

Breathe on Me, Breath of God: A Reflection on Safe Church Practices in COVID-19 Time

The Rev. Dr. Dennis S. Tierney
Diocesan Property Manager
Episcopal Diocese of Olympia

“Breathe on me, Breath of God,
Fill me with life anew,
That I may love what Thou dost love,
And do what Thou wouldst do.”
(Edwin Hatch, 1878)

I recently received three phone calls from clergy colleagues asking me about best practices regarding managing air flow in their buildings in light of COVID-19 and our need for maintaining safety even when we are permitted back into our buildings and worship spaces.

I am not an expert on HVAC (heating, ventilation, air conditioning) systems or air flow science or the transmission patterns of viral diseases. What follows is based on research I have done about what people in the HVAC business are writing about proper responses to COVID-19 with regard to air flow in enclosed spaces when heating, ventilation, or air conditioning systems are in use. I offer this information in the hope that it will help my clergy colleagues and all lay leadership make sensible decisions when we are permitted back into our buildings.

Like it or not, we are all in the business of risk assessment when it comes to conducting church with our congregations. Opening our churches opens us all up to some level of risk. Living is dangerous. Nothing in this life is risk-free. What prudent leadership must do is analyze risk and make decisions about how much risk to accept given the population being served. Those decisions are made in the context of what is permissible in law and permissible by order of the Bishop. Within the parameters of the permissible, congregations will vary in the level of risk accepted.

Adult humans, on average, when at rest breathe about 12 times per minute. Speaking and singing can increase both the number of breaths taken per minute and increase the amount of air in any one breath. Humans breathe in about 30 cubic inches of air each time they breathe. That is about a half-quart of air per breath. Thus, putting many humans in an enclosed space means that a lot of air is needed and shared.

Modern buildings typically utilize forced-air heating and cooling systems. These combine air that is brought into the system, heated or cooled, and then forced into the space by fans pushing the air through ducts. To save energy, most modern systems re-circulate air that has been already heated or cooled along with “new” air. Filters are employed to clean the “new air” and, sometimes, to clean the re-circulated air.

Other systems use radiators or passive systems for heating. No air is forced by the system so new air is introduced by opening windows or having some other air circulating system add or exhaust air in the building space. Some of these are self-regulating while others depend on humans to open or close windows.

HVAC experts suggest the following options for maintaining air flow while reducing the chances of viral transmission.

1. Clean or replace all air filters more frequently. Clean air ducts.
2. Cancel or reduce the air recirculation options on forced air heating or cooling systems. This will increase energy consumption but decrease air transmission risks.
3. HEPA – high efficiency particulate air filters can reduce risk of viral transmission. Some can be added to existing systems and may reduce the number of COVID-19 viral particles, but the actual efficiency has not been tested. Such systems appear to work best in closed environments like airplanes where all the air is re-circulated through the multiple HEPA filters along with HEPA filtered outside air coming in through compressor systems.
4. Portable HEPA filters can be purchased and moved from space to space to increase air filtration. Here again, the efficiency of the filtration is a function of the amount of air that is captured by the machine versus the amount of air not captured.
5. The use of exhaust fans to move air up or down and away from people along with outside air flow can help but will increase energy costs as outside air replaces heated or cooled air much faster.

Realistically, all these efforts are unlikely to reduce risks sufficiently for most congregations given the costs involved.

6. The safest method of worship currently available is virtual worship.
7. If people gather in the same space, mask wearing, by all people, all the time, provides the next safest means of worshipping when coupled with social distancing.
8. Cleaning air ducts and changing out air filters would be helpful before opening the building.
9. Churches should run their water systems by flushing toilets and opening faucets once a week during building closures to prevent bacterial build-up in those systems – there are other nasties out there beyond COVID-19.
10. Hand sanitizers in multiple locations available for use easily and frequently.