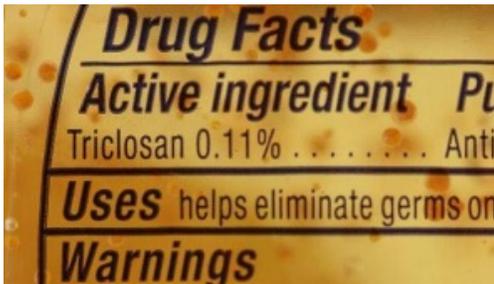


## *Disinfectants: Bad for Microbes, Bad for You*



FROM TIME TO TIME in the news media we see reports of health alerts regarding the flu, common colds and the ever-present Norovirus outbreaks that will want you to run to the nearest market looking for a disinfectant to kill these “bugs”. There are some disinfectant manufactures that make the contemptible claim that their product will “kill ALL germs and viruses” to protect your family. Unfortunately, not all disinfectants are effective against every type of bacteria or bug and while you may think these products are keeping you healthy and safe; the actuality is that some of them may be harmful to both your health and the environment.



**Antibacterial Products** (antimicrobial or antiseptic soaps): In regards to disinfectants, the old adage "What doesn't kill you makes you stronger" is appropriate when talking about bugs (bacteria and viruses). According to Stuart Levy<sup>i</sup> a microbiologist of Tufts University School of Medicine, antibacterial products leave a surface residue that will continue to kill bacteria, but some will survive. The bacteria that survive will have developed a tolerance or have been selected to tolerate the disinfectant. These tolerant bugs will then

reproduce with the mutation to resist the effects of the disinfectant. In 2013 the FDA issued a proposed rule requiring safety and efficacy data from manufacturers if they wanted to continue marketing antibacterial products specifically containing the active ingredients triclosan and triclocarban. To date little information has been provided to the FDA to show that these ingredients are any more effective than plain soap and water in and is why the FDA is issuing a final rule under which these products will no longer be able to be marketed. So, what should you do? The simplest and best proven method is to wash your hands with plain soap and water and avoid touching mucus membranes (eyes, mouth and nostrils) is the most important steps you can take to avoid getting sick and reduce spreading germs.



**Alcohol-based hand sanitizers** (Antiseptic rubs): claim that they “kill 99.99 percent of germs” have recently been addressed by the Food and Drug Administration (FDA)<sup>ii</sup> and the Centers for Disease Control and Prevention (CDC). Both the FDA and the CDC recommends consumers to simply wash their hands with plain soap and water over purchasing over-the-counter hand sanitizers. The FDA does not support manufactures claims because more data is needed to assist the FDA ensure that regular use of these products does not present safety and efficacy concerns. This does not mean the FDA believes these products are unsafe or ineffective, just additional data has been requested by the FDA to support their claims. Additionally, according to the CDC, they are not effective against the

Norovirus. If soap and water are not available, the FDA and CDC recommends using alcohol-based hand sanitizers that contain no less than 60% alcohol until you have access to plain soap and water.



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**Bleach:** is a readily available, inexpensive and an effective disinfectant. In fact, Clorox® bleach is the only bleach registered disinfectant by the Environmental Protection Agency (EPA). Typically 10% concentration in water is effective for killing some bacteria and viruses including staphylococcus, streptococcus, E. coli and salmonella, Norovirus, flu, common cold. However, bleach is also harmful to human health – do not apply to skin and never mix with other disinfectants or cleaners especially ammonia-based cleaners. Also, application to stainless steel will pit and “rust” the surface. If used on these surfaces, it is recommended that you follow-up with 70% alcohol solution to stainless steel surfaces and wiped clean.

**Ammonia-based cleaners:** While these products may be “eco-friendly” over chemical-based products, ammonia-based cleaners are not EPA registered as a disinfectant. Ammonia-based cleaners will not kill staphylococcus bacteria but are excellent glass cleaner since it is known to be a cleaner that leaves no streaks and great for removing soap scums. However, ammonia-based cleaners should never be used with bleach and/or bleach containing products.



Unfortunately, no disinfectant is ideal for every situation. It is important that you define the need and select the proper disinfectant with consideration of the characteristics of a disinfectant to select the most effective and cost-efficient product. Disinfectant considerations to consider: Concentration (how much of the active ingredient or how much to dilute), method of application (spray, wipe, other), contact time, that is how long does it need to be in contact with the surface to be effective; storage (how long can the disinfectant be stored before losing its ability to disinfect). Other considerations that will affect the effectiveness of the disinfectant: Temperature, humidity, surface conditions (rough or smooth, absorbent); other chemicals and interferences. What should you do? Read and understand the instructions and the limitations of the product before selecting a disinfectant.

<sup>i</sup> Scientific American, Strange but True: Antibacterial Products May Do More Harm than Good by Coco Ballantyne. June 7, 2007; Retrieved 12/09/2016: <https://www.scientificamerican.com/article/strange-but-true-antibacterial-products-may-do-more-harm-than-good/>

<sup>ii</sup> U.S. Food and Drug Administration (FDA) : Antibacterial Soap? You Can Skip It -- Use Plain Soap and Water 9/2/2016; Retrieved 12/09/2016: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm378393.htm>