Guidance for Cleaning, Disinfecting and Decontaminating Manufacuring Facilities

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A HEALTHY, HYGIENICALLY CLEAN FACILITY IS VITAL TO YOUR BUSINESS

Manufacturing facilities have always faced a variety of health hazards, including potentially harmful industrial chemicals, petroleum byproducts, hazardous waste, molds and other fungi, and bacteria. The SARS-CoV-2 virus that causes COVID-19 has heightened the need for creating safe and healthy work environments.

Containing the spread of coronavirus is particularly difficult considering the number of people coming-and-going from manufacturing facilities, including just-in-time suppliers and other delivery personnel, along with employees working different shifts.

Compounding the difficulty of containing the spread of disease is the use of common workstations and personnel often working together in close-quarters. These circumstances create the potential for the spread of disease and the need for diligent, routine cleaning and disinfecting practices.

Maintaining safe and healthy work environments is good for employees and for business.

Always follow the policies, procedures and controls of your facility when it comes to health and safety, and with the use of disinfectants and decontaminants.

In the pages that follow, we offer a set of protocols, practices and information that will help you to develop a plan to meet your specific needs for infection control using disinfectants and decontaminants.

We also suggest that you limit access to your facility to essential workers, distance workers as much as possible, stagger arrival and departure times, enforce the use of protective face coverings and other PPE, and place alcohol-free hand sanitizers in multiple locations throughout your facility to encourage good hand hygiene.

FOUR STEPS TO CREATING A HEALTHY ENVIRONMENT

1. Conduct Your Site Assessment
2. Select Your Antimicrobial
3. Design Your Delivery System
4. Execute Your Plan

Conduct Your Site Assessment

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Walk the property, taking note of high traffic areas

There are numerous considerations in assessing a facility, including potentially harmful chemicals and gases, petroleum byproducts, molds and other fungi, and bacteria. Recently, organizations have turned their focus toward viruses due to the coronavirus pandemic.

Walk the facility, taking note of areas that are highly trafficked by workers, including work stations, bathrooms, breakrooms, lunchrooms and water fountains. Also consider an approach for disinfecting and decontaminating ventilations systems.

Collect surface sample swabs with an ATP (adenosine triphosphate) meter, such as the Hygiena Systemsure Plus, in order to gauge levels of biomass on surfaces throughout the facility. Biomass is simply the number of organisms on a particular surface or in an area, and assessing its level will dictate how much pre-cleaning should be done before disinfecting or decontaminating a surface or area.

* Available at artemisbiolsolutions.com

Follow company policies, protocols and procedures

Most facilities have developed policies, protocols and procedures to comply with federal laws and OSHA standards. Always follow company policies, protocol and procedures, along with applicable laws.

Consider the time required to disinfect the property

The saying, time is money, may be more relevant to manufacturing facilities than any other types of businesses. Keeping a production line moving is critical to an efficient and profitable operation.

When planning for cleaning, disinfecting and decontamination procedures, consider and plan for the time needed to properly do the job.

Ask yourself the following questions:

- Can the space be vacated? And is that a requirement?
- Is there a need to work in zones?
- Can sufficient cleaning, disinfecting and decontamination be done in-between shifts?
- Are there any HVAC concerns?
  - Is treatment of ductwork and air handler unit (AHU) on option?
  - Should the system be turned off during application?
  - Can the system be turned on right after treatment to incorporate some of the antimicrobial product to provide light disinfection in the duct system?
- Do smoke/alarm detection devices or sensors in the space need to be treated?
- Do textiles in the space require chemical compatibility testing?
- What, if any, are the post remediation verification (PRV) requirements?
  - Air sampling for the presence of fungal or bacterial CFUs
  - Visual inspection
  - Presence of chemicals or gas

Select Your Antimicrobial

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The goal is to choose an antimicrobial that is highly effective against pathogens yet poses minimal risks to human health or damage to surfaces and equipment.

A pathogen is an organism that causes disease. Once a pathogen sets itself up in a host's body, it uses the body's resources to replicate before exiting and spreading to a new host. Pathogens can be transmitted through skin contact, bodily fluids, airborne particles, contact with feces and touching a surface touched by an infected person.

Four common pathogens

Viruses Viruses are made up of genetic code, such as DNA or RNA, and protected by a coating of protein. Antibiotics are ineffective as a treatment for viral infections. Antiviral medications can sometimes be used.	**Examples** • COVID-19, SARS • Meningitis • Chickenpox/shingles • Measles • Hepatitis A, B, C, D, E • HIV and AIDS
Bacteria Bacteria are microorganisms made of a single cell. They are diverse and can live in just about any environment. Not all bacteria cause infections. Those that can are called pathogenic bacteria.	• Strep throat • Bacterial meningitis • Lyme disease • Tuberculosis • Gonorrhea • Cellulitis
Fungi There are millions of fungal species, but only about 300 are known to cause illness. Fungi can be found virtually everywhere, including indoors, outdoors and on human skin, and cause infection when they overgrow.	• Vaginal yeast infections • Thrush • Ringworm • Athlete's foot • Jock itch • Onychomycosis
Parasites Parasites live in or on a host. Three parasites that can cause disease are protozoa (single-celled organisms), helminths (commonly known as worms) and ectoparasites (organisms that live on or feed off your skin).	• Giardiasis • Trichomoniasis • Malaria • Toxoplasmosis • Intestinal worms • Public lice

First, determine which pathogens you need to kill

The choice of any antimicrobial product will depend on the type of contaminate you hope to eradicate. Some pathogens are relatively easy to kill, while others are resistant to commonly used disinfectants and decontaminants.

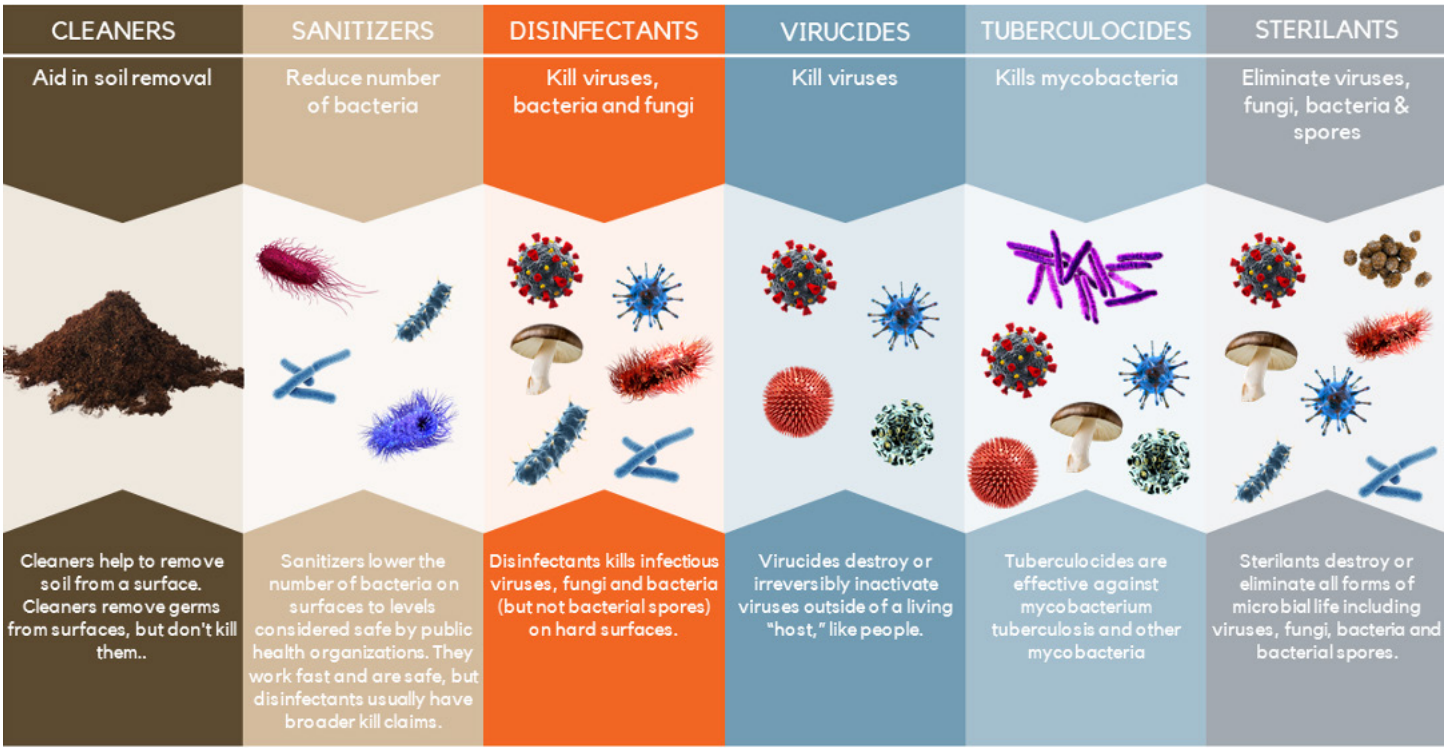
When choosing an antimicrobial, your goal should be to always choose a disinfectant or decontaminate that is highly effective against the pathogen yet poses minimal risks to human health or damage to surfaces and equipment.

Always read the product's EPA-registration label for a list of pathogens that the product kills. Label claims are based on standardized tests conducted at a GLP laboratory for efficacy (the ability to kill) against pathogens. Also read the product's SDS (safety data sheet) because some products can pose health hazards and cause corrosion to surfaces.

Not all antimicrobial products are alike. The chart below is a guide to the different types of products used in infection control. From cleaners to sterilants, the product you use should be based on the type of pathogen you need to eradicate.

Types of infection control products

In general, there are six categories of infection control products.



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Second, determine the required log kill of a disinfectant or decontaminant

Log reduction stands for a 10-fold (or one decimal point) reduction in bacteria, meaning the disinfectant reduces the number of live bacteria by 90 percent for every step. Log kill is simply the percentage of bacteria or virus that are killed by a particular product. A 7-log kill rate, or 99.99999% is the highest rate measured by U.S. regulatory agencies.

Look for products with these attributes

Manufacturing facilities are busy places. The turnover of people, products and constant movement of equipment means that these environments tend to accumulate dirt and grime. These facilities often include structures and equipment with rolled-edge surfaces, expansion joints in concrete and other areas where pathogens might live. Taking these factors into consideration, along with the fact that downtime means lost revenue, manufacturing facilities managers should look for products with these attributes:

- They work in challenging, soil-load conditions. Many products have kill claims that are based on laboratory tests, but it's important that they work in real-world conditions.
- They have quick kill times for the contaminants that need to be eradicated, so that people can get back to work.
- They contain no VOCs (volatile organic compounds).
- They are non-flammable and non-toxic.
- They have little or no adverse effects on equipment.

Design Your Delivery System

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Choose how to apply your antimicrobial product

There are numerous ways to apply cleaners, disinfectants and decontaminants. Choosing the right delivery systems will depend on the specific area of the facility.

Tips to Properly wipe & spray

- Follow the manufacturer's EPA-registered label.
- Use the 4-fold method with a microfiber cloth and wipe only in one direction. Fold the cloth to always use a clean surface.
- Use a 2-step process to first clean a soiled surface, removing dirt, grime and grease, and then disinfect.
- Allow for the product's prescribed dwell time to kill pathogens.

See the tips in action in this video

Each area of the property requires multiple delivery methods

1. Heavy Touchpoints
2. Food Contact Surfaces
3. Ventilation Systems
4. Carpets
5. Laundry
6. Personal Hygiene
7. Mold and Mildew
8. Insect Infested Areas

Workshop

The factory floor is highly trafficked with heavy touchpoints, which requires a thorough antimicrobial application.

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Office

The office or supplies area requires a more complex delivery system. There are several heavy touchpoints. The ventilation system should be used to disinfect the air, while the carpets can be treated with a carpet disinfectant solution.

1 Heavy Touchpoints
2 Food Contact Surfaces
3 Ventilation Systems
4 Carpets
5 Laundry
6 Personal Hygiene
7 Mold and Mildew
8 Insect Infested Areas

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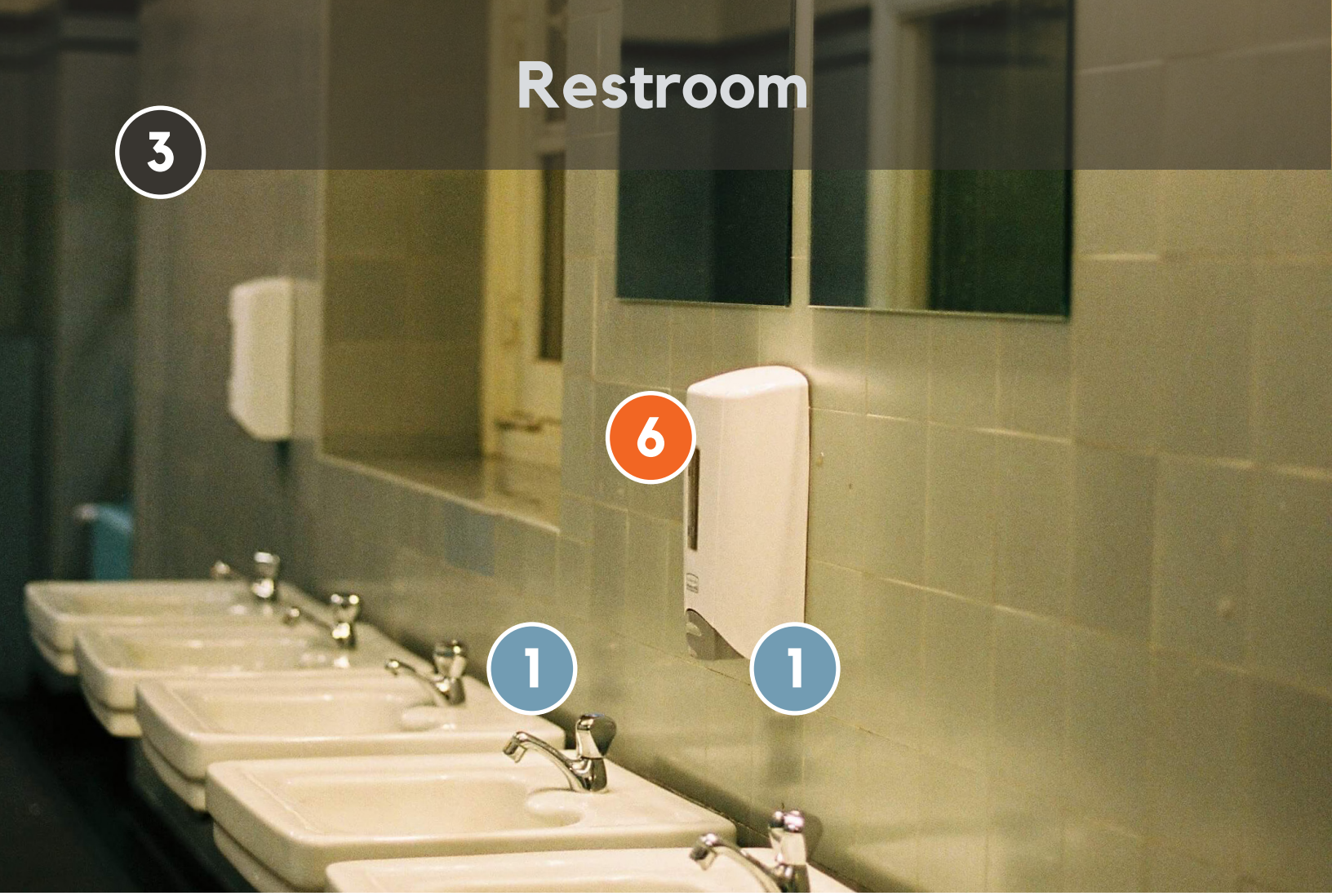
Restroom



Restrooms require multiple delivery methods to address heavy touchpoints and airborne pathogens. Personal hygiene products, such as antiseptic soap and hand sanitizers are also needed.

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Warehouse

Warehousing areas are generally open spaces with high ceilings and, therefore, don't require the same disinfecting rigor as do restrooms or offices. However, pay attention to some of the heavy touchpoint areas, and consider disinfecting the HVAC system.

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Personal Hygiene

Make sure to deliver antimicrobial personal hygiene products to people in convenient locations throughout out the facility. Place antiseptic soaps at all sinks, sanitizer bottles at all entrances and exits, and sanitizer stations conveniently at all traffic hubs and congregating areas.

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Execute Your Plan

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Communicate and Train

The coronavirus pandemic has forced numerous changes at manufacturing sites. Workers, suppliers and others who visit the facility must know what to expect and how to comply with policies and protocols for entering and working in the facility. Consequently, communication and training should be a priority within any manufacturing facility that is undergoing remediation or changes to daily routines to prevent the spread of disease.

Lear Corporation acted quickly and decisively at the start of the coronavirus pandemic. The global vehicle component supplier leveraged knowledge and resources from its 271 production plants in 39 countries to develop a document to reopen its manufacturing plants as safely as possible. Lear took the additional step of making its recommendations available to everyone through its website. The company is now on its 2nd edition of its Safe Work Playbook, including sections on communications and training that can be used as a guide to plan your communications and training efforts.

When communicating and training, we also recommend that you describe the types of antimicrobial products used to disinfect or decontaminate the facility, and explain why they were chosen. Also describe the types of delivery methods for the antimicrobial, such as spraying and wiping, fogging, foaming, mopping and other methods.

Communicate and Train

To create your cleaning, disinfecting, and decontaminating plan, follow six steps:

- Establish Engineering Controls
- Gauge Biomass Levels to Determine Pre-Cleaning
- Pre-Clean as Needed
- Setup Antimicrobial Delivery Systems
- Apply the Antimicrobial and Allow for Dwell Time
- Post Treatment Considerations

Document Your Work

Industrial hygiene information is needed at all levels of manufacturing operations, from front-line workers to C-level executives, particularly during the coronavirus pandemic. Document cleaning, disinfection and decontamination with activity log sheets and a log book, or use an electronic system. Logs should include the purpose of the procedure; the type of pathogen(s) you hope to kill; the type and quantity of cleaning, sanitizing, disinfecting and decontaminations materials used; the methods and systems used in the process; and the date and time of the work.

ADDITIONAL RESOURCES

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Additional Resources

Safe Work Playbook, 2nd Edition: An Interactive Guide for COVID-19 Pandemic Preparedness and Response
Lear Corporation

Manufacturing Workers and Employers Interim Guidance from CDC and the Occupational Safety and Health Administration (OSHA)
Centers for Disease Control and Prevention (CDC)

Manufacturing Facilities: Key Strategies to Prevent COVID-19 Infection Among Employees
Centers for Disease Control and Prevention (CDC)

Cleaning and Disinfecting for the Coronavirus (SARS-CoV2)
ISSA (International Sanitary Supply Association)

The COVID-19 Pandemic: A Report for Professional Cleaning and Restoration Contractors, 4th Edition
Institute of Inspection Cleaning and Restoration Certification (IICRC), Restoration Industry Association (RIA), American Industrial Hygiene Association (AIHA).

Guidance on Preparing Workplaces for COVID-19
U.S. Department of Labor and U.S. Department of and Health and Human Services' booklet

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