



LIGHTINGEUROPE
THE VOICE OF THE LIGHTING INDUSTRY

Dr. Andrea Ammon
Gustav III:s Boulevard 40
16973 Solna
Sweden

Brussels, 08 March 2022
02.08_03_2022.02

Subject: **New developments and evidence on the effectiveness and safety of UV-C technologies for air disinfection in closed spaces**

Dear Dr. Ammon,

I am writing to you on behalf of our experts in LightingEurope¹ to respectfully ask the ECDC to draft recommendations for the use of UV-C disinfection technology indoors as an effective non-pharmaceutical measure to reduce the number of people getting infected with Covid-19, with the objective that more national health departments in the EU will follow the guidance.

With this letter we also aim to share with you some of the latest scientific studies and developments on UV-C, a technology that is widely used to disinfect water, surfaces and the air and has been proven to inactivate, without exception, all bacteria and viruses against which it has been tested, including those causing tuberculosis, influenza, and SARS-Cov-2.

For Covid-19, the WHO is now recognizing that the virus is mainly spreading through aerosols, which is especially true for 'poorly ventilated indoor settings'.^[1] In reaction to this new evidence, WHO Director for Public Health and the Environment, Maria Neira, has stressed that in one hour the air in a room needs to be changed at least six times (6 ACH).^[2] While natural and mechanical ventilation are important to renew the air in a room, they alone are not sufficient to achieve the needed 6 ACH.^[3] Properly installed and operated air treatment systems making use of UV-C disinfection technologies are thus crucial complementary applications that will raise the achievable ventilation rates (an extra 6-10 equivalent ACH²)^[4] and significantly reduce the airborne virus load.

Since publication of the last ECDC paper which mentioned UV-C, several scientific studies providing new evidence about the effectiveness of UV-C light in preventing aerosol transmission of Sars-CoV-2 have been published, meriting a new ECDC recommendation.^[5] The Global Lighting Association (GLA) also published a new UVGI effectiveness study to this extent.^[6] Safety issues of UV-C usage have already been addressed, the GLA has published Safety Guidelines for manufacturers which contain an overview of all existing norms and standards on how to safely manufacture and install UV-C appliances. The IEC has acknowledged those guidelines that are now available as IEC PAS 63313:2021 and can be used by countries for reference in future regulation.^[7]

¹ LightingEurope represents Europe's manufacturers of lighting technologies and products, including UV-C disinfection technologies.

² Air quality is typically managed by ventilation rates, expressed in Air Changes per Hour (ACH). One ACH occurs when a volume of air equal to that of the room enters and leaves over a period of one hour. Each air change removes approximately 63% of the room's virus concentration. An Equivalent Air Change has occurred when an alternate technology inactivates 63 % of infectious organisms in a room (Equivalent Air Changes per Hour – eqACH).

The effectiveness and safety of the UV-C technology is now demonstrated within its increasingly wide deployment as a valuable tool in the battle against the current pandemic in education facilities, theatres, medical practices, offices, restaurants and supermarkets. [some examples are given in Annex II]

We are also observing that governments in and outside of Europe are implementing UV-C solutions: For example, the CDC [8] and US Department of Defense [9] are recommending to use UV-C light as part of a 'layered strategy' to reduce exposure to SARS-CoV-2, the Singaporean national Environmental Agency has published guidelines on the use of UV-C technologies to mitigate the risk of Covid-19 infection via aerosols, [10] and Germany and the United Kingdom have made available government funds for safe implementation of mobile air cleaners with UV-C in schools.[11]

In light of all these recent developments, and the rise of the highly infectious Omicron variant which has led to an exponential growth of cases of infections,[12] our experts feel that it is of utmost importance to make use of all the protective tools that are available to fight the virus. We are seeing that vaccines and the currently recommended non-pharmaceutical interventions (NPI) such as wearing a mask and washing hands, while crucial, are not, by themselves, considered enough to prevent infection, and the ECDC itself has proclaimed that now 'urgent and strong action is needed to reduce transmission'.[13]

As also stressed in a recent WHO webinar by Professor Ed Nardell from Harvard University, with 5.6 million Covid deaths at the end of January 2022,[14] holding back on a UV-C technology that has been proven to be effective, because of risk concerns, is ill-judged given the current pandemic situation.[15]

Looking ahead, since UV-C technology is proven to inactivate, without exception, all bacteria and viruses against which it has been tested, such devices will also come to play an indispensable role for other major health concerns such as antimicrobial resistance (AMR) which is responsible for an estimated annual 33.000 deaths in the EU.[16]

Thank you in advance for addressing our recommendation.

Yours sincerely,



Ourania Georgoutsakou
Secretary General, LightingEurope

Annex I

- [1] WHO website – [Q&A Covid-19](#).
- [2] [Episode #10](#) – Ventilation & COVID-19 – Science conversation.
- [3] E.A. Nardell, et.al. 'Airborne infection. Theoretical limits of protection achievable by building ventilation', [Am Rev Respir Dis](#). 1991 Aug;144(2):302-6
- [4] [IEQ Gathering](#): 'Recognise indoor air pollution as a health risk – industry associations issue urgent COVID-19 statement to EU institutions', 2021
- [5] R.J. Fischer et. al., '[UV-C light completely blocks highly contagious Delta SARS-CoV-2 aerosol transmission in hamsters](#)', January 2022 (pre-publication)
- N.L. Jones et. al., '[Simulation of COVID-19 Ultraviolet Disinfection Using Coupled Ray Tracing and CFD](#)' September 2021
- C.B. Beggs and E.J. Avital. '[Upper-room ultraviolet air disinfection might help to reduce COVID-19 transmission in buildings: a feasibility study](#)'. October 2020, PeerJ8:e10196
- Innovative Bioanalysis, "[Efficacy of a wall mounted device against aerosolized SARS-CoV-2](#)," 2021
- N. Storm, et al., "[Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation](#)," Nature Sci Rep 10, December 2020
- [6] Global Lighting Association (GLA); '[Position Statement of UV Germicidal Irradiation](#): Guidelines for Quantification of Airborne Pathogen Inactivation by UVGI Technologies', February 2022.
- [7] EC website - international standards for electrical, electronic and related technologies – [IEC PAS 63313:2021](#)
- [8] Centers for Disease Control and Prevention (CDC) – '[Upper room ultraviolet germicidal irradiation \(UVGI\)](#)
- [9] [US Department of Defense, dvids platform](#), 'Ultraviolet light system could mitigate COVID risk in schools' Little Rock Air Force Base, US, August 2021
- [10] The Singaporean National Environmental Agency: '[Technical Advisory on Use of Air-cleaning Technologies to Mitigate COVID-19 Aerosol Transmission Risks](#), August 2021.
- [11] See the websites of the [German Government](#) '200 million euros for mobile air cleaners' and of the [Environmental Agency](#) for guidance on the implementation. July 2021
- [12] Most recently, ECDC, '[Communicable disease threats report](#), Week 3, 16-22 January 2022.
- [13] ECDC, '[Rapid Risk Assessment, 18th Update](#), December 2021.
- [14] WHO Coronavirus (COVID-19) Dashboard. 12/28/2021. Accessed 26/01/2022. <https://covid19.who.int/>
- [15] WHO Webinar on 'Disinfection using Ultraviolet Radiation', 17 December 2021, [Recording](#). Password: 0@wQtVC\$
- [16] European Commission, '[EU Action on Antimicrobial Resistance](#)'.

Annex II

Global Lighting Association (GLA) website – [UV-C Application examples](#)

Latest examples of UV-C installations in Europe:

Education facilities:

- Modern air disinfection at the Max-Mannheimer Middle School in the German town of Garching, equipped with closed UV-C systems to make teaching safer
- The city of Meru (France) opted for upper air disinfection in schools.

Entertainment:

- The Royal Theatre Carré in Amsterdam was the first theatre in the Netherlands to install disinfecting UV-C lighting, equipping 15 dressing rooms, the artist foyer as well as the public foyers and 14 staff offices with more than 70 UV-C wall mounted upper air luminaires.
- The football club PSV Eindhoven installed 15 UV-C disinfecting upper air luminaires to provide additional protection against viruses and bacteria in key locations in its facilities (changing rooms and medical facilities)

Medical practices and clinics:

- In various clinics and medical offices in France, UV-C solutions were implemented. In Vauban Clinic, near Paris, upper air UV-C disinfection luminaires were installed in patient waiting rooms and reception areas. In Molsheim, open disinfection lights (with safety circuitry, room monitoring and sensors) were chosen to clean the air.
- Some German medical practices such as one in Vilsheim-Altfraunhofen deploy free floor standing closed UV-C systems.

Offices:

- In Romania, companies such as Forte Partners in Bucharest installed 6 upper air ceiling mounted luminaires in its offices and meeting spaces
- In the French logistics centre, the canteen was equipped with several open UV-C systems.

Supermarkets:

- An EDEKA in Hamburg installed 31 UV-C disinfection upper air devices with shielding and optics to prevent UV-C radiation exposure