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When the Masks Come Off

At the onset of COVID, our family quickly adopted cloth masks, then procedural masks, replaced by KN95s when they became available, and finally graduated to the Canadian made Vitacore and Eternity N95 equivalent filtering facepieces. Combined with vaccines and social distancing, we felt safe until there was a reprieve from isolation and larger indoor social gatherings were permitted. Masks were still used, but the social gatherings invariably include food, and drink, at which point the masks came off.

In one situation, everyone was spaced at least two metres apart with occupancy less than the 50% permitted. We hummed O Canada (some hummed the old words), but people talked, joked, and laughed during the meal. "What if one or more of us are infected", I wondered? Are there MERV 13 filters on the ventilation system and is it bringing in enough outdoor air?

To satisfy my curiosity, I bought a Ritioner carbon dioxide meter off EBay for about \$150. This was not the NIST-Traceable device that I had used to do indoor air quality measurements back in the day, but the readings were similar to those that I had measured in my home and office, and it did respond appropriately to an exhaled breath. The sensor measures the absorption of infrared light and recorded 411 ppm carbon dioxide in outdoor air, which was good enough.

When carbon dioxide readings quickly rose to over 1100 ppm at our next meeting, I explained that if some of us were infected with COVID, the lack outdoor air will increase the risk of transmission. To take down the nerdiness factor, I claimed my device was also a bullshit meter, pointed it towards a pontificating friend, and blew at the sensor. The alarm went off, laughter ensued, the device gained credibility and windows were opened. The carbon dioxide concentration dropped to less than 600 ppm within half an hour. The BS continued.

At a gathering in a different building, people took off their masks to drink and chat, and I inquired about the ventilation system. As it turns out, the system hadn't worked for years, and the lounge was heated by a gas fireplace. Carbon dioxide measurements demonstrated what one would expect, and windows were opened.

Before another evening meeting even got started, my carbon dioxide meter shot up to over 1500 ppm. The ventilation system had been shut down for the day by mistake. Windows were opened, and arrangements were made to ensure the ventilation system was operational for evening events.

In my small sample, 100% of the buildings had inadequate outdoor air supply and simple measurements illustrated the problem. If these were in any way representative of communities at large, it is no wonder COVID has spread so readily. My optimism lies with the people who decisively responded with appropriate action, when provided with data so easily acquired. The potential to significantly reduce viral transmission is great, and the benefits of good ventilation go far beyond COVID.

The public have come a long way learning about viruses, vaccines and PPE. It is time that well designed and maintained ventilation systems are recognized by the public as a critical element of public health. I am hopeful that this will happen, so we can rise from this pandemic with a healthier population and possibly, a milder flu season.

By : Rob Strang