

CLEANING, SANITIZING, AND DISINFECTING

UNDERSTANDING THE DIFFERENCES

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Introduction

The COVID-19 pandemic continues to have a remarkable impact on everyday life around the globe. According to the U.S. Centers for Disease Control and Prevention (CDC), while the primary mode of transmission is through person to person spread, it is possible that people may become infected “by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes.”¹ This possible mode of transmission of the virus has led to an increased use of cleaning, sanitizing, and disinfecting products. These three terms are often used interchangeably by the media and the general public but are actually quite different from one another. It is important to understand the differences between these terms so that proper sanitation can be performed, which will lead to reduced risk of illness spread in an establishment.

Cleaning

The United States Environmental Protection Agency (EPA) defines a cleaner as “a substance or mixture of substances (such as chemical or biological substances) that is intended to clean away or remove inanimate material from a surface.”² The CDC further defines cleaning as “the removal of foreign material (e.g., soil and organic material) from objects.”³ Cleaning a surface of any gross soil presence, such as significant food soil, is necessary for effective sanitization or disinfection. Why? Because the organic material present on a dirty surface can interfere with the effectiveness of the antimicrobial product, either by forming a protective barrier to the microorganisms or by interfering with the antimicrobial chemistry itself. Many sanitizers and disinfectants are tested in the presence of soil to enable cleaning and disinfection in one step; however, the testing does not account for the presence of significant soil. If a sanitizer or disinfectant is not a one-step product, then a cleaning step is always required for product efficacy and the label will note surfaces should be clean prior to application. Additionally, US Food Code requires that all food-contact surfaces must be cleaned prior to the sanitizing step.⁴

It is important to remember that effective cleaning requires the proper chemistries and tools for the job. Make sure to choose a cleaner that is effective for the soils likely encountered in your establishment. And always remember to incorporate mechanical agitation during the cleaning step using a brush, cloth, towel, or other appropriate tool. Mechanical action helps to lift trapped and stubborn organic material and soil away from the surface, enhancing the performance of the cleaner. Poor cleaning efficiency could lead to poor sanitization or disinfection, particularly if a one-step antimicrobial pesticide is not used.

Sanitizing

Surface sanitizers and disinfectants are both regulated by the EPA as antimicrobial pesticides for the purpose of reducing microorganisms on surfaces.⁵ They differ in their level of antimicrobial efficacy. In general, sanitizers have reduced antimicrobial efficacy relative to disinfectants. The EPA defines a sanitizer as “a substance, or mixture of substances, that reduces the bacterial population in the inanimate environment by significant numbers (e.g., 3- \log_{10} reduction or more) but does not destroy or eliminate all bacteria.”⁵ Sanitizers are not intended to destroy all bacteria; rather, they are intended to reduce bacteria to levels considered safe. It is important to note that, according to the EPA, sanitizers are allowed to carry antibacterial claims but not claims for other classes of organisms, such as viruses and fungi.



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The EPA is responsible for regulating antimicrobial pesticides and actively reviews all products to ensure they meet federal requirements for worker safety, microbial efficacy, and product stability. For food-contact surfaces, it is important to choose a sanitizer that is approved by the EPA for use on these surfaces. These food-contact approved products, when used according to the label instructions, generally do not require a rinse step after application. This is because they are recognized by the EPA to have a low safety risk if food were to encounter any residue left by the product after it has been allowed to dry. Sanitizers also differ in their EPA-approved bacterial kill claims, emphasizing the importance of reviewing the label of the product to ensure the appropriate time is allotted to effectively kill the organisms of most concern.

Disinfecting

A disinfectant is defined by the EPA as “a substance, or mixture of substances, that destroys or irreversibly inactivates bacteria, fungi and viruses, but not necessarily bacterial spores, in the inanimate environment.”⁵ As mentioned previously, disinfectants are stronger than sanitizers in that they are intended to have a higher level of antimicrobial efficacy, and generally have a broader spectrum of activity. The EPA allows disinfectants to make claims against classes of organisms other than bacteria, such as viruses and fungi.

The majority of disinfectants available require a rinse step with potable water when used on food-contact surfaces. This is because their formulations at disinfectant levels may leave potentially harmful residues behind on food-contact surfaces. If food were to come into contact with these residues, it may pose a health risk to the consumer. Recently, innovative disinfectant chemistries that do not require a rinse step when used on food-contact surfaces have become available. These chemistries utilize active ingredients (such as ethanol) that do not have an upper threshold for safety tolerance per 40 CFR § 180.⁶ In other words, they are formulated to have the antimicrobial efficacy required to be approved as a disinfectant, including only low-risk ingredients so that any residue left behind on a food-contact surface is deemed minimal risk by the EPA. Thus, they do not require a rinse step after use on a food-contact surface.

TAKE HOME MESSAGES

The COVID-19 pandemic is a public health crisis of unprecedented magnitude. As establishments adopt enhanced cleaning and sanitation programs to reduce the risk of spreading COVID-19, it is important for individuals responsible for implementing such programs to educate themselves and others on cleaning and sanitation best practices. In this case, understanding the difference between cleaning, sanitizing, and disinfecting will help to reduce risk in food establishments. Below are several key considerations:

- **Read and understand the EPA-approved label:**

Chemical manufacturers are required by law to have their product evaluated by the EPA for safety, efficacy, and stability. This information will appear on the EPA-approved label in the form of kill claims, contact times, usage instructions, and safety precautions. It is important to review this label to ensure the product meets an establishment’s needs. In addition, it is a violation of federal law to not comply with EPA-approved label use instructions.



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- **Choose products that have a combination of broad and fast kill claims and a favorable safety profile:**

Sanitizers and disinfectants are not all equal, and so it is important to fully understand a product's efficacy and safety profile. Prioritize products that have both a broad spectrum of activity against bacteria and viruses and short contact times (e.g., a minute or less for organisms of interest). Additionally, choose products with a favorable safety profile to reduce risk of exposure for your employees and guests. Adhering to these three criteria when choosing a sanitizer or disinfectant will help reduce risk of illness in an establishment.

- **Ensure products are used for appropriate settings and their intended purpose:**

Be sure that the products are used only for their intended purposes. For example, ensure that only food-contact antimicrobial pesticides are used on food-contact surfaces or that they are rinsed following sanitizing or disinfection. Not adhering to a product's intended use may constitute a violation of federal law and increase risk for illness spread in an establishment.

- **Ensure cleaning and sanitation practices are (firmly) established and staff are properly trained:**

Lack of compliance with EPA-approved label instructions is a major concern in food establishments. Adhering to the proper label use instructions, especially required contact times and safety precautions, is key to reducing risk. All staff should be trained on proper product usage and a plan should be in place to double-check compliance on a frequent basis.

At first glance, cleaning, sanitizing, and disinfecting may all sound identical. However, they are quite different in practice. Understanding the differences, along with adhering to basic sanitation best practices, will help reduce risk of illness spread in a food establishment.

References

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