The Role of Time in Disinfecting Surfaces Against Coronavirus and Other Pathogens

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In a nutshell...

Disinfecting destroys pathogens, including the coronavirus (COVID-19 virus), on surfaces. One important and frequently overlooked aspect of disinfecting surfaces is allowing sufficient time for the disinfecting product to be in contact with the surface (contact time). This article focuses on the role of time in applying surface disinfectants.

In a nutshell...

Cleaning and disinfecting surfaces has been an important topic of discussion since the start of the coronavirus pandemic. Although researchers say touching contaminated surfaces is not the main way we are exposed to the virus (inhaling airborne virus-laden respiratory droplets and aerosols is), the coronavirus can persist on surfaces from minutes to days. How long a virus remains viable on a surface depends on the environment, including factors such as temperature and the initial amount of virus initially deposited on the surface. We use disinfectants to speed up and ensure virus destruction.

Targeted surface disinfection is still recommended as a precautionary measure against the spread of the coronavirus. That includes disinfecting frequently touched surfaces, especially in public places, and to the extent that it is practical, objects brought into your home that others have handled.

Besides the immediate COVID-19 concerns, many other pathogens we fall prey to, such as norovirus, flu, and cold viruses, are known to be transferred from hand to mouth, nose, or eyes after making contact with contaminated surfaces. From a health standpoint, it pays to have a working knowledge of proper surface disinfection. This article focuses on the role of time in disinfecting surfaces.
Cleaning Is Different from Disinfecting

Cleaning and disinfecting are two different activities with very different purposes. Cleaning, usually carried out with water and detergent, removes dirt, grime, and debris from a surface. Cleaning may remove some pathogens, but it can also spread them around to other surfaces via the cleaning cloth or sponge. Disinfecting destroys the vast majority of pathogens on surfaces using an appropriate chemical product applied for a specific length of time. It’s a two-step process: We clean a given surface, then we disinfect it because cleaning removes substances that could react with and decrease the effectiveness of disinfectants. A surface looks much the same after cleaning and disinfecting, but it is much freer of invisible pathogens after that second step.

The Importance of Contact Time When Disinfecting

“Contact time” is the amount of time needed for a given disinfectant to destroy specific pathogens on hard surfaces. Contact times are listed in the use directions on disinfectant product labels. Unfortunately, the very important role of time may be overlooked by consumers who do not read or have difficulty reading or understanding use directions. (We admit they are often printed in very small font!) But simply spraying a surface with disinfectant and immediately wiping it away can reduce its effectiveness because it has not had sufficient time to work.

Common contact times for household disinfectants can vary greatly; contact times for products approved by the U.S. Environmental Protection Agency (EPA) to be effective against the coronavirus, for example, range from 30 seconds to 30 minutes! The average contact time for those products is nearly 6.5 minutes. Consumers who would like to choose products with shorter contact times can access the handy search tool on the EPA List N website. (Simply click “Launch” and then choose “Contact Time” in the menu on the left side of the page. One can then search for products featuring contact times of less than or equal to 1 minute, 5 minutes, 10 minutes, etc.)

Why do contact times vary so much? Different disinfectants may react differently with pathogens. Additionally, the concentration of active ingredient(s) matters. Before a disinfectant product comes to market, industry scientists work to determine the effectiveness, or the “germ-kill” of a given formulation against specific pathogens over a span of time. Disinfectants registered with the EPA must document evidence of their effectiveness when applied according to label use directions. If the product label claims “Kills 99.9% of germs,” consumers can be confident of this result if, and only if, they follow use directions carefully.

The simple fact is that if one does not allow for the correct contact time, the disinfection method may be woefully ineffective. And that matters greatly when it is us against the invisible enemy!

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1 When contact times are prolonged, it may be necessary to re-wet surfaces with disinfectant. EPA lists all approved products for coronavirus (SARS-CoV-2) disinfection in “List N.” The average and range of contact times for these products was calculated using List N data accessed on June 5, 2020.
The COVID-19 pictogram poster above provides directions for cleaning and then disinfecting surfaces with a solution of regular chlorine bleach. Note, Step #2 indicates the bleach solution must remain in contact with the surface for 1 minute. The poster is available for free download.

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