



Occupational
Hygiene Association
of Ontario
FORUM



Anne-Marie Landis-Groom,
BSc, MHS, CIH, ROH

President’s Message

Happy Fall 2021! September is in full swing with some old routines feeling familiar again – some are back to school and some are back to the in-person office. I’m hopeful we can maintain these routines into the fall and winter but only time will tell.

Since my last message, the OHAO Board of Directors and the OHAO committees have been busy working for our members. We have drafted a three-year plan centered around the themes of “Reach, Reputation and Recognition”.

In terms of Reputation, we want to clearly state and communicate OHAO’s organizational values and vision that guide us and the membership. It is clear OHAO has a set of unwritten values that guide and direct the organization and its culture. As occupational hygienists, at our core, we don’t want people to get sick from work. In the 2021 Member Survey that was issued in August, we included questions to help inform our organizational values and vision statements. We hope to share with you where this is heading and other survey results later in the Fall.

In terms of Recognition, we will write to the provincial regulator to include the relevant occupational hygiene professional designations in regulation guidance – we want to see the designations ROH and

CIH specifically referenced. With many interactions with the media this past year, we are investigating how to get OHAO on a media contact list as subject matter experts in occupational hygiene. We will also be connecting with new organizations to raise awareness of OHAO and member skillsets.

In terms of Reach, we have set an ambitious goal of increasing our membership to 300 by the 2023/2024 year while continuing to improve the experience of existing members. We will be investigating different education formats (e.g. hybrid of in-person and virtual offerings); we will be restarting the planning of an OHAO promotional video.

OHAO has some exciting developments with the Workplace Safety & Prevention Services (WSPS) and AIHA. WSPS approached OHAO to draft and sign a “Letter of Intent” between the two organizations. We have received the Letter of Intent in September signed by the WSPS President and CEO, Lynn Brownwell. We have agreed to explore a cooperative relationship to grow awareness and learning of occupational hygiene across Ontario. We look forward to working with WSPS to provide value to our respective memberships.

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OHAO met with Larry Sloane (AIHA CEO) and Laurie Mutdosch (AIHA Director of Membership and Professional Community) in September to review the Memorandum of Understanding (MOU) between our two organizations. We expressed our mutual desire to maintain the MOU and we have agreed to update it to include more opportunities for information sharing.

The OHAO Education Committee has been meeting regularly to put together valuable learning opportunities at the Fall Symposium and PDC on October 21 and 22, 2021. See our website for topics and to register. I hope to see you all there!

In closing, the OHAO Board is working diligently to highlight our organization, the values we hold, and the expertise we have to offer to industry, the public and other stakeholder organizations.

Let's continue to advance the profession of occupational together. Let's work together to make 2021/2022 a great year!

Anne-Marie Landis-Groom,
BSc, MHSc, CIH, ROH

Editor's Message

Greetings everyone,

I hope that you have all enjoyed the summer as we are all cautiously easing some of our COVID-19 anxieties. Some of us have returned to work (on-site), while others continue to work from home. The challenges of both are still very much a source of uncertainty.

In chatting with on-site workers, I have uncovered some amount of resentment towards those who are working from home. They may feel that they are being put in harm's path just by the virtue of having to come into work and interact with other people (even with all the COVID-19 precautions that have been implemented). Alternatively, those working from home may feel like they are being deprived of social interaction and may have developed physical/ergonomic/psychological issues working in a less than ideal home environment during this period.

No matter how you look at work life, it's fair to say that our stresses have increased, even if only in following COVID-19 rules diligently and constantly.

There are some positives, however, that make work life bearable. Working on-site provides not only a chance to interact with peers, but also to maintain the sense of normalcy that is lacking in other parts of our lives right now. Working from home, allows workers to have a flexible work schedule and to run errands or go to appointments in the middle of the day and make up the time after work hours (depending on what the employer allows). The reduction in commuting has also given those working from home more time for family and personal matters.

With the return to work slowly gaining momentum, there are even more challenges. For those that have not been on-site during this time, there will no doubt be a great period of adjustment to going back to work. Besides all the COVID-19 rules and precautions that one must learn and abide by, do we even fit into our work clothes anymore (a legitimate concern, as expressed by a friend who just returned to work)?

As for my workplace, those of us working from home have not yet been summoned back. In preparing for a future return to "normal", our workers were surveyed on what COVID-19 restrictions they were looking forward to being lifted. And the winner was...COFFEE! This came as a surprise since, admittedly, our work coffee is horrible, but it was the first thing most people thought of, even more that getting rid of surgical masks. I would wager that it's more about what "coffee" represents; a break in the day when you might spend a few minutes with a colleague, just catching up. I think that says a lot about the psychological state of the workforce and I genuinely hope we get through this phase soon and start enjoying better days ahead.

Stay safe everyone.

Negin Ghanavatian, MHSc., CRSP

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OH Forum is published quarterly by the Occupational Hygiene Association of Ontario, and distributed free of charge to all members.

Quarterly Issues:

Spring
Summer
Fall
Winter

Enquiries or suggestions should be directed to:

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Circulation: 300

Vol 43, No.4

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

Two-handed or One-handed Earplug Insertion? Consult your User Instructions

Bev Borst, MA, BScN, RN, COHN(C)

Senior Technical Specialist, 3M Personal Safety Division

Hearing protection devices (HPDs) are worn for the purpose of reducing noise. From construction to food processing to manufacturing, HPDs can help reduce noise exposure and thereby could help reduce noise-induced hearing loss (NIHL). Traditionally, earplug manufacturers instruct the wearer to use a two-handed insertion method. But what about one-handed insertion? Let's learn more....

But How Do You Know How Effective HPDs are?

Single number ratings such as the Noise Reduction Rating (NRR) are indicators of how much noise attenuation or noise reduction HPDs are capable of under ideal conditions.

However, research suggests that users may receive less noise reduction on the job than indicated by the NRR printed on the package due to many factors such as:

- Differences in the size and shape of ear canals
- Not following the user instructions
- Variation between fittings
- Fitting skill
- Motivation of the user

To account for variability among real-world workers in real job conditions, various NRR derating schemes have been recommended. For example, the CSA Standard Z94.2-14 (reaffirmed 2019), Hearing Protection Devices — Performance, Selection, Care and Use indicates that if the NRR attenuation method is used that all types of earplugs are derated by 50 percent.

How well suited the earplug is to the size and shape of the ear canal and how well the earplug is fitted can affect the level of attenuation achieved, both during NRR testing in an acoustical laboratory, and when fitted and used by the user in the workplace.

The Important Role of HPD User Instructions

The test method for measuring NRR, ANSI S3.19-1974, requires hearing protectors to be inserted “in accordance

with instructions from the manufacturer.” Manufacturers have typically specified in their earplug instructions that the opposite hand should be used to pull the pinna (outer ear) outward to help straighten the ear canal prior to inserting the earplug with the other hand. This is known as a two-handed insertion method.

Using a fitting technique that is not consistent with the manufacturer's instructions means the attenuation rating or class cannot be applied for that fitting. In countries where regulations require the use of such ratings or classes to select hearing protectors with appropriate attenuation, employers may have compliance concerns if employees don't follow the manufacturer's fitting instructions. Users may also put themselves at risk of hearing damage and NIHL if they don't adhere to proper user instructions.

Recently, innovative earplugs with fitting stems that are used to push the foam ear tips into the ears have been tested using two distinct methods of insertion—the traditional two-hand method and a one-hand insertion method that does not include the pinna pull.

It is important to note that the NRR values obtained from the two insertion methods are different. This validates the one-hand instruction as an acceptable insertion method. This dual NRR approach gives users more flexibility in choosing the best insertion method for their situation and maintains a valid NRR when calculating protected noise exposure. The 3M™ E-A-R™ Flexible Fit HA Earplug is an example of an earplug with an NRR for both a one-handed (NRR 25 dB) and two-handed (NRR 30 dB) insertion method. These new earplugs have been tested for both one-hand AND two-hand insertion methods using manufacturer's instructions that specify both methods of insertion. So, the user should closely follow the instructions for the insertion method that is aligned with the most appropriate NRR for the individual's situation.

For all earplugs, regardless of method(s) of insertion specified in the manufacturer's instructions, individual fit testing is recommended before using hearing protection in hazard-

ous noise. In addition, periodic checks should be made to determine if training is needed on how to more effectively insert the earplugs to help improve the fit. These are vital components of an effective hearing loss prevention program.

Vaping and Theatrical Fogs

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

In the 1980's and 90's, irritant and respiratory symptoms from exposure to theatrical smokes were of concern to workers in the entertainment industry; glycols were the focus.¹ Recent concerns have arisen regarding lung injury and deaths from vaping – electronic cigarettes having components similar to theatrical fogs.^{2a,b}

Theatrical fogs^{1,3} are generally created by vapourizing glycols (aliphatic diols) or glycol/water mixtures over a heating coil to produce a thick cloud. Mineral oils and petroleum products were occasional ingredients. Acknowledging early health concerns, the Academy of Motion Picture Arts and Sciences presented a 1985 Science and Engineering award to Rosco Laboratories for the 'development of an improved, "non-toxic" fluid for creating fog and smoke for motion picture production';³ the product currently contains triethylene glycol, 1,2-propanediol and 1,3-butanediol.⁴ A NIOSH report concluded that there was 'no evidence that theatrical "smoke", at the levels found in the theaters studied, is a cause of occupational asthma among performers. Nevertheless, some of the constituents of theatrical "smoke" (such as the glycols) have irritative and mucous membrane drying properties...'¹

Vaping⁵ involves breathing an aerosol from an electronic cigarette. E-cigarettes often contain ingredients^{6a} such as 1,2-propanediol, glycerol, flavourings, thickening agents and, optionally, variable percentages of nicotine or cannabinoids. See Table for physical properties of typical ingredients. As in theatrical fogs, vaping liquids are heated to form a vapour which then condenses into an aerosol of respirable size.^{6b,7}

Table: Components of Theatrical Fogs and Vaping Liquids

Substance	CAS#	Boiling Point, °C	Vapour Pressure mmHg@20°C
2,3-Butandione (Diacetyl)	431-03-8	88	52
2,3-Pentanedione	600-14-6	108	21
3-Hydroxybutanone (Acetoin)	513-86-0	148	4-6
1,2-Propanediol	57-55-6	187	0.08
1,3-Butanediol	107-88-0	203	0.06
Triethyleneglycol	112-27-6	285	<0.01
Glycerol (1,2,3-Propanetriol)	56-81-5	290	46mmHg@200°C
Nicotine	54-11-5	247	0.04 243 mmHg@200°C ⁸
Δ ⁹ -Tetrahydrocannabinol, THC	1972-08-3	200°C@0.02m mHg	0.012mmHg@141.1°C ⁹
(-)-Cannabidiol, CBD	13956-29-1	m.p. 67.5 155-160 C@0.05mmHg	0.017mmHg@141.1°C ⁹
(+)-Vitamin E acetate	58-95-7	184°C@0.01m mHg dec. >240°C without boiling	0.047mmHg@200°C ⁸

For youth, flavouring can be a gateway to vaping. More than 7700 flavours¹⁰ were available online (2014), in more than 460 e-cigarette brands. Flavoring ingredients such as diacetyl (2,3-butanedione), 2,3-pentanedione and acetoin (3-hydroxybutanone) have been measured in a majority of e-cigarette liquids. Industrial exposure to diacetyl vapour has been linked to 'popcorn lung' disease but the vaping situation appears more complex.¹¹ Typical vaping temperatures¹² are 157-232 degrees C; although below the boiling points of some of the ingredients, contact with heating coils can generate many thermal and oxidative reaction and decomposition products, often toxic.^{6a,13-15} Highly reactive free radicals can also occur, causing oxidative stress which can damage cellular proliferation, metabolism and health; reportedly, they can be involved in the development of several cardiovascular disorders, diabetes, rheumatoid arthritis and some types of cancers.

In the NIOSH¹ report on theatrical fogs, the respiratory effects of glycols and mineral oils were considered irritative only...an unlikely cause of vaping deaths, where pathology results were 'more consistent with airway-centered chemical pneumonitis'.¹⁴ Lung biopsies initially suggested that an observed build-up of lipids or oils in the lungs – lipid pneumonia – might be responsible, possibly from the relatively involatile vitamin E acetate used as a thickening agent but the injuries were more akin to chemical burns. Vitamin E acetate can thermally degrade to form ketene¹⁴ – an extremely reactive gas, toxic by inhalation and a severe pulmonary irritant, resembling the more injurious phosgene in its capability of causing delayed pulmonary edema.¹⁵ Vitamin E acetate is, however, just one particular additive and ketene but one of

many possible thermal degradation products.¹⁶ Ketene in vaping aerosols has neither been quantified nor has it been confirmed as causing vaping deaths.

E-cigarettes generate a complexity of toxic substances depending on the nature of the e-liquid and the operation of the vaporizer; the long-term health effects of vaping are as yet uncertain. Recent research¹⁷ indicates that ‘chronic e-cigarette vapor aberrantly alters the physiology of lung epithelial cells and resident immune cells and promotes poor response to infectious challenge...alterations in lipid homeostasis and immune impairment are independent of nicotine’. Vaping can result in serious human health effects but the actual cause of vaping fatalities that peaked in September 2019, remains unresolved.

Notes:

- E-cigarette or Vaping Associated Lung Injury cases. US: 2807 (2020-02-18); Canada: 20 (20-08-14). US Fatalities: 68.^{2a}
- The EPA recently (January 15, 2021) approved (emergency) use of a fogging formulation containing triethyleneglycol reportedly ‘capable of killing 98 percent of airborne SARS-CoV-2’.^{18a,b}

1. NIOSH Health Hazard Evaluation Report No. 90-0355-2449 (1994). <https://www.cdc.gov/niosh/hhe/reports/pdfs/1990-0355-2449.pdf>
2. a: Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products | Electronic Cigarettes | Smoking & Tobacco Use | CDC b: https://en.wikipedia.org/wiki/2019%E2%80%932020_vaping_lung_illness_outbreak
3. https://en.wikipedia.org/wiki/Theatrical_smoke_and_fog
4. <https://us.rosco.com/sites/default/files/content/resource/2017-01/Clear%20fog%20fluid-%20SAFETY%20DATA%20SHEET.pdf>
5. <https://www.canada.ca/en/health-canada/services/smoking-tobacco/vaping.html>
6. National Academies of Sciences, Engineering and Medicine. 2018. Public Health Consequences of E-Cigarettes. Washington DC: The National Academies Press. <https://www.nap.edu/read/24952/>
a: /chapter/9; b: /chapter/7#71
7. E Floyd et al. (2018). (PDF) Electronic cigarette power affects count concentration and particle size distribution of vaping aerosol (researchgate.net)
8. <https://www.sigmaaldrich.com/chemistry/solvents/learning-center/nomograph.html>
9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5733806/>
10. S-H Zhu et al. (2014). https://tobaccocontrol.bmj.com/content/23/suppl_3/iii3
11. JG Allen et al., 2016. <https://doi.org/10.1289/ehp.1510185>
12. <https://vapingdaily.com/blog/vaping-temperature/#:~:text=A%20good%20range%20for%20vaping%20concentrates%20is%20generally,range%20will%20provide%20the%20best%20flavor%20and%20consistency>
13. <https://assets.thermofisher.com/TFS-Assets/CMD/Application-Notes/can-73327-thermal-decomposition-vitamin-e-acetate-can73327-en.pdf#:~:text=As%20a%20proof-of-concept%20experiment%2C%20the%20decomposition%20of%20vitamin, vitamin%20E%20acetate%20and%20a%20variety%20of%20thermal>

14. D Wu and DF O’Shea (2020). <https://www.pnas.org/content/pnas/117/12/6349.full.pdf>
15. Ketene in Documentation of the TLVs and biological exposure indices. ACGIH
16. JS Herrington and C Meyers (2015). <https://reader.elsevier.com/reader/sd/pii/S0021967315013400?token=D6ACDC7DC30E8DD41E03DEF2436A50504FDCDB622F6E62058F092164E197D402D9878374A8DDFDE2172296DD3E35E3AA>
17. MC Madison et al. (2019). <https://www.jci.org/articles/view/128531>
18. a: EPA Approves Emergency Exemption for Antiviral Air Treatment | U.S. EPA News Releases | US EPA b: Theatrical fog formula approved as antimicrobial air treatment | Building Design + Construction (bdcnetwork.com)

Online references accessed 20 August, 2021

The “Recommendations of the International Commission

Health Physics

—Column Editor—

Michael Grey, CHP, ROH

on Radiological Protection” form the basis for radiological protection regulations around the world. The Recommendations have been updated many times since their initial publication in 1929 and broad-based revisions were issued in 1954, 1966, 1976, 1990 and most recently in 2007. The 1976 Recommendations made fundamental changes to the ICRP system of radiological protection while the 1990 and 2007 Recommendation made evolutionary rather than revolutionary changes. It is expected that the next edition of the Recommendations will be published later this decade and work on those revisions has already begun. A preprint of a working paper called “Keeping the ICRP Recommendations Fit for Purpose” has been posted on the IOP website (<http://iopscience.iop.org/article/10.1088/1361-6498/ac1611>). The issues described in this working paper will be discussed at a meeting called “The Future of Radiation Protection” that will be held online on October 19 & 20, 2021.

The working paper described the issues for consideration as “classification of effects, with particular focus on tissue reactions; reformulation of detriment, potentially including non-cancer diseases; re-evaluation of the relationship between detriment and effective dose, and the possibility of defining detriments for males and females of different ages; individual variation in the response to radiation exposure; heritable effects; and effects and risks in non-human biota and ecosystems.” The ICRP is also reconsidering some basic concepts including “the framework for

bringing together protection of people and the environment, incremental improvements to the fundamental principles of justification and optimization, a broader approach to protection of individuals, and clarification of the exposure situations introduced in 2007. In addition, ICRP is considering identifying where explicit incorporation of the ethical basis of the System would be beneficial, how to better reflect the importance of communications and stakeholder involvement, and further advice on education and training.” Some of these issues have been addressed in the 46 ICRP publications that have been issued since 2007 Recommendations and the new document will provide an opportunity to revise and update the system in a single, self-consistent set of recommendations.

At present, it appears that the upcoming revision of the Recommendations, like the 1990 and 2007 revisions, will be evolutionary rather than revolutionary. The most significant change is likely to result from the new approach to tissue reactions that was presented in ICRP Publication 118 (ICRP Statement on Tissue Reactions / Early and Late Effects of Radiation in Normal Tissues and Organs – Threshold Doses for Tissue Reactions in a Radiation Protection Context) in 2012. The current approach, first introduced in the 1976 Recommendations, is based on the ‘equivalent dose’ which is a risk weighted quantity derived from the physically measurable quantity ‘absorbed dose’. The absorbed dose in a tissue or organ, measured in joules per kilogram, was multiplied by a ‘tissue weighting factor’ (wT) derived from epidemiological data to determine the equivalent dose to the tissue or organ measured in Sievert (Sv). The problem with this approach was that the tissue weighting factor was determined from the epidemiology of stochastic effects, such as cancer, at low doses while the tissue reactions are deterministic effects often resulting from cell killing at high doses. Consequently, it was questionable whether the tissue weighting factors were applicable to tissue reactions. In 2012, the ICRP proposed protecting against tissue reactions by controlling the measurable absorbed dose to a tissue or organ rather than the hypothetical equivalent dose.

Another major change was the new approach to the protection of the environment described in ICRP Publication 108 (Environmental Protection - the Concept and Use of Reference Animals and Plants) in 2008. Publication 108 was supported by Publication 114 (Environmental Protection: Transfer Parameters for Reference Animals and Plants) in 2009 and Publication 124 (Protection of the Environment

under Different Exposure Situations) in 2014. At present, protection of the environment is a stand-alone topic within the ICRP system of radiological protection, but the Commission has indicated that it intends to fully integrate environmental protection into the system.

The Commission has also indicated that it hopes to clarify issues related to some of the fundamental elements of the system. These include:

1. The three fundamental principles of the system: justification of practice, optimization of protection and limitation of dose. The system requires that: i) no practice shall be adopted unless it is justified, usually through a political, regulatory or legal process such as licensing or environmental approval; ii) protection shall be optimized so that all doses are maintained as low as reasonably achievable (ALARA) with social and economic factors taken into consideration; iii) all doses shall be limited with prescribed dose limits. Limitation of dose is usually clear, and no changes to the recommended dose limits are expected, but there are issues arising from justification of practice and optimization of protection that the Commission believes require clarification.

2. The three exposure situations: planned exposure situations, existing exposure situations and emergency exposure situations. Planned exposure situations arise from practices that have been planned and justified and the application of the Recommendation to these exposure situations is generally clear. Existing exposure situations can arise from historical practices that were not planned as required by the Recommendations or from accident situations, while emergency exposure situations are self-explanatory but it is not always clear how the Recommendation should apply to these situations or to the transition from an emergency exposure situation to an existing exposure situation.

The Commission has identified some technical issues related to the calculation and use of effective dose that may require clarification, including age and sex related factors in the calculation of effective dose, and the use of effective dose in medicine. Finally, the Commission has indicated that it hopes to provide greater clarity and further guidance on stakeholder involvement, education and training as they apply to the system of radiological protection.

In Memory: Dr. Dave K. Verma, 1941 – 2021, A Pioneer in the Field of Occupational Health in Canada



Dr. Dave Verma, one of the founding members of the Occupational Hygiene Association of Ontario (OHAO) passed away September 23, 2021.

Dave was born in Gaya, Bihar, India. He studied Chemistry and Engineering at Bihar University, before moving to Wales to study Mining Engineering at the University of Wales in Cardiff. He obtained a B.Sc. in 1966, a M.Sc. in 1967 and a PhD in 1969. He was awarded a Senior Doctorate degree (DSc) from the University of Wales in 2006. Dave worked in the coal mines during his school holidays, which gave him his first experience with worker's health and safety. He was in charge of taking the canary into the mine to check for oxygen levels. After graduation, he worked for the National Coal Board in South Wales before immigrating to Canada in 1970. Dave was hired by Hugh Nelson as an Industrial Hygiene Engineer for the Ontario Department of Health. He was always grateful to Hugh, for giving him the opportunity to work at the Ontario Department of Health at a time when job opportunities were not

plentiful. He moved to the Department of Health in Saskatchewan in 1973 and the Alberta Department of Worker's Health, Safety and Compensation in 1974. Dave conducted industrial hygiene surveys of industrial workplaces for the Ontario, Saskatchewan and Alberta governments.

In 1978, Dave returned to Ontario and became an Assistant Professor in Industrial Hygiene at McMaster University. Dave worked with Dr. Muir to create the Diploma in Occupational Health and Safety (DOHS) Program. This program was extremely innovative at the time, in that it was a small group of students, was problem based rather than traditional learning and both the teachers and students were from different disciplines. Dave was an Assistant Professor in the Department of Family Medicine and the Occupational Health Program from 1978 – 1989, an Associate Professor from 1983 to 1990, a Professor from 1990 – 2006 and a Professor Emeritus in 2006.

Dave was interested in a wide variety of areas of research, including silica, silicosis and lung cancer in hard rock miners, occupational and non-occupational asbestos exposures, chemical exposures, laboratory accreditation issues, air pollution and diesel exhaust exposures and lung cancer in workers. He has published widely in the field of occupational hygiene and occupational health.

In addition to conducting research and teaching in the DOHS, Dave established the Occupational and Environmental Health Laboratory (OEHL) at McMaster in 1979. In 1981, the OEHL became the first laboratory in Ontario to be accredited by the American Industrial Hygiene Association Laboratory Accreditation Program.

Dave was actively involved in the Occupational Hygiene Association of Ontario (OHAO). He joined the Ontario Section of the American Industrial Hygiene Association (AIHA) in 1979 and was elected Chair in 1981. He was instrumental in forming a special Long Range Planning Committee that proposed the Ontario local section becoming the Occupational Hygiene Association of Ontario, an independent not-for-profit association. Dave also served on many OHAO committees. Dave was also involved in creating and implementing the process for Canadian accreditation for industrial hygienists through the Canadian Registration Board of Occupational Hygienists (CRBOH)

exam. Dave served as the Chief Examiner from 1990 to 1998.

Dave was a Professional Engineer in the Province of Ontario, was certified by the American Board of Industrial Hygiene (ABIH) and was a Registered Occupational Hygienist (ROH). He was a Fellow of the American Industrial Hygiene Association (AIHA) and a member of the American Conference of Governmental Industrial Hygienists (ACGIH). He was also a Diplomate of the Academy of Industrial Hygiene and a member of the British Occupational Hygiene Society (BOHS). He was a member of many national and international committees: the AIHA Laboratory Accreditation Committee, the AIHA Asbestos Analyst Registry Committee, the Editorial Review Board of the American Industrial Hygiene Journal and the Journal of Occupational and Environmental Health.

Over the years, Dave has been the recipient of numerous awards including: the OHAO Hugh Nelson Award for Excellence in Occupational Hygiene in 1996; the 1998 Edward J. Blair Technical Achievement Award (as Member of the Laboratory Accreditation Committee); the OSH 1997 Award of Excellence for Lifetime Achievement in Occupational Safety and Health; the 1999 ACGIH Meritorious Achievement Award given for outstanding long-term contributions to the progress of occupational health and environmental hygiene, the 2001 AIHA Donald E Cummings Memorial Award given for outstanding contributions to the knowledge and practice of industrial hygiene; the 2004 AIHA Fellow Award and the 2007 AIHA Donald L. Swift Memorial Outstanding Aerosol Paper Award for excellence in aerosol research applied to industrial hygiene.

Of all the awards Dave received, the Hugh Nelson Award was the one he was most proud of because it was named in honour of his friend and mentor Hugh Nelson. The award is given to a hygienist who has a consistent record of significant contributions as a teacher, researcher, leader, mentor or innovator in the field of occupational health. Dave certainly met all of those criteria. He was a well loved and respected teacher in the DOHS program at McMaster. He mentored countless numbers of occupational hygienists all over Canada. He had numerous areas of research in the field of occupational health and was always interested in new research opportunities.

Dave's passion and purpose in life was protecting the health and safety of workers. In his retirement he continued to go into his office each day to continue this work. One of the accomplishments he was most proud of was his work as an expert witness on the South African Gold Miners class action lawsuit for silica exposure. In 2018 the miners were awarded a \$400 million silicosis settlement. He also continued to work on writing research papers.

Dave was a devoted husband, father and grandfather. He shared with Joy, his wife of 51 years, an immense pride for his son Paul, who also works in the occupational health and safety field and his daughter Anita, who is a lawyer. He enjoyed spending time with his granddaughters Abigail and Gemma.

Compiled by: Lorraine Shaw, B.Sc., CIH 1987-2017, ROH (Retired)

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Become an OHAO mentor and provide guidance and feedback to students and new occupational hygienists. Contact office@ohao.org for more details.

Promote the Profession

Did you know OHAO has a PowerPoint presentation available to members who are interested in promoting the profession at schools, community organizations, etc. Contact office@ohao.org for more details.

Write an Article for Forum

We are always looking for new contributors to the newsletter. If you have an article you would like to have considered for publication email articles to: neginghanavatian@gmail.com

Promote Your Business

When people are looking for occupational hygienists they often end up at the OHAO Consultants Directory. List your company in the directory and gain exposure and business. There is an annual fee for a listing in the directory. [Click here for details.](#)

Career Postings

Whether you are looking for a job or looking to hire the OHAO job listings are a great place to post your jobs for a reasonable fee. All job postings are shared on our new LinkedIn page. [Click here for the job posting page.](#)

LinkedIn

OHAO now has our own LinkedIn page. Be sure to follow us for updates and information related to occupational hygiene.

[Click here to visit our LinkedIn page.](#)

OHAO Fall PDC and Symposium, October 20, 21, 2021 - Registration Now Open

OHAO Fall PDC: Wednesday, October 20:

Dermal Exposure Assessment.

Jennifer Sahmel, PdD, CIH, SCP, FAIHA will present a full day session on dermal exposure assessment. For a full overview of the session including learning outcomes see the attached PDF.

OHAO Fall Symposium: Thursday, October 21:

OH-Related Topics and Case Studies.

Topics include:

- **CSA Z94.4.1 Technical Sub-Committee – Performance of Filtering Respirator** - Ron Meyers, CSA Group
- **Noise Topics including TLV and Non-Audible Health Effects** - Hugh Davies, PhD, MSc, CIH, University of British Columbia
- **Total Worker Health** - Liz Hill and Deborah Nelson, Safe and Healthy Workplace Centre
- **Occupational Hygiene Issues in Return to Work from a Medical Perspective** - Dr. Aaron Thompson, Assistant Professor, Faculty of Medicine University of Toronto and Staff Physician, St. Michael's Hospital
- **Legal Perspectives in Return to Work** -TBC, McMillan LLP
- **Occupational Hygiene and Return to Work** - Magdalena Warczok, WSIB, OH Manager, Suzanne Farkas, Occupational Hygienist, WSIB
- **MLTSD / CPO Updates** - Speaker TBC, MLTSD / CPO
- **Computational Fluid Dynamics / Directional Air Flow; CDC and ACGIH Recommendations for Buildings** - Rob Dinsmore, Lev-Co

Visit www.ohao.org to register today.