

ETF Chair: Limited Virus Knowledge is Key Challenge

ATLANTA—ASHRAE's Epidemic Task Force (ETF) was created seven months ago and has since developed guidance on mitigating potential health risks in light of the COVID-19 pandemic. The ETF's guidance has helped built environment professionals reopen buildings and implement mitigation strategies.

ASHRAE *Journal* staff talked with the task force's chair, William Bahnfleth, Ph.D., P.E., Presidential Member/Fellow ASHRAE, about lessons the ETF has learned and what the industry can expect from the task force's continued work.

Now that we are more than seven months into this pandemic, how has the ETF evolved to keep up with the latest information on the virus, how it's transmitted and how to respond?

Bahnfleth: Fundamentally, the position of the task force has not changed. From the outset, we saw it as our objective to provide guidance on reducing airborne exposure to SARS-CoV-2 because there is sufficient evidence to believe that airborne transmission is possible in some circumstances, e.g., when there is low ventilation in a space. Emerging research and the changing position of the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC) and other health organizations have tended to support this point of view.

Similarly, we have not seen evidence of transmission through HVAC systems, although within a space, air motion caused by HVAC components as well as fans can be a factor. The main evolution of the ETF and its guidance has been a greater focus on refining recommendations to minimize energy use and operating cost impact. For example, current guidance does not recommend 24/7 operation of systems, always shutting off energy recovery wheels or maximizing outdoor airflow for all systems.

What are some key insights the engineering/built environment industries learned during this pandemic?

Bahnfleth: The first is that, not surprisingly, buildings and systems that are not designed to reduce risk of infectious disease transmission are generally not well-equipped to do so. A second is a reminder that deferred maintenance has consequences. Many systems need to be repaired before they can be upgraded. Perhaps a third is that more outdoor air is not always the best solution to indoor air quality concerns if energy use and economic factors are taken into consideration.

The industry has begun to educate itself about ways of utilizing filtration and air cleaning more effectively. Unfortunately, we have also learned that there are important gaps in knowledge related to the

effectiveness and performance of some air cleaners.

What are ASHRAE members saying are their biggest challenges regarding mitigating the spread of the virus in built environments?

Bahnfleth: One key challenge is posed by the limited knowledge we have regarding the characteristics of the SARS-CoV-2 virus, specifically, the production rate of infectious aerosol by infected persons and the relationship between exposure and

AHR Expo Cancelled

WESTPORT, CONN.—The 2021 AHR Expo has been cancelled, according to ASHRAE and Show Management. "With roadblocks set in place by the ongoing COVID-19 pandemic and current state and local restrictions that prohibit mass gatherings over 50 people, an in-person event will not take place in 2021," according to a statement from Show Management.

Now, the focus is shifting to prepare for an in-person 2022 AHR Expo in Las Vegas.

ASHRAE is planning to host its 2021 Winter Conference virtually. From February 9–11, 2021, the Winter Virtual Conference will include a mixture of live, prerecorded and on-demand sessions. ASHRAE committee, council and board meetings will take place virtually in January. ■

risk of infection. Since we do not know with great precision what acceptable exposures are, we must compare the characteristics of superspreader events with cases in which airborne transmission seems not to have occurred as a basis for practical guidance. We must continue to emphasize it is not possible to reduce risk to zero indoors.

Another challenge is formulating recommendations that are technically feasible and economically possible in existing buildings whose owners and operators are already financially stressed.

What is on the horizon for the ETF?

Bahnfleth: Several guidance development activities that began at the start of the 2020–2021 Society year are in progress. These include guidance for laboratories and industrial facilities. We have also convened a team to provide answers based on the best available science to some of the more difficult questions regarding system operations, for example, related to air distribution and air cleaners.

We are beginning to address the third, forward looking, aspect of the task force scope, i.e.,

recommendations for the post-pandemic future. A team is in the process of developing a suggested research agenda. Our recommendations to ASHRAE leadership at the end of this Society year, when we plan to submit our final report and disband, will also address issues like possible changes to design guidance and to design standards for indoor air quality and energy to incorporate resilience in a way that is sustainable.

In addition, task force members continue to be very active in communicating guidance to ASHRAE members, the wider professional community and also to many government entities. We have worked closely with ASHRAE Government Affairs, program and professional development committees on this kind of outreach.

For more information and to access the ETF's guidance, visit www.ashrae.org/covid19 ■



William Bahnfleth, Ph.D., P.E.,
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Pandemic Increases Focus on IAQ

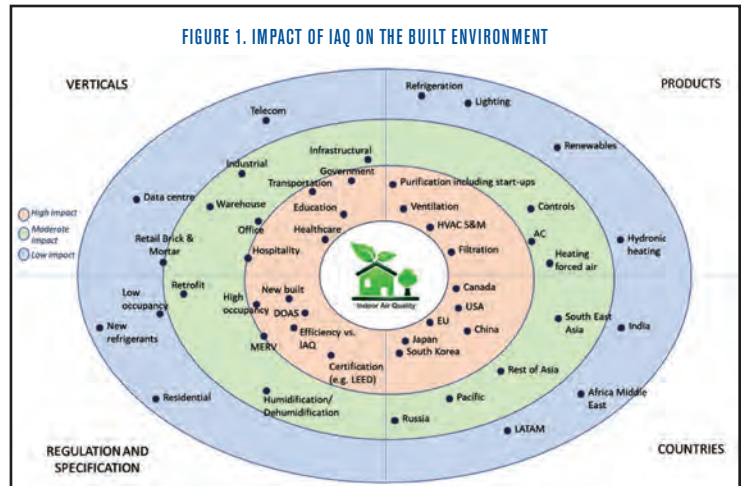
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BRACKNELL, BERKSHIRE, U.K.—Due to the COVID-19 pandemic, there is more pressure on employers to provide good indoor air quality (IAQ) in workplaces for staff to return to work.

In recent years, IAQ has gained attention from HVAC specifiers in the commercial space. Designers, especially in Europe and the U.S., have strived to specify fully featured ventilation solutions to keep pace with regulatory compliance and the increasing sophistication of end-user requirements. To enhance occupant comfort levels and ensure their health and safety, ventilation systems have become more customized. There is no one-size-fits-all solution for IAQ, which remains a vague concept until it is applied to the relevant building site and vertical market.

The recent health crisis has brought the IAQ debate from the closed HVAC industry circles to the attention of the mainstream media. The claim that a badly designed ventilation system in a public space could facilitate the viral contagion among the occupants has caused anxiety among the general public and has sparked a renewed interest in IAQ facility upgrades from building owners and operators. The urgency of enhancing the IAQ solutions prompted by the health risk associated with COVID-19 spread represents a challenge for regulators and specifiers, a cost for building owners and an opportunity of product development for the HVAC manufacturers. Although the pandemic has not receded, businesses are planning how staff can safely return to the workplace and are looking for ways to do so efficiently and cost-effectively.

Building occupancy levels vary across economies and cities. Cushman & Wakefield, a commercial real estate services firm, reported the “office real estate market will get back to pre-COVID level in 2025.” The study also reports “work from home will double, and hybrid working will increase. The share of people working permanently from home in the U.S. and Europe will increase from roughly 5% to 6% pre-COVID-19 to between 10% and 11% post-COVID-19, while the share of hybrid working, also referred to as agile working, will increase from between 32% to 36% to just under half of all workers.”



Building services engineers will face a new challenge: how to bring existing buildings with reduced occupancy levels to acceptable standards for the safe return of employees. Some strategies being considered are redesigning layouts, zonal HVAC controls, dilution ventilation, variable refrigerant flow (VRF) with dedicated outdoor air system (DOAS) with 100% fresh air, cleaning air ducts, filtration, ultraviolet germicidal irradiation (UVGI), smart sensors and smart controls, etc. Use of some of these strategies will depend on cost, time and knowledge from the building owners, service and maintenance contractors and building services engineers.

The COVID-19 pandemic has catalyzed attention and awareness of the importance of hazard-free indoor air in commercial spaces. In the future, regulatory requirements and building end user requests will make IAQ an essential aspect of specification. Developers may wish to enhance their building’s environmental wellness, as this would contribute to an increased value of their assets.

The consequences of the HVAC industry’s transformation remain hazy. Ventilation and air-conditioning companies are developing new solutions and working with control suppliers, specifiers and regulators to resolve the apparent incongruity between efficiency and IAQ. The process is in its infancy and will continue when the COVID-19 emergency is tamed. ■