



## Cleaning, Sanitizing, Disinfecting, and Sterilizing. What is the difference?

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### Introduction

COVID-19 has forced everyone to think about social distancing, hand washing, mask-wearing, and the cleanliness of the surfaces we touch. Each of these, when done properly, can reduce the risk of getting and spreading SARS-CoV-2, the virus that causes COVID-19.

Specifically, with the surfaces we touch and equipment we use at home, there is confusion between what it means to clean, sanitize, disinfect, and sterilize surfaces and equipment. Often the confusion around these terms and definitions causes people to perform them improperly. Here we explain the differences between each one of these activities and why they are important when doing them at home.

### What is the goal?

Cleaning, sanitizing, disinfecting, and sterilizing are all actions that reduce the number of germs on commonly used surfaces and objects such as kitchen tables, countertops, light switches and door handles. Germs such as bacteria, viruses, parasites, and some fungi are part of everyday life and many are harmless and can be found everywhere. However, some germs make people sick, and cleaning, sanitizing, disinfecting, and sterilizing are used to reduce the number of germs so they are less likely to make people sick.



Figure 1. Level of germ reduction as a result of cleaning, sanitizing, disinfecting, and sterilizing surfaces (Figure by Reza Ovissipour).

## **Cleaning**

Cleaning alone can reduce germs, and is also the first step before you can sanitize, disinfect, or sterilize. Cleaning removes the things you can see (for example, dirt, dust, or bits of food) and with-it germs from a surface, utensil, piece of equipment, or other objects, by scrubbing, washing, wiping, and rinsing. Commonly this action will make use of soap (or another detergent) and water to physically loosen them from surfaces and objects. For example, the mechanical action of washing hands with soap and water (in other words cleaning hands), can remove germs.

## **Sanitizing**

Remember to clean before you sanitize (as you cannot sanitize a dirty surface). Sanitizing a cleaned surface, utensil, piece of equipment, or other objects, further reduces the number of bacteria on a surface. Sanitizing agents may include chemicals (e.g., bleach, alcohol) or devices (e.g., UV light). All sanitizers will have a label that provides instructions on how to mix and use to maximize effectiveness against germs.

## **Disinfecting**

Remember to clean before you disinfect (as you cannot disinfect a dirty surface). Disinfecting a cleaned surface, utensil, piece of equipment, or other objects, reduces a larger number of germs, including viruses that cause COVID-19. Similar to sanitizers, there are a range of common chemical disinfectants such as bleach and alcohol. Each disinfectant should be mixed and used according to its label instructions. Disinfection usually requires that the product remains on the surfaces and objects for a certain period of time to maximize effectiveness against germs.

## **Sterilizing**

Sterilizing destroys bacteria, viruses, parasites, and fungi on surfaces. Typically, sterilization is used in the medical field; for example, surgical instruments are sterilized before use in an operating room, or dental instruments before a patient's teeth cleaning.

## **When should I clean?**

Surfaces should always be cleaned once they are used or become dirty. Cleaning is an easy way to promote good health and hygiene and prevent future problems from unsanitary (i.e., dirty) conditions.

## **When should I sanitize or disinfect?**

Choosing whether to sanitize or disinfect will depend on what kind of germs you want to reduce, and how often you touch/use the surface, utensil, piece of equipment, or another object. For example, you should disinfect, instead of sanitize a cleaned surface, when the goal is to reduce viruses like SARS-CoV-2. Generally, a disinfecting solution often has a stronger concentration and is in contact with the surface for a longer amount of time compared to a sanitizing solution.

Also, it is important when deciding which sanitizer or disinfectant to use, to read the label for information on proper mixing and use of the compound. For example, some disinfectants require a freshwater rinse after application due to the higher concentration of the chemical(s) that is used.

## **Can I clean and sanitize or disinfect something at the same time?**

Yes. There are products that can combine actions. For example, sanitizing or disinfecting wipes will clean a surface, and it can leave behind chemical(s) to sanitize or disinfect the surface. Make sure to follow the instructions on the label for these products so the chemical remains on the surface for the appropriate amount of time to ensure effectiveness.

## Can I clean without sanitizing or disinfecting?

Yes, you can clean a surface without sanitizing or disinfecting. Cleaning loosens and removes dirt such as food debris and with it some germs. As discussed above, cleaning is an easy way to promote good health and hygiene at home and prevent future problems from unsanitary (i.e., dirty) conditions.

## Can I sanitize or disinfect without cleaning first?

No. Always clean before sanitizing or disinfecting. If the soil (i.e., dirt, dust, food debris) is not removed from surfaces before sanitizing, this residue can reduce the germ-killing ability of the sanitizer or disinfectant.

## What should I do? Should I sanitize or disinfect?

It is recommended that you clean surfaces regularly, especially after use. You should also sanitize or disinfect surfaces depending on your goal. For example, if your goal is to reduce the number of germs after handling raw meat on your kitchen counter, then you should use a sanitizing solution after cleaning. If the goal is to remove viruses such as SARS-CoV-2, from a surface, then use a disinfecting solution after cleaning.

Ask yourself how often this surface gets used or touched? For example, on highly touched surfaces, like doorknobs and bathroom faucet handles, use a disinfecting solution after cleaning to reduce a greater range of germs, including SARS-CoV-2.

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