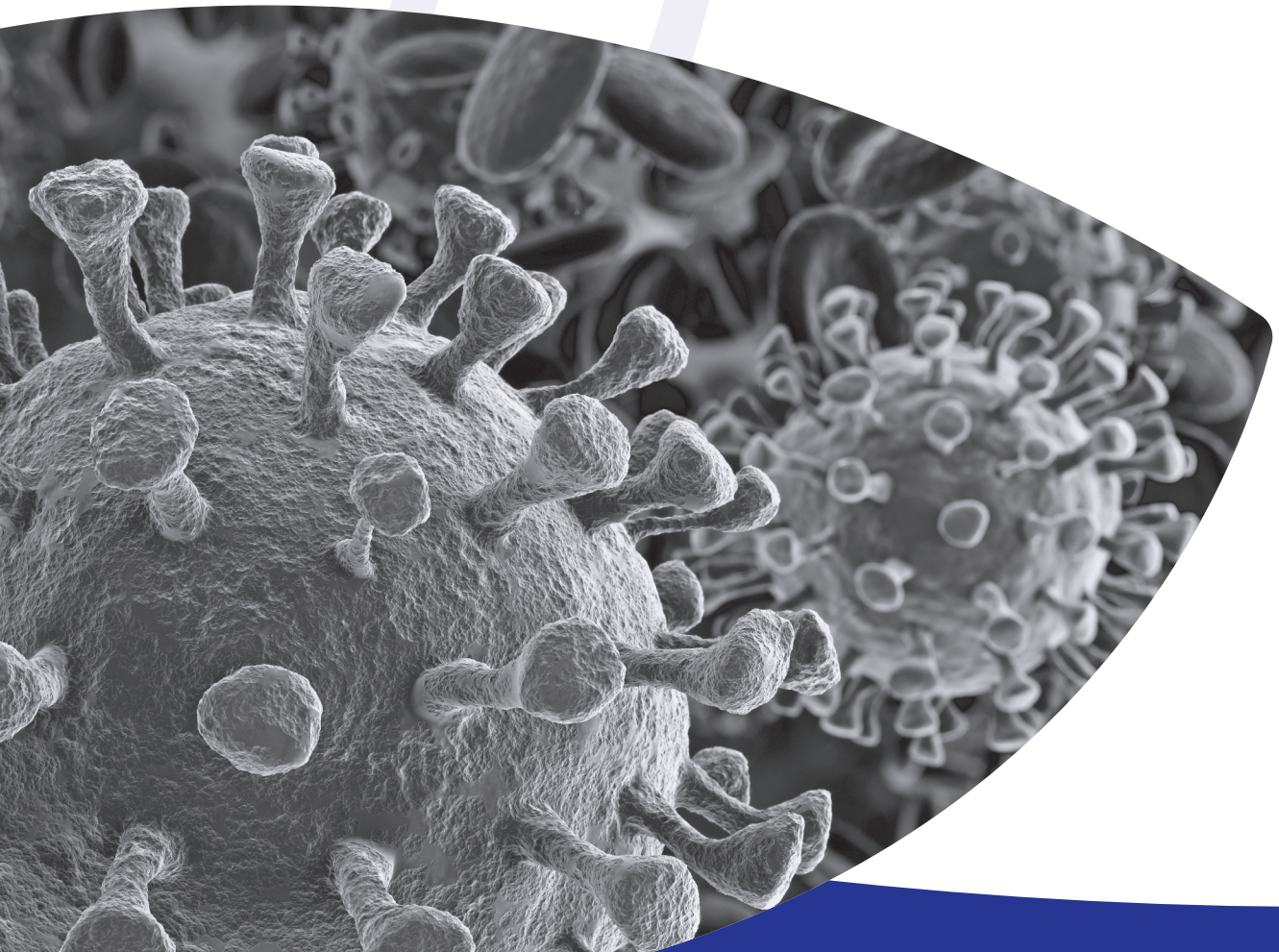
Diversey

Deep Cleaning Commercial Facilities after a COVID-19 outbreak (caused by SARS-CoV-2)

Introduction

The global pandemic that originated in Wuhan China in Nov/Dec 2019 has spread to more than 150 countries as of March 2020. The SARS-CoV-2 novel coronavirus has been identified as the pathogen causing the outbreak. This coronavirus causes respiratory infections that ranges from mild to severe. The virus can be transmitted by close contact from person to person, and from contaminated surfaces, as has been conclusively demonstrated through epidemiological reports and summarized by the World Health Organization (WHO) recommendations for healthcare infection prevention and control (WHO, 2020).

This document was developed to discuss major considerations in cleaning a commercial facility after an incident of SARS-CoV-2, the virus which causes coronavirus disease 19 (COVID-19).



SARS-CoV-2/COVID-19 and Infection Risk

SARS-CoV-2 is a respiratory virus that causes the COVID-19 disease and is genetically similar to the SARS coronavirus that caused the SARS outbreak in 2002-2003. Transmission between people can occur when an infected person coughs or sneezes (without covering their cough/sneeze) and generates contaminated droplets into the air and a second person inhales or swallows the droplets. Transmission can also occur when the contaminated droplets are deposited on a person's clothing or environmental surfaces. Hand contact with the contaminated surfaces or clothing can result in hand contamination. Subsequent contact with a person's eyes, nose or mouth can result in the virus entering the body where it can cause infection. It is important to understand the likely route of transmission when addressing environmental hygiene risks for a human pathogen.

Deep Cleaning your Facility

After an incident in a facility building, such as a school, hotel, airport, or retail store, deep cleaning of the building is probably not necessary, but may be desired to ensure that subsequent use of the building does not result in ongoing spread of the pathogen and additional infections.

The timeline of the environmental survival of the pathogen is an important consideration in the probability of ongoing infection risk, but often the cleaning is done as much for the public relations value to help ensure patrons that the facility is hygienic and thus safe to enter.

SARS-CoV-2 and Environmental Survival

A literature review by Kampf (2020) of environmental survival of human coronaviruses determined that coronaviruses can survive on environmental surfaces for up to 9 days under certain conditions with the median time of survival being 5 days. 14 of the 23 papers reviewed had a survival time of <5 days. Facility managers may consider performing a deep clean of the area where the newly discovered patient spent time. This would include areas where the patient spent more than 5 – 10 minutes (e.g., restrooms, meeting rooms, auditoriums), and may have deposited virus in secretions while coughing, talking or sneezing. This would help ensure that the pathogen has been eliminated, allowing the area to be used safely without concern for subsequent infection.

Facility deep cleaning more than a week after the outbreak occurs are unlikely to find viable virus remaining on surfaces, but deep cleaning still may be desired to ensure the facility is hygienic and provide peace of mind.

Worker Safety during Deep Cleaning for SARS-CoV-2

When performing environmental cleaning, it is not clear what level of personal protective equipment (PPE) is necessary to protect the worker. Some facilities have assumed a worst case scenario where viable virus might be present and the cleaning activities may put the worker at some risk of exposure. Additionally, PPE may be necessary to protect the worker from the chemical concentrate of the disinfectant/cleaner when using concentrates. The product SDS can provide guidance on necessary PPE to protect the worker from the chemical hazards – if present.

Thus, at a minimum, workers should wear gloves. Hand hygiene must always be performed after removal of gloves. Use of a mask, eye protection and/or gown may be considered to keep staff from touching their face, and to help minimize the contamination of their uniform. Full body suits, such as are used by some healthcare workers for extreme medical procedures, are not needed. Staff should be reminded that their uniforms worn during cleaning should be removed before exiting the facility and laundered at home, in hot water, prior to reuse.

If cleaning is likely to generate splashing from surfaces that may be contaminated with the virus, the use of eye protection and a standard surgical mask would be appropriate. The use of high level respiratory protection, such as an N-95 respirator, should not be needed as long as the worker does not generate small droplet aerosols (i.e. droplets less than 5 microns in size). In general, it is better to avoid generating droplets during cleaning. This is best accomplished by not spraying liquids onto surfaces, such as by not using hand pump trigger sprayers or powered hand sprayers unless the pressure can be minimized.

Whether workers should be tested to confirm they are not carrying the SARS-CoV-2 coronavirus is an unresolved question, and would be a discussion for local public health officials.

Training Staff on Cleaning Practices

In general, cleaning practices do not need to change from non-outbreak to outbreak situations. If the established cleaning practice acceptably addresses the risk on a daily basis, during a deep cleaning the same practices should provide an acceptable hygienic result. Exceptions include:

1. During daily cleaning, a non-disinfectant cleaner is used. If this is the case, during a deep cleaning, disinfectants should be incorporated. Only use a non-disinfectant cleaner or degreaser if a surface is heavily soiled, or requires pre-cleaning due to the presence of gross soils. Use of cleaners on non-soiled surfaces can give an acceptable hygiene result, but there is more potential for cross-contamination, which can be significantly reduced by using disinfectants. In this document, when the word cleaning is used, it is implied we refer to the use of a disinfectant with cleaning properties (cleaner/disinfectant or one-step cleaner/disinfectant).

2. If the facility manager wants low hand contact surfaces (such as walls and ceilings) disinfected, special equipment or whole room disinfection devices (hydrogen peroxide vapor or UV-C units) may be needed as adjunct technologies. The risk of ongoing infection from low hand contact surfaces is much lower than for high hand contact surfaces. This is an important discussion to have with the facility manager when establishing the cleaning practices staff will follow. Any visible soiling on these low touch surfaces can be cleaned/disinfected.

Regardless of the cleaning practices used, detailed cleaning practices should be documented in training materials to provide for auditing for adherence. The use of strong, visual materials, with minimal text, are preferred. Point of use training tools and checklists are also preferred to give workers a quick reference when performing the cleaning tasks. The training tools should reinforce the importance of cleaning the entire surface of concern. When cleaning a chair, a worker may spend a lot of time cleaning the seat and back (likely low risk), but not the underside of the arm area where hand contact is likely. Ensuring the training materials accurately reflect the areas of risk on all surfaces to be cleaned is important.

Cleaning Practices during Deep Cleaning

Neither the WHO nor US-CDC provide any significant information about how environmental cleaning in these settings is to be performed during deep cleaning after an outbreak. Thus this section is based on Diversey expert opinion.

1. Hard surfaces. Hard non-porous surfaces can be cleaned with a disinfectant that is effective against SARS-CoV-2, similar viruses, or harder to kill viruses. Disinfectants with strong cleaning performance are preferred since more effective cleaning reduces the number of microorganisms that must be inactivated by the disinfectant. Any heavily soiled surface must be pre-cleaned with non-disinfectant cleaner. The mechanical action provided during cleaning is an important element in the mechanical removal of soil and pathogenic organisms.

2. Soft surfaces. Soft surfaces such as carpet, curtains, bedding, and upholstery, cannot be disinfected. Laundering of soft surfaces is preferred to ensure the materials are hygienic. Diversey publishes guidance on proper laundering to address the risk of SARS-CoV-2. Where laundering cannot be performed, hot water extraction can be used for carpets and upholstery. For reference, OSHA recommends steam cleaning carpets or other non-launderable items for 1 min at 100 °C or 5 min at 70 °C for norovirus contamination events. This does not guarantee the surface is disinfected, but is the best option. If neither is an option, evaluating the risk posed by the surface is preferred to discarding the surface/object. Smaller objects may be stored for 2 weeks until the risk of virus viability has passed. Use of a sanitizer registered as a soft-surface sanitizer can also be considered.

3. Disinfectant application. Disinfectant should be applied to the wiping cloth and then applied to the surface to minimize the risk of splashing viable virus onto the worker. The use of pre-wetted disposable wipes is generally preferred to minimize any risk associated with splashing or subsequent laundering process. Facility managers may not want any of the materials used during cleaning to be reused and disposables are a good option to meet this goal. However since the CDC has indicated that standard healthcare laundering practices are adequate to produce hygienic fabrics, launderable cloths is also an acceptable option. For large area cleaning/disinfection, it may be necessary to use low pressure spray, but this should be used cautiously with considering additional PPE for workers and may still require mechanical action on the surface to ensure adequate efficacy. All disinfection needs to be done with precleaning on any visibly soiled surfaces.

4. Cleaning tools. Hand cleaning tools, such as wands, extension tools, and floor mops may be contaminated during cleaning. As long as the hand tool is hard and non-porous it can be disinfected after use, minimizing any risk of subsequent contamination. Tools with absorbent hand grips should not be used. Disposable toilet swabs may be preferred for toilet cleaning as SARS-CoV-2 is believed to be capable of being passed in feces.

5. Floor machines. Floor machines have significant complexity in considering their use. Currently there is little evidence they represent a risk of pathogen dissemination during cleaning in an outbreak. This is largely because their use has not been studied in depth, so it is difficult to assess their overall hygiene risk in use in an outbreak setting. In non-outbreak settings the hygiene risks associated with using floor machines are low, but in an outbreak setting it is not clear whether that risk level changes. Consequently, we recommend continued use of floor machines, but recognize that there may be a hygiene risk that is not well quantified. Flat mopping is an alternative that likely carries less risk, but there is also a lack of data comparing the two methods of floor cleaning. Among the considerations in using a floor machine are:

a. Whether all exterior surfaces of the machine can be disinfected so that operators do not contaminate their hands by manipulating pads, brushes, and squeegees. Hand hygiene should be available for machine operators when their hands are contaminated.

b. Does the specific make/model machine spray droplets of liquid into the air through the rotation of the brush or pad, which could contaminate the machine operator, hand contact surfaces, or other people? Some machines are designed to direct droplets onto the floor, but it is not clear all machines are similarly designed.

c. Does the vacuum portion of the machine (if present) exhaust air that can capture any virus present. A standard 0.3 micron HEPA filter may not stop a 0.12-0.15 micron coronavirus, but there also is a lack of evidence investigating this as a potential risk factor.

6. Vacuuming. It is similarly not clear whether a virus in carpeting can become airborne by vacuuming. A standard HEPA filter captures particles of 0.3 microns in size. A 0.12-0.15 micron coronavirus may pass through the standard HEPA filter. However there is limited data to suggest that this increases any risk of using a vacuum equipped with a HEPA filter, so as with floor machines, we recommend continued use of vacuums, but suggest equipping them with a HEPA filter capable of capturing the virus. Ensuring the HEPA filter is changed per the manufacturer's recommendation may also help address some of the potential risk.

7. Cleaning Validation. The use of covert fluorescent markers is helpful during the training process of staff for providing a proof of demonstrated competency. During the cleaning process, this will provide proof of process when doing the actual cleaning. Facility managers will want some assurance that the cleaning process was actually done correctly and fluorescent markers can help demonstrate that specific surfaces were cleaned properly.

References:

- Kampf G. Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. Journal of Hospital Infection. 2020; 104: 246-251.
- World Health Organization. Q&A on coronaviruses (COVID-19). Retrieved on 12 Mar 2020 from: https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125

Diversey has been, and always will be, a pioneer and facilitator for life. We constantly deliver revolutionary cleaning and hygiene technologies that provide total confidence to our customers across all of our global sectors.

Diversey is headquartered in Fort Mill, SC, USA. For more information, visit www.diversey.com or follow us on social media.

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