SAFECOM
TRAINING + SERVICES
262, 17008 – 90 Avenue
Edmonton, AB, T5T 1L6
(T) 780.984.7983
www.safecom-inc.com
info@safecom-inc.com

June 7th, 2021

Mr. Dominic Desjarlais, attorney
1188 Union Avenue
Office 626
Montréal (Québec) H3B 0E5

REPORT PREPARED AT THE REQUEST OF MR. DOMINIC DESJARLAIS, ATTORNEY, CONCERNING THE HAZARD POSED BY MASKS WEARING

My name is Chris Schaefer. I have been employed in the field of Occupational Health and Safety, within the specialization of respirator training and fit testing for 27 years now.

My clients include many departments of provincial, territorial, and federal government, Department of National Defense, health care providers, educational institutions, and private industry.

My Relevant Qualifications:

CSA Respirator Instructor/Fit Testing Instructor
OHS Respirator Instructor/Fit Testing Instructor
CSA Respirator Training/Fit Testing Administrator
Consultant for Workplace Respirator Requirements
Consultant for Protection from Hazardous Atmospheres
Respirator Program Designer
OHS Air Quality/Gas Monitor Technician
Contract Respirator/Fit Testing Instructor for the University of Alberta
Contract Respirator/Fit Testing Instructor for Alberta Health Services
Certified Health and Safety Consultant
Spill Containment & Response Instructor
HAZMAT Instructor
Confined Space Entry Instructor
Fire Training Instructor

The present report concerns the testing/analysis of the hazard posed by the wearing of various masks (procedural, medical and non-medical/cloth masks).

Accompanying the present report is a video showing the testing of the following:

-Inside room air quality;
-Air quality for both child and adult wearing nonmedical/cloth, procedural, and medical masks;
-Air quality for both child and adult wearing proper respirator masks.

I understand from reading the various orders mandating the wearing of masks in Quebec in relation to Covid-19 that the types of masks that are mandated in various situations are the procedural mask (also typically known as the "blue masks"), and the nonmedical/cloth mask.

In this video demonstration, I simply measured the level of both carbon dioxide and oxygen from each wearer's mask, keeping my testing equipment clearly visible with no manipulation or intrusion, in order to compare these measures with established regulatory limits.

OPINION re: MASKS

Masks designed to cover the mouth and nose of the wearer are required to have engineered breathing openings for air to flow in during inhalation and to be purged during exhalation. Examples of masks include respirator masks, scuba masks, hockey goalie masks and Halloween masks.

The Quebec provincially mandated nonmedical/cloth, and procedural masks do not have engineered breathing openings for air to flow in and exhaled air to be purged out. Therefore, they are not respirator masks or even masks at all, but are, in fact, close fitting covers.

These mandated nonmedical/cloth, and procedural close-fitting covers, erroneously called masks, are, in fact and in reality, breathing barriers that interfere with normal healthy inflow of atmospheric oxygen and outflow of toxic carbon dioxide.

Discussing filtration efficiency of these covers is a moot point. Why? Because wearing any of these covers creates a lower oxygen and high carbon dioxide breathing environment that is hazardous to the wearer, regardless of contaminant filtration efficiency. Simply put: all closed covers worn over mouth and nose are hazardous to the wearer, regardless of whether there is an atmospheric contaminant.

These covers, by design, cause the wearer to rebreathe their own exhaled air, which is very hazardous (see the document attached as Schedule 1).

Actual proper respirators (as the black one with the valves shown on the video) have an engineered breathing system that eliminates the risk of capture and re-inhalation of

exhaled air. As shown in the video, they are designed with two inhalation valves, covered by pink filters, through which atmospheric air enters with inhalation and an exhalation value in-between that causes exhaled air to exit.

Carbon dioxide is a toxic gas that is produced from cellular respiration. Ordinary outdoor atmospheric air contains 400 ppm (parts per million) of carbon dioxide depending upon the environment that a person is located in (see document attached as Schedule 2).

As shown in the accompanying video, I measured the oxygen levels and carbon dioxide levels for two adults and a child wearing non-medical/cloth, procedural, and medical (NIOSH certified N95 disposable) masks, as well as an actual proper respirator mask.

For this experiment, I used an air testing monitor. The specific model I used was the MultiRAE Lite. For any mask to provide protection to a wearer, a mask must form an airtight seal around the edges. If gaps exist between edges of the mask and the face, atmospheric protection cannot occur. Covers and masks during this testing were kept intact to clearly demonstrate the actual air results for each type.

I tested the air just outside each cover and the proper respirator mask to prove, beyond any doubt, that inhaling/exhaling from the same air supply creates a hazardous breathing environment. When analyzing the air quality produced by a respirator/mask/cover, it is important to test the air without any changes to the position of the respirator/mask/cover, in order to obtain accurate results. Official fit testing protocol requires air testing without disturbing the seal of the respirator/mask/cover to the wearer's face. Any changes to the position create air quality changes. Therefore, taking the measure of air quality levels right outside of the respirator/mask/cover is a proper procedure and the carbon dioxide and oxygen levels as measured on the video are an accurate indication of the levels of carbon dioxide and oxygen levels present in the air inside of the respirator/mask/cover and inhaled by each of the wearers.

Unlike the provincially mandated covers, the proper respirator prevents the rebreathing of exhaled air through an engineered breathing system that pulls atmospheric air in through two inhalation valves and purges exhaled carbon dioxide through a single exhalation value.

The testing of air quality outside each closed cover worn by both adults, as well as the child, detected hazardous levels of both carbon dioxide and oxygen within 30 seconds that activated emergency alarms on the monitor as shown in the video.

The testing of air quality outside an inhalation valve of the proper respirator (black respirator with the two valves shown in the video) worn by each of the two adults and child proved that inhaled air is not being contaminated by exhaled waste air. In the video, each test of inhaled air while wearing the proper respirator shows safe levels with no alarms. The test of the exhalation value in the middle of each proper respirator showed that all the waste air and excess carbon dioxide is purged out here, just as it should be.

Using an air testing monitor known as a MultiRAE Lite, I observed that the carbon dioxide concentration detected by the air testing monitor outside the wearer's non-medical/cloth, procedural and medical covers detected carbon dioxide concentration in excess of the exposure limit of 1000 ppm within 30 seconds of measuring.

The MultiRAE Lite air testing monitor, which was calibrated and that I am competent to operate, measures both oxygen and carbon dioxide levels.

The Health Canada standard, as of 2021, sets the maximum indoor exposure limit regarding carbon dioxide at 1,000 ppm. (see document attached as Schedule 3).

Additional international standard for indoor carbon dioxide exposure:

> -United States: No more than 700 ppm above outdoor ambient levels: ASHRAE (2016) (see document attached as Schedule 4).

Young children breathe in more air in relation to their body weight than people in other age groups. This means that they breathe in more contaminants, so air pollution affects them more.

The body's defence and lung systems are also not fully developed yet. Therefore, young children cannot easily fight off sicknesses that may result from air pollution.

Health Canada – Health Effects of Air Pollution (see document attached as Schedule 5).

Individuals with certain environmentally mediated health conditions were more likely to experience building related symptoms (due to carbon dioxide) than those without these conditions. Erdmann, C.A. and Apte, M.G. (2004) Mucous membrane and lower respiratory building related symptoms in relation to indoor carbon dioxide concentrations in the 100-building BASE dataset, Indoor Air, 14: 127-134 (see document attached as Schedule 6).

As a result of the testing which I have performed, the measured results indicate that all persons wearing a non-medical/cloth, procedural, or medical mask immediately exceed the Health Canada limit for carbon dioxide exposure within less than 30 seconds.

LOW OXYGEN INHALATION

In addition to being a toxic gas, carbon dioxide is also an asphyxiant, and displaces oxygen and creates an oxygen deficient atmosphere between a wearer's cover and face.

Using a MultiRAE Lite air testing device, as shown in the video, I have observed that upon commencement of wearing a nonmedical/cloth, medical or procedural cover oxygen levels dropped. Some readings showed low oxygen levels approaching 19.5% or lower which, according to Legis Quebec Occupational Health and Safety Legislation is prohibited:

> -(40. Oxygen): Subject to section 45, the percentage in volume of airborne

oxygen in any location of an establishment shall not be less than 19.5% at normal atmospheric pressure (see document attached as Schedule 7).

According to the Occupational Health and Safety Administration (OSHA), below 19.5% oxygen is immediately dangerous to life and health (IDLH). (see document attached as Schedule 8).

As a result of the testing which I have performed, the measured results indicate that, for a child or adult wearing a closed cover medical mask, non-medical/cloth mask or procedure mask, the oxygen level rapidly drops below both the Quebec provincial legislation limit and OSHA limit of acceptable and safe oxygen level.

The participants to the demonstration, who were wearing the various masks were breathing in a relaxed state, and still, the level of oxygen rapidly went below the acceptable and safe level, and the level of carbon dioxide rapidly went above the acceptable and safe level. It is important to mention that, as effort increases, so does oxygen demand and carbon dioxide rate of expulsion. Therefore, anyone wearing any one of the closed covers, erroneously called masks, shown in the video, would experience even more significant increases in hazardous carbon dioxide capture and oxygen deficiency while engaged in increasingly strenuous physical activity.

SUMMARY:

1. A mask is a specially engineered device for safe breathing.
2. In addition, a respirator is designed to prevent contaminants from being inhaled.
3. The currently mandated procedural and nonmedical/cloth covers are neither respirators, nor masks.
4. Monitoring as shown in the accompanying video, clearly demonstrates that the currently mandated procedural, and non-medical/cloth covers create hazardously high levels of carbon dioxide capture and low oxygen, which the wearer continuously inhales while wearing the said covers.
5. Testing showed hazardous levels of high carbon dioxide and low oxygen inhaled by participants in as little as 30 seconds of wearing the various covers, while at rest. As exertion increases, so will carbon dioxide capture and conversely produce increasing reductions in available oxygen.

CONCLUSION:

The currently mandated procedural and non-medical/cloth covers (masks) by the Quebec Government create hazardous inhaled air for wearers and should be absolutely prohibited.

These are my conclusions based upon the testing performed.

Sincerely,

Chris Schaefer
SafeCom Training Services Inc.

Schedules:

Schedule 1: Harmful effects of rebreathing exhaled carbon dioxide: http://thebetteroxygenmask.com/harmful-effects-of-rebreathing-carbon-dioxide-co2/

Schedule 2: Concentration of carbon dioxide in the atmosphere: https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/

Schedule 3: Health Canada Carbon Dioxide Indoor Exposure Limit: https://www.canada.ca/en/health-canada/services/publications/healthy-living/residential-indoor-air-quality-guidelines-carbon-dioxide.html

Schedule 4: ASHRAE Indoor Carbon Dioxide Limit https://www.ashrae.org/File%20Library/Technical%20Resources/Standards%20and%20Guidelines/Standards%20Addenda/62.1-2016/62_1_2016_d_20180302.pdf

Schedule 5: Health Canada Health Effects of Air Pollution on Young Children https://www.canada.ca/en/health-canada/services/air-quality/health-effects-indoor-air-pollution.html

Schedule 6: Erdmann, C.A. and Apte, M.G. (2004) Mucous membrane and lower respiratory building related symptoms in relation to indoor carbon dioxide concentrations in the 100-building BASE dataset, Indoor Air, 14: 127-134 https://pubmed.ncbi.nlm.nih.gov/15663468/

Schedule 7: Oxygen safe limit Quebec legislation:

> -(Paragraph 40. Oxygen): Subject to section 45, the percentage in volume of airborne oxygen in any location of an establishment shall not be less than 19.5% at normal atmospheric pressure. http://legisquebec.gouv.qc.ca/en/showdoc/cr/S-2.1,%20r.%2013

Schedule 8: OSHA Oxygen Safe Limit USA legislation: https://www.osha.gov/laws-regs/standardinterpretations/2007-04-02-0

SCHEDULE 1

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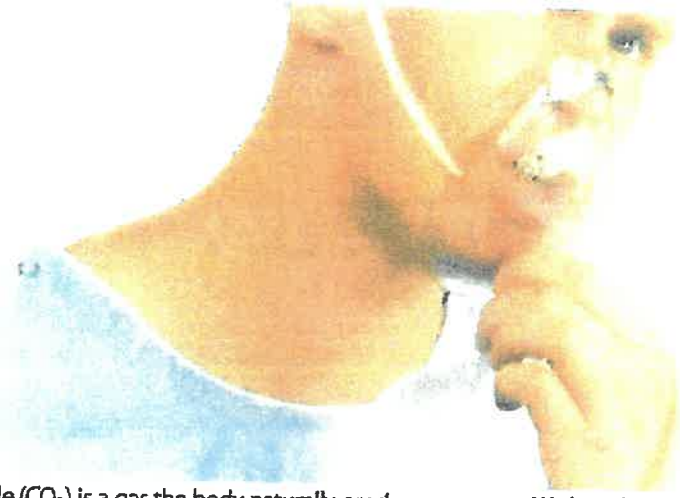
Harmful Effects of Rebreathing Carbon Dioxide (CO2)

July 11, 2016 OxyMask™ News



Carbon dioxide (CO_2) is a gas the body naturally produces as waste. We breathe in oxygen (O_2) to fuel organs and tissues and the end product is CO_2. The balance between these two gases is required for a healthy body. However, when we rebreathe CO_2 it can have harmful and sometimes dangerous effects on the body. When CO_2 levels are elevated in the body it is known as hypercapnia. Hypercapnia can occur for a number of reasons, one of which is rebreathing our own exhaled CO_2. Rebreathing CO_2 can lead to increased blood pressure, headaches, muscle twitches, rapid heart rate, chest pain, confusion, and fatigue. In extreme cases, if left untreated, hypercapnia can lead to organ damage and even have long standing effects on the brain.

SCHEDULE 2

NEWS | October 9, 2019

The Atmosphere: Getting a Handle on Carbon Dioxide

Sizing Up Humanity's Impacts on Earth's Changing Atmosphere: A Five-Part Series

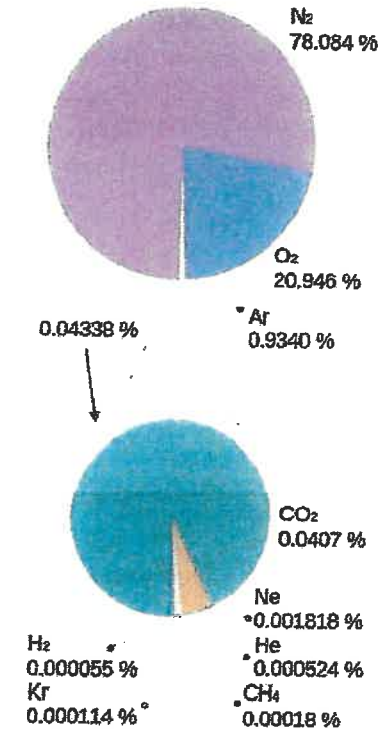
By Alan Buis,
NASA's Jet Propulsion Laboratory

Part Two

Earth's atmosphere is resilient to many of the changes humans have imposed on it. But, says atmospheric scientist David Crisp of NASA's Jet Propulsion Laboratory in Pasadena, California, that doesn't necessarily mean that our society is.

"The resilience of Earth's atmosphere has been proven throughout our planet's climate history," said Crisp, science team lead for NASA's Orbiting Carbon Observatory-2 (OCO-2) satellite and its successor instrument, OCO-3, which launched to the International Space Station on May 4. "Humans have increased the abundance of carbon dioxide by 45 percent since the beginning of the Industrial Age. That's making big changes in our environment, but at the same time, it's not going to lead to a runaway greenhouse effect or something like that. So, our atmosphere will survive, but, as suggested by UCLA professor and Pulitzer-Prize-winning author Jared Diamond, even the most advanced societies can be more fragile than the atmosphere is."

What's in the Air?



Composition of Earth's atmosphere by volume. Lower pie represents trace gases that together compose about 0.038% of the atmosphere (0.041197% at March 2019 concentration). Numbers are mainly from 1987, with carbon dioxide and methane from 2009, and do not represent any single source. Credit: Public domain

By volume, the dry air in Earth's atmosphere is about 78.09 percent nitrogen, 20.95 percent oxygen, and 0.93 percent argon.

NASA's OCO-3 instrument sits on the large vibration table (known as the "shaker") in the Environmental Test Lab at NASA's Jet Propulsion Laboratory. Thermal blankets were later added to the instrument at NASA's Kennedy Space Center, where a Space-X Dragon capsule carrying OCO-3 launched on a Falcon 9 rocket to the space station on May 4, 2019. Credit: NASA/JPL-Caltech

Changes to our atmosphere associated with reactive gases (gases that undergo chemical reactions) like ozone and ozone-forming chemicals like nitrous oxides, are relatively short-lived. Carbon dioxide is a different animal, however. Once it's added to the atmosphere, it hangs around, for a *long* time: between 300 to 1,000 years. Thus, as humans change the atmosphere by emitting carbon dioxide, those changes will endure on the timescale of many human lives.

Earth's atmosphere is associated with many types of cycles, such as the carbon cycle and the water cycle. Crisp says that while our atmosphere is very stable, those cycles aren't.

"Humanity's ability to thrive depends on these other planetary cycles and processes working the way they now do," he said. "Thanks to detailed observations of our planet from space, we've seen some changes over the last 30 years that are quite alarming: changes in precipitation patterns, in where and how plants grow, in sea and land ice, in entire ecosystems like tropical rain forests. These changes should attract our attention.

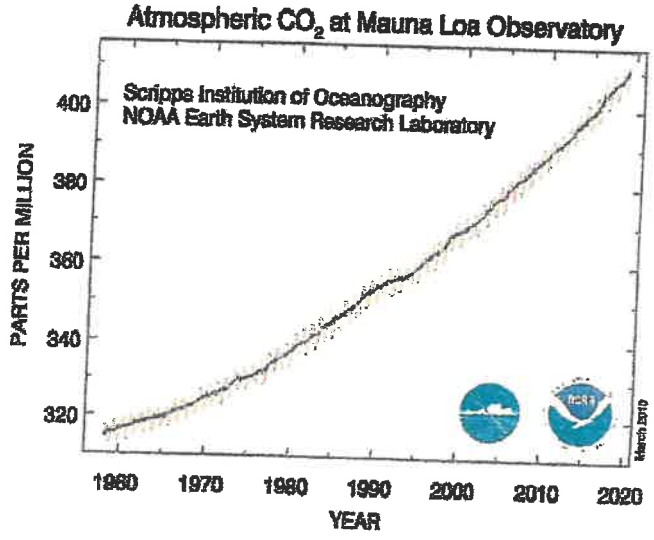
A brew of trace gases accounts for the other 0.03 percent, including the greenhouse gases carbon dioxide, methane, nitrous oxide and ozone. Yet while these greenhouse gases make up just a tiny percentage of our atmosphere, they play major roles in trapping Earth's radiant heat and keeping it from escaping into space, thereby warming our planet and contributing to Earth's greenhouse effect.

The largest greenhouse gas by volume is actually the one most people tend to overlook: water vapor, whose concentration varies significantly depending on temperature. As the temperature of the atmosphere increases, the amount of humidity in the atmosphere also goes up, further heating our planet in a vicious cycle.

Tiny solid or liquid particles known as aerosols, which are produced both naturally and by human activities, are also present in variable amounts, along with human-produced industrial pollutants and natural and human-produced sulfur compounds.

"One could say that because the atmosphere is so thin, the activities of 7 billion humans can actually make significant changes to the entire system," he added. "The composition of Earth's atmosphere has most certainly been altered. Half of the increase in atmospheric carbon dioxide concentrations in the last 300 years has occurred since 1980, and one quarter of it since 2000. Methane concentrations have increased 2.5 times since the start of the Industrial Age, with almost all of that occurring since 1980. So changes are coming faster, and they're becoming more significant."

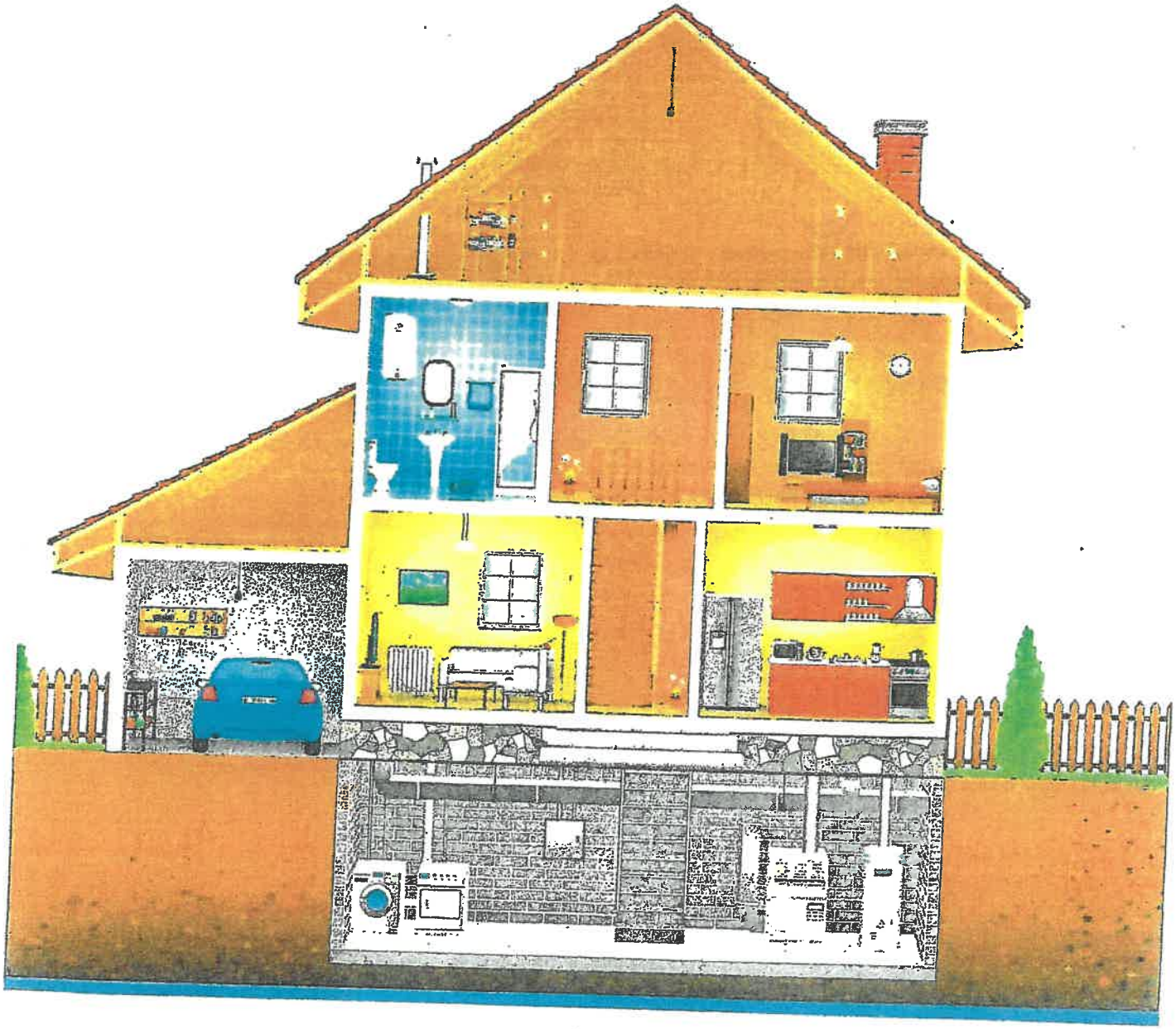
The concentration of carbon dioxide in Earth's atmosphere is currently at nearly 412 parts per million (ppm) and rising. This represents a 47 percent increase since the beginning of the Industrial Age, when the concentration was near 280 ppm, and an 11 percent increase since 2000, when it was near 370 ppm. Crisp points out that scientists know the increases in carbon dioxide are caused primarily by human activities because carbon produced by burning fossil fuels has a different ratio of heavy-to-light carbon atoms, so it leaves a distinct "fingerprint" that instruments can measure. A relative decline in the amount of heavy carbon-13 isotopes in the atmosphere points to fossil fuel sources. Burning fossil fuels also depletes oxygen and lowers the ratio of oxygen to nitrogen in the atmosphere.



SCHEDULE 3

RESIDENTIAL INDOOR
AIR QUALITY GUIDELINES

CARBON DIOXIDE



Health Canada Santé Canada

Canada

EXECUTIVE SUMMARY

RESIDENTIAL INDOOR AIR QUALITY GUIDELINES FOR CARBON DIOXIDE (CO_2)

Exposure Limit	Concentration		Critical effect(s)
	mg/m³	ppm	
Long-term (24 h)	1800	1000	As CO_2 increases, there may be an increased risk of: • mucous membrane or respiratory symptoms (e.g., eye irritation, sore or dry throat, stuffy, congested or runny nose, sneezing, coughing, and rhinitis) • decreased test performance (e.g., decision-making, task performance, standardized test scores) • neurophysiological symptoms (such as headache, tiredness, fatigue, dizziness or difficulty concentrating)

The recommended long-term exposure limit for CO_2 is 1000 ppm (based on a 24-hour average). The guidelines are based on effects observed in epidemiological studies in schools or offices and controlled exposure studies.

BACKGROUND

Carbon dioxide is an odourless, colourless, and non-flammable gas; the main source of CO_2 indoors is from the respiration of occupants. Indoor CO_2 concentrations are often used as a surrogate for ventilation rate and as an indicator of general indoor air quality.

The Residential Indoor Air Quality Guidelines (RIAQG) are intended to provide a recommended long-term indoor air exposure limit for CO_2 which would indicate adequate ventilation as well as minimize risks to human health from CO_2 and other indoor air pollutants.

The guideline document also shows that levels in some Canadian homes may exceed the recommended exposure limit, and recommends various risk mitigation measures to improve general indoor air quality and reduce exposure to CO_2.

SCHEDULE 4

ADDENDA

ASHRAE

ANSI/ASHRAE Addendum d to
ANSI/ASHRAE Standard 62.1-2016

Ventilation for Acceptable Indoor Air Quality

Approved by the ASHRAE Standards Committee on January 20, 2018; by the ASHRAE Board of Directors on January 24, 2018; and by the American National Standards Institute on February 21, 2018.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE website (www.ashrae.org) or in paper form from the Senior Manager of Standards.

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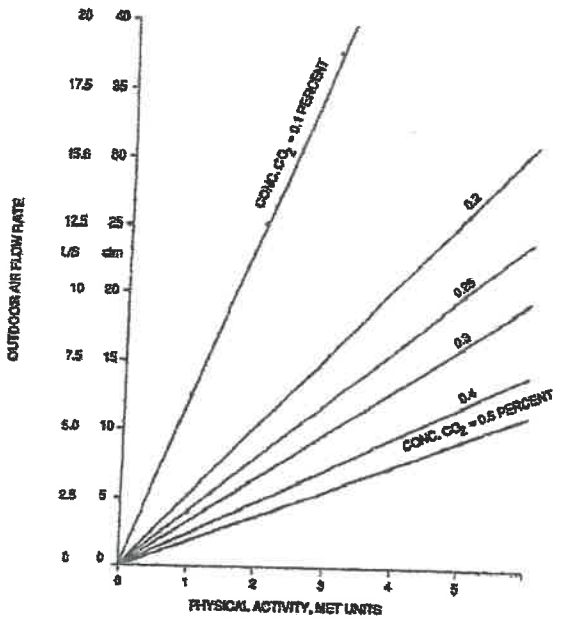

FIGURE D-3 Ventilation requirements.

ies have shown that with sedentary persons about15 cfm (7.5 L/s) per person of outdoor air will dilute odors from human bioeffluents to levels that will satisfy a substantial majority (about 80%) of unadapted persons (visitors) to a space [D-3,D-4,D-5,D-6,D-7]. If the ventilation rate is to be held to 15 cfm (7.5 L/s) per person, the resulting steady-state CO_2 concentration relative to that in the outdoor air is

$$C_s - C_o = N/V_o$$
$$= 0.31/(7.5 \times 60 \text{ s/min})$$
$$= 0.000689 \text{ L of } CO_2 \text{ per L of air}$$
$$\approx 700 \text{ ppm}$$

Thus, maintaining a steady-state CO_2 concentration in a space no greater than about 700 ppm above outdoor air levels will indicate that a substantial majority of visitors entering a space will be satisfied with respect to human bioeffluents (body odor). A more detailed discussion of this relationship between CO_2 concentrations and the perception of bioeffluents, as well as the use of indoor CO_2 to estimate building ventilation rates, is contained in ASTM Standard D6245 [D-8].

CO_2 concentrations in acceptable outdoor air typically range from 300 to 500 ppm. High CO_2 concentrations in the outdoor air can be an indicator of combustion and/or other contaminant sources.

Figure D-3 shows the outdoor airflow rate required as a function of physical activity and steady-state room concentration. If the activity level is greater than 1.2 met, the required ventilation must be increased to maintain the same CO_2 level.

Also the decrease in oxygen content of the room air can be found from Equation D-1 when oxygen concentration is substituted for carbon dioxide concentration.

$$C_o - C_s = N/V_o \quad \text{(D-2)}$$

The term N now has a negative value with respect to its use in Equation D-1 because oxygen is consumed rather than generated.

$$C_s = C_o - N/V_o \quad \text{(D-3)}$$

The oxygen consumption rate is 0.0127 cfm (0.36 L/min) when the activity level is 1.2 met. For ventilation at a rate of 15 cfm (429 L/m) and an activity level of 1.2 met units, the room oxygen level will be reduced from an outdoor concentration of 20.95% to 20.85%, a percent change of 0.48% ([20.95 – 20.85]/20.95). Unlike oxygen, CO_2 is generated as a result of activity. At 1.2 met, the CO_2 indoors is raised from the outdoor background of 0.03% to 0.1%, a percent change of 230%. Thus, measuring the increase of CO_2 is clearly more significant than measuring the decrease of oxygen.

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SCHEDULE 5

Health effects of air pollution

On this page

Exposure to air pollution

Everyone is exposed to air pollution. Air pollution, even at low levels, has an impact on human health. Science has clearly shown that air pollution leads to disease, increased hospitalizations, and even premature death.

While air pollution is a complex mixture of substances, most health effects are associated with the major components of smog:

- fine particulate matter;
- nitrogen dioxide;
- ozone; and
- sulphur dioxide.

- those who live near industries or busy roadways
- those who have existing breathing or lung problems and illnesses

Lung conditions

Lung conditions that put people at risk for air pollution health effects include:

- asthma
- lung cancer
- chronic obstructive pulmonary disease (COPD)
  - this is sometimes called chronic bronchitis or emphysema

Heart conditions

People who have previously suffered a heart attack are at risk. Other heart conditions that put people at risk include:

- heart failure (your heart is too weak to move blood around the body)
- angina (chest pain that happens when your heart does not get enough oxygen-rich blood)
- heart rhythm problems like arrhythmia (your heart either beats too fast, too slow or is irregular)

Those with diabetes are also at risk for air pollution health effects. This is because people with diabetes are also likely to have a heart condition.

Young children

Young children breathe in more air in relation to their body weight than people in other age groups. This means that they breathe in more contaminants, so air pollution affects them more.

The body's defence and lung systems are also not fully developed yet. Therefore, young children cannot easily fight off sicknesses that may result from air pollution.

Older adults

Older adults may have weaker lungs, heart and defence systems. They may also have an undiagnosed lung or heart condition.

Those who are active outdoors

People who play sports or do hard work outdoors breathe faster and more deeply than others. This allows more air pollution to enter the lungs.

Those who live near industries or busy roadways

People who live near industries or busy roadways are closer to major sources of air pollution. They may be exposed to more pollutants from these sources.

What should you do if you think you are suffering from health problems related to air quality?

If you think that you are suffering from health problems related to air pollution, it is important to:

- keep track of when you get symptoms and when they go away
- discuss your symptoms with your health care provider

This will help your health care provider determine if your symptoms are related to

- air quality problems, including indoor air quality issues

SCHEDULE 6

Indoor Air 2004;14 Suppl 8:127-34. doi: 10.1111/j.1600-0668.2004.00298.x.

Mucous membrane and lower respiratory building related symptoms in relation to indoor carbon dioxide concentrations in the 100-building BASE dataset

Christine A Erdmann [1], Michael G Apte

Affiliations

PMID: 15663468 DOI: 10.1111/j.1600-0668.2004.00298.x
Free article

Abstract

Indoor air pollutants are a potential cause of building related symptoms and can be reduced by increasing ventilation rates. Indoor carbon dioxide (CO(2)) concentration is an approximate surrogate for concentrations of occupant-generated pollutants and for ventilation rate per occupant. Using the US EPA 100 office-building BASE Study dataset, we conducted multivariate logistic regression analyses to quantify the relationship between indoor CO(2) concentrations (dCO(2)) and mucous membrane (MM) and lower respiratory system (LResp) building related symptoms, adjusting for age, sex, smoking status, presence of carpet in workspace, thermal exposure, relative humidity, and a marker for entrained automobile exhaust. In addition, we tested the hypothesis that certain environmentally mediated health conditions (e.g., allergies and asthma) confer increased susceptibility to building related symptoms. Adjusted odds ratios (ORs) for statistically significant, dose-dependent associations ($P < 0.05$) for combined mucous membrane, dry eyes, sore throat, nose/sinus congestion, sneeze, and wheeze symptoms with 100 p.p.m. increases in dCO(2) ranged from 1.1 to 1.2. Building occupants with certain environmentally mediated health conditions were more likely to report that they experience building related symptoms than those without these conditions (statistically significant ORs ranged from 1.5 to 11.1, $P < 0.05$).

Practical implications: These results suggest that provision of sufficient per-person outdoor ventilation air, could significantly decrease prevalence of selected building related symptoms. The observed relationship between indoor minus outdoor CO(2) concentrations and mucous membrane and lower respiratory symptoms suggests that air contaminants are implicated in the etiology of building related symptoms. Levels of indoor air pollutants that are suspected to cause building related

SCHEDULE 7

Québec

Updated to December 10, 2020
This document has official status.

chapter S-2.1, r. 13

Regulation respecting occupational health and safety

Act respecting occupational health and safety
(chapter S-2.1, s. 223).

TABLE OF CONTENTS

40. Oxygen: Subject to section 45, the percentage in volume of airborne oxygen in any work location of an establishment shall not be less than 19.5% at normal atmospheric pressure.

O.C. 885-2001, s. 40.

41. Standards: Subject to section 45, any establishment whose operation could cause the emission of gases, dusts, fumes, vapours and mists into the work area shall be operated so that the concentration of any gas, dust, fume, vapour or mist does not exceed, in the respiratory zone of the workers, the standards provided for in Schedule I for any time period specified therein.

The use of crocidolite, amosite or a product containing either of these substances is prohibited, except where their replacement is not reasonable or practicable.

Such an establishment shall be designed, constructed, fitted or provided with an evacuation system for gases, dusts, fumes, vapours or mists to comply with the standards provided for in the first paragraph.

The first paragraph also applies to any work station located in a vehicle, wherever situated.

O.C. 885-2001, s. 41.

42. Carcinogenic and isocyanate substances: When a worker is exposed to a substance identified in Schedule I as having a known or suspected carcinogenic effect on humans or being diisocyanate or isocyanate oligomers, such exposure shall be reduced to a minimum, even when it remains within the standards in that Schedule.

O.C. 885-2001, s. 42.

43. Measurement: In any establishment that employs 50 workers or more where the concentration of gases, dusts, fumes, vapours or mists at a work location exceeds or could exceed the standards prescribed in Schedule I, the concentration of such gases, dusts, fumes, vapours or mists emitted into the work environment concerned shall be measured at least once a year, in compliance with paragraph 1 of section 44.

However, in any establishment where workers are exposed to asbestos, the concentration of airborne asbestos dust and the concentration of respirable asbestos fibres in the respiratory zone of the workers shall also be measured at least once a year. A sampling strategy may provide for more frequent measuring, at shorter intervals, depending on the extent of the risk to the health, safety or physical well-being of the workers.

These measurements shall also be taken each time there is a change in industrial processes or each time facilities are installed for improving the quality of the air in the work environment of the establishment.

The results of any measurement of the quality of the air taken in the work environment by the employer shall be entered in a register that shall be kept by the employer for a period of at least 5 years.

O.C. 885-2001, s. 43.

44. Methods: Dusts, gases, fumes, vapours and mists found in the workplace environment shall be measured in the respiratory zone of workers or, if this proves to be impossible owing to the lack of equipment for taking a sampling in this zone, then outside the breathing zone but in a place located as close as possible to such zone.

These dusts, gases, fumes, vapours and mists found in the workplace environment shall be sampled and analyzed to obtain an accuracy equivalent to that obtained by applying the methods described in the Sampling Guide for Air Contaminants in the Workplace published by the Institut de recherche Robert-Sauvé en santé et sécurité du travail du Québec.

SCHEDULE 8

Standard Interpretations

/ Clarification of OSHA's requirement for breathing air to have at least 19.5 percent oxygen content

- **Standard Number:** 1910.134 ; 1910.134(d)(2)(i)(A) ; 1910.134(d)(2)(i)(B) ; 1910.134(d)(2)(ii)

OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at https://www.osha.gov.

April 2, 2007

Mr. William Costello
Vice President
FirePASS Corporation
1 Collins Drive
Carneys Point, NJ 08069

Dear Mr. Costello:

Thank you for your January 8, 2007 letter to the Occupational Safety and Health Administration's (OSHA's) Directorate of Enforcement Programs regarding the Respiratory Protection Standard, 29 CFR 1910.134. This letter constitutes OSHA's interpretation only of the requirements discussed and may not be applicable to any question not delineated within your original correspondence.

In your letter you ask OSHA to revise the Respiratory Protection Standard to state that an atmosphere containing a partial pressure of oxygen at or above 100 mm of mercury is safe for employees when employers demonstrate that, under all foreseeable conditions, they can maintain the partial pressure of oxygen at or above 100 mm of mercury. Although most of your letter argues for the use of "partial pressures of oxygen" to describe atmospheric oxygen concentrations, the expression "percent oxygen" was purposely chosen during the rulemaking for the Respiratory Protection Standard. Oxygen meters used to assess hazardous conditions by safety personnel in both general industry and construction are calibrated in percent oxygen, and employers and employees are familiar with, and prefer, this terminology. This same terminology has been used in the Confined Space Standard, 29 CFR 1910.146, since 1993.

Paragraph (d)(2)(ii) of the Respiratory Protection Standard considers any atmosphere with an oxygen level below 19.5 percent to be oxygen-deficient and immediately dangerous to life or health. To ensure that employees have a reliable source of air with an oxygen content of at least 19.5 percent, paragraphs (d)(2)(i)(A) and (d)(2)(i)(B) of the Respiratory Protection Standard require employers working under oxygen-deficient conditions to provide their employees with a self-contained breathing apparatus or a combination full-facepiece pressure-demand supplied-

The sampling strategy for these contaminants shall be carried out in accordance with common practices in industrial hygiene as summarized in the aforementioned guide.

O.C. 885-2001, s. 44.

DIVISION VI

INDIVIDUAL PROTECTIVE RESPIRATORY EQUIPMENT

45. **Protective equipment**: Where existing technology prevents an employer from complying with sections 40 and 41, and for work involving maintenance, inspection or repairs outside the workshop, or transportation where the standards provided for in sections 40 and 41 are not complied with or, where the technology exists, while waiting for the measures required for compliance with those sections to be implemented, the employer shall provide the worker, free-of-charge, with respiratory protective equipment and ensure that he uses it, as indicated in the Guide des appareils de protection respiratoire utilisés au Québec, published by the Institut de recherche Robert-Sauvé en santé et en sécurité du travail.

The equipment shall be selected, adjusted, used and cared for in accordance with the CSA Standard Z94.4-93 Selection, Use and Care of Respirators. A respiratory protection program shall be drafted and applied in compliance with that standard.

Notwithstanding the foregoing, where the exposure of a worker to asbestos does not exceed 5 times the time-weighted average exposure value, the employer may provide him with a mask certified at a minimum FFP2, pursuant to the Appareils de protection respiratoire: demi-masques filtrants contre les particules: exigences, essais, marquage EN-149 Standard of the European Committee for Standardisation, by a laboratory accredited by the latter. In such case, the employer shall make sure that the worker wears this equipment.

The preceding provision in no way diminishes the employer's obligation to reduce at the source the dangers to the health, safety and physical well-being of workers.

O.C. 885-2001, s. 45.

46. **Prohibition**: Notwithstanding section 45, an employer may not provide the worker with a self-contained or air-supplied protective respiratory apparatus equipped with an automatic device which interrupts or restricts the air supply in the part of the apparatus covering the face.

O.C. 885-2001, s. 46.

47. **Use of protective equipment**: The respiratory protective equipment prescribed in section 45 shall be:

(1) designed to offer protection from the danger to which the worker is exposed;

(2) kept in good working order;

(3) inspected by the worker each time he wears it;

(4) inspected by the employer at least once a month and each time the worker using the equipment reports to his employer that it is not working properly;

(5) disinfected before being used by another worker, except in an emergency;

(6) stored in a clean place.

The principles of operation and the use of the equipment shall be explained to the workers, and the employer shall ensure that its use is fully understood by the workers.

O.C. 885-2001, s. 47.

CURRICULUM VITAE

Chris Schaefer
262, 17008 – 90th Avenue
Edmonton, Alberta T5T 1L6

CURRICULUM VITAE

EMPLOYMENT/PROFESSIONAL HISTORY:

Feb 2005 – Present

Director, SafeCom Training Services Inc.
Edmonton, Alberta

- CSA Respirator Instructor/Fit Testing Instructor
- OHS Respirator Instructor/Fit Testing Instructor
- CSA Respirator Training/Fit Testing Administrator
- Consultant for Workplace Respirator Requirements
- Consultant for Protection from Hazardous Atmospheres
- Respirator Program Designer
- OHS Air Quality/Gas Monitor Technician
- Contract Respirator/Fit Testing Instructor for the both the Faculties of Medicine and Dentistry – University of Alberta
- Contract Respirator/Fit Testing Instructor for Alberta Health Services
- Contract Respirator/Fit Testing Instructor for Government Workplace Health & Safety Officers in both Alberta and Northwest Territories

Aug 2003 – Jan 2005

Western Canada Manager of Training, Ensign Energy

- Co-ordinated and facilitated operations and safety training for over 300 employees across 6 branch offices.
- Implemented innovative new training programs for all employees that had never been conceived before.

Sep 2002 – Aug 2003

Senior Instructor, Golder Associates

- Facilitated and managed training for over 300 employees and clients across Alberta

Aug 2000 – Jul 2002

Field Operations Manager, Scotford Safety

- Managed operations regarding emergency response, hazardous materials, training education of both employees and clients

Feb 1998 – May 2000

Safety Officer, PCL Construction

- Supported the safe working requirements and behaviors of over 400 tradespersons at a time on various projects.

Jul 1994 – Jan 1998	Contract Firefighter/Rescue Technician/Safety Supervisor for a variety of companies including: • British Petroleum • United Safety • Standard Safety • Safety Boss Canada
Feb 1992 – Jul 1994	Firefighter / Safety Officer, Weyerhauser Canada • Responsible for responding to site fires and emergencies as well as equipment maintenance.

ASSOCIATIONS:

Member of the Canadian Society of Safety Engineering
Member of the Alberta College of Paramedics
Member of Civil Air Search and Rescue

RELEVANT CERTIFICATIONS:

- Spill Containment & Response Instructor
- HAZMAT Instructor
- H_2S Alive Instructor
- Confined Space Entry Instructor
- CSA Respirator Trainer & Fit Testing Instructor
- Fire Training Instructor
- Asbestos Abatement Instructor
- Certified Health & Safety Consultant (CHSC)
- Provincial Asbestos Inspector
- Industrial Hygiene
- Bench Certificate for Scott SCBA
- Hazardous Materials Operations & Emergency Response
- Respirator Training/Fit Testing
- Advanced Confined Entry and Rescue
- Industrial Firefighting

MEDIA COVERAGE AS A RESPIRATOR SPECIALIST:

Story Dr. Joseph Mercola wrote on my work:

https://articles.mercola.com/sites/articles/archive/2021/03/01/moist-masks.aspx?ui=2e85870fe36d55695cd4b4ffffea8b6ae9885c67fc8186c56e23a572a95e2336&sd=20201211&cid_source=dnl&cid_medium=email&cid_content=art1ReadMore&cid=20210301&mid=DM817965&rid=1096417926&fbclid=IwAR1j7MhufifC3TIf4vhkzx9sOu4l2o9L72excAFq1z1Gjwh181r_PFINw8Y

Digital News Todayville – my open letter to Dr. Hinshaw:

https://www.todayville.com/mask-expert-warns-dr-deena-hinshaw-mask-use-will-not-protect-against-covid-19/

My Talk at the Barrhead, Alberta Rally

https://rumble.com/ve91a9-enough-is-enough-non-medical-masks-cause-harm.html

My Video Proving the Harm of the Mandated Face Covers:

https://rumble.com/ve57c5-respirator-specialist-from-canada-proves-masks-for-coronavirus-cause-harm.html

Requesting City Council of Grande Prairie to not renew their municipal mask mandate which was set to expire end of January. Within two hours of my talk, they voted to do just that.

https://www.youtube.com/watch?v=qPmRFLcWHx4&t=7981s Starting 2:12

Requesting City Council of Beaumont to cancel their municipal mask mandate – which afterwards they cancelled.
https://photos.google.com/share/AF1QipMEGFZlcXNu7iq3KGaE61c3v5Hsblo6PI4AcrE9eevTI0t1J9AHrovZX_BKL-xv0w/photo/AF1QipO9LTO-EdiK5wqzl4hbAAUVNQ6940o54eads4A?key=aGo1WW95ZEt4SHBfSGkwblBqa19vdkJSNG1qeWF3

Requesting City Council of Edmonton to cancel their municipal mask mandate – my part starts 7:31
https://www.youtube.com/watch?v=K1W0FHuR-Rc&t=29974s

Rebel News Interview:
https://www.rebelnews.com/non_medical_face_coverings_dont_protect_from_covid19_ppe_instructor_chris_schaefer_speaks_out?fbclid=IwAR29Be691N26yyR6VrLuMBzFi7e-X9TrZfh130OlyAN53Lh_JBZ-vn4ley8

Speaking at Calgary Freedom Rally – I start 22:28
https://www.facebook.com/101963541593316/videos/362558905177342

Guest on The Laura Lynn Show – My part 33:40
https://www.facebook.com/LauraLynnTT/videos/10158927244854319

Guest on the Angry Albertan Podcast:
https://www.facebook.com/TheAngryAlbertan/videos/633526517363157