



# Ultraviolet Disinfection vs. Human Coronaviruses

Ultraviolet (UV) disinfection technologies for biologically contaminated air and surfaces have been highlighted by the global health crisis caused by the COVID-19 pandemic.

Currently, various establishments such as health care facilities, shopping malls, and airports have been utilizing UV disinfection devices to sterilize highly exposed surfaces and circulating air flows. In addition, UV sterilization is also used to sanitize doorknobs, personal protective equipment, and purify enclosed spaces. The commonly utilized UV light type is called the far-UVC light which provides a short-range wavelength of 207 nm to 222 nm. This UV light efficiently and safely inactivates airborne human coronaviruses including the SARS-CoV-2.

## ULTRAVIOLET (UV) DISINFECTION

UV disinfection system is where the UV radiation, generated by an electrical discharge through mercury vapor, targets an organism's DNA and RNA, commonly incurring damage by causing the formation of thymine dimers which impedes the organism's ability to replicate, infect, and reproduce.

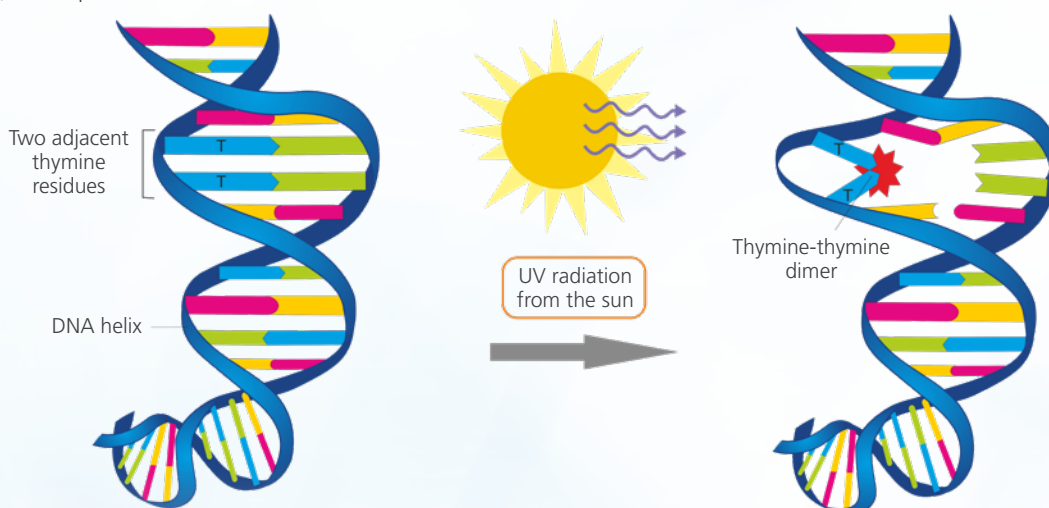


Figure 1. Molecule dimerization particularly Thymine upon exposure to UVC.

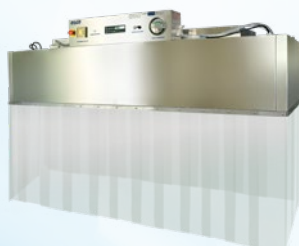
## ESCO LIFESCIENCES SOLUTIONS

Secure your laboratory against human coronaviruses including SARS-CoV-2 with Esco Lifesciences' solutions. These can be equipped with UV disinfection features that are proven effective for the decontamination of the work zone, hence, preventing possible product contamination and unnecessary pathogen exposure of the user.



AC2-4S

Class II Biological Safety Cabinet



CLAF-PC-AC-H13

Ceiling Laminar Airflow



CYT-4A

Cytoculture® Cytotoxic Safety Cabinet

References:

- [1] Center for Devices and Radiological Health. (n.d.). UV Lights and Lamps: Ultraviolet-C Radiation, Disinfection, and Coronavirus. U.S. Food and Drug Administration. Retrieved October 20, 2021, from <https://www.fda.gov/medical-devices/coronavirus-covid-19-and-medical-devices/uv-lights-and-lamps-ultraviolet-c-radiation-disinfection-and-coronavirus>.
- [2] CS, T. C. C. L. (n.d.). Inactivation of viruses on surfaces by ultraviolet germicidal irradiation. *Journal of Occupational and Environmental Hygiene*. Retrieved October 20, 2021, from <https://pubmed.ncbi.nlm.nih.gov/17474029/>.
- [3] Far-UVC Systems. 2021. Far UVC Systems (222 nm Light) by UEC Energy. [online] Available at: <https://far-uv-c-systems.com/> [Accessed 22 October 2021].
- [4] Kim, S., Kim, D. and Kang, D., 2021. Using UVC Light-Emitting Diodes at Wavelengths of 266 to 279 Nanometers To Inactivate Foodborne Pathogens and Pasteurize Sliced Cheese. [online] NCBI. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4702654/> [Accessed 21 October 2021].
- [5] Raeeszadeh, M., & Adeli, B. (2020, October 14). A critical review on ultraviolet disinfection systems against COVID-19 outbreak: Applicability, validation, and safety considerations. *ACS Photonics*. Retrieved October 20, 2021, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7571309/>.
- [6] UVC India (2021). Sanitization is Integral part of Life now. [online] Uvcindia.com. Available at: <http://www.uvcindia.com/index> [Accessed 20 October 2021].

