

Disinfection Services and the Pest Management Industry

INTRODUCTION

As the world faces an unprecedented pandemic in modern times, many pest management companies are interested in providing services in their communities to assist with COVID-19. One of the primary suggestions from public health organizations, such as the Centers for Disease Control and Prevention and the World Health Organization, is to regularly disinfect surfaces that may be contaminated with SARS-COV-2 viral particles. While disinfection may seem like a simple concept, there are a myriad of details that must be addressed around the specifics of the service. This includes products and application equipment, regulatory requirements, staffing, training, customer service, quality assurance, and personal protection. The scope of this document is intended to provide a brief overview of the factors that pest control companies should consider if they plan to provide, or are already providing, disinfection services. This guidance does not preempt local, state, and federal regulations and does not provide specific details regarding protocols or product selection. The intent of this document is to provide insight and perspective for companies considering disinfection and serve as a valuable resource to enable NPMA member companies to excel in disinfection services to protect public health. This document contains the best available information at time of publication, however the response and recommendations regarding the COVID-19 pandemic are rapidly evolving and recommendations may change frequently.

According to the Centers for Disease Control, disinfection is defined as the process of eliminating pathogenic microorganisms, except bacterial spores, on inanimate objects. Sterilization describes the process of eliminating all microbial life through various physical or chemical methods. Sanitizing lowers the number of germs on surfaces or objects to a safe level, as judged by public health standards or requirements¹. Finally, cleaning is the removal of visible soil from objects or surfaces². While the differences between these definitions may be subtle, it is important to understand the terminology when drafting documents and making marketing claims for disinfection services.

In the United States, antimicrobial products are registered as pesticides with the Environmental Protection Agency. Many companies within the pest management industry have considered providing disinfection services as a logical next step to assisting with the pandemic, because they already have the knowledge and expertise to apply pesticides, the application equipment, and personal protective equipment and training. Therefore, The COVID-19 pandemic provided an opportunity for pest management companies to develop disinfection services to help protect the health and safety of their communities, as well as add a new service line to their businesses.

■ Service Overview

Disinfection services are designed to treat inanimate, non-porous touchpoints (fomites) that serve as passive disease transmission vectors. When contaminated with, or exposed to, infectious agents such as pathogenic bacteria, viruses, or fungi, the fomites can transfer disease to a new host. Disinfection services control the organisms that are present at the time of treatment but do not provide residual disinfection. The treated surface can be re-contaminated subsequent to treatment and again serve as a passive vector.

¹ Sanitizers are not designed to kill viruses. <https://www.epa.gov/coronavirus/whats-difference-between-products-disinfect-sanitize-and-clean-surfaces>

² <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/introduction.html>

Service frequency should be based on several factors including customer risk profile, volume of public access and interaction with the site, amount of employee interaction with fomites, and viability of supplemental disinfectant programs such as janitorial services and employee executed protocols. The service frequency can range from daily to weekly services or a combination of daily services, performed at a variance in high-touch, high-volume areas such as breakrooms, restrooms, customer service areas, and waiting rooms. This could be combined with weekly service of the entire facility.

Disinfection services can be performed in spaces which range in size from less than several thousand square feet to several hundred thousand square feet. These services can also be performed in a variety of locations, from front-of-house to back-of-house, and from highly manual services consisting of wiping sensitive surfaces to large area treatments performed with battery or electric powered applicators. Like other services offered by pest management professionals PMPs, disinfection services are customized to meet the needs of the customer and require knowledge of the target pest, the environment, products, application equipment, and personal protective equipment to be successful.

■ Staffing

Disinfectant service typically requires the deployment of a crew, similar to fumigation or bed bug heat treatments. Many of the same pre-planning, precautionary practices, and quality assurance processes apply. The treatment plan developed by the PMP is important for effective execution by the crew and also serves as a communication tool for interaction with site management.

Crews of technicians are effective since most services require a combination of application techniques and associated equipment due to the treatment of a wide variety of surfaces (fomites), the allotted time frame to complete the service, and the frequent need for associates to work in teams to efficiently perform treatment (e.g., de-nesting shopping baskets or removing chairs from under tables).

Disinfection services can be physically demanding. Carrying application equipment and gallons of liquid disinfectant throughout a facility can be taxing; adding personal protective equipment (PPE) like respirators and protective outerwear adds another element of exertion. Services are typically scheduled during off-hours at night or early mornings and service frequency can change with short notice due to events beyond the customers' or the PMP's control. Depth of crew experience, alternate team members, and flexibility in schedules should be considered and planned up front. Crew members must be confident with their PPE and their ability to accurately perform donning and doffing protocols due to the nature of the environments and target pests they will be treating.

■ Customer Communication

Whether treatments are performed after hours when a limited number of site employees are on-site or during normal operating hours with operations underway in adjacent areas, effective communication and awareness of the treatment process and expectations are important. Communications with site management should include a review of what areas will be treated, how the treatments will be executed, and what equipment/areas are in-scope and out-of-scope for treatment. Pre-service communication enables the site manager to coordinate operations personnel to provide access to the treatment areas while alerting employees of the restricted entry requirements, awareness of signs or postings that will be used during treatment, re-entry periods and precautions, availability of Safety Data Sheets (SDS), and general awareness of the work that will be performed.

Communication between the client and service provider is extremely important. Clients should have a clear understanding that surfaces must be free of dirt, debris, etc. before disinfectants are applied. It is not possible to disinfect a surface until it is clean. Clients should clearly understand what services are to be performed by the pest control company, whether it be application of disinfectant products, or cleaning and disinfection, as well as the status of the surface that has been treated³. Clients should understand what responsibilities they have following the service. Avoid making claims about protection from disease. Disinfection claims should be limited to the service that is being provided, i.e. application of disinfectants, or cleaning and application of disinfectants.

³ For example, some disinfectant product labels require food contact surfaces to be rinsed following application. Different facilities and application sites may have unique requirements, always read and follow all label instructions

Post-service communications are equally important to help establish expectations and enable any preparation activities for subsequent services. This is particularly important when the site employees are on-site during treatment. Their cooperation and accommodation of the treatment activities and area preparation can have significant impacts on the safety and operational efficiency of the service.

■ Training

Many states do not require certification or licensing for performance of disinfection services and do not have associated education and training curricula and materials available, leaving this requirement to the PMP. Structural pest control training programs provide the necessary knowledge and skills for safe handling of pesticides, use of PPE, understanding product labels and SDS, and mixing, loading and applying pest control products. However, those training programs do not provide information about disease transmission, PPE doffing protocols and decontamination, biohazard waste disposal, differences between sterilization, sanitizing, and disinfecting, and other antimicrobial pest control topics. It is incumbent on the PMP to acquire or develop training resources to prepare technicians to perform disinfection services. NPMA has developed a resource library of third-party providers that offer training resources for its members.

In-house training should be conducted for application equipment set-up, calibration, and use with a focus on application technique. Disinfection service treatment areas and touchpoints are very different from those of general pest control. Disinfection treats touch points that PMPs take care to avoid when applying traditional pesticide products (door handles, light switches, tabletops, chairs) and avoids areas that are typically treated when performing general pest control (thresholds, cracks, and crevices). Disinfection quality assurance protocols are also unique to disinfection services and should be included in the training curriculum.

Due to the nature of the service and the associated risk with the potential for pathogen transmission, disinfection training programs should also include a practical component to ensure technicians are competent at PPE donning/doffing, as well as decontamination procedures when necessary. Additionally, record keeping for training is essential to mitigate the liability associated with disinfection service. Documented proof of academic training and practical training should be available for each technician performing service.

■ Personal Protective Equipment

The health and safety of technicians and their families is paramount. In addition to the PPE necessary to protect technicians in the safe handling of application equipment and chemical products, protection from the environment and potential microbial contaminants is equally important. PMPs that are contemplating offering disinfection service may want to consider involving their human resources team to determine what liabilities exist for employees and what steps should be taken to ensure that the company is protected.

Similar to traditional pest control activities, PPE requirements for preventative treatments differ from PPE for corrective treatments (e.g., rodent cleanout and potential exposure to hantavirus). Effective communication with the client and disclosure of the exposure potential is critical for defining the proper PPE, as well as required donning and doffing protocols that will be followed for each treatment.

For treatments that are precautionary with no known or suspected microbial contamination on-site, baseline PPE based on disinfectant exposure may be suitable to meet the safety concerns of the PMP and customers. Treatments performed when known or suspected microbial contamination was present on site, but the expected viability period has passed, demand a higher level of PPE to prevent potential airborne and dermal contact during treatment and require controls to minimize the potential to transmit contaminants off-site following treatment (e.g., coronavirus has been shown to remain viable for 72-hours on some hard surfaces). A third treatment scenario with known microbial contamination currently present or within the viability period, will require additional PPE protections, additional donning and doffing protocols, and the potential treatment of some waste materials as biohazards.

The goal is to ensure crews are aware of the conditions at the site and can be prepared and organized when arriving on site to effectively execute the service. Diligence in post-treatment activities are also important to avoid transmitting any contaminants away from the treatment site.

■ **By-Stander Protection**

Treated surfaces can present exposure hazards, both physical and chemical. Chemical exposure can occur if the product is not dry and by-standers come into direct contact with the product, resulting in a dermal exposure. Examples include puddled disinfectant on chair seats or wet surfaces on a desk, tabletop, or keyboard that are touched upon re-entry. In addition to the obvious direct dermal contact with the product, consideration should be given to interaction with other cleaning products, many of which are chemically incompatible with the treatment product and may be used by by-standers re-entering the area and engaging in their workspace. For these reasons, it is important to ensure that all treated surfaces are dry prior to releasing the area or site for re-entry.

Physical hazards, mainly in the form of slip and trip hazards, can also be created during the application of the liquid treatments. Non-slip footwear should be mandatory PPE for technicians and by-stander re-entry into the treated area must be restricted until the area is confirmed to be dry and absent of any slip hazards. A quality assurance sweep of the area and testing for dryness of various surfaces should be integrated into performance of the service.

■ **Out-of-Scope Areas/Touchpoints**

Treatment techniques, treatments areas, and treatment surfaces must be evaluated and planned prior to conducting service. Some surfaces or items must be avoided such as packaged and unpackaged foods, electrical components, and sensitive electronics. Soft/porous surfaces are not included on disinfectant labels and should be avoided as they cannot be disinfected. Application equipment should be selected for the various treatment areas to achieve the required outcome and mitigation measures should be developed to reduce the risk of unintentional exposure to out of scope areas and surfaces. For example, alternate spray nozzles/spray patterns can be adjusted to increase application precision and reduce product movement to undesired areas. Additionally, surface wiping is a common approach for items where a more controlled and directed application is required. Wiping can also be used to treat shielded touch points where coarse mist applications are unable to reach or where adjacent materials cannot be treated (e.g., the inside surface of keypad covers, overhead consoles and control buttons in cars).

A scoping document adds value internally and facilitates communication and preparation with the customer. The document can be used as a guide for the PMP's employees that can be customized for each site and facilitate onboarding of new crew members. The scoping document can also serve as an action plan for the customer to communicate the preparation work that must be accomplished prior to PMP arrival. Examples of customer prework include collection of all shopping carts from the parking lot, collection and grouping of shopping baskets, employees removing paperwork from desktops, and ensuring access to secured areas.

■ **Product Selection**

Similar to other pest control services, product selection plays a critical factor in any disinfection service offering. Common active ingredients include quaternary ammonium compounds, hydrogen peroxide, peracetic acid, and sodium hypochlorite. Within each class of chemistry, the concentration of the active ingredient and the dwell time⁴ dictate the efficacy against the listed microbial pests.

Dwell time can be as low as 1-4 minutes, although 10-minute dwell times are more common across the range of active ingredients. Surfaces that dry prior to the labelled dwell time have not been effectively treated and efficacy will not be achieved. In these cases, immediate reapplication is necessary to achieve desired results. This is a critical attribute for microbial disinfectant products and the reason application equipment selection, calibration, and proper application technique are critically important.

⁴ Dwell time (or contact time) is defined as the time a disinfectant is in direct contact with the surface or item to be disinfected. For surface disinfection, this period is framed by the application to the surface until complete drying has occurred. <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/glossary.html#D>

Validating product efficacy presents a unique challenge to PMPs that traditionally conduct their own confirmatory efficacy trials or use historic service data to validate the product efficacy, whether it be time required to control an infestation, call back frequency, or longevity of control. This is not possible with disinfectant services since the PMP is unable to see the target pest or readily measure its population. PMPs must rely on U.S. Environmental Protection Agency (EPA) or a specific country's regulatory body for approval of product label claims as demonstration of product efficacy. This makes it critically important to carefully read and follow each label's Directions for Uses section as the efficacy data that was submitted, reviewed, and approved by regulatory agencies was based on the directions appearing on the master label (application method, dwell times, etc.).

Confidence in achieving effective control of the target pest is dependent on our ability to use the product as stated in the Directions for Use. Use rates are not provided simply in terms of active ingredient per unit area or product mix rate/concentration. Active ingredient dwell time with the target microbe (mold, bacteria, virus, etc.) in addition to the active ingredient concentration, are the measures of the effective "use rate" for the majority of disinfectant products. The dwell time, or the time the product remains wet and in contact with the surface, determine the efficacy against the target pest. At the time of publication there are no registered antimicrobial products that provide residual protection for SARS-CoV-2.

■ Application Equipment

Product efficacy and operational efficiency are primarily affected by the selection of application equipment, equipment set-up, and application technique. While many traditional pest control application tools are also used for disinfectant services, the set-up and use of these applicators is quite different. Disinfecting hard surfaces relies on providing a thorough, uniform coverage of the surface to ensure prolonged product contact with the entire surface. Large droplets tend to pool or coalesce, and run-off treated surfaces rendering the treatment ineffective. Smaller liquid particles, delivered as a coarse mist, are required to provide coverage to both vertical and horizontal surfaces without generating run-off while also achieving the required dwell time. Many traditional pressurized sprayers are able to achieve the small particle mist required for disinfectant product applications while others require spray wand or spray nozzle replacement or reconfiguration. The spray pressure that is generated and maintained by the various brands and models of sprayers will impact the selection of the appropriate sprayer nozzle for each model as nozzles will perform differently with different pressures and flow rates. Similarly, some traditional fogging equipment can prove effective in providing disinfectant services if particle size, surface coverage, and dwell times are consistent with label instructions and the associated efficacy data for the target pest. Standard fogger set-ups can generate particles that are too fine, resulting in unwanted airborne concentration of particles, significant off-target movement of product, and poor efficiency in providing the liquid loading to the surface to achieve the required dwell time. A coarse particle, that can be directionally controlled, and rapidly falls to the surface is preferred.

It is a best practice to designate and maintain disinfection service equipment separately from general pest control equipment. The surfaces treated with disinfectants are high touch areas with frequent dermal contact, as well as food contact and food preparation surfaces, where any potential risk of pesticide residues must be avoided. Label and segregate disinfection service application equipment and mixing and loading equipment to mitigate any risk of cross contamination.

■ Application Technique

Application techniques for disinfectant services are different from general pest control. Insect and rodent harborage and entry points are different from the touch points that may harbor bacteria or viruses. The treated surfaces are also in contrast, with disinfectants being applied to areas we generally avoid with pest control products (door handles, tabletops, keyboards, monitors, grocery carts, light switches, etc). PMPs must be aware of these differences and modify application techniques and the set-up and use of application equipment.

Dwell time should be closely monitored and can change dramatically from site to site and even within the treatment site. Relative humidity and airflow are the most important factors impacting dwell time. Re-application is often required to ensure the surface remains wetted and the prescribed contact time is

achieved. Knowledge of the site and an associated game plan to address the need for re-application, the use of a quality assurance (QA) technician to spot check and re-apply, or a scheduled walk-through and reapplication by the service technician should all be considered to ensure label requirements are met and efficacy is achieved. While disinfectant services are often performed during shutdown or off hours, safe re-entry periods must be established and will be dependent on the formulation used and the method of application.

■ Quality Assurance

QA protocols and quality reports take on a higher level of importance with disinfectant services since verification methods of effective control of the target pests are not readily available. The customer is dependent on assurance of proper product preparation, proper application, and achieving the prescribed dwell times to assure the treatments are effective. Each of these elements can be customized by the PMP to achieve the desired outcome while demonstrating value and competency. Product concentration requirements can be demonstrated via log sheets, active ingredient test strips, pH, or other means. Proper application and thorough coverage can be achieved via visual observations or the use of indicator cards, and dwell times can be validated with QA checks. Disinfectant products work through direct, prolonged (dwell time) contact with the target pest on the touch points which requires a thorough application to every critical touch point. Human error and variations in climatic conditions (humidity, air flow) will both impact the efficacy of the application and require execution of a robust quality assurance program to achieve effective treatment.

■ Insurance

As with all new lines of business, a review of insurance coverage is essential. Protecting the company with insurance coverage depends on how an insurance carrier views the line of business with services a company already provides. Some carriers consider disinfection service as part of pest control due to the chemicals being used and other lines of business currently included in the policy. Others will require additional coverage and modifications to existing policies. PMPs should check with their providers to ensure they are protected.

■ Agreements

Pest management firms that are considering adding disinfection services to their business should draft a stand-alone contract that outlines the parameters of those services. NPMA has added a “Commercial Sanitization Contract” to the list of downloadable, customizable sample contracts available here. As with any contract, an attorney should review this agreement to confirm that it complies with applicable laws and regulations before it is issued to clients.

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