



# COVI-19 UPDATE

Make an educated purchase. Before you purchase a PARAGON UV-C Sanitizer, understand the available science and limitations of UV-C Sanitizers



## ABOUT THE PARAGON S20 UV-C SANITIZING CABINET

### Can UV-C lamps kill viruses?

Yes, UV-C lamps kill up to 99.9% of most viruses, airborne bacteria and mold spores and help prevent future mold growth.

### Can germicidal UVC penetrate surfaces or substances?

No - germicidal UV-C sterilizes only what it comes in contact with. The UVC light will stop when it hits these exterior surfaces. The effectiveness of UV-C depends on the length of time a microorganism is exposed to UV-C, the intensity and wavelength of the UV-C radiation, the presence of particles that can protect the microorganisms from UV-C, and a microorganism's ability to withstand UV-C during its exposure.

### How much intensity and how close do I need to kill certain organisms?

The exposure of UV-C is the product of time and intensity. High intensities for a short period and low intensities for a long period are fundamentally equal in lethal action on bacteria. The inverse square law applies to germicidal ultraviolet as it does to light: the killing power decreases as the distance from the lamps increases. The average bacterium will be killed in 60 seconds at a distance of six inches from a lamp in a PARAGON S20 UV-C Sanitizing Cabinet.

### How do germicidal lamps kill?

Ultraviolet technology is a non-chemical approach to disinfection. In this method of disinfection, nothing is added which makes this process simple, inexpensive and requires very low maintenance. UV light in the germicidal wavelength causes damage to the nucleic acid of microorganisms by forming covalent bonds between certain adjacent bases in the DNA. The formation of such bonds prevent the DNA from being unzipped for replication, and the organism is unable to reproduce. In fact, when the organism tries to replicate, it dies.



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## WARNINGS

### What damage will the lamps do to me?

Prolonged, direct exposure to UV-C (ultraviolet C-spectrum) light can cause temporary skin redness and eye irritation, but does not cause skin cancer or cataracts. American Ultraviolet systems are designed with safety in mind and, when properly installed by a professional contractor, do not allow exposure to ultraviolet irradiation and allow for safe operation and maintenance. If you are exposed to direct germicidal light, it can burn the top surface of your skin. If your eyes are exposed, it would be similar to a "welder's flash", and your eyes can feel dry or gritty. At no time do germicidal lamps cause any permanent damage.

### What effects does UV light have on surrounding materials?

Long-term exposure of germicidal UVC light to plastics will shorten the shelf life of the plastic by approximately 10%. Example: If the plastic would normally last about ten years, and it's exposed to germicidal UVC light the entire time, it would probably need to be replaced in 9 years. Plant life may be damaged by direct, or reflected, germicidal ultraviolet rays. Transient dyes and colors may be faded from prolonged exposure to ultraviolet rays.

### What safety precautions should be taken when using germicidal UVC?

In personal protection applications (the use of lamps for room irradiation in homes, schools, offices, etc.), indirect fixtures such as TB and Corner Mount fixtures are mounted above eye level. Only the upper air is irradiated and persons or animals occupying the area receive no direct exposure. Direct ultraviolet irradiations irradiate the air in the entire room. In such installations, personnel should be protected by wearing either goggles or face shields that are designed for ultraviolet exposure, and by covering as much skin as possible with clothing or sun block.

Another potential danger is the UV production of ozone, which can be harmful to one's health. The US Environmental Protection Agency designated 0.05 parts per million (ppm) of ozone to be a safe level. Lamps designed to release UVC and higher frequencies are doped so that any UV light below 254 nm wavelengths will not be released, to minimize ozone production. A full-spectrum lamp will release all UV wavelengths, and will produce ozone when UV-C hits oxygen ( $O_2$ ) molecules.

## MAINTENANCE

### How often do the lamps need to be replaced?

PARAGON's UV-C lamps typically have a useful life of approximately 6,000-9,000 hours (1 year) with standard use. As a rule of thumb, anything over this 9,000 hour range has a decreasing UV-C lamp effectiveness.

### Should UVC lamps be cleaned?

Yes - depending on the surrounding environment, UVC lamps should be checked periodically (approximately every three months), and can be cleaned with a dry cotton cloth or paper towel. Wear rubber gloves and clean with alcohol only. This will also help maximize lamp life.