



Lambent Hygienics

Bringing the outside inside to make the inside safe again.

Outside has sunshine and wind. Inside, well it's just an enclosed space.... We thought we had it all figured out with lighting and air conditioning. But Covid19 has shown us that being together indoors is not safe unless new measures are taken.

SUNLIGHT

Supreme Court Justice Louis Brandeis is often quoted “sunlight is said to be the best disinfectant”. He probably didn’t know much about microbiology, but given enough time, sunlight will inactivate viruses and other microorganisms like bacteria, fungi and their spores. Sunlight is composed of a broad spectrum of wavelengths. Some is visible, some is not. One of the invisible bands is the Ultraviolet (UV) band and is responsible for inactivating viruses and other microorganisms.

Germicidal lamps (medium pressure mercury vapor) have been used to sterilize surfaces for 100 years. They work by emitting a peak wavelength (254 nm) that just happens to damage DNA and RNA. A germicidal lamp can be left on in a room and it will sanitize the environment but people need to keep their distance. As soon as the lamp is turned off and people return to the room, virus can once again be spread. In-duct UV disinfection systems are available but they don’t sanitize surfaces.

The CDC and others have determined that Covid19 transmission is more likely via airborne droplets and aerosols than by surface contamination. The Holy Grail for viral inactivation would be to continuously sanitize air and surfaces. What if a room had germicidal lamps that were always on but positioned so the occupants’ UV254 exposure did not exceed the published limit of 6 millijoules per square centimeter (mJ/cm^2)?

Wind

Besides sunlight, why is it safer outside? Wind. It moves vast quantities of air, transporting and diluting viruses. *Dilution is the solution to pollution.* ASHRAE guidelines suggest increasing the air exchange rate from the current standard of once per hour to three times per hour. Ceiling fans can direct air up to the higher intensity UV energy.

The Lambent Hygienics Solution

Our solution quickly draws the air away from lower portion of an occupied space to the top of that space where UV254 lamps illuminate the air and quickly inactivate viruses before they can drop back down to the occupied level. The UV254 lamps are sized and high enough to not exceed the exposure limit of 6 mJ/cm² at the occupied level. *Wind and sunshine.*

- Most occupied spaces will be different shapes and sizes. Lambent Hygienics will survey the space and design a layout as well as electrical requirements. The existing air handling system will be addressed to provide the optimum air flow.
- Licensed contractors will install the lamps and fans and make any duct adjustments.
- After installation, Lambent Hygienics will perform a validation on lamp output and airflow.
- An annual service visit is recommended to replace lamps and validate lamp output and airflow.

The Lambent Hygienics Solution can be applied to virtually any indoor public space.

