Assisting Clients With COVID-19 Concerns

A Preliminary Report for Restoration Contractors,

Second Edition,

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Contents

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It is also important to note that this document is specific to the implementation of processes addressing the risk of exposure to and spread of COVID-19, and thus the assessment of risk referred to is specific to the hazard of exposure and spread of COVID-19. Be aware that other hazards may exist and still be present, including the group known as P.A.L.M.S. (Pandemic/PCBs, Asbestos, Lead/Legionella, Mold/Metals, Silica/Safety/Sustainability). Because other hazards exist, a proper and complete hazard assessment is still a vital part of your overall safety and health processes. However, the assessment of risks other than COVID-19 is beyond the scope of this document.

Preface

The restoration industry has extensive experience in assisting individuals and organizations when their lives have been disrupted by catastrophic events such as floods and fires. Therefore, it is no surprise that clients are turning to restoration professionals to assist them in properly responding to the coronavirus pandemic referred to as "COVID-19." In such circumstances, it is imperative that restoration professionals be clear about what their services can, and cannot, accomplish for the client.

This document has been prepared by a wide range of experts from the cleaning and restoration industry as preliminary assistance to contractors managing the risks arising from efforts to mitigate the COVID-19 pandemic. It is important to note that this Preliminary Report, and the processes described, are not intended for the general public; they are solely directed to the professional cleaning, restoration and remediation industry. For that reason, the authors took into consideration the frequency, duration and variety of the work tasks performed by the field crew which result in an elevated risk of exposure.

This Preliminary Report is based on extensive industry experience and, to the extent possible, we have incorporated portions of the guidance provided by the Centers for Disease Control and Prevention (CDC) and the United States Environmental Protection Agency (EPA).

However, the pandemic is a rapidly evolving situation and more research is needed. **This Preliminary Report is not intended to be, nor should it be construed as, an industry standard or a complete statement of every appropriate way to address the virus.** Each project is unique and requires a specific work plan, and it was not our goal to offer solutions for every scenario.

Taking into account the site conditions and all other relevant factors, restoration contractors must exercise sound professional judgment to determine the best plan for each project, on a case-by-case basis. Relevant factors may include, without limitation, the use and nature of the building, the vulnerability and health conditions of the occupants, the needs and budget of the customer, test data and other input from competent professional consultants, the availability of resources, and other factors.

Common sense should prevail in all cases, and the restorer owes a duty to exercise reasonable care. To determine what constitutes reasonable care, the restorer may need to seek the advice of competent professionals in the fields of science, medicine, construction, and/or law. The pandemic does not lend itself to a one-size-fits-all approach, so deviations from these methods may be appropriate and preferable, based on the requirements of the project and the professional judgment of the contractor.

Accordingly, this Preliminary Report is intended solely for general informational purposes. It is a potential supplement to the restorer's other training, experience, and research. Anyone using this document should understand the document's limitations. It may be a helpful

reference point to begin the development of work plan but is not intended to be construed as advice of any sort, including without limitation, scientific, medical or legal advice.

Note: For a discussion on managing emergency service operations amidst the COVID-19 pandemic, refer to the RIA and IICRC document titled *'COVID-19 and Our Essential Industry'* available at *www.iicrc.org* and *www.restorationindustry.org*.

Basic Information About Coronavirus

Coronaviruses are a type of organism that often cause respiratory diseases in people and animals. In the Fall of 2019, a new mutation of a coronavirus was first detected in China. The new variation was soon recognized to have properties similar to the 2003 coronavirus that led to the description of Severe Acute Respiratory Syndrome (SARS). As such, the virus was named "SARS-CoV-2" by the World Health Organization (WHO). Exposure to SARS-CoV-2 can lead to a specific form of illness characterized by very high fever and dry cough named "coronavirus disease 2019" - abbreviated "COVID-19." This document will refer to SARS-CoV-2 in reference to the processes and procedures discussed.

Within months of its identification, despite extensive efforts at containment, COVID-19 spread around the globe and was declared by the WHO to be a "pandemic"; a world-wide epidemic of an illness for which people have no natural immunity. To address the risk, significant efforts are being directed at developing a vaccine. However, as of the publication date of this document, no such preventative medicine is available. According to the Centers for Disease Control and Prevention (CDC) "Nonpharmaceutical intervention would be the most important response strategy" to COVID-19. Their pronouncement means that infection control and home care of the affected are the key response measures.

It is noted that older adults, particularly those with weakened immune systems and underlying health problems, are at a higher risk for severe COVID-19 associated illness. This means that medical facilities and eldercare accommodations are especially vulnerable to outbreaks.

Infection Control Principles

Decades of scientific studies and practical experience have shown that effective control of infectious agents in the population requires a nearly equal combination of adjusting people's behavior and taking additional steps to stop the spread of contamination from surfaces. This dual approach to infection control is necessary for COVID-19, as the best available information indicates that it is spread both by direct exposure to the droplets aerosolized when an infected individual coughs or sneezes and by secondary exposure of uninfected people to objects and surfaces with residual viral particles.

Secondary exposure is likely more of a problem with COVID-19 than influenza viruses that typically circulate seasonally, as some early reports from the CDC indicate that the virus may remain viable on nonporous surfaces for up to nine days as compared to one to three days for normal influenza viruses. The recommendations in this document are designed to address secondary human transmission through the cleaning of facilities to prevent the spread of the virus from surfaces within buildings. While the exact extent of disease transmission from contact with surfaces is currently unknown, initial indications are that prolonged exposure to contaminated surfaces can lead to higher infection rates. Therefore, cleaning surfaces and applying a disinfectant are important risk mitigation techniques.

During past viral outbreaks, the behavior component of the infection control process has been voluntary. Individuals are reminded to stay home if they are sick, educated to cover their cough and sneeze, and encouraged to wash their hands frequently. This voluntary approach has been supplemented with CDC suggested cancellations of activities that would bring large numbers of people into close proximity; including closure of schools, colleges, sporting events and amusement venues. Containment efforts have also resulted in authorities closing bars and restaurants in many states, along with enactment of international travel restrictions.

While these measures to adjust behavior will hopefully slow the spread of the virus, such efforts need to be matched with practices proven to minimize secondary transmission. Restoration contractors must emphasize to their clients that actions taken to reduce exposure from secondary transmission from surfaces with reservoirs of viral material must be matched with procedures to prevent recontamination. Cleaned and treated surfaces can become re-contaminated in minutes if an infected individual is present and sneezes or coughs without controlling the droplet spread.

Potential Services

With the proper training, equipment, supplies and personal protective equipment (PPE), restoration contractors who have experience dealing with other hazardous microorganisms, such as sewage mitigation and mold remediation, may have the qualifications to offer valuable services to combat COVID-19. The most basic service will likely be enhanced cleaning of touchpoints and application of disinfectants to other surfaces.

It is important that restoration contractors communicate clearly and use consistent terminology when describing the services, particularly in their contracts. When interpreting contracts, courts generally apply dictionary definitions of terms that are not otherwise defined in the contract. Dictionaries define “cleaning” as the removal of pollutants or impurities, and viruses may be considered pollutants or impurities. Therefore, confusion and conflict may arise because customers and courts may interpret the word “cleaning” as a guarantee that SARS-CoV-2 will be completely removed. Hence, it may be safer to describe the work more narrowly in terms of the specific acts to be performed, e.g., “wiping,” or “mopping,” which are less likely to be interpreted as guarantees.

Because no currently available antimicrobial has been tested against the SARS-CoV-2 (see section below on Pre-work Preparations for additional details), it is important to use the verbiage to “apply disinfectant” rather than “disinfect.” Applying a disinfectant does not necessarily guarantee disinfection. With no validation of a product’s effectiveness for this particular virus, there is no way for the contractor to know if the appropriate level of microbial reduction has been reached in order to meet the definition of the term "clean and disinfect." As such, contractors are offering a service to wipe and apply an appropriate EPA registered disinfectant in accordance with the application directions provided by the master label.

Even with that distinction in language, the cleaning of touchpoints and specialized treatment involving application of disinfectant is an essential service. If demand for such services grows beyond the capacity of the restoration contractor, consideration should be given to partnering with the client to educate existing custodial staff on proper techniques for cleaning touchpoints after which the restoration contractor can provide the specialty treatment of applying disinfectants to surfaces.

Other services that the restoration contractor may be able to provide to clients in the medical and eldercare industries include temporary isolation of rooms or areas to create negative pressure treatment or quarantine spaces. Infection Control Risk Assessment (ICRA) guidelines provide helpful information to contractors working in medical facilities. Although ICRA guidelines apply specifically to contractors conducting construction activities, they provide important guidance on infection control measures. HEPA vacuuming and the use of HEPA filtered equipment such as air scrubbers can also improve the environment by reducing the level of airborne particulate. The removal of aerosolized particulate during the cleaning process may further improve the overall cleaning efficacy and reduce risk.

With the recent announcement by the CDC that the virus can likely be transmitted through contact with contaminated clothes, linens, and shoes, the washing of soft goods now has increased importance. The CDC guidelines provide a helpful baseline for this work.

Pre-work Preparations

Restoration contractors should only offer services to assist with the control of SARS-CoV-2 if they are suitably prepared with the proper training, equipment, contracts, and insurance to perform these services. Those with less experience in properly dealing with other biological contaminants will have a steeper learning curve and more liability exposure.

Risk Management and Insurance Concerns

The COVID-19 pandemic raises new challenges in managing the risks of cleaning and restoration contractors. Because this is a new risk to both cleaning and restoration companies and their insurers, many of the risk management practices common in the cleaning and restoration business will need to be modified in response. The previous pages address the importance of employee safety and job site risk mitigation. These are priority items in managing COVID-19 risks.

Other important steps contractors can take to manage the risk include:

1. Revise service contracts to avoid indemnity obligations for virus contamination at your work site and warranties of performance on virus decontamination work. (See “Coronavirus Service Contracts,” below.)

2. Evaluate the current property and liability insurance policies for coverage for losses associated with viruses, contagions, infectious diseases, epidemics and pandemics.
3. Advise all insurance companies insuring the firm that the firm will be conducting COVID-19 related services or cleaning in environments that may have the SARS-CoV-2 present.
4. Procure the supplemental insurance necessary to fill the identified coverage gaps.

Material Changes In Risk

Claims against business environmental and liability insurance can be denied if a company materially changes the risks the insurance underwriter agreed to cover and does not inform the underwriter of the changes in the services offered. Those risks are identified in the insurance application. Contractors face a serious risk that the addition of coronavirus service may qualify as a material change, depending on the nature of the services the underwriter agreed to cover, based on the content of the application. Contractors are urged to immediately notify their carriers any time they expand their service offering, especially if those services relate to SARS-CoV-2, and to obtain written approval from the insurance company and confirmation of coverage.

Pollution Exclusions and Affirmative Grants of Coverage

All general liability insurance policies have exclusions for "pollution." Commercial Pollution Liability (CPL) policies cover pollution, but the definition of "pollution" rarely mentions viruses by name. Many insurance companies will argue that claims are not covered if the policy does not contain an affirmative grant of coverage that specifically mentions viruses, contagions, communicable diseases, epidemics, and so on. An affirmative grant of coverage is a decision by an underwriter to accept a specific, identified risk. Carrier arguments about coverage may or may not prevail, and may or may not be in good faith, but challenging them is usually very expensive. Some insurance policies have affirmative grants of coverage for viruses in an endorsement to the policy. Although that may not necessarily be the only avenue for potential coverage, it is the strongly preferred way to increase the chances that a claim will be covered and to avoid an expensive coverage dispute.

Workers Compensation insurance (in the United States)

Unlike liability insurance policies, there is no exclusion in Workers Compensation policies for injuries to employees caused by contaminants, including viruses. However, there are areas of concern in this coverage.

Some States are implementing insurance rating rules that lump all workers in PPE gear on a job site into the classification code of asbestos abatement contractors. The premiums charged for asbestos abatement are much higher than janitorial or cleaning.

In some areas of the United States, health insurers may relate First Responder and Front Line employees' COVID-19 medical expenses to a work related injury, which may shift the medical costs of employees to the Workers Compensation policy. It is unclear at this time if this trend will expand to the professional cleaning and restoration industry.

Active Covid-19 related work may be considered by the insurance company to be a material change in the risk insured. In response to a new occupational disease hazard, either real or perceived, the insurance company may want to cancel the Workers Compensation policy mid-term or decline to renew the policy if a contractor enters into this field of work.

To avoid unexpected and costly Workers Compensation premiums at the end of the policy term, contractors should advise the workers compensation insurance company about their work associated with SARS-CoV-2.

Service Contracts

The traditional restoration "Work Authorization" lacks essential contract terms and rarely creates enforceable rights for the contractor. Contractors can significantly reduce their risk with the use of professionally-prepared service contracts that specifically address the unique legal challenges presented by SARS-CoV-2. A partial list of these challenges is below:

1. Agreements to indemnify or hold harmless the customer for viruses, or to provide additional insured certificates, may seriously impede or eliminate the contractor's ability to obtain liability insurance coverage.
2. "Return to pre-loss condition" cannot be guaranteed.
3. There are no published industry standards of care.
4. The work area can be re-contaminated immediately after the work.
5. The success of the work is difficult to measure or describe, while poor work can cause extreme danger.
6. Customers rarely want to hire hygienists to prepare protocols.
7. There may be no visible evidence the work was performed.
8. No insurance money is available to pay for the work.

The failure to specify terms and conditions may lead to a legal result that is very different from what the contractor intended. Many different contract provisions can help contractors clarify their capabilities and fairly apportion the risks between the customer and the contractor. The legal and financial ramifications of using incorrect or incomplete contracts can be severe. Each state has its own contract law which a qualified attorney can explain. This document is for

general information and is not intended as legal advice, but the following can serve as a partial list of potential contract issues to discuss with an attorney:

1. A narrowly drafted scope of work can exclude testing and environmental consulting services and emphasize that that the goal of the work is not to remove or eradicate all viruses, and that the customer is purchasing a process rather than a result.
2. Indemnity and hold harmless provisions can include releases of virus claims against the contractor and a defense in the event contractor is sued for damages or illnesses arising from viruses at the job site.
3. A disclaimer of warranties, including implied warranties, can state that the contractor cannot warrant that the workspace is free from viruses after completion of the work.
4. The contract can shift liability to the customer for certain losses caused by those under the customer's control, such as environmental consultants who write protocols or perform testing.
5. The contract can include information about the products to be used in the work, a disclosure of the risks associated with those products and the customer's consent for the use of the products.
6. If testing will be performed, the contract can specify the criteria to be used to determine the success of the work, to avoid confusion and expensive conflict.
7. A *force majeure* clause can excuse the contractor for delays and losses arising from pandemics, material shortages, acts of government or military authority and many other events.

Personal Protective Equipment (PPE)

A thorough review of company policies related to site risk assessment, use of PPE, and infection control work practices is critical. Regulatory agencies in the United States, Canada, Australia and New Zealand, among others, require employers to protect their workers from a "recognized hazard." This means that employers are responsible for taking reasonable steps to protect their employees.

Any respiratory protection, including filtering facepieces such as an N-95 mask, that is assigned to crew members who perform touchpoint cleaning or surface treatment, must comply with regulations established by authorities having jurisdiction such as OSHA, Health Canada, Safe Work Australia and Worksafe NZ. Typically, regulatory requirements include employee medical evaluation, fit testing, PPE training, and a written PPE program. In contrast, providing surgical style masks to potentially infected individuals to control the spread of sneeze and cough droplets prior to their departure from the worksite does not constitute giving them a respirator.

Providing services in workplaces and public buildings generally requires a basic risk assessment of the project to protect workers from biological, chemical, and safety hazards. In addition, work performed in food service establishments requires compliance with numerous food safety

regulations and generally requires the use of disinfectants that are appropriate for such operations. In health care and assisted living facilities, there are many state/provincial regulatory agencies, as well as facility specific rules that may require training and/or certification for workers who assist with cleaning and sanitization activities.

The crisis nature of COVID-19 pandemic means that many typically available supplies may now be in short supply. This may require contractors to use alternate PPE items they are not familiar with, or potentially reuse single use products. As an example, the CDC has already posted procedures explaining how personnel may have to store and reuse single use disposable respirators. Contractors may have to use PPE different than that to which they are accustomed. Shortages of disinfectants, hand sanitizers, cleaners, and disinfectants may also occur.

Disinfectant Selection

Choosing a disinfecting product can be confusing as the sudden onset of the SARS-CoV-2 virus because commonly used antimicrobial products have not been tested or have not received an EPA registration specifically for cleaning surfaces with viral materials that cause COVID-19. In this situation, the EPA falls back on its "Emerging Pathogens Program" to provide guidance in evaluating a product's effectiveness in arresting the spread of the virus.

To break the chain of infection, as new pathogens emerge, the EPA guidance allows companies with existing registrations to utilize those chemicals against the new threat. The guidance requires documented product efficacy in killing or inactivating similar organisms and viruses. Therefore, any antimicrobial products used by restoration contractors should be listed on the EPA "Emerging Pathogen: List N" or meet the requirements of the emerging pathogens procedures for enveloped viruses (the class of organism of the SARS-CoV-2) and that human coronavirus is listed. It is critical that restoration contractors understand that the "List N" is not exhaustive, does not represent any EPA endorsement of listed products, and is updated as products that are not currently listed are evaluated for similar efficacies.

In the United States, review of the product label should result in a full understanding of application methods and specific dwell time or exposure time as directed on the product label, which may include a review of the full master label on the EPA website[1]. Restorers must stay abreast of federal, state, local and other laws and regulations that govern the use of all products they use, including biocides. It is important to also review the Safety Data Sheet (SDS) as it contains additional information necessary to protect workers and occupants during and following application of a disinfectant.

Prior to the selection of any alternate application method, review the product label to confirm that the product is registered for that application method. All EPA-registered pesticides must have an EPA registration number, which consists of a company number and a product number

[1] EPA Label Search: https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

(e.g., 123-45). For example, registration No. 123-45-678 is identical to registration No. 123-45. The extension at the end of the number indicates it is distributed under a different brand name.

Note that disinfectant products have a shelf life after diluting, and as such the expiration date must be considered in order to ensure efficacy. The post dilution shelf life can be found on the EPA registered product label.

Equipment Care

It is important to note that equipment used when COVID-19 is a concern should be scrupulously cleaned and treated with a disinfectant between projects. Equipment containing filters, prefilters should be removed and bagged, and the unit sealed prior to de-energizing and removal from the job site. Before use at another project, the unit should be thoroughly cleaned and treated with a disinfectant then fitted with new prefilters. If the equipment then will be used in non-COVID-19 projects, consider quarantining the equipment for a minimum of 7 days or replacing the HEPA filter prior to deployment.

Field Crew Safety

The minimum PPE for individuals potentially exposed to COVID-19 includes gloves, gowns, eye protection, and respirators. Typically, workers in the restoration industry use respirators, protective eyewear and disposable suits with attached hoods and booties for contaminant control work.

However, if a shortage of disposable suits occurs, disposable lab coats or full front treatment gowns with long sleeves that tie in back could also be used for body covering. Depending on the availability of disposable suits, workers may have to utilize reusable medical style scrubs consisting of top, pants, cap, and shoe covers. Such outerwear can be worn as a replacement for street clothes if a controlled changing area is available or purchased oversized and worn on top of street clothes. In such cases proper provisions for the collection, handling, and cleaning of clothes are necessary. For more information on managing PPE shortages, refer to the RIA/IICRC publication titled *Managing Emergency Service Operations During the COVID-19 Pandemic.* The document can be found at www.restorationindustry.org, or at www.iicrc.org.

For most work conducted by restoration contractors related to mitigation of SARS-CoV-2, an N-95 filtering facepiece is the minimum protection against possible exposure to the viral contaminants. Out of an abundance of caution, a higher level of respiratory protection, if available, provides better protection where airborne contamination may be extensive due to the existing conditions or cleaning methods employed. If filtering facepieces are used, a full-face shield rather than safety glasses can be used in order to minimize fogging and to protect the eyes from exposure to contaminants. A full-face negative pressure respirator with HEPA filters can be used to provide respiratory and eye protection in one device. A greater level of protection is provided by a mask or hood style powered air purifying respirator (PAPR).

Respiratory protection must also be matched to protect workers from the chemicals used when applying disinfectants to the surfaces.

Regardless of what particular PPE is used to protect workers, it is necessary to train them how to use it properly. This includes the correct methods of donning and doffing (to put on and take off) the equipment. Small actions can be important to protect workers and minimize the spread of infectious agents and there are detailed procedures for actions such as the proper removal of gloves.

Contractors should emphasize to their crew members and clients that helping stop the transmission of COVID-19 is serious work and does carry some risk. Therefore, all safety and health procedures must be followed without exceptions.

Note: For discussion on suggested considerations for training, refer to the current version of the RIA/IICRC publication titled *Novel Coronavirus (COVID-19) and Our Essential Industry.* The document can be found at www.restorationindustry.org, or at www.iicrc.org.

Working On COVID-19 Projects Is A Process

As discussed in the "Potential Services" section, the primary response at this point is for restoration contractors to offer a service to wipe and/or mop and apply an appropriate EPA registered disinfectant in buildings in order to help break the chain of infection.

However, in order to provide an appropriate service, the application of the chosen EPA registered disinfectant must be in accordance with the application directions provided on the product label. Most disinfectant labels indicate that the product should be “applied to a clean surface”. Unless some form of testing, such as ATP sampling, is done on a representative number of surfaces, it can be difficult to confirm that the surfaces are “clean” prior to the application of disinfectant without including a cleaning step in the COVID-19 response effort. Therefore, the combination of wiping touch points and applying disinfectants as a combination of activities is critical.

Many EPA registered disinfectant products have a variety of application methods which are allowable. Still, it is important to remember that the purpose of spraying, misting, or fogging is the same as mopping and wiping: to directly and purposefully apply the disinfectants to surfaces. Whatever method is used, it is the surfaces that need to stay wet for the minimum dwell time. Just fogging (i.e., fumigating) to fill the air without ensuring that the surfaces being treated have received product application for the appropriate amount of time is inappropriate and should be avoided as a stand-alone procedure.

Restoration contractors should also be careful about promoting services for a COVID-19 response where various chemicals are fogged or applied with the purpose of creating a microbial resistant (i.e., microbiostatic) surface. Such microbiostatic agents are generally intended to protect products, not people, from the deleterious effects of microbial growth.

Wiping of Touchpoints

To break the chain of COVID-19 illnesses from secondary surfaces, the first step is wiping to remove unwanted soil, microorganisms and other surface contaminants before applying a disinfectant. Emphasis should be placed on wiping surfaces more likely to be touched by occupants; commonly referred to as touchpoints or high touch surfaces. Since people are not precise when touching objects, touchpoint cleaning should extend past the focused item 3-12 inches. Common touchpoints include, but are not limited to, door knobs and locks, door push bars, door edges and jambs on the side opposite the hinges, stair and ramp hand railings, cupboard handles and drawer pulls, appliance handles, light switches, table and desktops, telephones, toilet seats and flush handles, faucet handles, soap pumps, keyboards and mouses, elevator buttons, credit card keypads, vending machine buttons, equipment controls, television remote controls, chair armrests, bedrails, countertops, and so on.

Touchpoints will also vary by the type of facility being cleaned. Pew tops and armrests, communion rails, confessional kneelers, altars, and holy water dispensers are touchpoints that need cleaning in churches. Toys, books, and teaching supplies in schools may need to be addressed. Medical facilities will require an additional focus on wheelchair handles and wheel grips, computer stations, IV poles, divider curtains, blood pressure equipment, bed stands, food delivery carts, laundry and trash containers, and nurse call buttons. While not a touchpoint that typically gets addressed by the restoration contractor, clients should be advised to remind occupants to frequently wipe their cell phones and other mobile devices during pandemics and times of increased disease transmission.

Typically, a saturated cleaning disinfectant wipe or a trigger sprayer and a wiping cloth are used for wiping most touchpoints. When using a trigger sprayer and cloth, spraying the cloth and then wiping is preferable to spraying the surface. Avoid spreading contaminants that have transferred to the cloth during wiping.

If it is an allowable application method under the EPA registration for the particular chemical, substituting pump up devices that deliver the chemical product as a foam is a technique that has multiple advantages over a sprayer for wiping touchpoints. A foam application allows the worker to see what has been covered, allows the product to stay on the surface longer without drying, and uses significantly less of the cleaning product. For facilities with a large number of desks, tables, or counters, using a foam applicator and squeegee to remove the residue into a rag or disposable towel is another cleaning method that may be used.

Each situation presents its own challenges, and the specific examples provided in this section are not appropriate for all projects. Each project should be evaluated for procedure and methods that are appropriate to meet the goals of the client. Proper touchpoint wiping may require a facility specific checklist of critical touchpoints, providing the checklist to workers with training on the particular products and application methods to be used, and allowing adequate dwell time for the cleaner/ disinfectant. Additionally, appropriate supervision of the cleaning

activities, as well as post cleaning evaluation (see section below on Post-work Project Evaluation for additional details) must be part of proper touchpoint cleaning.

Applying Disinfectants

Wiping touchpoints is crucial to reducing the spread of COVID-19. To further reduce the potential for infection transmission, touchpoint wiping should be paired with the application of disinfectants to the many surfaces where viral contaminants may exist. Applying appropriate disinfectant solutions as an aerosol in accordance with the product's label is an effective way to reduce microorganisms on walls, floors, and horizontal surfaces. Certain materials and methods may be incompatible with the uses of the building and may void a rating the structure has obtained for energy or environmental efficiency.

There are numerous processes and systems that can be effective in completing large area disinfectant application. Many disinfectant products currently used in the restoration, medical, and food service industries include label directions for use with a trigger sprayer, pump sprayer, misting equipment, airless sprayer, electrostatic sprayer, or ultralow volume (ULV) fogger.

Several steps are typically completed prior to the broadscale application of disinfectants to surfaces. Covering return air vents will prevent migration of the disinfectant into the equipment and into other areas. While air duct cleaning can be incorporated into response procedures, the EPA has specific guidance[2] regarding which products can be used in HVAC systems. At this time, it is unclear whether an HVAC or air conveyance system plays a role in the spread of SARS-CoV-2, and the inclusion of HVAC cleaning and decontamination therefore may not be necessary.

The CDC recommends opening doors or windows to reduce the level of airborne droplets. HEPA filtered negative air machines can be used as air scrubbers to reduce the airborne particulates that may be dislodged from surfaces by the treatment process.

After selecting an approved combination of disinfectant product and application method, the prepared disinfectant should be applied in accordance with label directions. Depending upon the facility and specific space, when walls are considered a potential touchpoint, wall surfaces should be included in the application of the disinfectant. Shelves, bookcases, file cabinets, or other fixtures may require a higher starting point. Application should begin at the designated upper height and move down to floor level in overlapping passes to ensure that every part of the surface to be treated is adequately covered.

Depending on the listed product dwell time and the application method, multiple applications of disinfectant may be required to keep the surfaces wet for the minimum time. Vertical surfaces in particular can be challenging to apply disinfectants to according to the label's dwell time requirements. Applying disinfectant products with short dwell time or that can be foamed to allow for the appropriate surface wetting may be necessary. Careful assessment of the

[2] https://www.epa.gov/pesticide-labels/use-disinfectants-and-sanitizers-heating-ventilation-air-conditioning-and

surfaces will be necessary to prevent the product from streaking or running while keeping the surface wet for the recommended contact time.

Dust control methods (i.e., suppression and capture) are recommended when wiping to prevent the spread of SARS-CoV-2. Floors and other horizontal surfaces should be treated after the product has been applied to all walls. Floor surfaces should be free of visible debris before treatment. In most cases, HEPA vacuuming of a floor will remove the majority of visible debris. Mopping, damp-mopping, and other wet wiping methods, as well as dust control materials like dry microfiber mops and cloths may be appropriate for floors. Methods that are not recommended include regular vacuuming, dust mopping, or sweeping as these methods can easily aerosolize viral fragments, along with other unwanted dust. Disinfectant should be applied to floors in a pattern that allows the operator to finish at an exit without having to walk over the wet floor.

Post-work Project Evaluation

The combination of touchpoint wiping and application of a disinfectant to other surfaces is a commonly accepted strategy to break the chain of infection. Although these efforts are designed to affect microorganisms that are too small to see without magnification, a detailed post work visual inspection is still the first step to evaluate the effectiveness of the efforts to control SARS-CoV-2. A white cloth should be wiped over representative touchpoints that have been cleaned and should not reveal any discoloration or residue. Any visible debris deposited on the cloth (not disinfectant residue) indicates a need for re-wiping of all touchpoints represented by the sample.

If desired by the contractor or the client, analytical methods can be used to supplement the visual inspection. A useful process that provides on-site results is a swab collection of surface samples using an adenosine triphosphate (ATP) meter. ATP is an organic compound found in all living things, but viruses are not alive, so ATP meters do not identify viral contaminants since those organisms do not produce ATP. However, the overall reduction in biological contaminants is an excellent surrogate measure of cleanliness since selective cleaning of specific contaminants is impossible (e.g., it is not possible to remove bacteria and leave behind just the virus).

Given the ability of ATP to measure general biological residue, representative testing using an ATP meter can be conducted if additional assurance of project effectiveness is desired. Sample results should be compared to guidelines for hygiene surface testing provided by the manufacturer of the specific ATP meter. Another approach to documenting the effectiveness of the process is to utilize the ATP meter on a number of representative touchpoints prior to the start of wiping and again at the end to compare the level of reduction that was achieved. Disinfectants may affect ATP results, so ATP testing is performed after wiping but before the application of disinfectant.

Another useful process that has recently emerged is Polymerase Chain Reaction (PCR) testing. The PCR technique allows pinpointing specific genetic markers (i.e., DNA, RNA) in a given sample. Quantitative Polymerase Chain Reaction (qPCR) tests for surface sampling are now available, as long as laboratories and portable real-time quantitative polymerase chain reaction (RT-qPCR) devices offering such analyses follow the CDC's guidelines and are validated using bioinformatics for SARS-COV-2. Such testing will confirm if coronavirus genetic material was detected or not detected in the sample. Such a process can provide confirmation of viral fragment removal for a targeted investigation of a suspected area.

Project Documentation

Regardless of the technology and chemistry used for touchpoint wiping and surface sanitization treatment, the restoration contractor will frequently be expected to document the work to confirm that it was completed correctly. Project documentation for COVID-19 activities commonly includes a written description and photographs or video recordings of the work and of any isolation barriers set up as part of the wiping and disinfectant application process.

Specific types of (e.g., respiratory protection, suits, gloves) PPE for workers should be documented. Records should also be kept regarding the specific equipment used for chemical application, including the process that was used to wipe the equipment prior to adding the selected antimicrobials. These records can confirm how the product was mixed if it was not a ready-to-use cleaner/sanitizer. The correct application rate is another crucial data point to be documented. Evidence of appropriate dwell time, as noted from the product label, also needs to be recorded. Finally, if the cleaning/sanitizing product requires rinsing or neutralization, the procedures to comply with that requirement should be fully explained.

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RIA/IICRC COVID-19 Joint Task Force

This document is managed by the RIA and IICRC *COVID-19 Joint Task Force* (JTF). The JTF is comprised of a group of volunteers, appointed by the IICRC and RIA. The members are listed here alphabetically:

- Brandon Burton, WLS, MWR, IICRC Standards Chair, Next Gear Solutions, BIEC Consulting
- Mark Drozdov, IICRC Board of Dir., Vice Chair S410 Infection Control Consensus Body
- Norris Gearhart, CR of Gearhart and Associates
- Michael Pinto, FLS, CSP, CMP of Wonder Makers Environmental

Reviewers and Contributors

The following individuals and organizations have contributed content or peer review or other support to one or more versions of the joint COVID-19 reports. By listing below, the individual did not necessarily directly contribute to this specific report. They have however contributed time, expertise, peer review or other support to one or more of the RIA/IICRC Joint COVID-19 reports, and are listed here alphabetically:

- Leslie Anderson, Vice President of Training & Launch, Paul Davis Restoration
- J. Scott Armour, M.S., Armour Applied Science
- Jaclyn Carpenter, Ideal Restoration
- Kristy Cohen, CEO of Restoration Industry Association
- Hugh Crisp, BluSky;
- Edward H. Cross, Esq., Law Offices of Edward H. Cross; RIA Contractor Advocate
- Graham Dick, Infection Control Training Group; Chair, S410 Infection Cont. Consensus Body
- John DiMenno, CR, CMRS, CMP, WLS, Romualdi Davidson and Associates
- Peter P. Duncanson, Director of Commercial Operations, ServiceMaster Restore
- David Dybdahl, CIC, CPUC, ARM, American Risk Management Resources Network
- Josh Hobbs, Dalworth Restoration
- Mark Meece, Complete DKI;
- Tom Peter, CIH, Insurance Restoration Specialists
- Kent Rawhouser, CMP, WLS, A&J Restoration Services
- Lee Senter, CEO of Dryit.ca and IICRC Standards Vice Chair
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- Halden Shane, M.D., Steramist
- Shawn Silliman, CR, WLS, First Restoration Services

- Mark Springer, CR, RIA President, President of Dayspring Restoration
- Joe Spurgeon, Ph. D., CIH
- Bruce White, SGS Forensic Laboratory

The COVID-19 Joint Task Force is a collaboration of the Institute of Inspection, Cleaning and Restoration Certification (IICRC) and the Restoration Industry Association (RIA). The IICRC is the leading certification body in the cleaning and restoration industry, and an ANSI Accredited Standards Developer. For more information on the IICRC, visit www.IICRC.org. The RIA is the only international, professional trade association for the cleaning and restoration industry. Its national and international member firms specialize in cleaning, treating and repairing damaged buildings and their contents. RIA sponsors education, training, and certification programs, and is the leading voice advocating for the rights of restorers. For more information, visit www.restorationindustry.org.