



Harmful to skin and eyes

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TÜV SÜD warns against open UV-C luminaires for disinfection

Munich. The number of coronavirus infections is soaring across Europe. Public concern is focusing on transmission through droplets, but also through airborne viral load. Air purifiers with powerful UV-C rays can be effective in killing germs in aerosols and droplets. Affordable offers on the Internet are tempting an increasing number of consumers to buy such devices. But beware: open UV-C luminaires in particular can involve significant health risks, according to a warning by TÜV SÜD lamp and luminaire expert Florian Hockel, who put some of these devices through their paces.

UV-C irradiation is a tried-and-tested germicide, i.e. it kills bacteria and viruses in water and air as well as on solid surfaces. For effective disinfection, UV-C lamps must have radiation energy of between 200 and 280 nanometres, and ideally 254 nm. However, international organisations including the Global Light Association (GLA) and the International Commission on Illumination (CIE) unanimously agree that unless appropriate safety measures are taken and observed, these high levels of UV-C energy can be dangerous to people and animals. Given this, these organisations warn against incorrect use of such devices. The CIE is concerned that private users of such lamps may be exposed to dangerous levels of UV-C or may use the products incorrectly and thus not achieve adequate disinfection.

TÜV SÜD's test of UV-C devices bought on the Internet

Since the start of the COVID-19 pandemic, claims of products that can rid spaces of airborne pathogens and effectively disinfect surfaces and air have been increasingly widespread on the Internet. On behalf of the regional broadcasting company of the German state of Hesse, Hessischer Rundfunk, TÜV SÜD tested three UV-C lamps available on the Internet. All three of them proved to be dangerous to health. Two of these products are based on an open system – in other words, one which freely emits invisible UV-C radiation. “UV-C light of 254 nanometres is not directly visible to the human eye. It can only be perceived as a light bluish shimmer. This is where it becomes dangerous, because users are unaware of the radiation emitted by the lamp”, explains Florian Hockel. Users face the risk of damaging their eyes

and skin through radiation. However, the third device had no germicidal effect at all. This is likewise dangerous for users because they are lulled into a false sense of security.

Open UV-C luminaires: harmful or ineffective

All three devices failed the test – from the high-energy but unstable, poorly designed table lamp and the hand-held lamp which involves the risk of eye damage if users look directly into it to a questionable electrical device that emitted no radiation whatsoever. All three devices are dangerous for human health. The conclusion for consumers is, hands off from open UV-C lamps.

More detailed information can be obtained in Hessischer Rundfunk's consumer advice programme "die Ratgeber", broadcast on 23 October 2020 (in German only): <https://www.hr-fernsehen.de/sendungen-a-z/die-ratgeber/sendungen/uenstige-uv-c-lampen-fuer-zuhause--tatsaechlich-wirksam-gegen-viren,video-135318.html>

UV-C radiation: Highly effective with a proven track record against germs and viruses

UV-C devices are considered safe if they are in compliance with the standards issued by the International Electrotechnical Commission (IEC) and Underwriters Laboratories (UL) for thermal, mechanical and human exposure to electromagnetic fields (EMF) and photobiological safety. UV-C radiation in the 200 nm – 280 nm range has been used successfully and safely for more than 70 years for applications such as disinfection of hospital wards.

UV-C at home: closed systems only

Given this, TÜV SÜD recommends that consumers seeking to buy a UV-C device for disinfection should only choose devices based on a closed system. These air purifiers come with a solid enclosure, supplying a reliable shield against UV-C radiation and thereby protecting people and animals in the vicinity from irradiation. A fan blows the circulating air through the steriliser, where it is disinfected by a UV-C radiator. The air coming out of these types of devices can be up to 99.9% germ free.

Further information is available at <https://www.tuvsud.com/en-sg/industries/consumer-products-and-retail/lighting/uv-c-lighting-solution>

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