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OH FORUM

President's Message

How do you Define Occupational Hygiene ?

Back when I was studying, the field of occupational hygiene sounded fairly black and white – how it was practiced, how it was defined, what the scope was expected to be… But, as I spend more time practicing in the field, I've quickly come to realize that few things in health and safety (especially on the health side) are even close to black and white.

In recent years, I've heard a number of people referring to "Capital H" health in reference to the health side of health and safety, implying a broader health scope than traditional workplace health or hygiene hazards. I know an increasing number of hygienists are wearing safety or environmental or engineering, even human resources, hats as part of their function but I can't help wondering whether we are taking a broad enough view of the hygiene component itself.

Hardly a month goes by without a subject coming up in discussion or at work that doesn't fit into the traditional chemical, physical, biological hazard definition and often its not obvious which profession or discipline should address it. A number of recent examples have caused me to question my traditional definition of the hygienist.

A few years ago, I got involved in a project that was intended to evaluate and re-energize our well-established employee wellness program. One of the tasks was to pull together the justification information for having the program. In researching the subject I gained a much better understanding of the increasing disease trend in employees who had multiple lifestyle risk factors (smoking, diabetes, hypertension, obesity etc.) and how this is impacting workers, workplaces, and the health care system. Not only are the risk factors (and disease burden) much more prevalent than I understood, but the current future projections for the Canadian population and workplaces are even less favourable. One of the more powerful statistics that sticks in my memory is that obesity related medical expenditures alone in the US cost more than 75 billion each year (it sounds cold to translate the personal side of disease to dollars but speaking in business language can be effective). As I got more involved in the impact of the subject, it made it more difficult to feel quite as smug about the huge reductions that we as hygienists, have helped make in employee exposures over the past three decades in order to improve exposure related morbidity and mortality.
There is no shortage of debates about how far a company or HSE professionals should go into changing lifestyles but the general consensus is that the workplace should play a facilitative role (many high risk employees don't use our medical system regularly, especially for preventative measures and may not get the feedback on the health indicators and prevention options that

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OH FORUM

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The Occupational Hygiene Association of Ontario is an Ontario-based organization whose members are dedicated to the practice of occupational hygiene. Occupational hygiene is concerned with the protection of people's health from hazards arising in or from the workplace.

To develop and promote the profession of occupational hygiene, and to serve the interests of our members by:

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

President's Message... cont'd from page 1

they need). Fortunately, I work in a large organization that has a specialized medical group to put energy into this issue (with only peripheral support on occasion from hygienists like me) but I'm guessing that many small or medium sized workplaces don't have an infrastructure to address lifestyle risk factors at all. Hygienists may be the ideal group to lead in many workplaces in this area. Download Roundtable 248 "The Synergy of Mixing Wellness and an Industrial Hygienist" from this year's AIHce for examples of a hygienist in this role.

I've been spending a portion of my time working for my company's corporate group in Europe, and we were recently trying, over e-mail, to establish our specialties and roles within the health group and it was clear how definitions of hygienists differ from region to region. I decided to send a definition of traditional occupational hygiene to them as part of this discussion. In an attempt to be global (rather than regional) I looked up the International Occupational Hygiene Association's definition: 'Occupational Hygiene is the discipline of anticipating, recognizing, evaluating and controlling health hazards in the working environment with the objective of protecting worker health and well-being and safeguarding the community at large.' This definition did not help clarify my intent to portray the traditional chemical, physical, biological workplace hazard recognizing/remediating hygienist role and in fact, it is so broad it could be interpreted as almost anything in the realm of health. Judging by the number of sessions at the past AIHce addressing hygienists facing a global world, it is evident that the broader IOHA definition is certainly more appropriate for many of us especially with the trend towards mergers and corporate globalization. Some of the primary occupational health priorities for sites in developing countries are communicable diseases such as tuberculosis, HIV, malaria and access to potable water. Dealing with poisonous snakes is a policy needed in many tropical areas, something not under the typical occupational health professional job description but a good example of protecting well-being that needs to be addressed by "someone".

Len Hong challenged hygienists at the 2007 OHAO fall symposium to take the lead on becoming health and safety experts in management systems and in doing so be the key driver behind taking their organizations to a higher level with respect to all aspects of health and safety. Certainly this fits the IOHA definition of "protecting worker health and well-being". Are enough of us taking on this challenge?

Hygienists are generally the respiratory protection subject matter experts within an organization. With chemical, biological, radiological and nuclear (CBRN) agent protection being an increasingly important component of an overall respiratory protection strategy, it seems like an obvious fit for hygienists to step in as the leaders/experts in pandemic or even business continuity planning. Although this has happened to some degree, in many cases it remains a grey area as far as who will step up as the experts.

I think we could all easily add to this list of "fringe" issues and that hygienists are probably great choices to position themselves as experts on moving forward.

The number of hygienists is on the decline in North America (based on some indicators I have seen). I think this is due in part to the fact that the state of control of many of the traditional hazards is now more of a "maintenance mode" in many areas (in conjunction with a fairly steady level of emerging issues). The hazards and issues falling into what is thought of as a traditional hygienist's scope will always need attention but what our profession's scope and "professional definition" as perceived by the population in general will look like in the future will depend on which challenges we take on as professionals today. There is no doubt that hygienists are invaluable because of the range of skills and characteristics we possess but we may need to take steps to make diversity the first trait that comes to people's minds when they think of hygienists, in order to remain strong in these times of rapid change.

Jason Hoffman, MHSc, CIH

Call For Case Studies March 25th 2009 Spring Symposium / AGM / Social

An invitation is extended to OHAO members, and to EHS Professionals in general, to share your experiences with your peers.

Any 15-30 minute IH related topic is welcome but this year's proposed theme is "Communicating Complex Issues" as this is a common challenge to all of us.

Interested participants are asked to e-mail the OHAO office at office@ohao.org with their subject.

Editor's Message

One of my roles as the editor, at least as I see it, is to facilitate information exchange amongst our members. In this light, I recently started pondering about how we as occupational hygienists could get the most out of networking and sharing of experiences on the internet.

Most of us, I would imagine, are aware of the Listserv from the CCOHS, HS-Canada. I have been a member for years. As I was researching my editorial, I came upon the CCOHS' newly launched www.workscape.ca. This community and its boards are for the discussion of occupational and environmental health and safety in a Canadian context. I have a feeling many of us will sign up to this discussion board.

However, in addition to Workscape, I was thinking more along the lines of what open forums exist for exchange, such as blogs, and I started to get curious as to what blogs existed about occupational hygiene. Wikipedia, defines a blog (contraction of "web log") as an interactive website that is maintained by an individual with regular entries of commentary or news, usually on a particular subject. They can also function as online diaries. According to the same Wikipedia article, there can be, amongst other categories, both personal and corporate blogs.

A look at a few "corporate" blogs from both NIOSH and the AIHA, which as hygienists I can presume we will agree are indeed "reliable" sources. NIOSH's Science Blog http://www.cdc.gov/niosh/blog/, to which you can subscribe, is a good example of this. According to the information it contains, they are using the media to optimize scientific discussion about research, with the goal of protecting workers. The AIHA also started their blog http://www.aiha.org/weblog/aihablog/ on August 6, 2008 for 2 main reasons: the members were starting to express interest in a blog (in particular they liked the now defunct Confined Space blog at http://spewingforth.blogspot.com/) and at the same time, staff at AIHA started to explore new trends in technology to see if there was a way social media could be used to benefit members and the OEHS profession. Despite the newness, it's very popular and ranks as one of the most visited web pages of the AIHA site. According to Caron Mason, Web Communications Specialist with the AIHA, contributions are made by volunteers - mainly members interested in blogging, and on some occasion the AIHA contacted commenters to the AIHA blog asking if they would be interesting in blogging as well.

In Canada, this is an informative one from the Worker's Compensation Board of Nova Scotia http://www.worksafeforlife.ca/blog_view.php . I did not do an extensive search, but only a few spot checks to see what was around.

As for personal blogs, I also found a few outdated ones - where nothing had been written in months. There are two more active blogs, though, that I believe deserve a second look.

In this blog, http://www.workerscompinsider.com/ , Lynch Ryan writes about not only worker's compensation, but also from an occupational perspective, workplace health and safety, occupational medicine, risk management and other related topics related to health and safety.

Finally, there is the Ramazzini Blog on Work and Health http://aflen2008.wordpress.com/ (Ramazzini...for those who do not remember, is one of the fathers of Occupational Hygiene). The blogger,

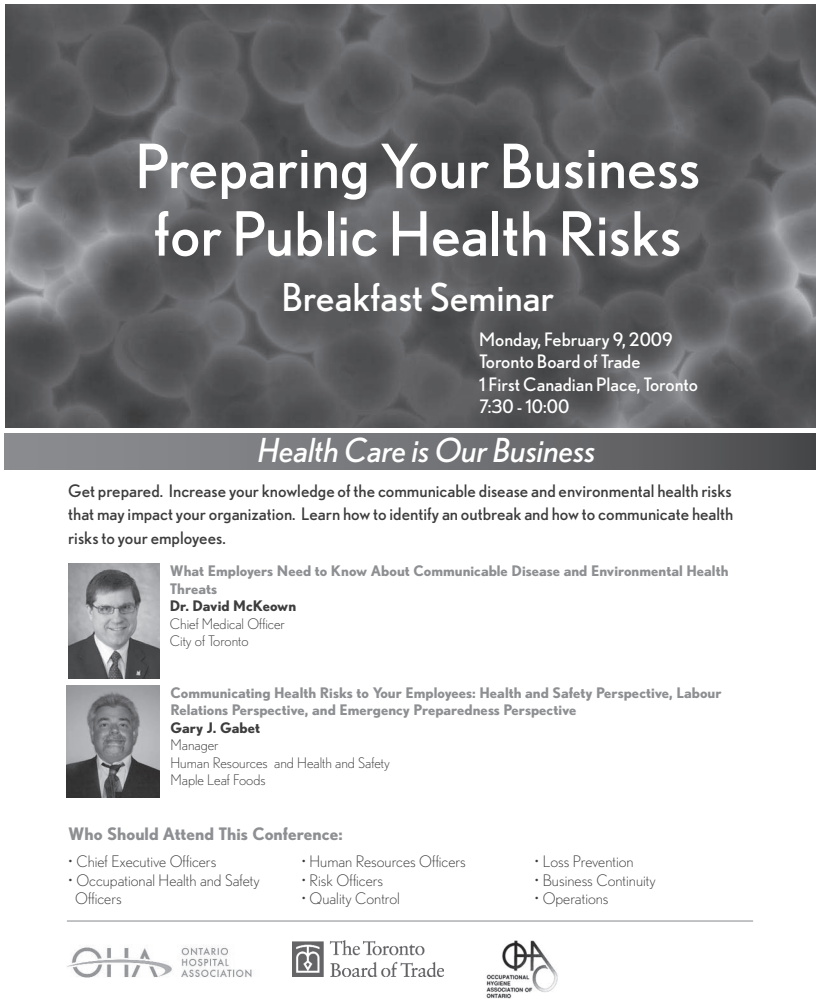
Annet Lenderink, trained as an occupational physician and a journalist, and has been working as a coordinator of knowledge dissemination at the Netherlands Center of Occupational Diseases since 2005.

I am sure there are many more blogs out there, but I am wondering, who will start the next Occupational Hygiene in Canada blog...And NIOSH is now on Facebook... that may be a topic for another discussion!

On another note, I hope you will enjoy this issue, our last one for 2008. As this year comes to a close, and with this being my fifth newsletter as the editor, in addition to recognizing the contributors on the editorial team, I would like to give my heartfelt thanks to Nikki Wright, who helps keep me in line and without whom this newsletter would never look so good!

If you are interested in contributing to the future editions of the *OH Forum*, please contact me. Our next deadline for submission for the Winter 2009 issue will be January 10, 2009. I look forward to receiving your articles!

Christine Sidhom



Visit http://www.oha.com/healthrisks to register.

People on the Move

Todd Irick, M.Sc, CIH, CRSP joined WESA Inc. in September 2008 as a Senior Industrial Hygienist in their Ottawa (Carp) Office. Todd has over 20 years of experience as an EHS professional serving as an internal company resource and external consultant for large multinational organizations. For 10 years he was responsible for EHS program implementation and enhancement for semiconductor manufacturing operations at BNR/Nortel in Ottawa where processes involved highly toxic, flammable and corrosive gases. He has extensive experience in risk assessment methodologies as well as expertise in assessing hazardous physical agents such as electromagnetic fields and radiation, lasers and noise. Todd welcomes hearing from old and new colleagues, and can be reached at tirick@wesa.ca or 613-839-3053 x258

Health Physics

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

Cell Phone Use by Children and Teens

The possible relationship between cell phone use and cancer was in the news again last summer. In May, Toronto City Council and the Board of Health endorsed a 'Prudent Advisory Policy' that called "for parents and teens to limit use of cell phones by children where possible". A Toronto Public Health Backgrounder states:

> *"There is still debate on the health effects of low levels of RF. Areas where uncertainty exists include the relationship between low levels of RF and cancer. Some, but not all, studies in humans and animals show a slight increase in leukemia and/or other cancers. Some studies have also reported an impact on sleep and some non-specific symptoms.*
>
> *Until better information is available to confirm or disprove these concerns, the Medical Officer of Health continues to recommend prudent avoidance to minimize exposures to RF waves."*

A few weeks later, Dr. Ronald Heberman of the University of Pittsburgh Cancer Institute sent a memo to 3,000 university faculty and staff which read:

> *"Recently I have become aware of the growing body of literature linking long-term cell phone use to possible adverse health effects including cancer. Although the evidence is still controversial, I am convinced that there are sufficient data to warrant issuing an advisory to share some precautionary advice on cell phone use.*
>
> *An international expert panel of pathologists, oncologists and public health specialists recently declared that electromagnetic fields emitted by cell phones should be considered a potential human health risk (see The Case for Precaution in Cell Phone Use, attached*). To date, a number of countries including France, Germany and India have issued recommendations that exposure to electromagnetic fields should be limited. In addition, Toronto's Department of Public Health is advising teenagers and young children to limit their use of cell phones, to avoid potential health risks.*
>
> *More definitive data that cover the health effects from prolonged cell phone use have been compiled by the World Health Organization, International Agency for Research on Cancer. However, publication has been delayed for two years. In anticipation of release of the WHO report, the attached prudent and simple precautions, intended to promote precautionary efforts to reduce exposures to cell phone electromagnetic radiation, have been reviewed by UPCI experts in neuro-oncology, epidemiology, neurosurgery and the Center for Environmental Oncology."*

***[Editor's note – this is not included in the *OH Forum*]:**

The "international expert panel of pathologists, oncologists and public health specialists" was an 'in-house' panel lead by Devra Lee Davis, the controversial Director of the Center for Environmental Oncology at the University of Pittsburgh. Dr. Heberman was a member of that panel, a relationship he failed to disclose in his memo.

The World Health Organization study mentioned by Dr. Heberman is the Interphone Study co-ordinated by the International Agency for Research on Cancer (IARC) in Lyon, France. In the first phase of the project, independent case-control studies were performed in Australia, Canada, Denmark, Finland, France, Germany, Israel, Italy, Japan, New Zealand, Norway, Sweden and the UK. These studies all followed a common protocol and the results of many of the individual national studies have been published. The second phase was to include a 'meta-analysis' of the pooled data from the national studies. Some preliminary results have been published, including a pooled analysis[1] of data from the Nordic countries and the UK (1522 glioma patients and 3301 controls) which found no evidence of an increased risk gliomas either regular cell phone users, in fact the results could be interpreted as indicating a protective response since the odds ratio was 0.78 (0.68-0.91). However when the data for ipsilateral gliomas (those occurring on the

1 Lahkola, A. et al, Int. J. Cancer, 120(8), 1769-75 (15 April 2007)

side of the brain closest to the usual location of the cell phone) and contralateral gliomas among long term cell phone users was analyzed separately the authors found an OR of 1.39 (1.01-1.92) for the 77 ipsilateral gliomas and an OR of 0.98 (0.71-1.37) for the 67 contralateral gliomas.

Unfortunately, the larger meta-analysis seems to have floundered on the selection bias and recall bias issues that plague many retrospective case-control studies. Selection bias occurs when a certain portion of the population is preferentially included in or excluded from the study. In the Interphone studies, potential controls were matched to cases on age, sex and geographical region. They were then contacted and asked to complete a computer-based interview. Of those who agreed, 59% meet the studies (rather low) criteria for regular cell phone users. Researchers later recontacted some of those who had declined to participate and found that only 34% were regular cell phone users. This creates the possibility that the controls were more likely to use cell phones than the population as a whole.

An assessment of the importance of recall bias in three national cohorts (including Canada) compared the frequency and duration of cell phone use reported by study participants during interviews to historical usage data provide by cell phone network operators. The study found that both cases and controls "underestimated number of calls by a factor of 0.81 and overestimated duration by a factor of 1.4"[2]. It was also found that for cases, but not controls, that these trends "increased with increasing time before the interviews". The authors concluded that "apparent overestimation by cases in more distant time periods could cause a positive bias in estimates of disease risk associated with mobile phone use". If this is true, then the increased odds ratio for ipsilateral gliomas observed in the pooled analysis of the Nordic & UK data may be an artifact of recall bias.

A draft of a final report was circulated to Interphone researchers in June 2008 but it appears that the group is far from agreement. Reports suggest that the researchers cannot agree if the results indicate that there is a weak but real effect of cell phone use or if the observed correlations are artifacts of selection and recall bias. Interphone organizers had been hoping that a final report would be issued this year but that now appears unlikely and it is possible that the team members may never reach agreement.

2 Vrijheid, M. et al, J. Exposure Sci. & Env. Epidemiol., (21 May 2008), doi: 10.1038/jes.2008.27

Fall Symposium Summary - October 16, 2008

James Miuccio, MSc., Occupational Health Clinics for Ontario Workers Inc.

The OHAO Fall Symposium took place at Black Creek Pioneer Village on October 16 and was very well attended. There were also a record of nine exhibitors, including 3M, Ashtead Technology Rentals, Cantest, CASSEN Testing Laboratories, Concept Controls Inc, Dalimar Instruments Inc, Levitt Safety, Sperian Protection and OSHTEC.

The first speakers, Steven Levine and Monica Szabo, paid tribute to the fallen. They told the story of Earl Dotter, an occupational photojournalist. Earl Dotter's eight photo essays told stories of injured or killed workers. All of the tragic stories of fallen workers were very moving because they were not just heard, but seen and visualized. The final thoughts of the presentation remind us that Occupational Hygiene is "not just another profession".

Great Turnout

For more information about these photo-essays you can visit www.earldotter.com.

Alberto Behar, Arthur Scott

The next session was an update on the HRSDC Labour Program-Current Initiatives, which included new ergonomic requirements and violence prevention in the workplace. For more information on these you can visit www.labour.gc.ca

Daniel Drolet from the IRSST then demonstrated his Computer Tools to Help Occupational Hygienists. His tools include VEMPire for unusual work shifts, m1Xie for combined chemical exposures, Saturisk to calculate the breakthrough time of cartridge filters and Thermal Stress for a work rest regime. To access these tools you can visit www.irsst.qc.ca. It is important to note that most of these tools are available in English.

Alberto Behar, Steve Levine, Monica Szabo

There was also a case study from Michel Crepeau of WESA regarding the outcome of asbestos wipe sampling.

The afternoon session started off with Arthur Scott from the Ministry of Labour, who talked about Radon in Homes and Workplaces. Then, Marshall Chassin talked about Hearing Loss in the Workplace and provided an alternate assessment of hearing. The final presentation by Sergey Grinshpun was on Respiratory Protection Against Airborne Particles.

Thanks to all the speakers for a great day.

Fall Symposium Attendee Feedback

There was a record turn out of approximately 90 attendees and nine vendors at the Fall Symposium this year. The attendees all seemed to be attracted by the full agenda put together by the Program Committee. *(See summary above written by James Miuccio).*

Sergey Grinshpun

Marshall Chassin

The attendees also provided very positive feedback through evaluations. Among the 55 attendees who have responded to the symposium evaluation, from a scale of 1(not relevant or poor)-4 (very relevant or excellent), the average for content relevance was 3.4 (ranging from 2.8 to 3.7), the average for presentation was 3.3 (ranging from 2.9 to 3.6) and the venue location was rated 3.5 and the food rating was 3.7. The Committee also received a list of suggested topics for future considerations.

We wish that OHAO members continue to enjoy coming to the Symposia.

Fall PDC's Summary - October 15 & 17, 2008

Feby Wong, WESA Inc & Margaret Fung, WESA, & Chair Public Affairs & Education Committee

The OHAO Public Affairs and Education Committee put on two very well attended and highly reviewed professional development courses, resulting in a very successful 3-day Fall Symposium and PDC lineup:

Control of Welding Health and Safety Hazards, a full day course, was attended by 25 participants on Wednesday October 15, 2008. The course was presented by Gregory J. Naherne, a Certified Industrial Hygienist with over 20 years of field experience in sectors ranging from industry, government, labour-related organizations, and consulting. Mr. Naherne is a true Welding Health and Safety Specialist, with numerous publications and professional expertise. The course material was comprehensive and engaging; common welding processes were discussed, and hazards and health effects associated with welding were identified. Mr. Naherne highlighted the various methods and approach to sampling and controlling exposure due to welding fumes and gases. Practical handouts and recognized references were the icing to this well developed, and professionally presented course.

Control Banding: Opportunities and Horizons, a full day course offered on Friday October 17, 2008 was attended by 17 participants. The topics included the history of control banding, the nature of control banding and its many applications, and examples of control banding models and tools. The lineup of very experienced and informative speakers included:

- David Zalk, CIH, a member of the WHO/ILO International Technical Group on Control Banding, Past President of the IOHA, EHS Manager at Lawrence Livermore National Laboratory, and a frequent provider of Control Banding talks.
- Ern Sullivan, PhD, CIH, ROH, CChem, with over 30 years experience in occupational health and hygiene, a WHMIS specialist, and a member of the AIHA working group on Control Banding.
- Om Malik, PhD, PEng, CIH, ROH, with extensive experience and expertise on occupational health and safety, a frequent provider of control banding presentations at national and international forums, and currently the Principal and CEO of ECOH Management,
- Marianne Levitsky, CIH, ROH, with extensive experience in environmental and occupational health and hygiene, and a senior industrial hygiene associate with ECOH Management.
- Marvin Faber, PHD, DOHS, CRSP, Corporate Director of EHS at Patheon, who provided an interesting and informative discussion of the control banding model used in the pharmaceutical industry.

Control Banding Instructors and Attendees: Top Row –Dave Zalk, Martin Albinger and Marianne Levitsky. Bottom Row – Tomor Cerriku, Altaira Hildebrand and Ern Sullivan

Control Banding PDC

Welding Attendees: Warren Clements, Sadiqa Hifsa and Febby Wong

Welding H&S: Rob Strang and Instructor Greg Naherne

A Brief Summary on Nanoparticle Exposure Monitoring: Potential Metrics and Direct-Reading Instruments

J.Anceriz MHSc, R.Hosein PhD

Editor's note:

Editor's note: This article was originally published in the Summer 2007 edition of the CCOH newsletter and is reprinted here with permission from the authors. For more information on the CCOH, please consult www.ccoh.ca. cs

Molecular manufacturing has been compared to the next industrial revolution, and is portrayed as cheap, self-contained and environmentally friendly technology. However, many scientists, industrial hygienists and other key stakeholders are trying to understand the impacts of nanotechnology on health and the environment, and how best to ensure its safe entry into commerce.

A nanoparticle is engineered by manipulating matter at the atomic scale, with at least one dimension between 1 and 100 nanometres. Nano-sized particles that are generated incidentally do not have the same properties as engineered nanoparticles and are not considered part of nanotechnology. A material's properties change as its size approaches nanoscale and the percentage of surface atoms relative to the total number of atoms increases greatly. ISO's Nano Technical Committee stated in their 2007 Draft Technical Report that due to their high percentage of surface atoms, nanometer-sized particles display unique physical and chemical properties and it is expected that their toxicity will be closely related to particle diameter, surface area and surface activity (ISO, 2007). Historically we have said that the toxicity of particles increases with decreasing particle size. Many believe nanoparticles will be no exception. Researchers are currently working to determine the toxicological effects from exposure to nanoparticles. Evidence suggests that because of their small size, nanoparticles are able to cross cell membranes and interact with sub cellular structures [NIOSH, 2006]. Evidence also indicates an association between potential hazard and particle structure for some poorly soluble nanoscale materials. However, much uncertainty remains around worker risks [NIOSH, 2006].

Worker Exposure

Workers who handle nanoparticles in the gas or powder phase are at risk of exposure via the inhalation route. Workers who handle nanoparticles suspended in liquid are at risk of exposure via the dermal route if proper gloves are not worn. Additionally, workers who maintenance equipment and air filters used in processes that manufacture or utilize nanoparticles are at risk of exposure via the inhalation and dermal routes of entry (CDC/NIOSH, 2006).

Measurement Strategies

Currently there is no consensus on a single sampling strategy for nanoparticle exposure in the workplace however, a number of standardization groups like ISO and NIOSH have produced fundamental guidance documents.

Filter Sampling

Traditionally, determining mass concentration via gravimetric analysis has aided hygienists in estimating the corresponding health implications of an employee's exposure to particulate matter.

However, because of the size and weight of nanoscale particles, mass concentration seems to be an inadequate metric by which the weight of a sample is not indicative of its potential toxicological effect. Determining mass concentration by way of filter sampling has two major limitations. First, filter collection is non-specific; a 10-micron particle weighs the same as one billion 10 nanometre-sized particles therefore large particles will bias the filter weight. Second because of their size and weight, nanoparticles are not easily detected; one may be required to sample for days in order to detect nanoparticles on a filter. Low Pressure Impactor's (LPI) separate particles according to their aerodynamic diameter. The bottom stages operate under low pressure so that nanoparticles will impact on the collection plates. Monitoring the workplace using a LPI is a time intensive process due to the number of nanoparticles that must be col-

lected for mass detection. However, the advantage to using an LPI is that secondary analysis via electron microscopy can by employed to classify these particles. Particle surface area, diameter and number concentration are thought to be more appropriate and consistent metrics for nanoparticle measurement.

Direct-reading instruments – Particle Counters

Historically, industrial hygienists have sampled ultrafine particles by way of directreading instruments for example particle counters. Particle counters produce instantaneous read-outs of the immediate airborne number concentration. In the absence of nanoparticle exposure limits, these measurements remain important as they can aid hygienists in locating particle emitting sources and assessing the effectiveness of engineering controls and work practices.

Traditional condensation particle counters (CPC) used to sample ultrafine particles are manufactured with a readability size range of between 20 and 1,000 nanometers. However, genetically engineered nanoparticles may be smaller then 20 nanometers and will not be adequately measured by traditional devices.

Manufacturers of air sampling equipment like TSI Inc. have developed condensation particle counters with a lower size limit of 10 nanometers. It is important to understand one particular disadvantage of using a condensation particle counter to sample nanoparticles. The CPC is non-specific in its sampling and cannot differentiate between incidental releases of ultrafine particles and engineered nanoparticles. When monitoring the workplace using a CPC it is important to understand all interfering particle sources whether they be background levels or incidental releases. It must be noted that nanoparticles are too small to be seen by an aerosol photometer or optical particle counter and under most circumstances a condensation particle counter should be used instead of or in conjunction with an aerosol photometer when measuring number concentration.

Surface Area

Surface area is thought to be an important metric in assessing nanoparticle exposure because of its association with health hazards. Diffusion chargers/electrometers are used to determine surface area measurements where the surface charge on an aerosol is proportional to its surface area. One advantage of using a diffusions charger is that its relatively small size and weight allows it to be used as a portable monitoring device to obtain personal exposure measurements in a worker's breathing zone.

Surface area and Mass by Calculation

The Scanning Mobility Particle Sizer (SMPS) calculates nanoparticle concentrations from size distribution measurements. The SMPS can be combined with a CPC to display number concentration for a particular size range. The SMPS is widely used as a research tool for characterizing nanoaerosols, although its applicability for use in the workplace may be limited because of its size, cost, and the inclusion of a radioactive source.

Until there is consensus around the most appropriate metric for assessing nanoparticles in relation to health hazards it is recommended that a variety of sampling equipment be employed for example CPC's, DC's and SMPS's, in order to provide full characterization of nanoaerosols in the workplace [ISO, 2007].

The monitoring devices presented in this article are by no means exhaustive of direct-reading instruments available for measuring mass, number and surface area concentration. ISO's 2007 Draft Technical Report includes a comprehensive list of direct-reading instruments used in nanoparticle exposure monitoring. Additionally, this article did not speak to analytical techniques such as spectrophotometry and electron microscopy used to characterize nanoparticles but solely focused on exposure monitoring via direct reading instruments.

References

ISO Standards Development (2007). Draft Technical Report. Technical Committee 229 Working Group 3. January 2007.

CDC/NIOSH (2006). Approaches to Safe Nanotechnology: An Information Exchange with NIOSH. U.S Department of Health and Human Services for Disease Control and Prevention and National Institute of Health and Safety. July 2006.

http://www.cdc.gov/niosh/topics/nanotech/safenano/pdfs/approaches_to_safe_nanotechnology_28november2006_updated.pdf (Accessed on 11/06/07).

F1

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

Last month I was given a demonstration of the new Windows Office/Home Server - most impressive! Even though it is called an “Office/Home” server it could easily be used for a small office. Here is a shortened version of what it has to offer. Read on…I think you will like what you read.

Windows Office/Home Server Power Pack 1 was released on 20 July 2008. Some of the features are:

Computers backed up daily, automatically

Windows Office/Home Server helps you keep your important files safe by automatically making an image-based daily backup of every computer on your network (up to 10). Your files and folders are duplicated across multiple hard drives, so even if one hard drive fails, you can still recover all your data.

With Windows Office/Home Server, you can bring back individual files or folders for an Office or Home computer. You can even rescue a PC that's had an unfortunate accident because Windows Office/Home Server makes a copy of the entire contents of your Office/Home computer hard drive. Your computers stay healthy with Office/Home network health monitoring. You can see the exact condition of the computers in your Office/Home and make sure antivirus and other protection software is up-to-date. Windows Office/Home Server sits behind your firewall and has strong password controls to help secure your Office/Home network. You decide who sees what, so you can share what you want and keep the rest private.

Digital multimedia stored and organized in a central location

With Windows Office/Home Server you can store all your data, photos, movies, and more in a central location that can be accessed from any computer on your Office/Home network. And Windows Office/Home Server uses a familiar interface that integrates with all your family's Office/Home PCs, making it even easier to find digital media.

Everyone in the office can create and access shared folders of data, photos, music, and movies from any computer in your network.

Complete access to files from both inside and outside the office/Office/Home

Windows Office/Home Server enables you to easily and more securely access your files and personal computers from inside and outside of your Office/Home. Using a personalized website address, you can download and upload files to the shared folders on your Office/Home server (you will need certain "ports" to be open to use these features.)

With Windows Office/Home Server, you can connect remotely (say, from a hotel room) to the computers in your Office/Home and access all your files, even run applications, just as if you were sitting in front of your Office/Home computer (to connect to one of your home computers via Remote Access, your home computer needs to be properly configured and running):

- Windows XP Professional with Service Pack 2 (SP2)
- Windows XP Media Center Edition 2005
- Windows XP Tablet Edition with SP2
- Windows Vista Ultimate, Windows Vista Business, or Windows Vista Enterprise

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for further information.

If you have any comments, suggestions or advice contact me at jimdesormeaux@hotmail.com.