



# Disinfectants: Are We Doing More Harm Than Good?

*Improper use of cleaning chemicals may inhibit their usefulness*

By Bruce Vance

**I**t's a common belief that to have a clean and healthy facility, every surface must be disinfected. In fact, one residential cleaning company has advertised they will fog your whole home with a disinfectant to sterilize the entire dwelling. But is all this disinfection necessary? Or instead, are we doing more harm than good?

## What Are Disinfectants?

Disinfectants are substances that kill life and are regulated by the U.S.

Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act. In order to be considered a disinfectant, a product must undergo extensive testing to show that it is safe to use and will meet its kill claims when used as directed by the manufacturer and product label.

The EPA must approve a product and its label before it can be sold as a disinfectant. The label on all disinfectants and disinfectant cleaners

will start with the same words: "It is a violation of Federal Law to use this product in any way not indicated on the label."

It is worth noting that these products fall under the category of bactericides—one of the four regulated forms of pesticides—and thus, may require the use of personal protection equipment per label instructions. Client reactions would probably be different if we told them we were going to spray pesticides all over their kitchen counters.



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### How Do You Disinfect?

Disinfectants require you to clean first, apply the disinfectant, and then keep the surface wet for a specified amount of time (also referred to as dwell time), typically as long as 5 to 10 minutes. This is because most disinfectants are unable to break through the top levels of dirt and soil to truly kill germs underneath, and thus, the surfaces require cleaning first.

How many of us actually follow this process? Most of the time when we spray a disinfectant cleaner, we wipe it up right away and believe the surface has been disinfected. Unfortunately, it most likely has not been. The surface may have been sanitized, but it is doubtful the threshold of disinfection has been achieved.

### What Is the Disinfectant Myth in the Cleaning Industry?

Many customers expect their cleaning service to use disinfectants, but in most cases, it is impractical for cleaning services to follow proper disinfection methods in a high-production business model. Of course, in these instances, it is unethical to make a disinfection claim.

### Is it Harmful to Use Disinfectants to Sanitize?

Of several recent studies, the most alarming is one from the University of Ireland in 2010, during which *Pseudomonas* bacteria were exposed to disinfectants that were either improperly mixed or used. The bacteria

became resistant to the disinfectant, but far more alarmingly, 240 times more resistant to the antibiotics used to treat an infection of the bacteria. There is evidence that misuse of disinfectants may be contributing to bacterial antibiotic resistance.

### Are There Other Options Available to Help With Bacteria Removal?

A study at the University of California showed that high-quality microfiber cloths were able to remove 99 percent of soil and bacteria from a hard surface with just water, compared to a 33 percent removal rate for cotton cloths. Some of the microfiber manufacturers have had third-party lab tests show up to a 99.99 percent removal rate with just water. These figures compare very well with disinfectants when they are used correctly. Another option is steam, with some manufacturers claiming disinfection in as little as 3 to 5 seconds for some machines.

### When Is it Appropriate to Use Disinfectants?

When properly used in the right places, disinfectants prevent infections, disease, and save lives. They are certainly appropriate in hospitals and many health care settings. Disinfecting can be a good last step after cleaning up any bodily fluids. If there is an influenza, norovirus, or a similar outbreak, using a disinfectant on high-touch points, such as door knobs, phones, and toilet and sink handles, might make sense.

When disinfecting, it is important to clean each surface with a fresh surface, meaning you must use a fresh disinfectant wipe or turn your cloth to a fresh surface before cleaning each new touch point. One study examining disinfectant wipes found wipes that were used on multiple doorknobs began to add germs—not eliminate them—by the time it touched the third one.

### Bottom Line: Follow the Label

When facilities misuse disinfectants, we not only fail to achieve disinfection,

we may actually contribute to antibiotic resistance, as well. In the instances where it may be appropriate to use them, it's important to follow label directions carefully. Only through proper use will these products remain a blessing to us and not a curse. 🍀

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*A 22-year veteran of the cleaning industry, Bruce Vance and his wife Sarah run a residential cleaning company in Chapel Hill, North Carolina. Vance's passion for excellence in cleaning and protecting his customers has led him to research the scientific and technical aspects of the cleaning profession. Bruce is a Master Textile Cleaner and holds 16 industry certifications. During ISSA/INTERCLEAN® North America 2017, Bruce will co-lead a session called, "IT'S NOT A GAME! What You Don't Know About Cleaning Can Put your Business in JEOPARDY!" During this session, attendees can test their cleaning expertise.*

## Know the Difference

Imagine this scenario: Your custodian sprays a multipurpose cleaning solution on a food service area to clean it, and immediately wipes it dry with a microfiber cloth. Has the surface been cleaned, sanitized, or disinfected? Believe it or not, each possible outcome is not the same. The following descriptions, based on information from the U.S. Centers for Disease Control and Prevention, should help to clarify.

**Cleaning:** This process removes germs from a surface, but does not necessarily kill them. Cleaning a surface with soap/detergent and water mitigates infection by lowering the number of germs on a surface.

**Disinfecting:** This process does not remove dirt, which is why custodians should always clean a surface prior to disinfecting it. When used appropriately, disinfectants kill germs.

**Sanitizing:** This lowers the number of germs to a safe level by either cleaning or disinfecting.



# Safe Disinfectant Use— It's the Law

*Following federal guidelines will protect building occupants and the environment*

By Stephen Ashkin

Several years ago, the U.S. Environmental Protection Agency (EPA) set up a pilot program to help identify “green” disinfectants. Historically, the term green could not be applied to an EPA-registered disinfectant due to concerns that consumers (both household and professional) might not follow the directions on the label for products marketed as greener and safer.

Despite the initial concerns, the pilot program has been moving ahead with manufacturers submitting disinfectants, along with their test results demonstrating the products’ effectiveness against the harmful microorganisms they advertise to eliminate. If the products conform to specific criteria, they can bear the EPA’s Safer Choice logo.

## Regulating Use

Despite the ongoing pilot program, contractors and building managers will still be using traditional EPA-registered disinfectants. One of the most important steps they can take to minimize negative impacts of these products on the user and environment is to simply follow the law and product labels when using them.

Most disinfectants have a label that includes the following statement: “It is a violation of federal law to use this product in a manner inconsistent with its labeling.” The label or information provided with the disinfectant also may state that the user of the product “must follow the use directions on the labeling of each [EPA] registered

product. Failure to follow the specified use-dilution, contact time, method of application, or any other condition of use is considered a misuse of the product and potentially subject to enforcement action under Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).”

Additionally, following a disinfectant’s instructions precisely will help ensure the product is used correctly the first time, minimizing its environmental impact. For example, the label may indicate that surfaces must be cleaned before a disinfectant is applied. The reason for this is simple; the disinfectant will work more efficiently if soils are removed from the surface, and less disinfectant will be needed.

## Dwell Time

One of the most frequently occurring violations of the law involves the “contact time,” also known as dwell time. Many cleaning professionals are aware that disinfectants typically require about 10 minutes of dwell time to work properly. But, the disinfectant’s label also should note that during dwell time, the surface must remain wet. If it dries, as surfaces often do in areas with very low humidity, the user must repeat this step.

## Dilution and Proper Mixing

Another legal issue regarding the use of disinfectants involves dilution. For instance, the label will indicate whether the product is for use at full strength or requires dilution at a specific strength per different requirements. With some disinfectants, the label may even take

this a step further and suggest the product be diluted with warm water. This means diluting a disinfectant without measuring the amount of water and, in some cases, using cold water, is against the law. Label instructions also may note to use fresh solution when mixing the disinfectant in a bucket, since soiled water can reduce the disinfectant’s efficacy.

## Chemical Removal

Finally, the label may indicate that all chemical residue be removed from the surface after cleaning. Typically, the term used is “remove excess.” Excess disinfectant left on a surface can cause rapid resoiling. More importantly, people who touch excess disinfectant may accidentally ingest it or absorb it through their skin, putting their health at risk.

## Protecting Human Health

Using disinfectants as legally instructed is one of the best ways to help protect human health and minimize the potential negative impact of disinfectants on the user and the environment. We are hopeful the EPA pilot program will prove to be a success, leading to the introduction of many more environmentally responsible disinfectants. 🌱

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