# Ex-Surgeon General Gives Landlords Tips On How To Outmaneuver The Pandemic

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In 1978, the coronavirus and the resulting pandemic from it was still four decades away, but former Surgeon General for the United States Air Force General PK Carlton Jr., who is also a medical doctor, was already wearing biochemical suits and worrying about the possibility of a deadly virus outbreak.

"I actually, while still on active duty, ran an exercise with a pandemic and killed the world," Carlton told *Bisnow* of some of the studies he was involved in during his medical and military career.

"It was stamped top secret and nobody got a chance to read it because it was so devastating. So when I see SARS come up, when I see Ebola come up, it doesn't matter what the name is going to be," he said. "What matters is our world has changed. There are means now to alter us directly and destroy us economically; and it's now time for the American public to say ... let me take the countermeasures, so that I am not destroyed, so that I can get on with business."

Carlton is now working directly with architectural firm REES to educate building owners, managers and operators on how to best incorporate coronavirus-prevention techniques inside commercial buildings.

Once REES and Carlton analyzed how the virus spreads, the general and architectural firm created a video and an online how-to advisory to share with clients across the real estate space. Carlton's recommendations for fighting viruses have been implemented at two of REES own offices and a spokesperson for REES says the firm is currently working with a Fortune 500 tech company that intends to integrate the Carlton plan into a new corporate campus and at some of their smaller sites in the coming months.

REES itself is implementing a hydrogen peroxide cleaning strategy in the near future as a third line of defense in the office. REES and Carlton concluded the No.1 defense against the virus is a focus on air quality, particularly given Carlton's first study of the original SARS virus in the early 2000s. He remembers learning how quickly that virus spread through the air, with an entire airplane and an apartment complex impacted from just one infection.

"My opinion is clean air technology is the key here, however it's implemented," Carlton stressed to *Bisnow*.

Carlton and REES released the general's detailed recommendations this month. What's most surprising is the general's belief that much of the marketplace failed early on to address the true culprit in the spread of the virus: the airflow inside of buildings. Instead, everyone was washing their hands and building surfaces incessantly.

"The focus is on surface transmission, when in reality, our German experts tell us there has never been a surface-transmitted case," Carlton told *Bisnow*.

"Centers for Disease Control tells us it may occur, but it is certainly rare. It's airborne," he added. "We have not focused on the air as much as we should have focused [on it] originally."

Professor of architectural engineering at Pennsylvania State University William P. Bahnfleth also noted a multilevel approach to preventing infection is needed, particularly in older buildings where updates to HVAC and other mechanical systems are harder to make on the fly.

"In terms of what we can do with the systems, we can exhaust indoor air that is contaminated at a higher rate and replace it with outdoor air," Bahnfleth said. "That is ventilation. We can circulate the indoor air through

filters that are of relatively high efficiency and remove particles from the air, and we can use some other technologies that inactive and kill microorganisms in the air."

To do this, Bahnfleth also points to the placement of HEPA filters and UV-C technology. He doesn't necessarily advocate for chemical treatments, but said facilities with children and other guests who may be harder to control in terms of sanitation practices, a third chemical treatment might make sense.

In the white paper released by REES and Carlton, the general recommends a multifaceted approach to keeping buildings and tenants safe, using a checklist to help building operators and owners ensure they're putting real tools in place to kill the coronavirus.

"We have to deal with the inside as well as the outside threat, and the filtration systems currently used [inside buildings] are focused entirely on the outside threat," Carlton said. "To control the inside threat, we have to change the air quality inside the building, not just in the filtration system, but we must change the air changes per hour."

There are two methods for doing this, the general says. First, you put what he calls "scrubbers" in the air to fight virus particles. Scrubbers, he says, may be a combination of having HEPA filters inside building rooms with germicidal UV-C light.

"What that does is, it increases the air circulation or the air exchange rate without changing the HVAC system and without increasing the cost for heating and cooling," Carlton added.

The second method is simply cleaning the air with certified chemicals, Carlton said. The best approach is incorporating a multi-layered approach throughout a building, so a facility's air is scrubbed and cleaned at the same time, the general added.

"I think the best combination would be using a HEPA filter as one layer, using UV-C as a second layer, and then adding either bipolar ionization, hydrogen peroxide or hypochlorous acid or something of the sort. That would give you three layers of protection inside the room that would then amount to maybe a 99% safety margin," Carlton said.

KAI Director of Mechanical Engineering Aleksandar Milenkov says the commercial real estate and engineering communities that deal with buildings and HVAC systems are utilizing guidelines distributed by the Centers for Disease Control and the American Society of Heating, Refrigerating and Air-Conditioning Engineers to COVID-proof buildings.

"There is no one single recommendation," Milenkov said. "You have a volatile building, you have a volatile system, we have to look at the system and the age of the equipment."

Carlton's layered approach is one that is generally recommended across the engineering and architectural space in the wake of the coronavirus, although the tools and steps taken may have some variations as to how much is required for a particular space. Milenkov said he agrees that the industry as a whole is recommending a similar layered approach like the one touted by Carlton and other experts.

"The CDC is recommending improving ventilation, improving filtration, improving air distribution patterns and utilizing ultra violet light as a supplemental technique to pretty much kill potential airborne viruses," Milenkov said.

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