



The COVID-19 Pandemic¹

A Report for Professional Cleaning and Restoration Contractors,

Fourth Edition,

July 30th 2020

¹ Formerly titled "Assisting Clients with COVID-19 Concerns" and "Managing Emergency Services Operations"

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States Occupational Safety and Health Administration (OSHA), the United States Environmental Protection Agency (EPA) and the American Industrial Hygiene Association (AIHA).

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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 concerns may exist and still be present, including those represented by the acronym 'PALMS' (Pandemic/PCBs, Asbestos, Lead/Legionella, Mold/Metals, Silica/Safety/Sustainability). Because other hazards may exist within the work site, a proper and complete hazard assessment is still a vital part of your overall safety and health processes. However, the assessment of risks associated with hazards other than COVID-19 is beyond the scope of this document.

NOTE: Many organizations use the phrase 'clean and disinfect' to describe the processes discussed in this document. This report intentionally uses terms that describe the actual activity performed by the contractor (e.g., contractors do not 'clean and disinfect' a surface, structure or space, they perform services such as 'wipe surfaces' and 'apply a disinfectant').

Preface

The restoration industry has extensive experience in assisting individuals and organizations when their lives or businesses have been disrupted by catastrophic events such as floods and fires. Clients continue to turn to restoration professionals to assist them in properly responding as the coronavirus pandemic, referred to as “COVID-19”, moves into different phases, to include business re-opening². In such circumstances, it is imperative that restoration professionals be clear about what their services can, and cannot, accomplish for the client.

It is also important that restoration contractors continually evaluate and document their own internal processes and procedures to ensure that they are not putting their workers or business at risk as the demands generated by the pandemic change. As “stay at home” and “shelter in place” emergency orders are modified by local authorities, thoughtful planning is required by restoration contractors regarding how to integrate specialized provisions while assisting clients with reopening and with traditional cleaning and restoration activities. This report addresses both the internal dynamics of operating a restoration company during the pandemic, as well as the specifics of the services that are offered to effectively meet customer needs while meeting the requirements of local health authorities.

This document has been prepared by a wide range of experts from the cleaning and restoration industry to assist contractors in managing the risks arising from efforts to provide mitigation services related to the COVID-19 pandemic. It is important to note that this report, and the processes described in it, are not intended for the general public. Although there is a wealth of excellent information in this document that can be useful to building owners, property managers, the healthcare industry, and other stakeholders, the primary focus is directed to the professional cleaning, restoration and remediation industries.

As such, the information presented here is based on the understanding that, by the time cleaning and restoration contractors are involved, a potential virus exposure problem exists. For that reason, the authors took into consideration the frequency, duration and variety of the work tasks performed by field crews which result in an elevated risk of exposure. While the techniques and procedures detailed in this document can supplement often vague guidance related to “cleaning and sanitizing” structures found in various government guidelines; the procedures appropriate for contractors may be more comprehensive than necessary for other users. Therefore, conducting a project risk assessment, as described in section 4.2.3 of this document, is a critical first step for all users of this document. Such a risk assessment should always be a first step before deciding which of the work procedures should be employed on a particular project.

This report is based on extensive industry experience and, to the extent possible, incorporates portions of the guidance provided by various authorities and regulatory bodies, referenced in *Appendix 2, Helpful Links and Resources*. However, the pandemic is a rapidly evolving situation

² AIHA Industry Specific Guidance: <https://www.backtoworksafely.org/>

and more research is needed. **This 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 SARS CoV-2.** Each project is unique and requires a specific work plan, and it is not the goal of this document to offer solutions for every scenario.

Restoration contractors should exercise sound professional judgement to determine the best work plan for each project on a case-by-case basis by taking into account the site conditions and all other relevant factors. 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, vacancy or unoccupied time that may mitigate the risk of the virus³, the availability of resources, and other factors.

Accordingly, this report is intended solely for general informational purposes. It is a potential supplement to the restorer's other training, experience, and evolving 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, technical, medical or legal advice.

Common sense should prevail in all cases, and the restorer has 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 industrial hygiene, medicine, construction, and/or law. The pandemic does not lend itself to a one-size-fits-all approach, so deviations from the information discussed in this report may be appropriate and preferable, based on the requirements of the project and the professional judgment of the contractor.

³ CDC Guidance on Environmental Viability SARS-CoV-2: https://wwwnc.cdc.gov/eid/article/26/9/20-2267_article

1. Basic Information About Coronavirus

Coronaviruses are a type of pathogen that often causes respiratory diseases in people and animals. In the Fall of 2019, a new 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 or SARS CoV). As such, the most recent coronavirus was named “SARS-CoV-2” by the World Health Organization (WHO). Exposure to SARS-CoV-2 can lead to a specific form of illness named “coronavirus disease 2019” - abbreviated “COVID-19.” This document will refer to SARS-CoV-2 in reference to the processes and procedures discussed.

As of the publication date of this document, neither a preventative medicine nor a vaccine are available. According to the CDC, nonpharmaceutical interventions (NPIs) are an important part of pandemic mitigation. The CDC states “NPIs are among the best ways of controlling pandemic flu when vaccines are not yet available⁴.”

Although COVID-19 may infect any individual in a population, 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 illness⁵. This means that medical facilities and eldercare accommodations are especially vulnerable to outbreaks. Further, infection is likely in any facility where people are unable to safely distance from others without respiratory protection.

2. Infection Control Principles

Decades of scientific studies and practical experience have shown that effective control of infectious agents in the population requires a combination of adjusting people’s behavior and taking steps to stop the spread of contamination from airborne droplet transmission and surface contact exposures. This dual approach to infection control is necessary for COVID-19, as the best available information indicates that it could be spread both by airborne droplet transmission (e.g. inhalation of the airborne virus and contact of airborne virus with mucous membranes), and by secondary exposure of uninfected people to objects and surfaces containing active virus⁶.

Current or past presence of infected individuals can cause other occupants to become infected^{7,8,9}. The recommendations in this document are designed to address secondary human

⁴ <https://www.cdc.gov/nonpharmaceutical-interventions/index.html>

⁵ <https://www.cdc.gov/coronavirus/2019-ncov/faq.html#People-at-Higher-Risk-for-Severe-Illness>

⁶ https://wwwnc.cdc.gov/eid/article/26/9/20-1798_article?deliveryName=USCDC_333-DM32083#tnF1

⁷ https://www.nejm.org/doi/suppl/10.1056/NEJMc2004973/suppl_file/nejmc2004973_appendix.pdf

⁸ <https://www.nejm.org/doi/pdf/10.1056/NEJMc2004973>

⁹ <https://www.nih.gov/news-events/news-releases/new-coronavirus-stable-hours-surfaces>

transmission through the cleaning of facilities to prevent the spread of the virus from touching of contaminated surfaces within buildings. While the exact extent of disease transmission from contact with surfaces is currently unknown, initial indications are that prolonged or repeated exposure to contaminated surfaces can lead to infection. Therefore, cleaning surfaces and applying a disinfectant are important risk mitigation techniques.

While 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 can help their clients achieve this objective by assisting them in reducing secondary transmission from surfaces in their workplace. 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. It is therefore important for the contractor to inform their client of the need for a plan to maintain a healthy workplace.

3. Providing COVID-19 Services

With the proper training, equipment, supplies, work practices, respiratory protection and personal protective equipment (PPE), restoration contractors who have experience dealing with other hazardous microorganisms, such as those who perform sewage mitigation and mold remediation, may have the qualifications to offer valuable services to combat COVID-19. For example, the most basic service will likely be detailed wiping of touchpoints followed by the application of disinfectants to those and to other surfaces.

It is important that restoration contractors communicate clearly and use consistent terminology when describing their 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 disinfectant has been tested against 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 US EPA registered

disinfectant in accordance with the application directions provided by the master label. See Section 3.1.4 for more information on disinfectants¹⁰.

Even with that distinction in language, the cleaning of touchpoints followed by the 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 healthcare and eldercare industries include temporary isolation of rooms or areas to create negative pressure enclosures for use as treatment or quarantine spaces. Infection Control Risk Assessment (ICRA) guidelines provide helpful information to contractors working in healthcare 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 Air Filtration Devices (AFDs) that contain properly fit and verified HEPA filters can also improve the environment by reducing the level of airborne particulate that presumably includes virions and/or viable viral RNA. The removal of aerosolized particulate during the cleaning process may further improve the overall cleaning efficacy and reduce risk.

According to the CDC, the washing of soft goods may assist in reducing the risk of spreading SARS-CoV-2 through contact with contaminated clothes, linens, and shoes. The CDC guidelines provide a helpful baseline for this work. The restoration contractor should be aware that work clothes, shoes, PPE and cleaning cloths may be vectors for spreading SARS-CoV-2 during the mitigation process and should therefore take appropriate precautions to limit spread.

3.1 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 (see Appendix 1, *Training and Education*). Those with less experience in properly dealing with other biological contaminants will have a steeper learning curve and more liability exposure. One of the ways a person can manage risk and shorten the learning curve is to review reopening guidance such as that available from the CDC¹¹.

3.1.1 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

¹⁰ USEPA (2020) Compliance Advisory, “What You Need to Know Regarding Products Making Claims to Kill the Coronavirus Causing COVID-19.” May 2020

¹¹ <https://www.cdc.gov/coronavirus/2019-ncov/community/reopen-guidance.html>

insurers, many of the risk management practices common in the cleaning and restoration business will need to be modified in response. Over the past five years, insurance companies have been adding optional “communicable disease” exclusions onto property and liability insurance policies. In response to COVID-19 communicable disease exclusions have become a standard practice in insurance companies.

A communicable disease exclusion specifically eliminates coverage for a loss caused by a virus, which includes COVID-19. Contractors performing COVID-19 cleaning services are also affected by pollution exclusions and exclusions for other biohazards including fungi and bacteria. Liability insurance policies containing these exclusions are inadequate protection for firms providing any type of biohazard cleaning services.

Contractors Pollution Liability (CPL) insurance can fill the liability insurance coverage gaps created by pollution, biohazard and communicable disease exclusions in General Liability insurance policies. CPL policies were created to insure contractors work on Superfund sites and were not originally designed to cover claims arising from biohazards. Many CPL policies sold today contain communicable disease exclusions, or fail to include microbial substances as covered “pollutants” rendering them useless for a COVID-19 related claim.

In response to the COVID-19 pandemic, innovative insurance companies have modified their CPL policy in various ways to provide an affirmative grant of coverage for losses arising from COVID-19 related claims. A CPL policy with an affirmation that the insurance company intends to insure the contractor for losses associated with biohazards including viruses, is essential coverage for any firm in the cleaning business today.

CPL insurance for biohazard cleaning is available to firms who can demonstrate proficiency in biohazard cleaning services through specialized environmental insurance brokers. Demonstrated proficiency varies by insurance company. Some common denominators for proficiency include trained staff with prior biohazard work experience, updated training specific to the coronavirus and specialized contracts (discussed below).

3.1.2 Managing Risk In Contracts

The failure to specify terms and conditions in contracts 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 client 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 serves 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 the goal of the work is not to remove or

- eradicate all viruses, and that the client 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, should 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 client for certain losses caused by those under the client'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 client's consent for the use of the products.
 6. To avoid confusion and expensive conflict if testing is to be performed, the contract can specify the criteria to be used to determine the success of the work or specify testing be performed by a qualified third party.
 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.
 8. Repeated use of certain products may result in corrosion or discoloration of materials to which they are applied.
 9. Use of Hazard Communication Training and a Worker Acknowledgment Form to limit future worker claims from COVID 19, other microbial agents, or disinfectants may be beneficial.

3.1.3 Personal Protective Equipment (PPE)

A thorough review of company policies related to site risk assessment, use of PPE, respiratory protection use 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, that is assigned to crew members who perform any type of work, must comply with regulations established by authorities having jurisdiction such as OSHA, Health Canada (and provincial agencies, such as the Ontario Ministry of Labour), Safe Work Australia and Worksafe NZ. Typically, regulatory requirements include employee medical evaluation, fit testing, PPE training, and a written respiratory protection program. In contrast, providing surgical style masks to employees to control the spread of sneeze and cough droplets 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. (refer to Section

4.2.2). 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 extent the use of or reuse single-use products or perform extended use of limited use devices. As an example, the CDC and OSHA have already posted procedures explaining how personnel may have to store and re-use single use disposable respirators^{12,13,14}. Contractors may have to use PPE different than that to which they are accustomed. Shortages of disinfectants, FDA-listed hand sanitizers, cleaners, and disinfectants may also occur. A contractor's failure to adequately work around such challenges could have a negative impact on their regulatory and insurance obligations in performing the work.

3.1.4 Disinfectant Selection

Choosing a disinfecting product can be confusing, because commonly used antimicrobial products have not been tested or received an EPA registration specifically for cleaning surfaces to inactivate the virus that causes COVID-19. In this situation, the EPA falls back on its "Emerging Pathogens Program" to provide guidance in evaluating a product's ability to inactivate the virus, after cleaning.

As new pathogens emerge, the EPA regulations 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 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. EPA has developed a compliance advisory and a list of disinfectants that it believes to be effective based on testing related to similar viruses, including SARS CoV-1¹⁵.

¹² CDC Respirator Strategy: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html>

¹³ CDC Respiratory Reuse: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>

¹⁴ OSHA Respirator Decontamination and Reuse Guidance: <https://www.osha.gov/memos/2020-04-24/enforcement-guidance-decontamination-filtering-facepiece-respirators-healthcare>

¹⁵ USEPA Compliance Advisory (May 2020): <https://www.epa.gov/compliance/compliance-advisory-what-you-need-know-regarding-products-making-claims-kill-coronavirus>

In the United States, review of the product label should result in a full understanding of application methods and specific dwell time or “wetting time” as directed on the product label, which may include a review of the full master label on the EPA website¹⁶. 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 (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.

A product used inside an HVAC system must have specific EPA approval for that usage.

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.

3.1.5 Equipment Care

It is important to note that equipment used when COVID-19 is a concern should be moved within the worksite in a manner that prevents cross contamination, and scrupulously cleaned and treated with a disinfectant between projects. Prefilters in AFDs should be removed and bagged, and the unit temporarily 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. Consider quarantining AFDs used on COVID-19 projects or replacing the HEPA filter prior to use on subsequent projects.

3.1.6 Field Crew Safety

The minimum PPE for individuals potentially exposed to COVID-19 includes gloves, eye protection, and respiratory protection. Typically, workers in the restoration industry use gloves, respirators, protective eyewear and supplementary 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

¹⁶ EPA Label Search: <https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1>

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 can be 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 3.1.3 Personal Protective Equipment (PPE).

For most work conducted by restoration contractors related to mitigation of SARS-CoV-2, an N-95 filtering facepiece is the minimum recommended protection against possible exposure to the viral contaminants. A higher level of respiratory protection, if necessary, 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 in addition to safety glasses can be used in order to minimize fogging and to protect the eyes from exposure to contaminants such as liquid splash or flying debris. A full-face negative pressure respirator with P100 HEPA (e.g. P-100) filters can be used to provide respiratory and eye protection in one device. Generally, a greater level of protection is provided by a properly worn respirator 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. Consultation with a qualified third party may be necessary to determine the needed level of respiratory protection.

Regardless of what PPE is used to protect workers, it is necessary to train workers how to use respiratory protection and PPE 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, suits, and respirators.

Contractors should emphasize to their crew members and clients that helping to 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.

3.2 COVID-19 Services

As facilities begin to re-open with the easing of shelter in place orders, the primary response useful to businesses 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 (see 3.1.4 *Disinfectant Selection*).

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 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 apply the disinfectants directly and purposefully 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 both inappropriate and can create additional health risks for workers and/or building occupants and should be avoided as a stand-alone procedure.* Any type of fogging or spraying must be conducted in full compliance with the product label instructions, including the prior cleaning of surfaces.

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.

3.2.1 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, computer keyboards and mice, 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 given special attention. 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. The item used to decontaminate the surface may quickly itself become a vector for contamination of uncontaminated surfaces. Workers should be provided with instruction to frequently change cleaning items.

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 3.2.3 Post-work Project Evaluation) should be part of the touchpoint cleaning protocol.

3.2.2 Applying Disinfectants

Wiping touchpoints is a crucial part of maintaining the health of the indoor environment. 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 accumulate. Applying appropriate disinfectant solutions as an aerosol in accordance with the product's label is an effective way to reduce microorganisms on surfaces. However, 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.

Once cleaning has been completed, 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 with critical barriers 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 guidance¹⁷ 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, however documentation is available from the American Society of Heating, Refrigeration and Air-Conditioning Engineers ([ASHRAE](#)) that discusses this topic¹⁸.

Ventilation with effective airflow patterns is a primary infectious disease control strategy through dilution of room air around a source and removal of infectious agents¹⁹. Because of some of the significant drawbacks of opening doors or windows (e.g., interference with temperature regulation, introduction of humidity, pollutants, allergens, etc.). HEPA-filtered AFDs can be used as air scrubbers to reduce the airborne particulates that may be present or 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. 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 surfaces will be necessary to prevent the product from streaking or running while keeping the surface wet for the recommended contact time. It is important for the contractor to communicate to the customer that any use of spraying or fogging may damage electronics and that corrosion risks increases with the number of applications. As such, covering electronics while disinfectants are being applied should be considered

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

¹⁷ <https://www.epa.gov/pesticide-labels/use-disinfectants-and-sanitizers-heating-ventilation-air-conditioning-and>

¹⁸ ASHRAE Position Document:

https://www.ashrae.org/file%20library/about/position%20documents/pd_infectiousaerosols_2020.pdf

¹⁹ Pantelic and Tham, 2019: https://www.ashrae.org/file%20library/technical%20resources/covid-19/64-65_ieq_pantelic.pdf

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 portion of the floor where the disinfectant was applied. The applicator should then change or disinfect their shoe covering prior-to or upon exiting the workspace.

3.2.3 Post-work Project Evaluation

The combination of touchpoint wiping, followed by application of a disinfectant to surfaces is a commonly accepted strategy to assist in breaking the chain of infection. As noted previously, most disinfectants are designed to work after “cleaning”, so using a disinfectant without touchpoint wiping is a violation of the label directions. Therefore, any project evaluation should include a heavy emphasis on determining the adequacy of worker training and the quality of supervision offered to the workers in order to gauge the effectiveness of the touchpoint wiping process.

A physical review of the wiped touchpoints is another critical step to evaluate the effectiveness of the efforts to control the transmission of SARS-CoV-2, despite the fact that the wiping efforts are designed to affect microorganisms that are too small to see without magnification. A detailed post-work visual inspection is enhanced with the use of a white glove or cloth. When the glove or cloth is wiped over representative touchpoints that have been cleaned, the fabric should not reveal any discoloration or residue. Any visible debris deposited on the cloth (not disinfectant residue if the wiping is done after application of a disinfectant) indicates a need for re-wiping of all touchpoints represented by the sample(s).

If desired by the contractor or the client, a number of different types of on-site test methods and off-site sample analysis may be used to supplement the visual inspection. With the rapidly changing innovations in testing and sampling related to SARS-CoV-2 a contractor is well advised to work with a qualified third party to decide which of the potential evaluation method(s) provide objective information that would be appropriate to be used in conjunction with a detailed visual inspection. Third parties may discuss the use of evaluation or verification of cleanliness through the use of a separate organism or substance. Some of these methods may include:

- Laser particle counters to evaluate airborne dust concentrations.
- Collection of surface sample swabs measured using an on-site adenosine triphosphate (ATP) meter.
- Collection of surface sample swabs measured using an on-site analytical methods for detecting fungal contaminants.
- Application of a tracer agent, such as an invisible fluorescent dye, prior to cleaning at select locations that will create a fluorescent response when exposed to UV light for any residual tracer not properly cleaned from a surface.

- Application of surrogate bacterial or viral organisms to select locations prior to cleaning with wipe sampling and lab analysis of those same surfaces following the wiping portion of the process.
- Surrogate bacterial or viral organisms can also be applied prior to application of the disinfectant to evaluate that part of the contractor's service.
- Surface wipe samples subjected to analysis using a reverse transcriptase quantitative polymerase chain reaction (RT-qPCR) process in an off-site laboratory or with a dedicated field portable instrument.

Given that each of these described evaluation methods has limitations as well as advantages, the discussion with a qualified third party needs to include the rationale for selecting a particular option as well as details regarding what constitutes a successful test as compared to a failure. Clear communication of the limitations and pass/fail criteria is important prior to the start of work.

3.2.4 Project Documentation

Regardless of the technology and chemistry used for touchpoint wiping and broadscale application of a disinfectant, 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.

4. Managing Emergency Service Operations

4.1 Introduction

Restoration contractors can only provide useful services to their clients if their company procedures and general management practices are capable of supporting such work. This

fourth section focuses on the considerations and activities necessary to strengthen the foundation that supports the field activities.

4.2 Emergency Service Procedures

The CDC, the US Occupational Safety and Health Administration (OSHA), the World Health Organization (WHO) and other authorities provide up to date recommendations and procedures to minimize the risk of contracting and spreading COVID-19. Keep up to date as the information evolves, and experts gain a better understanding of how COVID-19 is spread. Use official resources such as the WHO at www.WHO.int and the CDC at www.CDC.gov.

4.2.1 Prioritize Your Work

To minimize the exposure of your work force, the first line of defense is to adopt social distancing behavior. This means reducing the number of times your organization requires employees to be in contact with one another and the customers you serve. Some of the options are listed below:

1. Prioritize projects and services to those where response time is essential to the successful project outcome.
2. Consider which projects and services have the greatest potential to serve and protect the greatest number of individuals in your community.
3. If called upon for disinfection of COVID-19, read and understand the currently available resources. Refer to section 3, *Providing COVID-19 Services*.

4.2.2 Perform a Risk Assessment

The goal of risk management is to identify, assess and mitigate the potential risks of exposing your staff to COVID-19. The actions needed vary depending upon the job tasks associated with their essential work. An assessment of risk is a critical part of managing potential exposure. Both for good practice, and to be in conformance with numerous safety rules, the contractor should evaluate each project and develop a written risk assessment²⁰. Risks should be prioritized, mitigation actions based on that prioritization, and risk reducing actions communicated to any persons on site.

The reader of this document must consider the limitation disclosed in the disclaimer, as stated in the beginning of the document, which reads *“Because other hazards may exist within the work site, a proper and complete hazard assessment is still a vital part of your overall safety and health processes. However, the assessment of risks associated with hazards other than COVID-19 is beyond the scope of this document.”*

²⁰ <https://www.osha.gov/shpguidelines/hazard-identification.html>

The assessment should follow the workflow, from beginning of the day to end of day, from start of task to end of task. Further, it is important to be dynamic and fluid and adjust to changes in personnel, situation, and advisories from public health and government officials. Although each situation will be different, some of the common risks and corrective actions related to COVID-19 situations may include:

1. Move administrative staff to remote, work from home settings, as appropriate or required. Provide appropriate guidance and resources as necessary, such as available from the CDC and World Health Organization, for how to effectively manage home isolation and working from home. Consider that most of these individuals are not accustomed to working at home and will require guidance in establishing a homework site. It can be helpful to begin each day with a team update to ensure productive interaction and communication and provide a written work from home or telecommunication policy for your employees.
2. Apply any necessary or required administrative controls to reduce potential for exposure. This may include assigning essential work that requires on-site activity to those that are not in high risk groups (see current guidance from CDC for definitions of high risk groups²¹).
3. Provide training as necessary or required on personal and public safety to those that will be called upon to work with others, including those individuals working in your physical work location (e.g., warehouses, shops, offices, supply areas).²² This may include staggered work reporting times and social distancing at worksites (e.g., maintaining a distance of at least six feet between individuals). Include appropriate training on social distancing (i.e., physical distancing), even in work vehicles, which may include spacing and wearing PPE (at minimum, respiratory protection).
4. If any of your personnel or their household members are known or suspected to be infected with COVID-19, or are showing symptoms identified by the WHO or CDC that are common to COVID-19 infection, they should follow CDC guidance and stay home.
5. Provide for measures to mitigate spread of infection amongst staff in the event of positive infection. Design protocols to reduce the risk of employee exposure to COVID-19. This will in turn reduce the likelihood that your employees will need to self-isolate, allowing you to continue your business operations. A protocol for how you will inform team members of a positive identification of COVID-19 amongst your staff is part of these measures.
6. Individuals who have recovered from COVID-19 should practice self-quarantine if recommended by the CDC before returning to work.²³ This instruction from the CDC is likely to change as new information is obtained regarding the recovery from COVID-19. It is therefore imperative that you remain current on the guidance on this topic.

²¹ <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-increased-risk.html>

²² <https://www.osha.gov/Publications/OSHA3990.pdf>

²³ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-in-home-patients.html>

7. Prepare your work environment in accordance with OSHA and CDC guidelines for any essential staff who must continue to physically appear at your place of business²⁴. Refer to *OSHA Worker Protections Against Occupational Exposure to Infectious Diseases*²⁵. OSHA will assess an employer's pandemic plan and address any hazards. Many states require employers to develop a written safety plan outlining how its workplace will prevent the spread of COVID-19²⁶.
8. When working in occupied spaces, expand the risk assessment to include risks to both the work crew and occupants.

4.2.3 Protect your Field Staff and the Public

For essential work activities that require staff to perform duties in the field, more specific controls and training should be deployed to minimize risk. A full, site-specific hazard assessment is still a critical part of your safety and health program and may be required by local, federal or provincial law²⁷. The hazard assessment, when performed, shall be certified by the employer's designated, qualified and competent staff member^{28,29}. The practices and methods stated below are in addition to the identification, evaluation, prevention and control of other job site hazards. For the purpose of this document, the risk assessment being discussed is in regard to the risks associated with COVID-19 exposure.

For information on suggested training for field staff, refer to *Appendix 1: Training and Education*.

4.2.4 For any service or emergency response

1. Until such time that the COVID-19 pandemic is determined by local, federal or provincial regulatory bodies to no longer be a significant threat, treat all projects as though there may be or has been a COVID-19 infected individual within the property or jobsite. Consideration for whether COVID-19 is deemed to be a significant threat may include an evaluation of the current, local transmission of COVID-19, as reported by state, county, or provincial health departments. The presence of ongoing community transmission is one factor considered to determine the local threat level. Consideration may also include the status of current

²⁴ <https://www.osha.gov/Publications/OSHA3990.pdf>

²⁵ https://www.osha.gov/SLTC/bloodborne pathogens/worker_protections.html

²⁶ New York State COVID-19 Safety Plan Template:

https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/NYS_BusinessReopeningSafetyPlanTemplate.pdf

²⁷ <https://www.osha.gov/shpguidelines/hazard-identification.html>

²⁸ <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132>

²⁹ <https://www.osha.gov/shpguidelines/hazard-identification.html>

orders in effect for the local area related to business operation, travel and social activity restrictions.

2. Ensure field staff are equipped with adequate cleaning and disinfection resources. Active field staff should wash hands frequently with soap and water, and for a minimum of 20 seconds. Use disposable hand sanitizing wipes when hand washing is not possible. If necessary, use hand sanitizer. If necessary, use only FDA-listed hand sanitizers, and ensure that hands remain wet for a full 30 seconds to achieve efficacy. Designate a specific location at the job site for hand washing, and ensure the designated location is immediately adjacent to the staging/doffing area and properly cleaned before and after daily work activities.
3. Train employees on proper use and selection of respiratory protection and PPE³⁰ before employees start a project or task they are unfamiliar with. Many employees who are not familiar with the proper use of PPE or its purpose will nonetheless be asked or required to use it for protection from COVID-19. One mistake can be dangerous. For example, implement hand washing procedures each time disposable gloves are removed, and training should include demonstration for how to properly remove PPE, such as turning gloves inside out during removal. Written instructions alone are not sufficient.
4. Field staff should use disposable N-95 respirators or appropriate substitute (see number 6 below), disposable gloves (e.g., latex, nitrile, vinyl) and eye protection (e.g., safety glasses, goggles, face mask, full face respirator). Additional PPE based on task and location may be necessary. For a more thorough discussion related to considering a higher level of respiratory protection, refer to section 3.1.3, *Personal Protective Equipment*.
5. If gloves are determined necessary, wear disposable gloves that are not likely to tear or become compromised given the task. Consider double-gloving to increase durability and reliability of protection, or wearing puncture resistant gloves (e.g., leather, nylon) as a top layer when needed. Clean or change gloves frequently while working to prevent cross contamination. Discard gloves and wash hands after cleaning and disinfecting tools and equipment used at the job site, but before entering the work vehicle.
6. The availability of many traditional PPE items is significantly limited, and many jurisdictions are mandating that any available supplies be reserved for the healthcare and first responder industries. When faced with limitations for acquiring traditional PPE inventory, other items capable of providing the intended protection may be necessary as a substitution. Evaluate possible substitutions carefully to ensure they will provide an appropriate level of protection and consider how you will manage existing inventory to maximize its use in light of these limitations. Consider available guidance from local, federal, provincial and state health agencies, such as the current guidance from the US FDA³¹. When standard PPE, such as NIOSH rated N-95 respiratory protection, is not available due to market shortages,

³⁰ <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132>

³¹ <https://www.fda.gov/medical-devices/personal-protective-equipment-infection-control/faqs-shortages-surgical-masks-and-gowns#kn95>

document the situation and conditions, the name and model number of the substitute product, and the justification for selection of the substitute.

7. The use of controlled ventilation of the workspace may reduce the risk of airborne viral fragments during on site work activities. Note that simply opening doors and windows may not facilitate the level of ventilation necessary to significantly reduce airborne viral particulate, and that uncontrolled ventilation may cause aerosols to spread to other areas within the structure^{32,33}. The removal of aerosolized particulate during the cleaning process may further improve the overall cleaning efficacy and reduce risk. Consider the use of HEPA filtered exhaust systems particularly if the exhaust cannot be directed outdoors or must be directed to an area where exhausted air may come into contact with people. When pressure differentials are used, contractors should be aware of the potential impact makeup air may have to interior spaces (e.g., excess humidity, contaminants, temperature, secondary pressure differentials).
8. When exhaust systems cannot be used, consider the use of HEPA filtered AFDs as air scrubbers. When using AFDs, the use of a laser particle counter or DOP/PAO testing³⁴ to verify filter efficacy is beneficial. At a minimum, inspect the filter, filter seal and fit of the filter containment housing carefully to ensure no visible evidence of filter bypass or airflow leakage.

Note that according to OSHA, *“Workers required to use PPE must be trained. This training includes when to use PPE; what PPE is necessary; how to properly don (put on), use, and doff (take off) PPE; how to properly dispose of or disinfect, inspect for damage, and maintain PPE; and the limitations of PPE. Applicable standards include the PPE (29 CFR 1910.132), Eye and Face Protection (29 CFR 1910.133), Hand Protection (29 CFR 1910.138), and Respiratory Protection (29 CFR 1910.134) standards. The OSHA website offers a variety of [training videos](#) on respiratory protection³⁵.”* Note that training is the responsibility of the employer.

4.2.5 Supplemental protection

1. Follow CDC guidance for the specific facility type for each project, such as schools, churches, daycares, business offices³⁶.
2. Wear NIOSH approved respiratory protection and other PPE appropriate for the job and tasks performed using the guidance provided by OSHA and to address the additional hazards identified during your risk assessment. Provide appropriate training on the use and limitations of respiratory protection and your company’s written respiratory protection plan

³² <https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html>

³³ https://www.ashrae.org/file%20library/about/position%20documents/pd_infectiousaerosols_2020.pdf

³⁴ <https://www.ashrae.org/File%20Library/Technical%20Resources/Technical%20FAQs/TC-02.04-FAQ-68.pdf>

³⁵ <https://www.osha.gov/SLTC/covid-19/controlprevention.html>

³⁶ <https://www.cdc.gov/coronavirus/2019-ncov/community/>

and required fit testing. Ensure that workers and temporary workers are following your updated, written hazard communication program³⁷.

3. Evidence suggests that transmission of COVID-19 may also occur through mucous membranes (e.g., eyes, nose, mouth). Touching the face should be avoided when possible. PPE can help prevent touching the face.
4. Wipe and apply disinfectant to touch points in the service vehicles at the beginning and end of each job using an EPA registered disinfectant that is compliant with the guidance available from the EPA, such as those that appear on the 'Emerging Pathogen: List N'³⁸.
5. Wipe and apply disinfectant to tools and instruments used on the job site before removing disposable gloves using an EPA approved product on List N, in accordance with label instructions. When appropriate, dry and apply a protectant to tools afterward to prevent material degradation.
6. When leaving the work area, implement appropriate personal decontamination including removal of PPE, washing hands, etc.
7. To the extent possible, obtain signatures on documents electronically to avoid contact. If using physical forms, use appropriate disinfectants on pens and documents.

³⁷ https://www.osha.gov/FedReg_oseha_pdf/FED20120326.pdf

³⁸ <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

5. Acknowledgements

The RIA and the IICRC would like to thank the individuals and organizations who contributed time and expertise to the development of the COVID-19 Reports. Due to the rapidly evolving nature of the COVID-19 pandemic, this document was created in an expedited manner. Contributors, reviewers and authors listed in this section therefore are listed for *all editions* of the document, regardless of the version to which they contributed.

5.1 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, RIA and AIHA. 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, FLS, CLS of Gearhart and Associates
- Michael Pinto, FLS, CSP, CMP of Wonder Makers Environmental
- Joe Spurgeon, Ph. D.

5.2 Joint Task Force Procedures

The COVID-19 JTF (JTF) is a collaboration of the Institute of Inspection, Cleaning and Restoration Certification (IICRC), the Restoration Industry Association (RIA) and the American Industrial Hygiene Association (AIHA). The JTF was formed to manage the production, review and publishing of reports specific to the COVID-19 pandemic, and its impact on the professional cleaning and restoration industry.

The JTF is charged with reviewing available information, to the extent possible, from various institutions to include recognized authorities from government, education, healthcare and research. Further, the JTF has been provided with the request to update and revise reports as frequently as practical in an effort to incorporate rapidly changing and developing information. A full description of the JTF policies and procedures is available from the [IICRC](#) and the [RIA](#).

5.3 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
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- Mark Meece, Complete DKI
- Tom Peter, CIH, Insurance Restoration Specialists
- Kent Rawhouser, CMP, WLS, A&J Property Restoration, DKI
- Lee Senter, CEO of Dryit.ca and IICRC Standards Vice Chair
- ServPro Industries for both their technical and financial contributions
- Halden Shane, M.D., Steramist
- Shawn Silliman, CR, WLS, First Restoration Services
- Mark Springer, CR, RIA President, President of Dayspring Restoration
- Bruce White, SGS Forensic Laboratory

The COVID-19 Joint Task Force is a collaboration of the Institute of Inspection, Cleaning and Restoration Certification (IICRC) the Restoration Industry Association (RIA), and the American Industrial Hygiene Association (AIHA).

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. The AIHA is the premier association for occupational health and safety scientists and professionals. We advance the profession by producing educational resources for members, connecting current and future industry leaders, and promoting the value of their practice to corporations and the general public. For more information, visit www.aiha.org.

Appendix 1: Training and Education

Cleaners, restorers and remediators who continue to operate amidst the COVID-19 pandemic face a unique set of challenges. Evaluating and supplementing skills may improve the site health and safety for their workers and the public, improve the effectiveness and consistency of the cleaning processes and ensure that the work is properly documented.

A continuous effort on expanding the knowledge of workers and supervisors related to the topics discussed below will likely reduce the risk of exposure and possible infection. This effort can begin with a training needs assessment that will vary for each individual based on assigned job tasks. Components of training and skills may include many of the following:

- Plan development and implementation for:
 - Exposure Control & Special Hazards
 - Risk Assessments
- How to work safely with, and in proximity to, a biological agent that is generally recognized as a hazard in conformance with OSHA Hazard Communication Standard 29 CFR 1910.1200, to include but not limited to:
 - Inventory of hazardous chemicals and hazard assessment (to include exposure to COVID-19)
 - System for maintaining SDS
 - Chemical labels and warning signs
 - Training programs
 - Written hazard communication
- PPE program development, implementation and periodic review
 - Implement frequent review of OSHA guidance³⁹ or applicable local, state, federal or provincial regulatory bodies
- Course of actions for emergencies
- Fire hazards and fire prevention
- Safe work procedures and precautionary measures
- Identification of readily accessible handwashing facilities
- How to properly follow EPA disinfectant application directions and review product Safety Data Sheets (SDSs)
- Keeping records of:
 - all training/education provided to workers
 - all workers who have been exposed
 - surfaces that are cleaned, sanitized, disinfected, sterilized and tested.

In addition to the needs assessment, organizations should consider ensuring staff who are designated to supervise or manage operations in the field have additional training. Because training specific to COVID-19 is in extremely short supply, the training resources and certifications will likely not be COVID-19 specific. These listed resources are not suggesting that an individual is required to complete each training or certification. It is recommended that specific content used in administering these certifications be considered, as appropriate, based on the specific job tasks. Recommended training resources and certifications that may be considered include, but are not limited to:

- Infection Control (e.g., Infection Control Risk Assessment or ICRA)
- Crime / Trauma Scene Cleanup (e.g., from IICRC, GBAC, ABRA)
- Microbial Remediation (e.g., IICRC, RIA, ACAC)

• ³⁹ OSHA Safety and Health Topics/COVID-19: <https://www.osha.gov/SLTC/covid-19/>

- Lead and Asbestos Related Certifications
- HAZWOPER (Specifically, PPE elements of the training)
- Health and Safety (OSHA, IICRC)
 - OSHA PPE-specific training for use of N95, gloves, eye protection, body coveralls, etc.
 - OSHA HazCom – for use of chemical cleaners and disinfectants
- New York City Master Environmental Hazard Remediation Technician⁴⁰

Appendix 2: Helpful Links and Resources

United States Regulatory Bodies

Center for Disease Control (CDC):

www.cdc.gov

CDC RISK and DEFINITIONS (updated Mar 22, 2020)

<https://www.cdc.gov/coronavirus/2019-ncov/php/risk-assessment.html>

CDC Guidance for Specific Facility Types (e.g., Schools, Churches, Daycares, Business Offices):

<https://www.cdc.gov/coronavirus/2019-ncov/community/>

Occupational Safety and Health Administration (OSHA)

<https://www.osha.gov>

OSHA Safety and Health Topics – COVID-19:

<https://www.osha.gov/SLTC/covid-19/>

OSHA guidance on infection and exposure control:

<https://www.osha.gov/SLTC/covid-19/controlprevention.html>

OSHA, *Guidance on Preparing Workplaces for COVID-19*

<https://www.osha.gov/Publications/OSHA3990.pdf>

US Department of Health and Human Services, *Coronavirus Disease 2019 Risk Assessment and Public Health Management Decision Making*:

<https://www.cdc.gov/coronavirus/2019-ncov/downloads/public-health-management-decision-making.pdf>

US Environmental Protection Agency, *Compliance Advisory–What You Need to Know Regarding Products Making Claims to Kill the Coronavirus Causing COVID-19* (May 2020):

<https://www.epa.gov/compliance/compliance-advisory-what-you-need-know-regarding-products-making-claims-kill-coronavirus>

International Resources

World Health Organization:

www.who.int

Government of Canada, *Coronavirus disease (COVID-19): Outbreak Update*

<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html>

Australian Government Department of Health, *Coronavirus (COVID-19) Resources*

<https://www.health.gov.au/resources/collections/novel-coronavirus-2019-ncov-resources>

UK Government, *Coronavirus (COVID-19): Guidance*

<https://www.gov.uk/government/collections/coronavirus-covid-19-list-of-guidance>

Industry, Healthcare and Research Institutions

AIHA, COVID-19 Resources, including *Role of the Industrial Hygienist in a Pandemic*

⁴⁰ <https://www1.nyc.gov/assets/dep/downloads/pdf/air/asbestos/master-environmental-hazard-remediation-technician-attachment-a.pdf>

https://www.aiha.org/public-resources/consumer-resources/coronavirus_outbreak_resources

John Hopkins University Coronavirus Resource Center:

<https://coronavirus.jhu.edu/>

ASHRAE *Guidance for Building Operations During the COVID-19 Pandemic*

https://www.ashrae.org/file%20library/technical%20resources/ashrae%20journal/2020journaldocuments/72-74_ieq_schoen.pdf

NADCA White Paper on *Chemical Applications in HVAC Systems*

https://nadca.com/system/files/nadca_white_paper_on_chemical_applications_in_hvac_systems_0.pdf

AIHA *Back to Work Safely*

<https://www.backtoworksafely.org/>