

American Guild of Organists

Committee on Career Development and Support - COVID-19 and Organists: Q & A

<https://www.agohq.org/covid-19-and-organists-q-a/>

Question:

Is it ok to play a pipe organ during COVID? There's debate in our church whether, since this is a wind instrument, it will blow Covid particles around. Research shows that minute Covid droplets attach themselves to dust particles and disperse in the air for 2-4 hours. The organ is in an enclosed chamber 10ft above the floor of the balcony, and 25 feet above the congregation in a very large building. The blower is located in a tower well above the balcony. Thanks.

Responses:

1) from Jeffrey Dexter, President of the American Institute of Organbuilders...

I would tend to agree ... that the organ would not be any more of an agent of virus spread than say, for example, a building HVAC system – likely even less. Although I cannot offer any factual evidence that would corroborate that claim, common sense seems to indicate such. My greater concern would be for any assembly/choral singing within a space (*as tempting as it is to burst forth into song upon hearing an organ play*).

I am copying a number of my AIO colleagues – a cross section of persons – if only to provide further reinforcement to that which I have suggested – or perhaps, to take a wholly different opinion. This is the first such question about the pipe organ being a potential 'distribution agent' for the COVID-19 virus. We've been fielding questions about the sanitization of manual keyboards – especially in parishes where multiple organists use the same instrument. I would invite any responses from our group – and hope that we might all utilize the 'reply all' function.

2) from Mark Hotsenpiller, Executive Secretary, American Institute of Organbuilders...

Although I am not a scientist, just an organbuilder, I think you can rest assured that a pipe organ is not going to spread COVID-19 virus particles through its wind system.

Most blowers are located far from anyone. They are normally in a separate room, frequently on a different level. They are almost always contained in a silencing box or space which would provide a barrier to the virus. This would presume that there are viruses in the vicinity of the blower in the first place. It's my understanding that the "6 foot" rule came about since that is the distance the viruses can travel in small-sized aerosols before being sufficiently dispersed to not be worrisome. Organ blowers are much farther away than 6 feet. Even with smaller encased organs where the blower is in the base of the case, there is still sufficient separation.

The wind system of a typical organ merely contains the air under pressure, which is maintained by various regulating devices. This system is well contained so there is no leakage. Someone once remarked that a windchest of a pipe organ is the only example of a large wooden box with hundreds of holes intentionally bored in it, yet the box must not leak! The wind stays in the

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organ until a pipe is played. As you correctly noted, most pipes do not use much wind to speak. Large flue pipes use the most wind. These include Pedal Bourdons, Diapasons, and Principals, but they are usually located in the back of the instrument. Case pipes are closer to singers, but there is still space between them and a singing choir. Even Trumpets en Chamade hardly use any wind. There are so many convoluted twists and turns to an organ's wind system, as well as some heat produced by the blower itself, that it seems highly doubtful that any viruses could survive such an ordeal. Certainly not enough to cause an infection.

3) from Scot Huntington of S.L. Huntington & Co. Pipe Organ Builders, Stonington, Connecticut...

I received a similar inquiry from [an] Episcopal Diocese ... which was preparing to ban all singing and pipe organ playing indefinitely. Their asking me for an informed opinion led me to talk to a couple engineers to get an informed answer. This is what took away from those conversations.

While everyone wants to err on the side of caution as the ease of contagion is so clear, we can also take good ideas to a point of absurdity. In actuality, a masked preacher speaking from a pulpit represents a much greater danger than any pipe organ does. Likewise, running any kind of air handling system like heat or air conditioning is potentially even more dangerous-- not because it would introduce virus from one source and spread it to another, but simply because its function is to circulate the air contained within a space, which could then distribute virus molecules more widely and freely before they drop.

Scientifically, an air handling system is low-pressure, high-velocity. Put your hand one or two feet from a register when a system is running, and you'll feel air movement. Even standing under a ceiling fan 12 or 15 feet above your head, you'll feel a quantity of air moving at a certain velocity.

A pipe organ on the other hand, is high-pressure, low-velocity. Put your hand 12 inches in front of the mouth of a sounding pipe and you won't feel anything until you're practically touching it. Unless an organ is small and has a self-contained blower inside the organ, most blowers are remotely located and either draw their air from inside the organ from a remote location in the audience room like a sacristy, closet, or foyer, or directly from the remote location. Most modern installations also include filters on the incoming air.

Look inside the resonator of a sounding reed- even one on high pressure. You'll see the dust disturbed and spinning in a vortex but it won't travel upwards very far. You might see tiny dust particles moving above the top of a pipe shorter than 1' long, but they would remain contained within the pipe if it were any longer-- the pressure and velocity of air being introduced into the body of a pipe is so small, it wouldn't have the strength to move it upwards more than a foot.

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The quantity of dust which collects on the flat surfaces in and around pipes is also an indication of the relative weakness and short length of the wind streams causing pipes to sound.

What air movement there is in a speaking pipe, goes up and back down, not out.

The spread of virus requires a source that is producing it-- humans are sources, but machines aren't. We distance and wear masks because we are a source and need to minimize how far we can spread it around us based on the velocity at which we are expelling particles.

We have read the scientific reports about how far virus travels with various velocities related to breathing, speaking, singing, coughing, or sneezing. We have also read how long it survives on various surfaces-- some longer than others. The six-foot rule is general, but based on how far droplets of specific size and weight will travel at a normal velocity (exclusive of high-velocity sneezing for example). The build up of virus in an enclosed space and collecting on surfaces over a period of time is a concern among doctors, which is why there are guidelines that determine room capacity based on square-footage, and discouraging high-velocity activities like singing, yelling, and horn playing.

Even in a room with the allowed capacity of people, hopefully masked, any shed virus would first have to travel to the inlet source for the blower or air-handling source-- highly unlikely based on the weight of droplets and distance traveled. Next it has to travel a very convoluted route through turbines, ducting, and holding units. Even then, it can only find an avenue of exit through a narrow pipe windway while the organ is playing. Assuming for the sake of argument a group of people sneezed directly into the blower snout while the organ was playing, based on the principle of high-pressure, low-velocity, if the virus could in fact still be live when it exits a pipe, it would drop to the ground within a few feet of the sounding pipes, if not immediately.

An air handling system is actually the opposite in terms of theoretical danger. An air conditioner is going to either circulate room air through a filter, or draw fresh air from outside and distribute it also passing through a filter. Its job is to circulate a large volume of air. Even if you're not near an air source, you can feel the air move like a mild breeze when the system engages. A heating system on the other hand will either recirculate room air by drawing it through the cold return, or draw fresh air either from the room or a remote source, and like the A/C, is designed to move a large volume of air within the audience room. Contaminated air would have an equally tough route through that machinery as it would through an organ wind system and the chance of virus survival is low, but its efficiency at keeping a large volume of air circulating might allow air-borne virus within the audience room to stay airborne slightly longer than if the air were still.

Conclusion: from an engineering perspective, an organ is not a distribution agent for air-born virus.

Regarding key cleaning, alcohol is a solvent as are high alcohol-base sanitizers, and can harm not only wood surface treatments but ivory and bone- it will strip off the surface polish which

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with repeated use will then leave the unprotected surface more prone to the absorption of contaminants, and dull its appearance. The old-school method of using alcohol to clean ivory was abandoned by piano tuners years ago and is widely discouraged. The same rule also applies to bleach, although in a very diluted form may be less harmful than high-concentration alcohol. While plain water is the ideal cleaning agent for ivory, for disinfectant purposes the use of soap and especially an anti-bacterial version would offer better protection at killing surface virus.