

## Sharing the air in a pandemic

### Why are multi-disciplinary voices – including occupational hygienists and engineers – essential for effective protections and prevention?

#### Summary

Occupational hygiene, ventilation engineers and other skills and knowledge have been ignored in the pandemic, contrary to the Ontario Campbell Commission's [recommendations](#) after SARS-1. (Justice Campbell also recommended using the [precautionary principle](#).) Workers face unprecedented financial and health damages from failures to accept aerosol transmission and require effective airborne protections. Occupational health and safety (OHS)'s place as a public health practice also has suffered, thanks to the "droplets" transmission paradigm that ignored airborne protections common in OHS and other sciences.



#### How is the SARS-CoV-2 virus really "shared"?

From the pandemic's start, many doctors have talked about "droplets" that fall within six feet of an infected person -- only when they cough or sneeze. They advocate constant handwashing and disinfection; some have [said](#) it's okay to be infected. Yet, they agree COVID-19 is a respiratory disease, reluctantly recommending "masks" and ventilation. [Few](#) have publicly changed their droplets/ contact tune.

On the other hand, occupational hygienists, aerosol scientists, respiratory protection specialists, ventilation engineers, physicists and others with science training [say](#) the virus comes with aerosols exhaled when an infected person breathes, talks, sings, shouts, or sneezes or coughs. They explain particles come in different sizes, many capable of being inhaled deep into the lungs. In short, the virus is respirable, floating for hours in the air, like smoke..

While it's easier to inhale them near an infected person (given the high density of exhaled particles), the particles effectively fill the air in spaces with no/inadequate fresh and filtered air. Then, [distance](#) doesn't offer much protection (there's no evidence for the six-foot limit) and surfaces are unlikely virus sources. [Cloth/medical masks](#) aren't effective since they don't stop respirable particles.

Researchers have [shown](#) that Chapin's 1910 "droplet" theory is wrong and 1930s virus transmission [studies](#) are misunderstood.

#### How have workers been affected?

With the wrong paradigm come unclear statements about aerosols/airborne transmission. There's little about effective air-cleaning strategies and "masks" -- not respirators -- are promoted. Combined with "don't ask, don't tell" testing and tracing and "vaccinate our way out of this" tactics, predictable results have been preventable infections, long-term [diseases](#) and deaths, and the healthcare system crises.

We've seen outbreaks in meat-packing plants, distribution/shipping warehouses, post offices, schools, healthcare facilities, and migrant farm settings, amongst others. Long-term care residents made headlines across the country early on, while staff working with them also paid more-hidden and incredibly high prices. By March, 2022, officially more than [150,000](#) Canadian HCWs were infected. Some died. Long COVID, burn-out and other stressors still are taking a toll.

Racialised and low-income workers -- and their families and neighbours -- have suffered most. Statistics Canada [says](#) black men had the highest COVID-19-related death rates in 2020. Racialised communities like [Brampton](#) were hard-hit. Many of the [10+](#) Toronto airport taxi drivers who died in the first few months of the pandemic lived there or in other hard-hit areas.

Meanwhile, specialists with training in hazard assessment, aerosols and airborne transmission and related protections -- OHS specialists, engineers, other scientists, union reps, associations -- were dismissed, silenced, ignored or forced to the sidelines. This includes government OHS staff who had to take a [back seat](#) to public health officials' stands.

Rather than focusing on the air, toxic disinfection products are required, mostly-useless plexiglass shields popped up (and often remain) everywhere, skin-drying hand sanitisers were ubiquitous, workers were [refused respirators](#) and effective ventilation was ignored until late in the day (and then ill-defined). Human and OHS rights went out the window along with airborne hazard protections. Work refusals were [not supported](#). People had to go to work sick.



Figure 1 Occupational Health Clinics for Ontario Workers (OHCOW)

#### What really prevents infection and variants?

We need every layer of protection possible, including:

- ✓ Fewer people inside spaces for less time
- ✓ Provide lots of fresh air throughout enclosed spaces
- ✓ Use [CO2 monitors](#) to check on fresh air levels (above [600 ppm](#) is starting to be problematic)
- ✓ Clean the air (filter it), especially when there isn't 100% outside air -- [DIY Corsi-Rosenthal boxes](#) work (more air flow vs commercial units)!
- ✓ Provide [HC authorized](#) respirators (not cloth or medical/surgical masks) or [well-fitted](#) KN95s when ventilation is questionable, people are close to one another (elastomers and PAPRs are best)
- ✓ Only [disinfect](#) -- with relatively-non-toxic products like hydrogen peroxide -- if an infected person's been in a space less than two days ago (otherwise, air it out)
- ✓ Use the skills/knowledge of all those [trained](#) to protect workers (and others) from airborne and chemical hazards

#### Conclusions: Multi-/inter-disciplinary voices protect us all

Public health -- which includes OHS -- is based on the pre-cautionary principle and primary prevention for collective protections, both too often absent in this pandemic. Workers need [multi-/inter-disciplinary voices](#) -- including OHS ones -- for pandemic planning, protections and reactions, based on prevention, precaution and enforced rights. They also need fresh and clean air, sick pay and a real voice in decision-making, whatever the hazard.

References: Available from the authors. Some are linked.



All the authors are members of the Canadian Aerosol Transmission Coalition ([www.aerosoltransmissioncoalition.ca](http://www.aerosoltransmissioncoalition.ca))

Authors: **Dorothy Wigmore**, MS (Occupational hygienist, [dewwinnipeg@web.ca](mailto:dewwinnipeg@web.ca)); **Ken Martinez**, Capt. USPHS Ret, CIH (The Integrated Bioscience and Built Environment Consortium/IBEC; **Claire Bird**, PhD (IBEC); Elham Ahmadpour, MSc Ing; **Kevin Hedges**, PhD, ROH (Occupational Health Clinics for Ontario Workers/ OHCOW); **Laurence Svirchev**, MA, CIH; **Stéphane Bilodeau**, Eng., Ph.D.

