

Nursing Home and Assisted Living Oversight Working Group (NHALOWG)

Infrastructure and Capital Improvement Funding Subcommittee

Meeting Summary

Wednesday, December 9, 2020

8:30 A.M. via Zoom

Rep. Steinberg convened the meeting and explained that the meeting will focus on opportunities to help nursing homes improve the air quality in their facilities. An emphasis will be on ways to supplement or improve existing HVAC systems.

Members Present: Rep. Jonathan Steinberg, OPM Deputy Secretary Diamantis, DSS Deputy Commissioner Mike Gilbert, Anthony Bruno, Charles DU, Mag Morelli, Christopher Carter, Sue Eccleston, Sen. Paul Formica, Matt Barrett & Rep. Hughes.

Other Attendees: Robert Carr, Vice President of East-West Engineering; Joe Urso, CEO, AERUS; Vince Aspromonti, Director, New England Region, AERUS; Dan Marsh, President, AERUS Medical; Michael Smith, President and CEO, LiveWell; John Eagan, General Partner, Red Barn Advisory, Jim Keplesky, Red Barn Advisory; and Roei Friedberg, Aura Smart Air, Inc.

Presentation:

[East West Engineering Presentation](#)

Robert Carr explained a lot has been learned about Coronavirus and indoor air. I will share some knowledge along with regulatory standards that have been developed along the way. He informed the meeting that East-West Engineering has been in business for over 30 years.

We are involved in the monitoring of air, water and soil. Some of the COVID-19 monitoring that we perform are air and surface sampling and testing, and development of environmental monitoring plans.

The SARS-COV-2, which is responsible for COVID-19 is very resilient in the environment. CSIRO Survivability Study demonstrated that the virus can survive for up to 28 days in dark environments including on money, glass, and stainless steel surfaces. Once the virus is on a surface, either by direct contact or settling from aerosol transport, particles can be reintroduced into the air if the surface is disturbed through activities such as changing of bed sheets and sweeping of floors.

ASHRAE Position Document on Infectious Aerosols listed the following as recommendations:

- Increase outdoor ACH rates (e.g., from 2 to 6 in patient rooms)
- Use higher MERV rated filters than code minimums in high occupancy areas

- Use upper room UVGI or in-duct UVGI
- Maintain rooms with infectious aerosol concerns at negative pressure
- Use local HEPA grade air filtration

Presentation:

[Aerus Presentation](#)

[Aerus Technology on Decontamination](#)

[Aerus ActivePure Lab Results](#)

Vince Aspromonti informed the meeting that ActivePure Technology is not new to the market. The roots came from the NASA Space Program over two decades ago. It is not a capture-based technology. ActivePure molecules are safe, friendly and they go out like an invisible army and attack pathogens in occupied space and disinfect and destroy them in the air and on surfaces. This technology is also in the NASA Hall of Fame. He shared a 2 minutes video (*A Clean That You Have Never Known Before*) which is available on their website. The three most important take aways are:

- 1) After 2.5 years of FDA vetting, ActivePure was cleared this July as a Class 2 Medical Device.
- 2) On September 30, 2020, the FDA Compliant Lab called MRI Global completed a study of our technology effectiveness against COVID-19 on surfaces. Within three hours of our technology running, we had over 93% reduction of surface COVID-19 and within 7 hours we had a 99.9% reduction on surfaces.
- 3) Recently, another study conducted by a bio lab for the US Military on the effectiveness against COVID-19 in the air found that in just three minutes, our devices on their lowest setting were able to eradicate COVID-19.

This technology has been proven to eliminate over 90% of airborne contaminants in thirty minutes, which is 50 times more powerful than HVAC filtration. A university study shows that in two hours there is an 80% reduction in things like Bird flu, Swine flu, and Hepatitis, and in 24 hours there is a 99% reduction of these pathogens.

Dan Marsh informed the meeting that he spent most of his career working on infection prevention in the healthcare sector. Our challenge today is that we now know that episodic intervention will not help us. COVID-19 has brought to the forefront the need to address what is in the air. Working on mitigation of COVID-19 will have the long-term benefit of increased CMS watch over nursing homes and the start of publishing quality scores and leveling fines. The work that this committee does today will dramatically impact the budget and financials of nursing homes and the state coffers.

For the last three years we have been studying the impact on the ability to reduce micro burden on surfaces and in the air in health care settings. When we clean a room, once we leave that room there is 50-75% reinfection reoccurrence during a normal day. The only thing that we

can do is to create something that attacks the pathogen where it lives. Passive filtration systems and passive UV systems are helpful and they have been in place for a long time.

Unfortunately, most nursing homes air handlers will not be able to handle the MERVE-13 or MERV-7. We must look at technology that will complement a vast array of different systems in nursing homes. AERUS has induct units that can be put into the HVAC systems to provide continuous release of active molecules. We also have mobile devices that not only contain ActivePure technology but also do some filtration and some iodination.

We must use technology that goes into every room, every hallway, every nurse station, and every public area on a continuous basis. ActivePure is very effective, quiet, behind the scene, and it is meant to supplement the normal daily cleaning and disinfecting in a facility. We have developed all our science in a hospital setting. The challenges are MRSA and MRE which are very difficult pathogens to kill. On the hierarchy of pathogens, COVID-19 is at the bottom of the pile.

Rep. Steinberg stated he was not aware that compared to other viruses that are normally found in medical settings, COVID-19 is less daunting.

Presentation:

Michael Smith

LiveWell operates 120 residences for 120 people through skilled nursing care and an additional 13 through assisted living. Up until two days ago, we were probably the last of two nursing facilities that did not have any clients who contracted COVID-19. We have managed to create our own rapid negative testing system for all employees every single day and even with people testing negative they are silent spreaders.

Our organization started about thirty years ago when Governor O'Neil established the first task force in the United States to support how we would help people living with dementia. A not-for-profit was formed and ultimately we built what was described as probably the most expensive and up-to-date facility by the authority that had the ability to approve the construction of new facilities.

LiveWell is in the process of exploring renovations and they are expensive. Our building was built 30 years ago, and it was considered the most innovative design. There were about five other nursing homes built at the same time and they replicated the old designs that were in place 15 or 20 years prior. I encourage the legislature to consider how these building should be designed going forward. Our project is costing us approximately \$250 per square foot to create private bedrooms with private bathrooms. With the plan we have in place, we could continue to lead what would be innovative designs for the State of Connecticut.

The ability to finance this kind of construction is very challenging. The legislature could create access to the tax exempt bond market for organizations like ours. CHEFA will not take up project like ours so we are challenged with not having a financing authority in Connecticut to

support the kind of renovations to modify how air moves through a building like ours and how it is cleaned.

At LiveWell, the current air movement technology unfortunately does share air distribution between multiple neighborhoods. We are working with the Department of Public Health to devise a system to create temporary negative pressure. The importance of having the ability to create a higher distribution of air frequency per hour and to distribute that air through a filtration system is critical. Although we have created temporary assistance, the reality is we need a permanent system. I believe we are the only organization in Connecticut that has created this temporary system to the magnitude that we have. Without this, I fear that we would rapidly be spreading the virus to other people.

I would encourage the committee to consider:

- The importance of changing the semi-private bedrooms and shared bathrooms and shared shower facilities. They are no longer acceptable in terms of how people live, and they are a detriment to being able to control the spread of this virus.
- Establish a Financing Authority with resources to help organizations with access to capitals
- Set-aside bonds to support the costs of projects so organizations are not incurring the debt.

We have the renovations of our HVAC system and the renovations to change the designs of the facilities to make them more livable and appropriate based upon how we conceive supporting residents in long term care and keeping them safe. In addition to those renovations, we are pursuing a unique design of a new construction of 6 bedroom homes that would accommodate how people live and how we control infections.

Discussion:

Rep. Steinberg asked Mr. Smith what he meant by "isolating the virus or any virus in a specific neighborhood" and to explain how he accomplished that.

Michael Smith explained that what LiveWell is pursuing in terms of renovations is to have separate HVAC systems that would prevent the sharing of air from one neighborhood to the next neighborhood. There are five neighborhoods and there are no common-areas where residents congregate. At the earliest part of this pandemic we made plans to separate the airflow between upstairs and downstairs neighborhoods and applied negative pressure to draw air into that neighborhood that would be affected and then exchange it through air scrubbers and hepa filters and discharge it out of the neighborhoods. This is a temporary system. However, you could build systems that can essentially do this if you think it through a redesign or construction aspect.

Rep. Steinberg stated he can understand the emphasis of finding funding sources because a lot of what you talked about is expensive.

Matt Barrett explained that the CDC and epidemiologists at the Department of Public Health have informed the industry that the primary form of transmission of the COVID-19 virus is through respiratory droplets, close contact and penetration into membranes of those that it is transmitted to. The question for any and all presenters, do the various technologies discussed, address the issue of close contact and respiratory droplet transmission? Mr. Smith, in terms of the outbreak that eventually occurred at LiveWell, is there a hypothesis that was primarily transmitted by way of close contact, respiratory droplets, or do you believe it was airborne, surface, or can that be known?

Michael Smith responded that we have consulted with epidemiologists and our best guess is that during the course of the day this staff person developed enough viral capacity to switch from being negative to positive while they are working and covered in PPE. They probably breathed on themselves when they were not wearing their PPE in the resident area. The resident who got infected is somebody who lives with dementia who isn't aware of the need to social distance.

Matt Barrett asked if the technologies address close contact and droplet transmission that the epidemiologists told us is the primary cause of the transmission.

Robert Carr stated that the most common form of the exposure is direct contact and that this technology does not handle the direct contact issue. Trying to figure out how the exposure occurred is very difficult.

John Eagan explained that there is no one solution to stopping the spread of the COVID-19 virus and that his company is currently working on a product to combat both air and surface transmittal.

Presentation:

John Eagan stated our air purifier system has been under development over the last three years by AURA Air, an Israeli company. It is being worked on in conjunction with hospitals in Israel. On the call today is Roei Freidberg, the new CEO of Aura Smart Air, Inc., and he will answer questions. Red Barn Advisory is working in partnership with Aura Smart Air, Inc. to distribute their product in the United States.

This device detects indoor and outdoor air quality based on real time monitoring through an array of smart sensors. It uses algorithms to control and define the game change and functionality of the device and it has four levels of purifications.

Three years ago, Aura Smart Air, Inc. combined existing technology to develop this device. It is independently tested by Sheba Hospital, the largest health care facility in Israel and it showed that it killed greater than 99% of SARS COV-2, the virus that causes COVID 19 in the air. It is around 14.8 inches in size.

It does not require retrofitting buildings, it is easy to install, fits on a wall or ceiling with two screws, plugs into a regular two prong outlet, is portable, requires low maintenance, and the filter is easily replaceable.

Last month the city of Cambridge MA, Harvard and MIT completed a lengthy RFP process and chose our air purifier because: 1) a patented, UL certified four levels of purification; 2) floor spaces that are premium, so wall or ceiling mount; 3) easily installed and can be plugged into a two prong outlet; 4) low maintenance; and 5) six month filter life

On Friday we delivered 1,000 devices to the City of Cambridge to fulfill a mandate to have them installed in all schools and municipal buildings in order to reopen in January 2021. Here in Connecticut and across the United States, restaurants, hotels, healthcare facilities, senior housings, hair salons and other businesses are using the device to provide a healthy environment as they work to reduce COVID-19. The device provides 2.5 air exchanges per hour in a 600 sq. foot room. They cost \$499.00 per unit and the replacement filter is \$69.00.

Discussion:

Rep. Hughes asked where the product is manufactured and how can we scale up production.

Roei Friedberg added the product is currently assembled in Israel and in two months a second assembly line will be opening in Great Neck, Long Island because of the big demand.

Rep. Steinberg asked Robert Carr to comment of the copper component in the technology

Robert Carr stated I don't know a lot about copper, but my questions were around radius. How big of a room can this device deal with and what are the air exchanges per hour?

Roei Friedberg explained the device is doing 206 CFM which means we cover a room up to 600 square feet with 2.5 exchanges per hour. As to the copper layers, it is important to say that the copper layer has an approval from the US EPA and we have a patent on our filter regarding this technology.

Rep. Steinberg stated he is very pleased that we have addressed one of the core issues that this subcommittee was asked to consider which is how do we help mitigate the spread of COVID-19 in these institutions. He added it is important that these technologies get the appropriate vetting and that it is up to each institution and not the states to determine what technology might work best for a specific place.

Next week's meeting is to help us get an understanding of private source capitals. We can also discuss the prospect of recommending that the state either underwrite or make loans or grants available for some of the activities that we have talked about. At the very least we can begin to have a conversation about recommendations for short-term and long-term options and small cost and high cost options to help facilities make real time decisions to mitigate the virus, and maybe solve some systemic long-term issues.