

Friday September 16, 2022 1:30pm - 3:00pm

Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention

Clean Air Really Matters

A back-to-basics **discussion** on ways to improve **indoor air quality for health**, plus prevent transmission of SARS CoV-2 and other viruses.



NEWS & EVENTS * APPS, TOOLS & CALCULATORS * OTHER RESOURCES *

COVID-19 Transmission: Taking Stock of the Science

COVID-19, OCCUPATIONAL ILLNESS, VIDEOS, WEBINARS (LIVE) | INFECTIOUS

Part of the Occ-COVID Webinar Series

[July 7, 2020]

Moderator: Dr. Raymond Tellier

Sessions/Speakers:

SARS-CoV-2 in Droplets and Aerosols

Dr. Linsey Marr VIEW SLIDES [PDF]

SARS-CoV-2 Modes of Transmission and Related IPC Measures

Dr. John Conly VIEW SLIDES [PDF]

Understanding and Controling SARS-CoV2 Transmission

Dr. Donald Milton VIEW SLIDES [PDF]

> WATCH RECORDED EVENT [1:48:53] YouTube

OHCOW webinar July 7, 2020



Dr. Raymond Tellier

Associate Professor, Department of Medicine McGill University Health Centre (MUHC)

https://www.ohcow.on.ca/posts/covidtransmission-taking-stock-of-the-science/

Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention

OCC-COVID Webinar Series March 4, 2022



Courtesy of Malgorzata (Gosia) Gasperowicz who is a developmental biologist at the University of Calgary, a cofounder of <u>ZeroCovidCanada</u> and a member of <u>ProtectOurProvinceAB</u>, <u>EndCoronavirus.org</u> and <u>World Health</u> <u>Network</u>. Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention

Pandemic doesn't end with Omicron. The future is highly uncertain.



COVID-19 response: a massive global failure

Widespread failures at multiple levels worldwide have led to millions of preventable deaths and a reversal in progress towards sustainable development for many countries



The Lancet COVID-19 Commission makes 11 recommendations in three key areas of interest

Sachs et al. 2022, **The** *Lancet* **Commission on lessons for the future from the COVID-19 pandemic** Published:September 14, 2022DOI:<u>https://doi.org/10.1016/S0140-6736(22)01585-9</u>



The multiple failures of international cooperation include:

(2) costly delays in acknowledging the crucial airborne exposure pathway of SARS-CoV-2, the virus that causes COVID-19, and in implementing appropriate measures at national and global levels to slow the spread of the virus

Fast forward August / September 2022



First workshop





Second workshop

Indoor Air Management of Airborne Pathogens: Back to School (September 14, 2022)

Indoor Air Management of Airborne Pathogens: Lessons, Practices, and Innovations (August 18, 2022)

Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention

😑 🛛 🕒 YouTube 🎗

Search





Virtual Environment

FINDING A LOW-COST EFFECTIVE SOLUTION TO REMOVE VIRUS FROM THE AIR



Search



Virtual Environment

FINDING A LOW-COST EFFECTIVE SOLUTION TO REMOVE VIRUS FROM THE AIR

Air cleaners have been installed in every classroom.

CO2 monitoring is used as an indicator for fresh air provided by opening windows etc.

https://www.youtube.com/watch?v=Fo7ieGmR35M

Shared by Professor Catherine Noakes

What can we do?

 <u>COVID-19 is not mild</u>! Do not get reinfected! Think about LONG Covid! Unlike flu, SARS-CoV-2 gets into the blood & infects cells throughout the body. it's also a clotting disease with strokes & heart problems. <u>Imagining COVID is 'like the flu' is</u> <u>cutting thousands of lives short</u>. It's time to wake up! (The Conversation Australia)
Prof. Peter Doherty @ProfPCDoherty

3) <u>Measure CO2</u>, analyze and report. What gets measured gets noticed, what gets measured gets done! Have a look at <u>https://www.ravenapp.org/cleanair/</u>

4) <u>Ask questions about ventilation</u> (how many air changes per hour ACH?), provide / lobby for air purifiers / Corsi-Rosenthal DIY air purifiers. Limit capacity! <u>https://cleanairstars.com/filters/</u> <u>https://cleanaircrew.org/</u>

5) <u>Up your mask game</u>! Shoot for respirators (N95s or better). See mask smart 1, 2 and 3 <u>https://www.aerosoltransmissioncoalition.ca/</u> Measure CO₂ (if elevated) \rightarrow leave premises / air out / provide more fresh air \rightarrow MERV 13 plus filters recirculated air and or air purifiers

References: UK HSE, <u>Ventilation in the workplace</u>, <u>using CO2 monitors</u>. <u>UK</u> <u>EMG-SPI-B: Application of CO2 monitoring as an approach to managing</u> <u>ventilation to mitigate SARS-CoV-2 transmission NCCEH Indoor CO2</u> <u>sensors for COVID-19 risk mitigation: Current guidance and limitations</u>

Question

Information

Are the air changes per hour (ACH) for each room determined and adequate?

Refer to OHCOW ventilation calculator

Ventilation Calculation Tool An Excel-based tool to assist you in determining the adequacy of the ventilation in your workspace* *Tool can be used to evaluate classrooms, single offices and small meeting rooms. The levels in this tool are based on classroom occupancies.

Ventilation assessment criteria

criteria	air exchange rate (in ach)	equivalent CO ₂ concentration
pre-pandemic ASHRAE 62.1	2.0-2.6 (15 cfm OA/person)	1100 ppm
pandemic ASHRAE 62.1 & ACGIH (Jun 2021)	>6-12 ACH "OA and/or sufficiently filtered recirculated air"	700 ppm or less
Harvard (Allen et al., Nov 2020)	3-4 (min); 4-6 (preferred)	4-5 ach ≈ 800 ppm
AIHA (Sept 2020)	6-12 (threshold 4.5)	4.5 ach ≈ 800 ppm 6 ach ≈ 700 ppm
ACGIH (Jun 2021)	same as ASHRAE	700 ppm or less
REHVA (Apr 2021)	5	800 ppm
CDC (latest update: Jun 2021)		800 ppm
WHO (Roadmap, Mar 2021)	2.6-3.7 (21 cfm OA/person)	900 ppm

target: >6 to 12 ach	no problem:	<600 ppm CO ₂
good: 5-6 ach	possible problem:	600-800 ppm CO ₂
fair: 4-5 ach	probable problem:	800-1000 ppm CO ₂
bare minimum: 3-4 ach	more outdoor air needed:	1000+ ppm CO ₂
poor: <3 ach		

Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention https://www.ohcow.on.ca/covid-19/ventilation-calculationtool/#1636726803734-5e447b6e-34ec



Kashif Pirzada, MD

8,229 Tweets Pinned Tweet



Kashif Pirzada, MD @KashPrime · Aug 29

Kids are going back to school; there is a lot of fear... most public health measures are gone and Covid is still a threat. Fixing the ventilation in schools is one universal way to lower the risk, and @theRavenApp's CleanAir Map is one way to do it _____ ravenapp.org/cleanair/

Clean Air Map



RavenApp for inputting carbon dioxide (CO2) recordings

Following

...

https://www.ravenapp.org/cleanair/

https://twitter.com/KashPrime/st atus/1564419336403668995

See tutorial

https://www.ravenapp. org/a_tutorial

Innovation / newer and / or well established technologies

Think about better design for respirators.





Shows the application of an upper room UV fixture in a classroom. The fixture is the black box on the upper, le side of the front wall, with blue light visible. Another fixture on the rear wall would contribute to an effective upper room air disinfection zone. © Chaska Stern - TEAM GEWALTMANAGEMENT

If We're Going to Live With COVID-19, It's Time to Clean Our Indoor Air Properly (TIME)

For current and future viral pathogens like SARS-CoV-19, relatively high levels of "equivalent" ventilation by **supplemental air disinfection** will be needed.

In a controlled study in a hospital in South Africa, we showed that GUV inactivation of airborne **TB bacteria was equivalent to 24 ACH**—well beyond the capacity of most mechanical ventilation systems and room-air cleaners.

Independent investigators aerosolized test bacteria into an unoccupied hospital room in Russia and compared mechanical ventilation, upper room GUV, and three commercial room air cleaners. They found that upper-room GUV was about 9.4 times more costeffective than mechanical ventilation for the same amount of air disinfection.



Occupational Health Clinics for Ontario Workers Inc. Prevention Through Intervention

Conversation with

Joey Fox, P. Eng, M.A.Sc,. HVAC Engineer (@joeyfox85) to review IAQ basics, along with lots of practical ideas and strategies that you can apply to improve ventilation (and health) in workplaces large and small (including your home).

Joey Fox is a professional engineer with over ten years in the Heating, Ventilation, and Air Conditioning (HVAC) industry specializing in schools. He is currently the chair of the indoor air quality advisory committee for the Ontario Society of Professional Engineers.