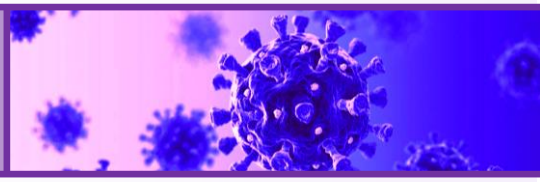
Return With Confidence.
The Science Behind Sanilume.

SaniLume

Video

Does UVC Kill Covid-19?

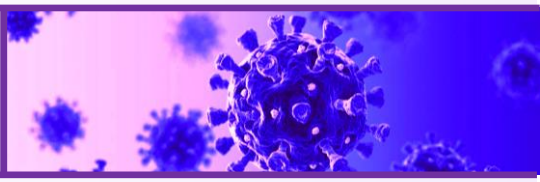


There is no longer any debate.

American Journal of Infection Control
Volume 48, Issue 10, October 2020, Pages 1273-1275

"The coronavirus SARS-CoV-2 pandemic became a global health burden. We determined the susceptibility of SARS-CoV-2 to irradiation with ultraviolet light. **The virus was highly susceptible to ultraviolet light.**

Does Covid19 Spread From Surface Contact?



Also, there is no more debate.

"A year into the pandemic, the evidence is now clear. **The coronavirus SARS-CoV-2 is transmitted predominantly through the air** — by people talking and breathing out large droplets and small particles called aerosols. Catching the virus from surfaces — although plausible — seems to be rare" (E. Goldman *Lancet Infect. Dis.* **20**, 892–893; 2020).

"Now that it is agreed that the virus transmits through the air, in both large and small droplets, efforts to prevent spread should focus on improving ventilation or installing rigorously tested air purifiers."

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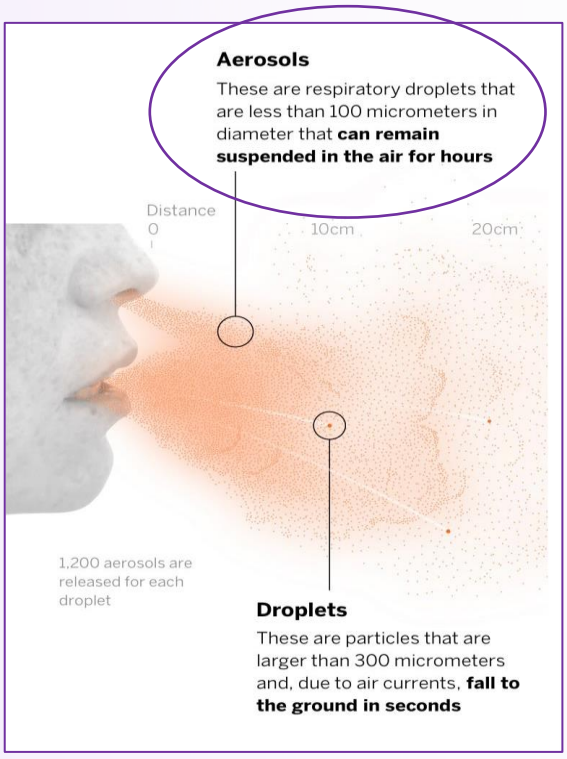
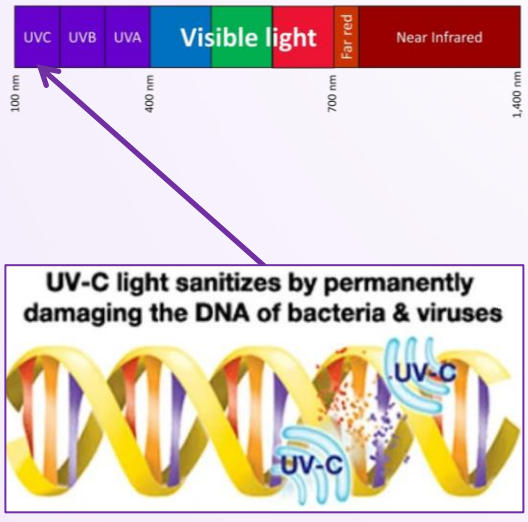


How Does Covid 19 Transmission Occur?

Governing bodies throughout the world like WHO, FDA, CDC and Health Canada now widely recognize the role played by the transmission of aerosols – tiny contagious particles exhaled by an infected person that remain suspended in the air of an indoor environment for many hours.
Health Canada Dr. Fauci



How Can Pathogens Be Eliminated?

UVC light has been used over the last century as a scientifically proven method of pathogen disinfection.
All pathogens such as viruses, bacteria, mold spores and funguses can be systematically killed.

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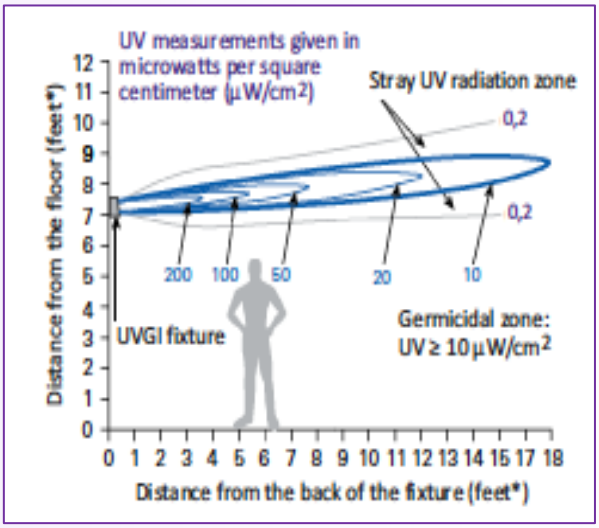
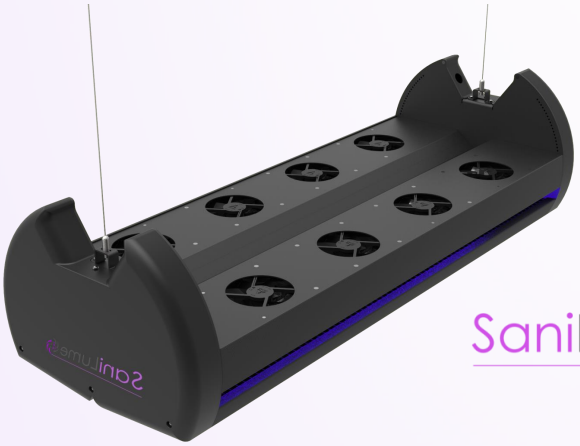


What Is The Best Way To Use UVC to Eliminate Germs?

The world's main governing body for lighting (IES) states that "Upper room air UVC is by far the most effective way to kill airborne pathogens". They also state that UVC systems in HVAC and air purifiers are ineffective.

Upper-air units continuously emit UV-C rays above people's heads eliminating viruses, germs and bacteria. **However, their effectiveness depends greatly on how well the room air is mixed with the UVC light.**



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Traditional Fixture

What Makes Sanilume The Most Effective GUV Fixture On The Market?

Unlike traditional fixtures, Sanilume uses patent pending new technology that uses a high capacity fan system . It cycles the room air through the UVC rays and fixture approx. every 2 minutes (400 sq. ft.) This creates approx. 35 total equivalent air changes per hour (eACH). Additionally, Sanilume features adjustable apertures that allow the UVC output to be increased as ceiling heights increase: **Sanilume** Max UVC Output: 7 watts,

Traditional Fixture: 1.5 watts

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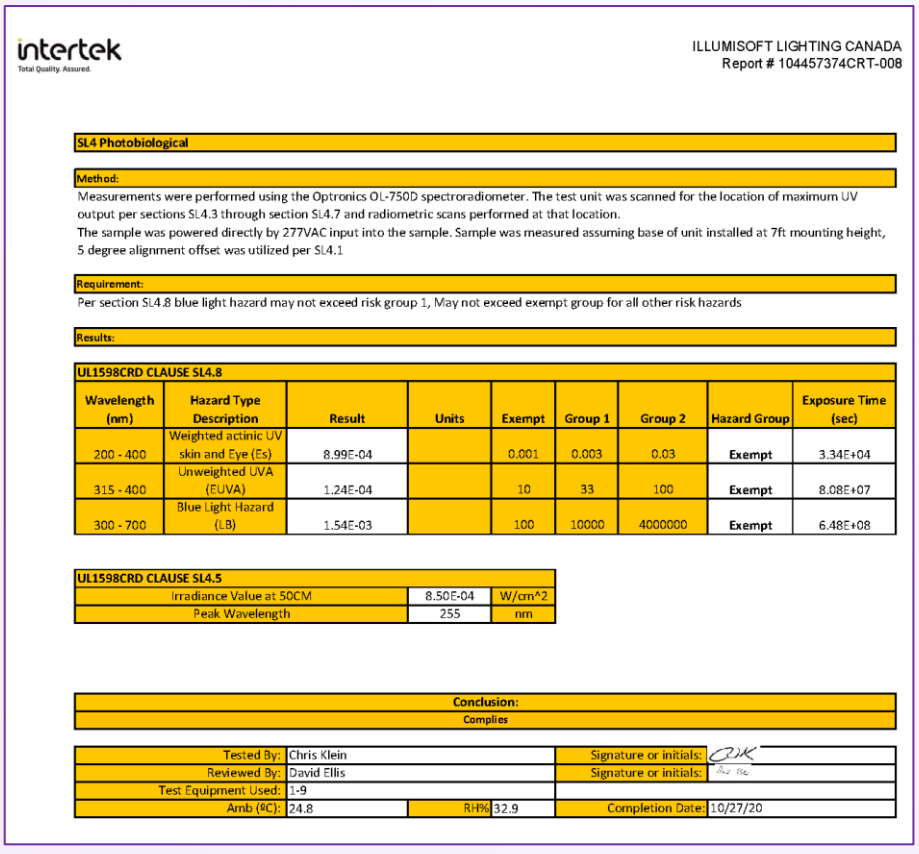
Most Importantly, Is Sanilume Safe?

Upper room air type GUV fixtures have been in use for over 60 years, mostly in medical clinics and hospitals, with an excellent safety track record.

Sanilume has been tested and certified that it is below the UV exposure guidelines for an 8 hour day used by nearly all health governing bodies around the world. As shown below, our fixture is in the "exempt" category (below the exposure limits) when the bottom of the fixture is mounted at a 7 ft. height.



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ILLUMISOFT LIGHTING CANADA
Report # 104457374CRT-008

SL4 Photobiological

Method:

Measurements were performed using the Optronics OL-750D spectroradiometer. The test unit was scanned for the location of maximum UV output per sections SL4.3 through section SL4.7 and radiometric scans performed at that location.
The sample was powered directly by 277VAC input into the sample. Sample was measured assuming base of unit installed at 7ft mounting height, 5 degree alignment offset was utilized per SL4.1

Requirement:

Per section SL4.8 blue light hazard may not exceed risk group 1, May not exceed exempt group for all other risk hazards

Results:

UL1598CRD CLAUSE SL4.8

Wavelength (nm)	Hazard Type Description	Result	Units	Exempt	Group 1	Group 2	Hazard Group	Exposure Time (sec)
200 - 400	Weighted actinic UV skin and Eye (Es)	8.99E-04		0.001	0.003	0.03	Exempt	3.34E+04
315 - 400	Unweighted UVA (EUVA)	1.24E-04		10	33	100	Exempt	8.08E+07
300 - 700	Blue Light Hazard (LB)	1.54E-03		100	10000	4000000	Exempt	6.48E+08

UL1598CRD CLAUSE SL4.5

Irradiance Value at 50CM	8.50E-04	W/cm^2
Peak Wavelength	255	nm

Conclusion:
Complies

Tested By:	Chris Klein	Signature or initials:	CK
Reviewed By:	David Ellis	Signature or initials:	
Test Equipment Used:	1-9		
Amb (ºC):	24.8 RH% 32.9	Completion Date:	10/27/20

Sanilume has been safety certified to UL standards.

ETL CLASSIFIED
C ETL US
LISTED
Intertek
5005590

Despite inaccurate information being disseminated from other UVC device manufacturers, these types of products **do not require certification** with Pest Management Regulatory Agency or any other regulatory body.

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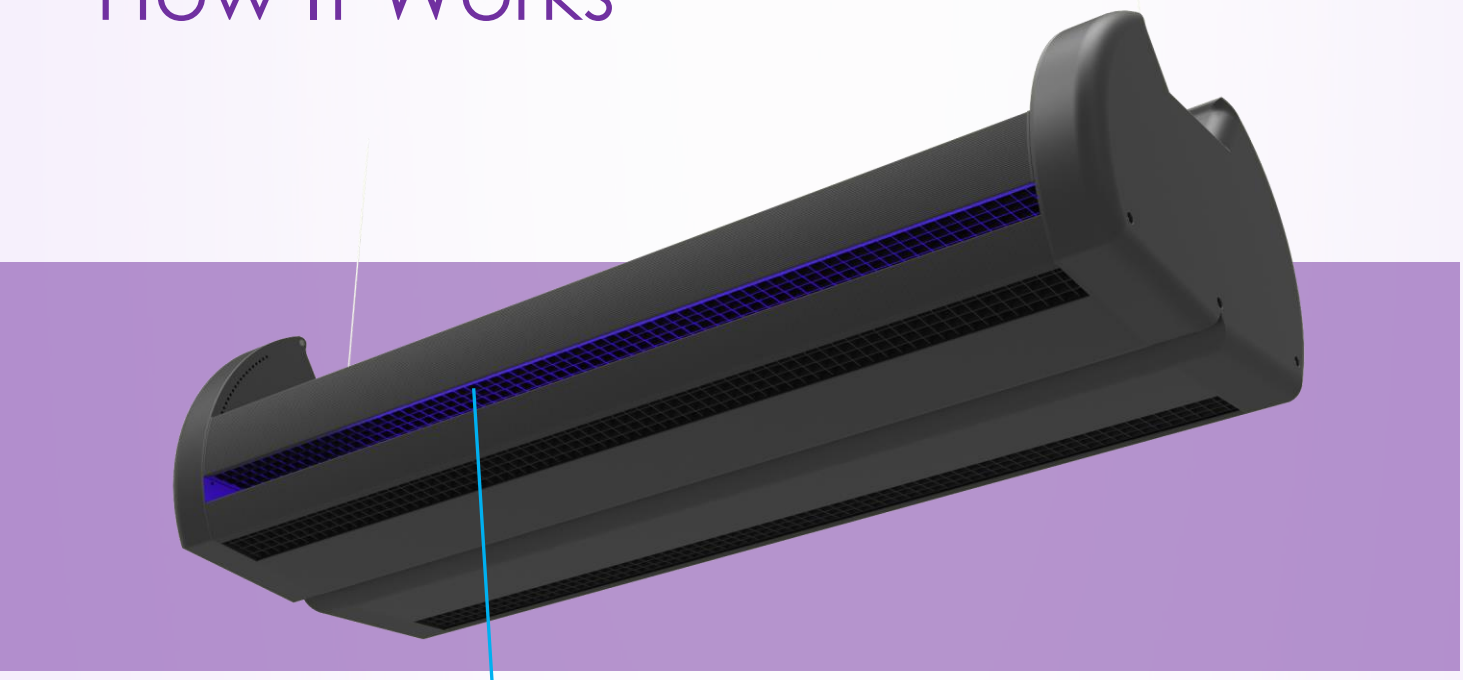
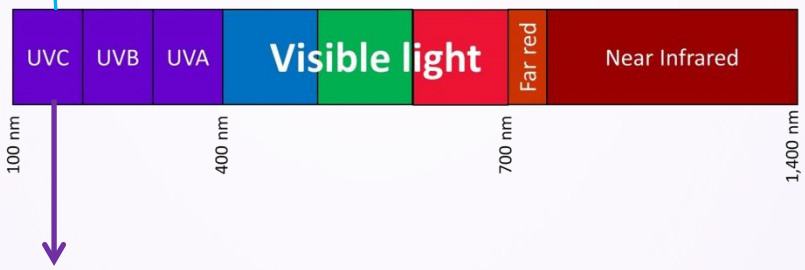
How It Works





254 NM UVC

UVC light in the 254 nm spectrum has been used for nearly a century as a scientifically proven method of pathogen disinfection in the upper areas of indoor spaces, above people's heads. Up to 99% of common pathogens such as viruses, bacteria, mold spores and funguses are systematically eliminated.

SaniLume

People Safe Pathogen Inactivation Zone

Using proprietary technology and clean modern compact design, UVC light is directed to a narrow zone safely above people's heads. Rising convection currents within the room are greatly amplified by our fixture and cycle the air through the pathogen elimination zone many times per hour.

SaniLume

US National Library of Medicine National Institutes of Health:

“The use of mixing fan, and air exchange rate significantly affected UV effectiveness.”

Our fixture enable over **25,000 cubic feet of air per hour** to travel through the fixture and pathogen elimination zone, disinfecting a 400 sq. ft. room approximately every two minutes.

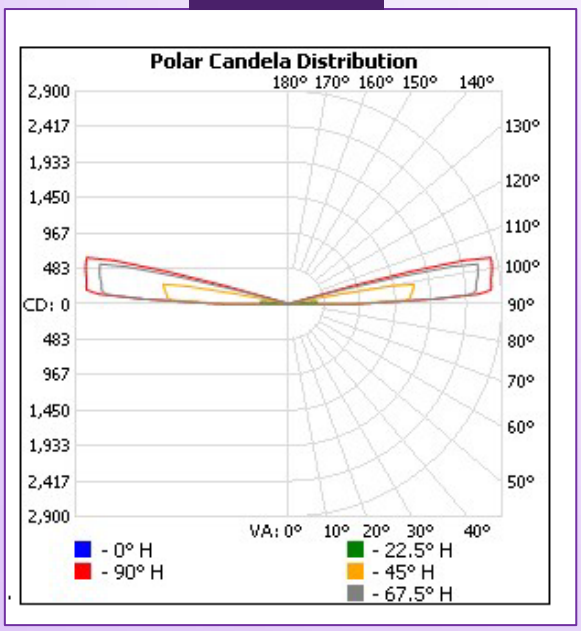
SaniLume

Adjustable Aperture

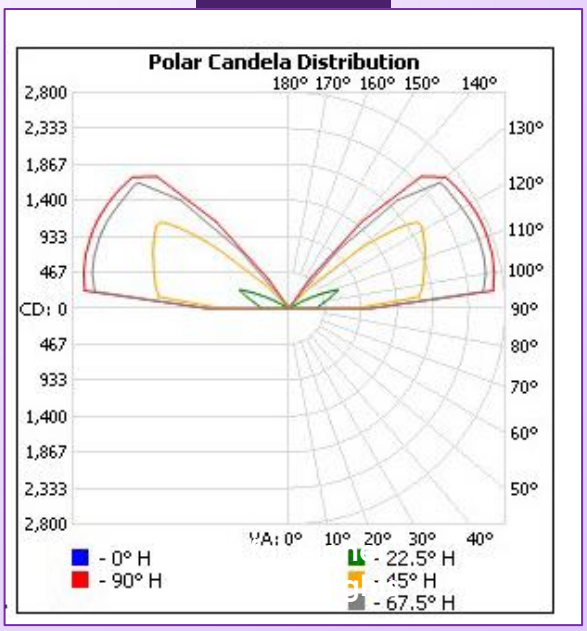
Adjustable Ceiling Heights

With our patented adjustable aperture, our fixtures can be adjusted on site to maximize occupant safety and also to increase the amount and distribution of UVC energy in higher ceiling spaces.

Set For 8 Ft. Ceilings



Set For Tall Ceilings



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Where To Use It

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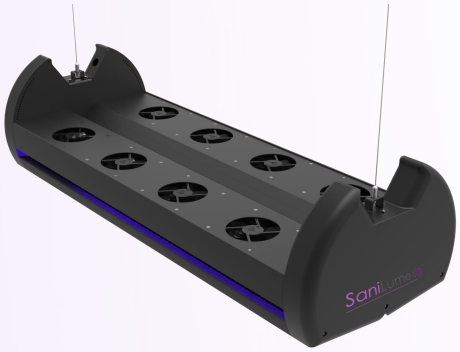


Offices

Areas where people congregate

Schools

Retirement Homes

Hospitals

Gyms

Technical Appendices

COVID-19: Main modes of transmission - Canada.ca

Government of Canada / Gouvernement du Canada

Canada.ca > Coronavirus disease (COVID-19) > For health professionals

COVID-19: Main modes of transmission

On this page

How COVID-19 spreads

SARS-CoV-2, the virus that causes COVID-19, spreads from an infected person to others through respiratory droplets and aerosols created when an infected person coughs, sneezes, sings, shouts, or talks. The droplets vary in size from large droplets that fall to the ground rapidly (within seconds or minutes) near the infected person, to smaller droplets, sometimes called aerosols, which linger in the air under some circumstances.

The relative infectiousness of droplets of different sizes is not clear. Infectious droplets or aerosols may come into direct contact with the mucous membranes of another person's nose, mouth or eyes, or they may be inhaled into their nose, mouth, airways and lungs. The virus may also spread when a person touches another person (i.e., a handshake) or a surface or an object (also referred to as a fomite) that has the virus on it, and then touches their mouth, nose or eyes with unwashed hands.

Technical Appendices

Fauci: "There's good enough data to say that aerosol transmission does occur"

From CNN's Amanda Watts

Dr. Anthony Fauci testifies at a hearing in Washington, DC, on September 23. Alex Edelman/Pool/Getty Images

Dr. Anthony Fauci, the nation's leading infectious disease expert, believes "there's good enough data to say that aerosol transmission does occur."

Speaking to New Jersey Gov. Phil Murphy on Thursday, Fauci explained, "Aerosol means the droplets don't drop immediately – they hang around for a period of time."

"Generally if you have droplets that come out of a person, they generally go down within six feet. So, if you're six feet distance, you're wearing a mask, you don't worry about that," he said.

This becomes "very relevant" when you are inside where there is poor ventilation.

Fauci said we shouldn't be "getting bent out of shape," about whether Covid-19 aerosolizes or not. "Act like it's occurring – and then do the same thing you've been doing otherwise."

"Which means: Wear the mask," he added.

Illumination Engineering Society Report CR-2-20

1.3 Can UV-C kill viruses as well as bacteria?

Yes, UV-C kills living bacteria, but viruses are technically not living organisms; thus, we should correctly say "inactivate viruses." Individual, energetic UV-C photons photochemically interact with the RNA and DNA molecules in a virus or bacterium to render these microbes non-infectious. This all happens on the microscopic level. Viruses are less than one micrometer (µm, one-millionth of a meter) in size, and bacteria are typically 0.5 to 5 µm.

1.4 Can UV-C effectively inactivate the SARS-CoV-2 virus, responsible for COVID-19?

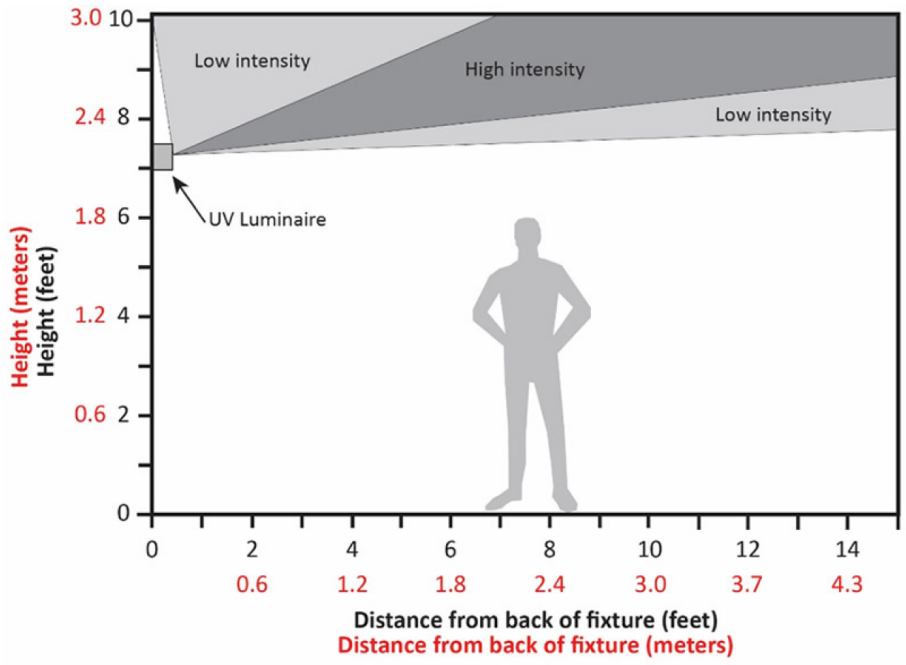
Yes, if the virus is directly illuminated by UV-C at the effective dose level. UV-C can play an effective role with other methods of disinfection, but it is essential that individuals be protected to prevent UV hazards to the eyes and skin as elaborated in **Section 4**. UV-C should not be used to disinfect the hands!

Technical Appendices

Illumination Engineering Society Report CR-2-20

3.2 Why is upper-room GUV more effective than UV in ventilation ducts or in room air cleaners?

Upper-room GUV (see **Figure 3-1**) disinfects large volumes of room air (above occupants' heads) at once, resulting in high "equivalent" air changes per hour (ACH) in terms of air disinfection only—GUV does not dilute odors or CO_2, the main functions of building ventilation. Odor control and CO_2 removal are accomplished by relatively low levels of ventilation (1 to 2 ACH), but air disinfection requires much higher rates of ventilation (6 to 12 ACH), or the equivalent produced by upper-room GUV. Two hospital controlled studies [13, 14] have shown upper-room GUV to be about 80% effective against tuberculosis (TB) spread. Even when GUV is confined to the upper room, good air mixing (ideally with low-velocity ceiling fans but easily accomplished by other types of forced-air ventilation) results in very high equivalent ACH in the lower, occupied space—estimated to be an additional 24 ACH in a South African study.[13]



Illumination Engineering Society Report CR-2-20

3.3 Is GUV inside air ducts sufficient for room-air disinfection?

When UV is used in ducts, although it ensures that recirculated air does not have viable pathogens, it unfortunately does relatively little to prevent person-to-person transmission in a room where both an infectious source and other susceptible persons share the same air. For effective interruption of transmission, air disinfection has to occur in the same room where transmission is occurring. Portable air cleaners can be placed in rooms where there is a risk of transmission, but moving large volumes of air through any device is difficult, limited by the clean-air delivery rate of the portable air cleaner. Often when the clean air delivery rate is converted to equivalent ACH, the result is a disappointing 1 to 2 ACH, far too little to effectively prevent transmission. A large air cleaner in a small room may be effective, but for larger rooms, air cleaners are simply an impractical approach to high levels of air disinfection, compared to upper-room GUV. Air cleaners may have value in a confined space where GUV is desired.

Technical Appendices

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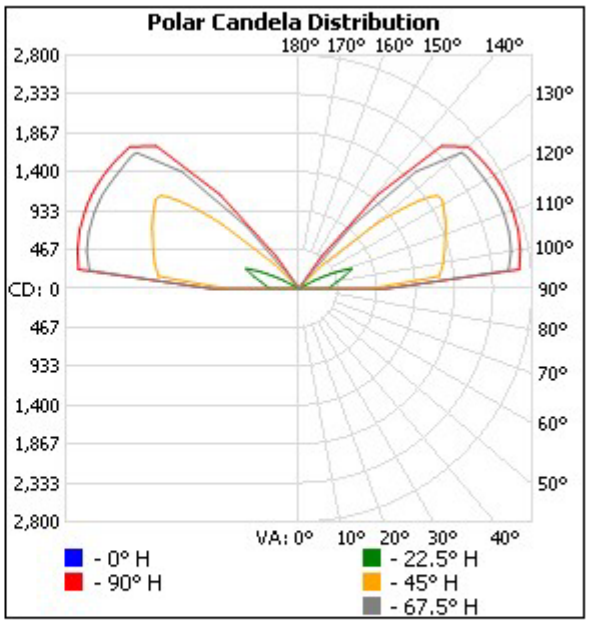
RADIOMETRIC .IES FILE

(see notes below)



Filename: 104457374CRT-003 Config 2 _ IES

Manufacturer: ILLUMISOFT LIGHTING CANADA
Luminaire: UPPER ROOM AIR GERMICIDAL FIXTURE
Luminaire Cat: SANILUME V2
Lamp: Hg Lamp
Distribution: Quadrilateral Symmetry
Lamp Output: Total luminaire Lumens: 6978.6
Max Candela: 2,733.0 at Horizontal: 90°, Vertical: 112°
Input Wattage: 97.89
Luminous Opening: Rectangle w/Luminous Sides (L: 34.56", W: 13.56", H: 0.6")
Test: The data set was measured in RADIOMETRIC UNITS. The following applies for data in this .IES file: Lumens-> mW, lux-> mW/m^2, candela-> mW/sr
Test Lab: Intertek Cortland
Near Field Test: Test distance of 194.4cm (max per gonio limits for UV for this EUT). Inverse square law may not be appropriate based on product dimensions.
Photometry : Type C
Cutoff Class: Noncutoff
Nema Type: 3 X 1

Flood Summary

	Efficiency	Lumens	Horizontal Spread	Vertical Spread
Field (10%):	97.4%	6,799.4	34.7	9.8
Beam (50%):	79.7%	5,565.2	49.5	n/a
Total:	100%	6,981.0		

Zonal Lumen Summary

Zone	Lumens	% Luminaire
0-30	2.2	0%
0-40	4.1	0.1%
0-60	7.6	0.1%
60-90	199.6	2.9%
70-100	1,618.8	23.2%
90-120	4,671.0	66.9%
0-90	207.2	3%
90-180	6,771.4	97%
0-180	6,978.6	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.3	0.0%	90-100	1,421.3	20.4%
10-20	0.8	0.0%	100-110	1,678.1	24%
20-30	1.2	0.0%	110-120	1,571.5	22.5%
30-40	1.9	0.0%	120-130	1,290.8	18.5%
40-50	1.8	0.0%	130-140	694.0	9.9%
50-60	1.7	0.0%	140-150	106.1	1.5%
60-70	2.2	0.0%	150-160	5.7	0.1%
70-80	2.9	0.0%	160-170	3.0	0%
80-90	194.5	2.8%	170-180	0.9	0%

Technical Appendices

Public Health Rep. 2008 Jan-Feb; 123(1): 52–60.
doi: 10.1177/003335490812300108

PMCID: PMC2099326
PMID: 18348480

Safety of Upper-Room Ultraviolet Germicidal Air Disinfection for Room Occupants: Results from the Tuberculosis Ultraviolet Shelter Study

Edward A. Nardell, MD,[a] Scott J. Bucher, MA,[b] Philip W. Brickner, MD,[b] Charles Wang, BA,[b] Richard L. Vincent, BSc,[b] Kathleen Becan-McBride, EdD,[c] Mark A. James, PhD,[d] Max Michael, MD,[e] and James D. Wright, PhD[f]

Conclusion

These findings demonstrate that careful application of upper-room UVGI can be achieved without an apparent increase in the incidence of the most common side effects of accidental UV overexposure.

Bench-scale and room-scale experiments clearly demonstrate the effectiveness of ultraviolet germicidal irradiation (UVGI), which consists primarily of shortwave (254 nm or UV-C) energy, for inactivating a wide range of aerosolized microorganisms.[1–9] Based on these and other data, UVGI technology is widely used as a protective measure to limit the transmission of airborne pathogens. To prevent spread of infectious agents within rooms, upper room rather than UVGI within ventilation ducts is the optimal implementation mode, using wall or ceiling-mounted fixtures that direct UV-C energy above the heads of room occupants. Existing or added mechanical air mixing within rooms delivers infectious aerosols into the germicidal beam and returns disinfected air back down to the breathing zone.

However, since its introduction more than 60 years ago, the application of upper-room UVGI has raised concerns of potential injury to room occupants, specifically to eyes (photokeratoconjunctivitis) and skin (photodermatitis). This article presents findings relating to the safety of the Tuberculosis Ultraviolet Shelter Study (TUSS), a double-blind, placebo-controlled field trial of upper-room UVGI at 14 homeless shelters in six U.S. cities, from 1997 to 2004.

About

SaniLume

Proudly based in Canada, Illumisoft Lighting has pioneered high efficiency, low glare, soft diffused lighting through the use of advanced optical film technology. With 18 patents and counting, this technology enables their commercial light fixtures to achieve the highest energy efficiency in the world (DLC Qualified Products Listings).

They are now applying their technical expertise to help the world become a safer place to live, work and play.

Contact: **info@illumisoftlighting.com**

Sanilume.ca

By ILLUMISOFT LIGHTING