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OHAO President**

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## **President's Message**

### **The Way Forward From Here**

This is my first opportunity to thank all of the members who came out for the Spring Symposium and Annual General Meeting. The size of the turnout was great, and, I believe, an indicator of the level of interest in your association and its' future management. I'd also like to personally thank all who stood for election, and send my congratulations to the successful new and returning board members. I am looking forward to another year of lively board discussions that help influence our profession and foster the passion for occupational hygiene that exists in our community.

As Beth Walpac mentioned in her last column, the Board has been anticipating the need for a strategic plan to move the Association ahead. Personally, I was impressed by the efforts of the CCOH in this regards, as presented to the CRBOH meeting in Toronto last spring by Richard Quenneville. I believe it is time that OHAO review its activities and spending, and decide how we might make progress in achieving our stated mission (reproduced below). With a strategic plan, I expect that your Board of Directors will set some short term objectives, to better serve our members and perhaps even take on new initiatives that help our profession.

I believe that OHAO does a good job at fostering communication and networking within our membership, and much effort is placed on sponsoring professional development. However, perhaps we can do more to promote partnerships, public education and thus improve our visibility outside the Association as the professionals who tackle and solve occupational health issues.

As most of you know, changes to the H&S "prevention system" are underway in Ontario. The Minister of Labour has appointed a new Chief Prevention Officer, who is responsible for shaping better ways to improve H&S performance in workplaces as of April. As we heard at the OHAO Spring PDC on Designated Substances, occupational disease fatality claims are on the rise, according to WSIB data. Hygienists have an important role to play in future occupational disease trends, and perhaps this is the time to speak out as an Association, and have a voice in shaping new provincial policy or initiatives to reduce exposures. OHAO should have a voice at the table with the workplace parties to make improvements that are consistent with our professional practises and thus achieve real results.

This is an exciting time to be in occupational hygiene, and I invite you all to consider how you might contribute time to your Association and get involved with an OHAO committee. When you volunteer, we all benefit from each other's

*continued on page 3*

# OH FORUM

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## Mission Statement

To advance the profession of occupational hygiene and to serve the interests of our members by:

- sponsoring professional development and training;
- promoting public and legal recognition;
- developing partnerships with stakeholders;
- providing public education;
- fostering communication and networking.

rev. May 2010

## Editor's Message

Christine Sidhom, MSc (A), CRSP

Welcome to the spring edition of the OH Forum. There is a great collection of articles in this issue that I hope you will enjoy. I hope that this newsletter provides you, and continues to provide you, with “quick and easy” information on occupational hygiene and related topics.

We welcome the new president of the OHAO, Paul Bozek, in this newsletter, and the spring symposium, PDCs, and the Annual General Meeting where Hugh Nelson was honoured are reviewed. Our contributors submitted articles on how to share

data on your smartphone, raising questions on comparing indoor to outdoor data when sampling for spores, radiation induced catalysts, and controlling vibrations.

If you would like to make any contributions to the OH Forum, please contact me.

Happy reading!

Christine Sidhom

### *President's Message... continued from page 1*

contribution to improving our Association. Occupational hygiene professionals, with the support of OHAO activities and events, make better informed practitioners who can meet the needs of those who benefit from our expertise. I look forward to playing a role in shaping how OHAO can

better help you, and invite you to contact your Board of Directors with any comments or to volunteer.

Paul Bozek, CIH ROH

## The OHAO Mission Statement

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- developing partnerships with stakeholders;
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## A Pioneer Remembered

At the Spring AGM, a tribute was paid to Hugh Nelson prior to the presentation of the Hugh Nelson Award. Gyan Rahjans and Dave Verma shared their memories.

### My Humble Boss - Hugh Nelson

Gyan Rahjans

Hugh hired me in 1968 as a dust control specialist under him in the Division of Industrial hygiene of the Ontario Department of Health. In the next 30 years that I worked for him, Hugh's one quality became apparent. He always shunned the spotlight. Instead, he wanted the focus to be on his engineering skills. He did not wish to be published or to be promoted. He just wanted to be a good industrial hygienist and a better industrial hygiene engineer. Those of us who knew his enormous talent and contribution to industrial hygiene wished the whole world to know about him. But, he would always discour-

age from us making any effort for his recognition.

When he wrote his thesis on silica flour exposure in Ontario for his Master's Degree from the School of Hygiene of U of T in 1976, I wanted him to publish a paper in the AIHAJ based on his thesis but he was not willing because he had no desire for any further recognition. Since I had worked with him on this project I said I would write the paper if he would not mind being the lead author. That is how the paper was published in the AIHAJ with me and Stu Morton as co-authors. That was the only paper Hugh ever published in an international journal despite the fact that he had hundreds of anecdotes based on industrial hygiene investigations to tell the international community.

Let me illustrate my point of my boss Hugh Nelson shying away from the limelight by the following anecdote that was known to only a few of his colleagues, all but me are no longer with us.

In 1981 Rodney May, a newly appointed ADM [Assistant Deputy Minister] of the O. H. & S. Division of the Ontario Ministry of Labour, decided to reorganize the Occupational Health Branch and appoint a certified hygienist (CIH by examination) as director of the branch. His ulterior motive was that since none of the incumbents in the branch could possibly be a CIH, he would be able to "parachute" a CIH from his previous workplace, whom he had possibly made a promise to before leaving his previous employment. Little did he know that Hugh was a CIH, passing the required examination in 1963. When the position was advertised, we asked Hugh to apply for it. Initially, he

wouldn't, saying that if he got the job he would always be in the limelight and wouldn't be able to concentrate on his fundamental duties of protecting the workers of Ontario. However, we saw it as a golden opportunity for a hygienist to become director of the branch, a post always held by a medical director in the past. We did not lose heart and kept persuading him. I must also admit that my persuasion was the strongest due to my own selfish reason. Hugh's promotion to the directorship would have opened the door for me to become the Chief of Occupational Hygiene Service, the post Hugh was currently holding. Our effort continued but humble Hugh wouldn't change his mind until we convinced him that if not for his own sake, at least for the sake of our profession, he should apply. That worked. Hugh applied and the rest is history.

### A Tribute to Hugh Nelson

Dave Verma

It is indeed a great honor and privilege for me to pay this tribute to Hugh Nelson, who I consider was an exceptional person, a great humanitarian and a true pioneer Canadian industrial hygienist.

Many of you would know that Hugh was born in Nova Scotia, in Amherst to be precise, served during the wartime in the Air Force for three years, studied engineering at Mount Allison in New Brunswick and at McGill in Quebec, and served the Ontario Government from 1952 until his retirement from his position as the Director of Occupational Health Branch in 1982.

I first met Hugh in 1970 when I had just emigrated from the UK and was looking for work of any kind. I was fortunate to have had a lead from Gyan Rajhans that there may be a position in Hugh's group. He was the Chief of Industrial Hygiene Section at that time.

After summoning a great deal of courage, I decided to go and see him personally in his office. I was very apprehensive but to my great surprise, he came out to see me. I did not have any appointment by the way. He soon put me at ease with his charm and kindness. I don't recall much of our discussion about industrial hygiene, since my knowledge of industrial hygiene was about zero at the time.

To my even greater surprise, he later on offered me the job. This was the BEST thing that happened to me in my career. He must have thought I was trainable!!! In those days, those who were recent hires were taken under the wings of the senior members of the group, including Hugh, and allowed to observe how the industrial

hygiene investigations were done. This was HIS method of training and ensuring quality.

In one of those visits, I had accompanied Hugh to a large foundry in Orillia. Seeing Hugh assess that big foundry in less than a day was observing a real MASTER at work. I would compare it to watching Glenn Gould playing the Piano. Many of us who trained under Hugh will attest to the help and professional nurturing that he gave us.

Thinking about his contribution to the occupational hygiene profession not only in Ontario and Canada but also internationally, there are far too many to enumerate, but I will highlight a few of them. His support for this organization, OHAO, since its inception as the Ontario section of the AIHA is well known, as is his support and help with CRBOH. The establishment of the Hugh Nelson Award of Excellence by OHAO is a truly fitting gesture. He was a key person in bringing the AIHA annual Conference to Toronto

back in 1970, the very first time it came out of the United States.

The one week training program in occupational health and hygiene organized using his group's resources in the seventies was influential in spreading the word about occupational hygiene and health. He also greatly influenced the spread of occupational hygiene in other parts of Canada in earlier years, such as helping to establish the Occupational Health Group in Nova Scotia in 1970.

I could go on, but will conclude now by saying that Hugh led an exemplary life and, directly and indirectly, workers of Ontario and elsewhere have benefited from Hugh's contribution. The Canadian Industrial Hygiene Fraternity owes a great deal to him. He is physically no longer with us, but we celebrate his life, his accomplishments and what he gave to the profession. I am glad I had the opportunity to know Hugh, who will forever remain in my heart and I am sure all of us will treasure his memory and many contributions.

## Spring Symposium Recap

Negin Ghanavatian

This year's spring symposium took place at the Toronto Congress Centre on March 22, 2012. It was well attended, covering a variety of topics that generated a lot of interest. The day began with the president's welcome, given by Elizabeth Walpac. There were a total of three topics that were presented. The following is a summary of the presentations that were given at the symposium.

The first presentation covered the new respiratory protection standard from the CSA and was presented by Beverley A. Borst (Technical Service Specialist, 3M Canada). This very informative presentation pointed out the key changes found in the new CSA respiratory standard Z94.4-11 Selection, Use, and Care of Respirators. For example, under Section 10 – Use of Respirators, it is stated that a qualified

person shall establish a change-out schedule for filters before their useful service life is ended. Odour and warning properties shall not be relied upon. Options include end of service life indicators, max. use time, or breathing resistance as appropriate (i.e. filters). The change out schedule is to be calculated using the manufacturer's product information. Furthermore, data must be collected on airborne con-

centrations of hazardous material through air sampling. This may create more costs, and the results may lead to workers using more/less cartridges.

Under the new standard, assigned protection factors (APFs) for respirators have also changed. The changes are aligned with what OSHA introduced in the U.S. in 2006. The major changes to respirator APFs are the following:

Air purifying: Full facepiece = 50x  
(qualitative = 10x)

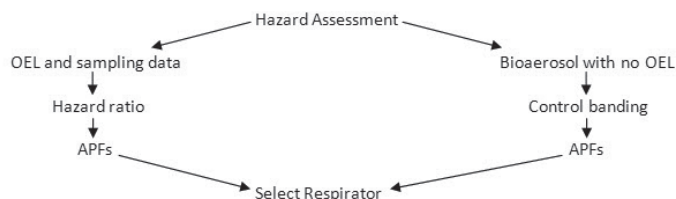
Powered air purifying: Helmet or hood = 25/1000x

Air line (continuous flow supplied air): Helmet or hood = 25/1000x

Air line (pressure demand): SCBA full facepiece = 10000x

SCBA tight fitting hood = 10000x

Under the new standard, respirator selection now includes control banding. The flow chart used for respirator selection is as follows:



Another new addition to the standard is that training has been expanded to include a new section on fit tester competency. The fit tester should be able to verify the user's ability to obtain an effective seal,

comfort, and fit, manage the overall fit testing process, and interpret results. The standard also refers to the checklist for fit testers. Certain items of interest include the fact that mirrors should be used when fit testing. Also, fit testers can not make adjustments to help the user get a good fit. The respiratory protection program should be reviewed annually, and fit testing should be done every two years or when no longer competent. Refresher training is not required, unless no longer competent. Finally, new appendices have been added to aid with the new sections, such as selection of respirators for bioaerosols, fit tester competency, and control banding. Overall, the presentation was well received, as the content was relevant and useful.

The second presentation was on Heat Stress "Hot" Topics by Kevin Schouppe (Ergonomics Consultant, OSHTECH Ergonomics Group Inc.). The presentation started by highlighting that heat stress/strain continues to present health, safety, and production challenges in the workplace. It is difficult, at times, to know which guidelines are best to use when it comes to the assessment and interpretation of heat stress/strain. The presentation provided a general review and comparison of selected thermal comfort and/or heat stress guidelines commonly used as the basis for many workplace health and safety programs. It also discussed the areas where workplaces seem to experience the greatest challenges in developing and

implementing effective health and safety programs.

The last presentation was a roundtable titled Conflict in Mould Remediation Guidelines for Grow-Ops. This tripartite presentation was given by Bruce Stewart (Vice President, Pinchin Environmental Ltd.), Ernest Sullivan (EA Sullivan & Associates), and Richard Summerbell (Associate Professor, Dalla Lana School of Public Health, University of Toronto). The presentation began with Bruce Stewart, who provided some background on marijuana grow operations (MGOs)/clandestine labs, and how they are currently addressed by the key stakeholders. The three departments that deal with grow operations are the police, the Electrical Safety Authority (ESA), and the fire department. The Municipal Clerk is ultimately responsible for the former MGOs. The major changes to regulations will be that buildings that were former clandestine labs would be deemed unsafe under the building code and they would be identified on the title of the property. Legislation for remediation will be created and legislation to regulate the home inspection industry and the hydroponics industry will be developed. Current deliberations include developing advisories to the fire department, police department, and municipalities, and recommending protocols for uniform response from town to town (e.g. notification, assessment, and remediation).

Ernest Sullivan followed with a presentation outlining difficulties encountered by occupational hygienists dealing with public health and the Electrical Safety Authority (ESA) criteria for the assessment and remediation of former MGOs.

Both of these groups follow the “Calgary Protocol” when it comes to dealing with MGOs. The specific issues with the protocol are better addressed in the previous issue of the OHAO Forum (Winter 2012), in the article titled “Need for a Rational Approach to Mould Inspection of Grow-Ops”, written by E.A. Sullivan and P.J. Pityn. I strongly urge readers to refer to this article for more details.

Dr. Richard Summerbell closed the presentation with an unconventional view of fungi in all their forms. Whether they are loved when used in food and wine, or whether they are detested for making children sick, fungi are looked upon differently across the world. Dr. Summerbell demonstrated how propaganda can colour and shape public perception of fungi.

Due to time constraints, it was not possible for the discussion period with the audience to occur. However, the panel did spark a lot of interest and conversation over this topic after the presentation. Overall, the morning talks were well received by the attendees.

Looking forward to the next symposium!



***Daniel L. Curtis, CIH, ROH, CRSP, Senior Specialist, 3M Occup Health & Env Safety presents on Respiratory Protection aspects of DSR Regulation 490. Photo by Meng Jian.***



***Altaira Hildebrand presenting thank you to speaker Cecilia Chan VOCs. Photo by: Altaira Hildebrand***



***Roundtable on Remediation Guidelines. Photo by: Altaira Hildebrand***



***Altaira Hildebrand with Margaret Fung and Nancy Wilk - Ethics PDC. Photo by Altaira Hildebrand***



***Nancy Wilk, Glen Wood and Jason Hoffman. Photo by: Meng Jian***

## Profile of the Hugh Nelson Award Recipient:

### Margaret Fung, CIH, ROH

*Introduced by Mike Grey, Chair Award Committee*

Margaret Fung, BSc (Honours Biochemistry), MHSc, CIH, ROH graduated from Simon Fraser University for her Bachelor's degree and is a Master of Health Science graduate from the Occupational and Environmental Health program at the University of Toronto. She has 20 years of experience in the occupational hygiene field.

Margaret has served for two terms of the OHAO Board, first serving as director on the OHAO Board from 2003-2006 and then sat on the executive from 2006-2009, serving as President in 2007. She has either chaired or sat as a member

on a number of OHAO committees, including the Newsletter Committee, the Program Committee, and the Public Affairs & Education Committee.

She has been a Certified Industrial Hygienist with ABIH since 1995 and a Certified Occupational Hygienist since 2010. She is a member of the American Industrial Hygiene Association (AIHA). She was elected on the Board of the Canadian Registration Board of Occupational Hygienists, representing ROHs in Ontario. She is currently the Vice-President CRBOH and will take on the role of President in June 2012.

#### What Does it Mean to Win the Hugh Nelson Award?

*Margaret Fung, CIH, ROH*

I was truly honoured to receive the Hugh Nelson award this year, and was very pleased to be presented the award by Gord Nelson, Hugh's son. I am very grateful to the OHAO Board for the award as well as the individual who nominated me.



With Hugh's recent passing, this year was a special year for the award. It provided us with a great opportunity to honour Hugh and all that he stood for both professionally and personally; Dave Verma did a wonderful job in his presentation about Hugh. I consider myself extremely fortunate to have known Hugh and to know the humble, giving and respectful man that he was.

### Changing Information?

*Title, employer, address, telephone, e-mail changing? Don't forget to advise the OHAO office so the appropriate changes can be made to our records.*

## F1

—Column Editor—

Jim Desormeaux, OHST, COHC  
Ontario Power Generation

### Sharing data from a Smartphone or Tablet

In order to share your data from your smartphone or tablet, you have three choices. You can subscribe to your providers' data plan, connect to a wireless service, or create your own hotspot and tether your phone to other devices.

Tethering means sharing the Internet connection of an Internet-capable mobile phone or Internet tablet with other devices. This sharing can be offered by any Wi-Fi-enabled computer or tablet which can connect to it, and the real bonus is that the Wi-Fi router is inside your phone so there's no extra stuff to

carry with you and no other device to recharge.

In the case of tethering over a wireless LAN, the feature may be branded as a *mobile hotspot*. The Internet-connected mobile phone acts as a portable router when providing tethering services to others. Your phone will go beyond talk, e-mail and Web surfing and act as a mobile hotspot that can supply Web access to nearby computers, tablets and other devices. Your smartphone will connect to a mobile data network and then act as a Wi-Fi router, distributing the bandwidth to nearby clients, for example, from your office, from your home, from a train or from a moving car. Basically, wherever you can get a mobile data connection, you can broadcast it with a hotspot phone.

To get the phone to act as a Wi-Fi hotspot, you need to start the tethering app by tapping on its icon; it usually has some variation of *mobile hotspot* in its name so it's hard to miss. For example, in my iPhone I just click <Settings>, <Personal Hotspot>, <Personal Hotspot, on>. Once connected, you may be lucky to connect to as many

as five to eight clients, depending on the model. However, be warned: the connection speed is often not enough to spread across several users. Keep an eye on your battery because it will deplete quicker. Also check with your provider to make sure that you are not charged any additional cost for tethering.

On the other hand data sharing plans give you online access anywhere, without the need to tether. Another big advantage is that a data plan is secure, always ready and yours.

Connecting your Wi-Fi-enabled device, such as a tablet or a smartphone, to a home Wi-Fi connection is great, but without a data plan your device is off the grid when you leave the house. Public Wi-Fi is convenient, often free and readily accessible, but keep in mind when surfing or shopping online, typically public hotspots are open and shared with others, which can impact privacy.

If you have any comment please contact me at [j.desormeaux@opg.com](mailto:j.desormeaux@opg.com)

## Highlights from the May Board Meeting

The following are the highlights from the May Board of Director's Meeting:

- 2012-2013 Committee Chairs and Board representatives appointed.
- The criteria for the Hugh Nelson Award is being updated for 2012.
- Membership applications approved: (Professional – Chris Benotto, Yasemin Sarraf, Rob Robinson, Lesley Halford, Amit Rajhans, Christopher

Rahm, Peter Pityn, Magdalena Warczok, Derek Hillis, Yvonne Doucette, Philip Bigelow, Holly Adams Associate – Jennifer Francis Emeritus – Len Hong

- Plans are under way for the Fall 2012 PDC and Symposium in October.
- The Board is investigating new materials that could be provided online in the *members only* section.

- A website committee has been formed to update and maintain content on the website.
- A review of the bylaws will be taking place in 2012 to bring OHAO in-line with the upcoming Ontario Not For Profit Corporations Act.

## GHS Update

Elizabeth Walpac

The U.S. OSHA Final Rule was issued on March 20, 2012 and the US has established its timetable for GHS implementation. Canada is committed to being in step with the U.S and is resuming its implementation.

A RCC Occupational Safety Issues Working Group had been formed in 2011 and a work plan is available for the Globally Harmonized System (GHS) for Classification and Labeling of Chemicals (workplace hazards) at the following link:

<http://www.actionplan.gc.ca/eng/feature.asp?pageId=444>

The Working Group was established to align and synchronize implementation of common classification and labeling requirements for workplace hazardous chemicals within the mandate of the U.S. Occupational Safety and Health Administration (OSHA) and Health Canada.

Some Canadian implementation considerations were covered by Diana Carroll, Special Advisor for Healthy Environments and Consumer Safety Branch in her presentation in April 2012 to CCSPA. This is a summary:

### Canadian Implementation:

Canada will align and synchronize with OSHA and GHS Implementation is planned for 2015. Canada will work to minimize differences from the US while maintaining current levels of protection for workers in Canada. Stakeholder engagement will be needed to work on Legislative considerations such as WHMIS exclusions and required amendments to the Hazardous Products Act (HPA). The cost-benefit study is expected to be completed in 2012. Since WHMIS-supporting legislation is referenced in Federal, Provincial, and Territorial OHS regulations, these will need to be updated to align with the HPA. Engagement of

these OHS agencies will be essential to achieving this alignment. Next steps will include developing the MOU between the U.S. OSHA and HECS/Health Canada, establishing mechanisms for stakeholder engagement, and developing common educational materials for classification.

Additionally, a Current Issues Committee (CIC) teleconference was held in early May to discuss GHS and HMIRC issues. HMIRC, the Trade Secret commission is to be moved into a Directorate within Health Canada without modifying the exemption process. At the meeting, it was indicated that draft Canadian regulations are to be published in Gazette I in 2013. A face-to-face CIC meeting is scheduled for June 28-29 in Ottawa to further discuss alignment with the US and other GHS issues.

## Noisy News



—Column Editor—  
Alberto Behar, P.Eng, CIH  
A. Behar Noise Control

### Introduction

*What's the problem? Since vibrations generate sound, if we control the vibrations, we control the noise,...*

This statement would seem to be absolutely correct... However, what is correct in theory may not be in practice.

If one controls the vibrations that generate noise, the noise will be gone. But can this always be done? In so many applications or situations, you just cannot do it. For example: if you take the case of a compressor, it most certainly is noisy, but the noise is the result of so many vibrations of parts of the entire machine that the control can only be done at the design stage. Once you have the compressor under your roof, you are stuck. You had better not try to control it at the source. So, in this case, what do you do? You treat the compressor as the source of noise and reduce the energy flowing from the source towards the receiver (operator). You either enclose the source, the operator, or work on the physical environment introducing sound absorbing materials in the room. You do everything except try to determine which parts of the compressor are vibrating and then control them. It is just not practical.

**DON'T GUESS IT, PERIOD!**

Here are two cases of noise and vibration control that were addressed by a colleague.

### Case 1

Above the roof of a factory, there were two stacks of approximately the same size: 0.45 m in diameter and 3 m in height. Both of them generated some 85 dBA at 1 m. Both of them had a strong pure tone component easily perceived by an observer. The price for a silencer as per the establishment's engineer was excessive, approximately \$15,000, without any specifications of the attenuation that could be obtained.

My colleague was called in. After performing a frequency spectrum analysis to determine where in the spectrum the pure tone was located, the colleague observed that while the wall of stack No 1 was vibrating, the same vibration didn't occur with stack No 2. He immediately realized that although the problem in both situations was the same; pure tone component, in one case the cause was the vibrations of the stack, while in the other case it was air flow turbulence with a large component of fan noise. So, here was a situation with noise (caused by vibrations) that in one case has to be controlled by cladding the stack and in the other using a silencer. Just try to imagine if the company would have gone after the silencer in the case of the vibrating stack!

### Case 2

In case number two, we have the story of another noise-vibration mistake in

a chocolate factory. The cocoa powder was stored in an upper floor. Using its own weight, it was sent to the lower floor through a metal pipe. To facilitate the cocoa flow and to avoid stoppages, a metal hammer was installed and set to continuously bang on the pipe. Because there were workers in the room, it was determined that something had to be done about the overwhelming noise of the hammer. The apparently obvious solution – using a rubber hammer – could not be applied, since there was a need for the pipe to vibrate to distribute the cocoa. The factory decided to enclose the mechanism driving the hammer as well as the hammer itself in a sound-insulating enclosure. The result was that even though the noise from the hammer impact was greatly reduced, the noise from the vibration of the pipe kept exactly the same level and the noise control effort didn't bring any significant reduction of the overall noise level. An acoustical consultant brought in after the fact did solve the problem by cladding the pipe. By doing so, the walls of the pipes kept on vibrating and ensuring the flow of the cocoa powder, but the noise was gone and everybody was happy.

This is yet another example of the need to determine the origin of the noise before proposing a solution.

## On the Hygiene Front



—Column Editor—  
*Jim Desormeaux, OHST, COHC*  
*Ontario Power Generation*

For the spring issue of the OH Forum, I am providing information on a new series of hard hats with sensors, a new type of seamless- knit glove, and a merger.

The 3M™ H-700 Series Hard Hat with Uvicator™ Sensor is the newest addition to the H-700 series hard hat family. This award-winning, lightweight hard hat offers the extended comfort and protection, and also features a sensor that changes color as the hard hat is exposed to UV light. The sun's UV rays can cause a hard hat shell to become brittle and com-

promise its ability to protect the wearer. With the Uvicator sensor, wearers know it's time for a replacement when the sensor changes from red to white. The H-700 hard hat, both with and without Uvicator sensor, is available with a 4-point ratchet suspension and an optional 6-point strap. You may contact them at <http://solutions.3m.com/>

### Sure-Grip® Hot Mill Gloves with Nitrile Grip Palms

The newest style of Sure-Grip® seamless-knit glove lineup is a heat-resistant glove with grip palms. A unique process is used to apply nitrile stripes (nitrile withstands moderate heat) across the palms so that the wet/dry grip stays solid for the life of the glove, rather than peeling off with repeated use and laundering. The gloves

come coated either single-side or double-side. You may contact them at <http://www.superiorglove.com/>

Dionex Corporation is now a part of Thermo Fisher Scientific, and its leading chromatography separation technologies are sold under the Thermo Scientific brand. The addition of Dionex capabilities contributes significant depth and breadth to the Thermo Scientific portfolio, offering new potential for discovery, simplified workflow solutions and new possibilities in our ability to serve science. You may contact them at <http://www.thermofisher.com/global/en/home.asp>

Please send comments to [j.desormeaux@opg.com](mailto:j.desormeaux@opg.com)

## Ministry of Labour - Supervisor Health and Safety Awareness Information

In 2010, the Expert Advisory Panel on Occupational Health and Safety recommended the development of health and safety awareness materials for Ontario workplaces. In the winter of 2011/12, a draft awareness poster, and worker workbook with employer guide were developed and posted on the Ministry website for public consultation.

This is to advise you that a draft awareness supervisor workbook with employer guide are now available for review and comment until June 29, 2012. Please visit the link below for more information.

[http://www.labour.gov.on.ca/english/hs/prevention/consultations/workbook\\_sup.php](http://www.labour.gov.on.ca/english/hs/prevention/consultations/workbook_sup.php)

## Health Physics



—Column Editor—  
*Michael Grey, CHP, ROH*  
*SAIC Canada*

### Radiation Induced Cataracts

'Cataract' is the term used to describe any loss of transparency that develops in the crystalline lens of the eye or in its envelope (the lens capsule). The first clinical reports of cataracts caused by exposure to radiation were published in 1903 and by 1957 it was clear that radiation cataractogenesis was a deterministic effect which would only occur when a minimum (threshold) dose was exceeded. Radiation induced cataracts are unique in that they can be distinguished from other cataracts, at least in their early stages. Radiation induced cataracts first appear as an opaque dot usually located near the posterior pole of the lens. They develop a clear centre as they develop so that they resemble a doughnut by the time they are several millimeters in diameter. A radiation induced cataract often becomes stable at about this size but lesions that continue to grow eventually become indistinguishable from other cataracts.

In 1984 the International Commission on Radiological Protection (ICRP) reported that the best evidence available at that time indicated that the threshold dose for visual impairment (large lesions) was 5 Gy for acute exposures and greater than 8 Gy (or greater than 150 mGy/a) for protracted and highly fractionated exposures. Based on this, the 1990 Recommenda-

tions of the ICRP proposed equivalent dose limits for the eyes of 150 mSv/a for occupational exposures and 15 mSv/a for members of the public. These recommendations were adopted in the Canadian Radiation Protection Regulations which were proclaimed in 2000. The 2007 Recommendations of the ICRP did not change the recommended dose limits for the eyes but the draft of a new ICRP report on "Early and late effects of radiation in normal tissues and organs: threshold doses for tissue reactions and other non-cancer effects of radiation in a radiation protection context" suggests that "the recommended acute dose threshold for purposes of radiation protection should be lowered from its current value to a nominal value of 500 mSv". If this recommendation is adopted, the equivalent dose limits for the eyes would probably be reduced to 15 mSv/a (from 150 mSv/a) for Nuclear Energy Workers and these limits would probably be abolished for members of the public since they would not be significantly different from the current 1 mSv/a limit on effective dose.

The suggestion in the draft report is based on a 2009 review of recent epidemiological studies including studies of Japanese atomic bomb survivors (acute exposures), Chernobyl cleanup workers and radiotherapy patients (fractionated exposures) and studies of medical radiation technologists, nuclear industry workers, airline pilots and residents of a Taiwanese apartment building built with radioactively contaminated steel (protracted or chronic exposures). All of these studies found some evidence of an increased risk at doses of 1 Sv (or 1 Gy) but the increase wasn't always statistically significant. The study of Chernobyl cleanup workers

found threshold doses of 0.35 to 0.50 Gy for different types of cataracts (all of these results were statistically significant) while two studies of Japanese atomic bomb survivors found threshold doses of 0.1 to 0.8 Gy but the 95% confidence intervals were wider so these results were not statistically significant. Many of the other studies did not calculate a threshold dose but all of them showed some degree of increased risk at low doses.

The ICRP is currently revising the draft report (which dealt with a longer list of issues and not just cataracts) and it will likely be published either late in 2012 or early in 2013. The Canadian Nuclear Safety Commission (CNSC) is currently revising the Radiation Protection Regulations (RPRs), but it is unlikely that they would change the dose limits for the eye in the absence of a formal statement from the ICRP. However, the CNSC has not announced a target date for completing the revision of the RPRs so it is possible that the ICRP might make a recommendation before the proposed revision of the RPRs appears in the Canada Gazette.

### Did You Know?

*That the OHAO Website features exclusive OHAO members only access to TLVs and BEIs documentation? Visit today at [www.ohao.org](http://www.ohao.org)*

# Indoor/Outdoor Fungal Comparisons in Mould Guidelines: Flawed Criteria for Post-Remediation Verification

E.A. Sullivan, PhD, CIH, ROH, CChem

It has become common occupational hygiene practice<sup>1-4</sup> (and a requirement of some guidelines<sup>5,6</sup>) to use indoor/outdoor air sampling measurements following mould abatement, as post-remediation verification (PRV) of an acceptable level of cleanliness. The conventional wisdom is that #1: concentrations of fungi indoors should be comparable to or lower than those outdoors and #2: the diversities of fungi found indoors and outdoors should be similar. Originally, such comparisons were considerations to discriminate between normal (clean) and atypical (contaminated) buildings; the extrapolation that remediated buildings and the outdoors should display comparable biodiversity represents a major paradigm shift, with inherent inconsistencies that are often overlooked by the professional community.

Statistical parameters describing the extensive body of air sampling data indicate that, collectively, outdoor fungal levels exceed those indoors (cf. point #1). However, the relationship is not absolute: seasonal variations and geographic conditions can lead to contrary results. It is well known<sup>1,2</sup> that in cooler climates, outdoor fungal levels in wintertime can be lower than those indoors – especially with regard to *Penicillium* spp. – even in the absence of significant indoor contami-

nation. Results from a 1991-1993 study of residences in the Kitchener-Waterloo area<sup>7</sup> support this observation, for peak *Penicillium* growth periods in January and April. The implication is that even satisfactorily clean individual buildings (e.g. former grow-ops being assessed for official PRV compliance) might fail to meet a generalized criterion based on statistics. An additional difficulty in applying the comparison is that during warm weather, outdoor fungal levels can be too high to make meaningful comparison, even in the presence of substantial indoor growth<sup>1,2</sup>.

Adherence to guideline requirements, regarding scheduling of air sampling to avoid proximity to “precipitation events” (or snow cover, or cold, or hot weather), would be prohibitively restrictive and impractical. Some authorities also contend that a proper (but expensive) determination of airborne biodiversity should be based on species rather than genus<sup>1,3,8</sup>.

There is no definitive basis for the contention that biodiversities outdoors and in remediated buildings should be comparable (cf. point #2). Quite the opposite: a major unacknowledged problem is that **post-remediation indoor fungal populations are an artifact of remediation and are inherently unrepresentative of outdoor biodiversity.**

Consider the nature of tear-out: large quantities of the various fungal colonizers are disturbed and rendered airborne, creating an artificial environment which varies as tear-out progresses. In this population, the genera and species of mould derive from the atypical circumstances of indoor growth; because the compositions of such fungal distributions are unpredictable, there can be no certainty that the diversity of these specific indoor contaminant fungi reflects that in the natural outdoor environment.

Remediation protocols typically involve HEPA filtration (exhausted outside) during tear-out, and final air scrubbing with re-circulation after vacuuming and disinfecting all surfaces. The overall fungal load is attenuated but the distribution of fungal species present at the end of tear-out might not be altered significantly. The distribution will be affected to an unknown extent by an overlay of replacement air from adjacent indoor areas. Since air scrubbing is continued until PRV air sampling can be conducted, it is unlikely that fungal populations and airborne concentrations will have had time to reach equilibrium, particularly where disinfectants have been used. It is consequently difficult to conceive of the likelihood of any resemblance between fungal distributions inside a remediation area and out-

doors; it would seem futile even attempting to obtain “representative” samples to confirm such a supposed resemblance. This difficulty is exemplified by the recent results of PRV in a basement, following a sump pump failure three months previously:

priate as definitive PRV guideline indicators of satisfactory cleanliness.

Viable Fungi	Outdoors	Indoors, Remediated	Indoors, Control
<b>Airborne Concentration (cfu/m<sup>3</sup>)</b>	606	156	69
<i>Cladosporium</i> (%)	66	0	0
<i>Penicillium</i> + <i>Aspergillus</i> (%)	4	16	18
<b>Sterile Mycelium (%)</b>	6	56	73
<b>Other Genera (%)</b>	24	28	9

Clearly, despite having followed an effective remediation protocol, no amount of additional cleaning or air sampling would cause indoor and outdoor fungal distributions to be comparable, if such were the guideline requirement.

Further, immediate post-remediation conditions as determined by air sampling for PRV, do not reflect long-term occupancy conditions because the fungal equilibrium will certainly change after restoration, with new growth substrates such as insulation, freshly painted wallboard and possibly new flooring, framing and fabrics.

Whether **any** criterion involving outdoor comparisons would ever be satisfied in the immediate aftermath of remediation, would be entirely coincidental. It is difficult to escape the conclusion that indoor/outdoor fungal comparisons are inappro-

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## CAREX Canada

Christine Sidhom, MSc (A), CRSP



CAREX Canada is an organization that has been formally in existence for approximately 5 years to monitor carcinogen exposure. However, CAREX had its beginnings in Finland, about 20 years ago. It then grew to 15 countries in the European Union who undertook to provide estimates of people exposed on the job to carcinogens using both European and U.S. data. It was Paul Demers, the Scientific Director, who wanted and was able to start the project in Canada to begin surveillance of Canadian workers' exposure to substances associated with cancer in the workplace and community environments. At the beginning, he began with data from Ontario, British Columbia, Finland and the United States and only looked at the surveillance data by industry. This has now evolved to having surveillance by industry and by occupational NOC-S (National Occupational Classification for Statistics), and also contains information on environmental exposures.

The Canadian Partnership Against Cancer agreed to provide funding for the last five years to continue the project and the website, and they recently agreed to continue funding for another 5 years (to 2017). There are also other important partners, including provincial worker's compensation boards, the Alberta Health Services and Alberta Employment and Immigration, and many others on the environmental side.

The original European CAREX data was used as it was based on actual counts of the number of people exposed. In Canada, the exposure estimates are a mix of previous work and exposure data, literature review, and expert assessments by CAREX staff hygienists.

The intended audience of the website is policy makers and researchers. However, the general public is also invited to consult this website. In fact, CAREX Canada is researching how to best translate the knowledge for the public, such as through the use of focus groups. CAREX is shifting its goals, gearing more and more towards "knowledge transfer" via report generation and training, making it a more indispensable tool.

Some plans are in the works to create an App that occupational and general physicians can consult by occupation to determine potential exposures to carcinogens. Occupational Hygienists could make use of this tool for access to simplified information, for example, if conducting a hazard assessment.

CAREX is continuing to build on its databases and is seeking to have the data to be national in scope. CAREX is inviting industries, occupational hygienists, and other interested parties to submit exposure reports done for compliance or research purposes. Cheryl Peters, (who was interviewed for this article), of the Occupational Exposure Surveillance Project at CAREX, indicated that there are many

security protocols are in place for the storage of data.

Perusing the extensive list of carcinogens, many chemicals are included. However, two agents, not chemicals, were discussed with Cheryl Peters

1. Magnetic fields – At this time, CAREX Canada is waiting on the results of a European study to determine exposure threshold levels for this contentious agent.
2. Shiftwork – IARC has listed light at night exposure as a probable carcinogen.

Research has started to show that Nurses and Flight Attendants are at a higher risk of breast cancer. More information is likely to come as 15% of the Canadian population works shift work.

This website does have the potential of providing useful information.

Finally CAREX Canada is developing webinars for showing how to use the information contained on the CAREX website. With its website relaunched on April 15, CAREX Canada has made the website clearer and easier to navigate, has more exposure data from the environmental side, and carcinogens will be classified in a semi-quantitative way into high, moderate and low exposure levels. For more information, you can consult <http://www.carexcanada.ca>.