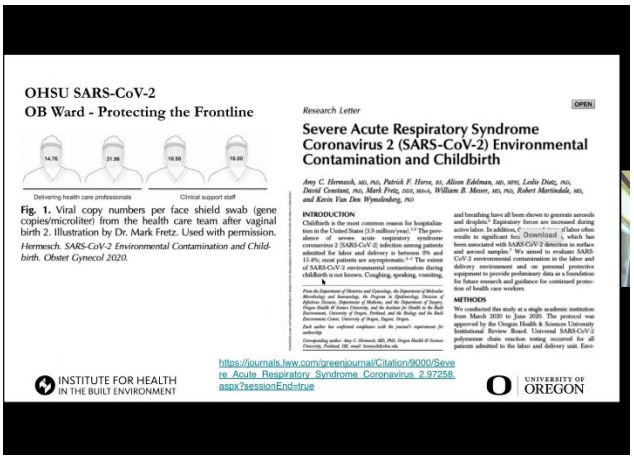
For almost a year, ever since the very first virus cases were detected, University of Oregon faculty and researchers, as part of several international teams, have been looking for alternatives in the built environment to reduce the spread of the virus that causes COVID19. These approaches, some of them with origins in the response to the 1918 pandemic may be helpful in dealing with not only COVID19 but with newer pathogens that develop in the future. Dr. Kevin van den Wymelenberg, the Director of the Institute for Health in the Built Environment, and a Professor of Architecture at the University of Oregon, laid out a hierarchy of non-medical responses that he believes can prove effective, This hierarchy, includes 1) social distancing; 2) masking; 3) reduce occupant density; 4) increased outside air; 5)increase filtration; and 6) ultraviolet disinfection. Some of these, particularly the last 4, may, he said, be structural changes that continue long into the future.

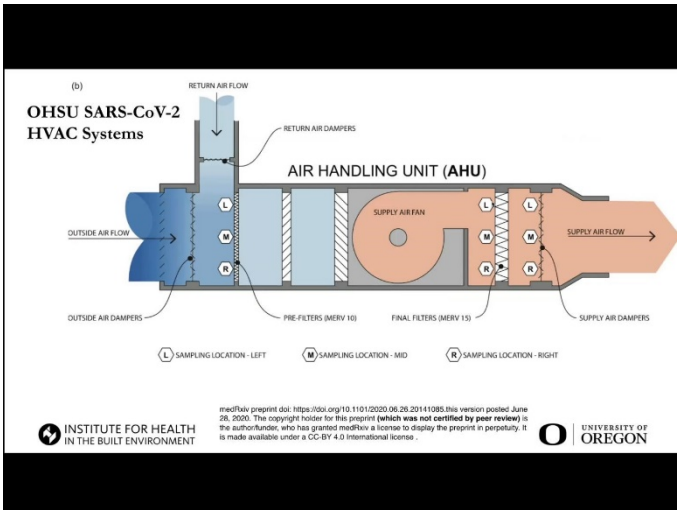
Dr. van den Wymelenberg was more cautious on the use of intensive cleaning and plexiglass preventive and protective measures. He observed that his research has demonstrated that the virus is far more frequently distributed as an aerosol. This means that intense cleaning is less effective and exposes workers to toxins in the cleaning materials. He recommended that intense cleaning of surfaces follow only after detection of viral particles in a buildings air. While plexiglass is effective against large particles like spittle, it is less effective against aerosols because they can float in a cloud and both collect and intensify and move around plexiglass shields. He noted that overuse of plexiglass can produce dead zones which interfere with a building's air handling efforts and create zones of higher viral concentrations.



The connection between air handling and viral spread was first noted in the 1918 pandemic and led to changes in building design, particularly residential design, to allow for more open spaces and better circulation. This was a reversal of a centuries long trend of increasing population density bey concentrating residents in cities (which was also occasioned by desire to minimize exposure to disease.

Humans have increasingly become an indoor species. This leads to more exposure to different air and toxic profiles. We interact more with the chemicals in our environment, and more time indoors generates more health ramifications. The is no hiding from microbes Dr. van den Wymelenberg said. Even NASA had given up on the idea of a sterile Mars rover. The International Space Station has microbes. Now the focus is shifting to learning how building design decisions affect the microbial structure. Dr. van den Wymelenberg said monitoring air handling is a much more effective and sensitive way to detect COVID virus particles. He pointed to one example of a study in South Korea. After a number of unexplained COVID outbreaks one building's air handler was monitored. It detected viral particles in the air being circulated, although no one was symptomatic. A 100 percent text of the occupants was done, and one individual was found to be infected. Although no real time protocols for monitoring building air exist now, there are methods to test which produce results within 24 hours. This sort of monitoring in a building's air handler could detect an issue much earlier than any other means.

Dr. van den Wymelenberg urged greater focus on air handling in buildings. Currently most buildings distribute air from above. This means that the fresh air is forced down into building spaces where it can mix with existing potentially infected air in za zone where I would hang around longer. Far better, he said, would be to distribute air from below, where the fresh air coming in would force the potentially infected air up to exhaust vents where it could then be recirculated after passing through filters. He also said that distributed ventilation (like window air conditioning units) could prove more effective because they would increase airflow and move stale air out more quickly.



Dr. van den Wymelenberg said the problem becomes more complex when outdoor air is challenged, like conditions in September where extensive smoke make even outdoor air unsafe. He emphasized that there is no single solution to making buildings safe, that it is an issue the implicates climate change concerns as well as the generally greater presence of environmental toxins in a more densely occupied space.