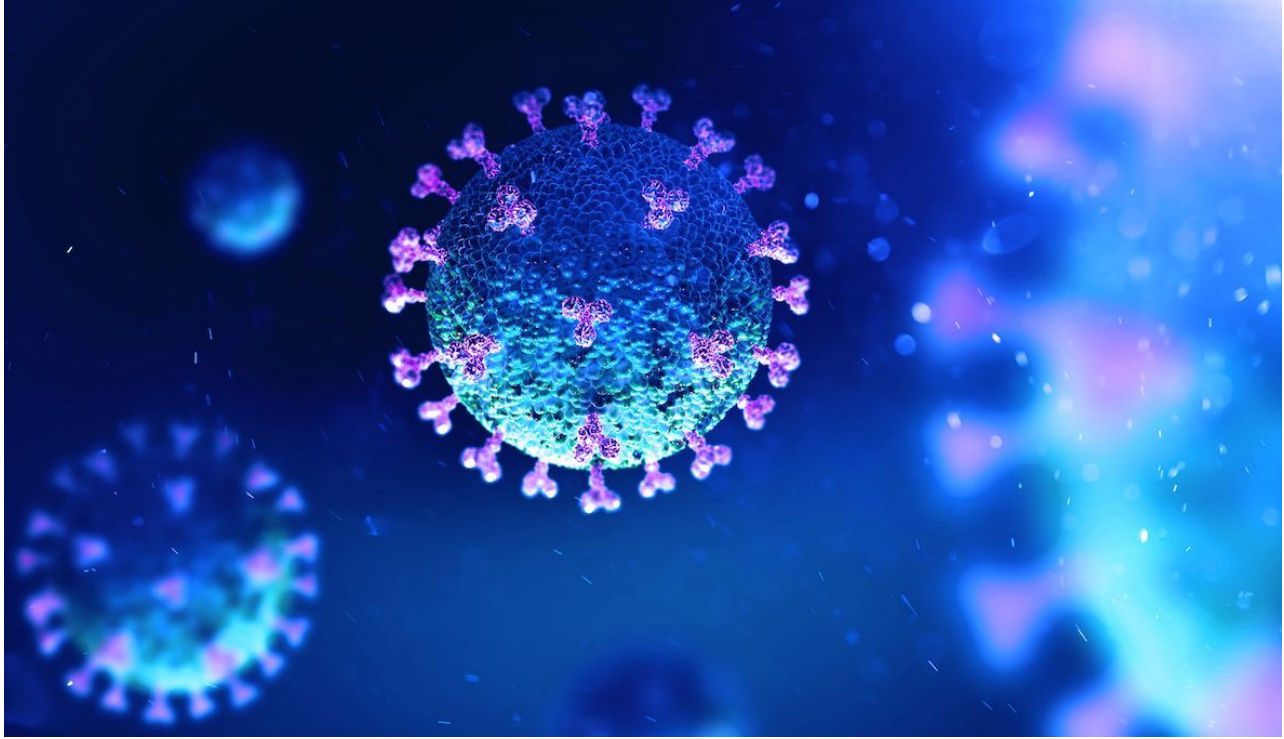


UVC

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According to the CDC, there are currently over 2.6 million cases of coronavirus (COVID-19) in the United States, resulting in over 128,000 deaths. This pandemic is affecting the lives of people all over the world, and everybody is looking for ways to contain and fight the virus.

Sales of ultraviolet (UV) sterilization equipment are skyrocketing. After all – if UV technology is good enough for hospitals and laboratories, certainly it must help in the fight against this pandemic virus.

The good news is that UV, particularly UVC absolutely can help fight COVID-19. But there are some misconceptions circulating about the role UV plays in managing the virus. This article is here to make some clarifications about how UV can be used to kill COVID-19.

How UV Kills Viruses

Not all UV radiation is identical. UV is classified according to its wavelength and energy. The three main types of UV are UVA (315 nm – 400 nm), UVB (280 nm – 315 nm), and UVC (100 nm – 280 nm).

UVC is the most energetic of these three types, and it is the type used in UV disinfection. In nature, almost all UVC is blocked out by the atmosphere, so we are never exposed to it when we go outside. It's UVA and UVB that give us sunburn.

But that doesn't mean UVC can't harm us when we are exposed to it.

Because UVC is so high-energy, it is highly destructive to living tissues. The same sunburn that would take a few hours of sun exposure can occur in minutes from UVC. This also makes it great at killing bacteria and viruses.

When bacteria and viruses are exposed to UVC, their genetic material becomes mutated and they can't reproduce. Because viruses are not true cells – just protein-covered pockets of genetic material – UVC can destroy or deactivate viruses.



UVC kills COVID-19

Coronaviruses are actually nothing new. While COVID-19 is a new strain that's causing a lot of problems, coronaviruses are actually a family of viruses. There was a fairly serious outbreak of a coronavirus called SARS-CoV in 2003, and researchers did some studies at that time about whether UVC could be used to deactivate it.

The results – it can. This is promising news for COVID-19, which is actually just a mutant of the virus from 2003. UVC can kill the COVID-19 viruses on surfaces, and researchers are even working on establishing minimum doses of UVC for sterilizing used N-95 respirators. Given the pressing need for protective equipment in hospitals across the world, this could be an important development.

Limitations of UV Against COVID-19

Though UVC has the potential to kill COVID-19, it's not as simple as shining a bright UVC lamp on every person entering a supermarket, which, believe it or not, somebody did recently suggest to a UV tech company.

It all goes back to how dangerous UVC is. UVC is a great disinfecting tool for surfaces and equipment, but it is not safe for use on or around skin. The WHO specifically recommends against exposing skin to UVC light.

There are a number of safety considerations that companies need to consider before using UVC technology. These include providing adequate protective equipment, extensive training on how to operate the equipment, and minimizing exposure time for all employees.

As far as UVA and UVB, there is not a lot of evidence they can do much against COVID-19. While sunlight, which is full of UVA and UVB, is a common water sterilization technique in developing nations, it takes hours for it to work. Meanwhile, the same study that showed that UVC can deactivate SARS-CoV showed that UVA is pretty much useless at deactivating the virus.

UVB could prove more promising, but the research just isn't there yet to support it. Bad news for anybody hoping the virus would fry in the sun this summer.

UVC as Part of a Larger Strategy

UVC in general has some limitations as far as its ability to kill everything on a surface or piece of equipment. It only works if light hits the pathogen, so textured surfaces often create microscopic shadows that viruses can hide in. There's also the logistical problem of making sure the light hits all the surfaces of the room. So while UVC is a great, clean method of sterilization that involves no harsh chemicals, it is far from perfect. That's why it is important to identify the optimal UVC solution in terms of power and light positioning abilities to reach surfaces beyond shadows.

Instead of relying on UV sterilization entirely, it's important to use it in the context of a larger sanitation strategy. UVC is a great complement to surface cleaning killing any viruses left behind afterwards.

Like any strategy for fighting this deadly virus, UVC is one tile in a mosaic of tools. Our best bet against COVID-19 is to use UVC safely along with other sterilization methods, social distancing, and contact tracing.