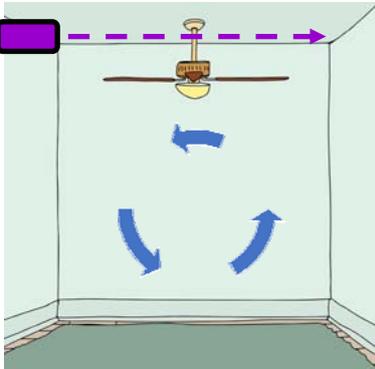


Using ultraviolet radiation to disinfect the air

For more than 70 years we have known that ultraviolet radiation (UVR) can kill bacteria and inactivate viruses. Termed Germicidal Ultraviolet (GUV) radiation, it can be used for airborne infection control, for example, to reduce the risk of infection from tuberculosis in hospitals. More recently, there has been speculation whether it is effective against COVID-19.

The wavelength with most germicidal effectiveness is 200nm—280nm (ultraviolet-C, or UVC). These wavelengths are also hazardous to the eye’s cornea (causes pain similar to welder’s flash) and the skin (burns similar to sunburn). GUV sources are not recommended for use in homes.

Upper Air Irradiation



1. GUV source located above ceiling fan, and above the height of people in the room

2. Air that passes through GUV beam is disinfected

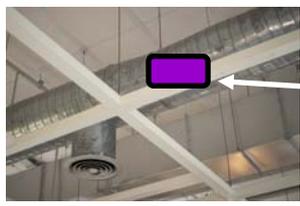
3. The ceiling fan circulates disinfected air through the room

4. If an infected person enters the room then the air that they breathe out will:

- ▶ circulate within the room and
- ▶ be disinfected when it passes through the GUV beam near the ceiling.

If the GUV is installed properly, then the UV exposure for people in the room is less than the 8-hour daily exposure limit for UVR.

Filtration through the air conditioning system



1. GUV source located within the air conditioning duct disinfects air before it enters the room.

2. If an infected person enters the room then the air they breathe out can be removed by ventilating the room (e.g. by opening a door or a window) or recycled back through the air-conditioning system for disinfection.

Mobile UVC source



1. A mobile GUV source is moved into the room. Any air or surfaces that lie within the path of the beam will be disinfected.

No-one should enter the room while a mobile GUV unit is operating unless they are wearing personal protective equipment. Otherwise they risk skin and eye damage from the GUV beam.

GUV sources are not suitable for disinfecting people!

References: Illuminating Engineering Society IES CR-2-20-V1 IES Committee Report: Germicidal Ultraviolet (UVG) - FAQ; CIE 155:2003 Ultraviolet Air Disinfection; CIE 187:2010 UV-C Photocarcinogenesis risks from germicidal lamps; CIE Position Statement on Ultraviolet (UV) Radiation to Manage the Risk of COVID-19 Transmission, May 2020.



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