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THE Synergist

Protecting Worker Health

VOLUME 20 NUMBER 9 www.aiha.org OCTOBER 2009

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AIHA Weighs Options for Change at OSHA

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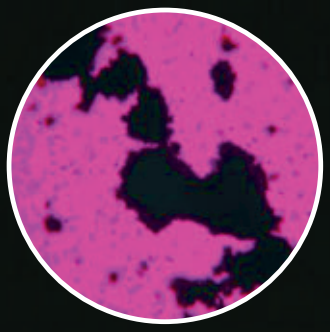
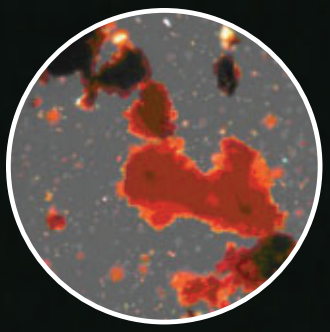


Your Microbiology Laboratory just identified Soot ...



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Columns & Departments

THE Synergist

Volume 20 • Number 9

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The Synergist's mission is to provide AIHA members with news and information about the occupational and environmental health and safety fields and the industrial hygiene profession. *The Synergist* focuses on industry trends and news, government and regulatory activities, key issues facing the profession, appropriate technical information and news on association events and activities.

The Synergist's objective is to present information that is newsworthy and of general interest in industrial hygiene. Opinions, claims, conclusions and positions expressed in this publication are the authors' or persons' quoted and do not necessarily reflect the opinions of the editors, AIHA or *The Synergist*.

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President's Message

Reengineering AIHA®

BY CATHY COLE, AIHA PRESIDENT

This month's column updates AIHA members about the association's current financial condition and some very difficult decisions that the Board of Directors have made regarding resetting member products and services in 2010 and beyond.

While we are wounded by the worldwide recession, our reserves remain strong and will certainly support AIHA through this economic downturn. AIHA reserves have fallen from a high of nearly 72 percent ($10.2 million) to today's 52 percent ($7.39 million). Alan Fleeger, AIHA Treasurer, reported in the June/July *Synergist* AIHA's low overhead costs of 20.5 percent, nearly 7 percent below similar professional societies. This allows us to maximize our investment in member programs, services and support. He also reported that although AIHA has lost approximately 19 percent in unrealized investments, this pales in comparison to the 32 percent drop in the Dow Jones and the 37 percent loss in the S&P 500.

In January, the AIHA Board passed an initial operating budget of $14.66 million for fiscal year 2009. Two months later, realizing that the impact of the economy would be greater than anticipated, the Board reset the FY2009 operating budget to $14.21 million. As we continue to monitor this year's operating budget and look forward to 2010 and beyond, the Board has established a $1 million reset goal to bring the operating budget into alignment and begin rebuilding reserves to the extent possible.

FY2010 and Beyond

Like most professional societies, AIHA has been very good at adding to its product and service line, but we have not been as diligent at removing or resetting products and services. Over the past three years, the AIHA Board and other task forces have reviewed AIHA's products, services and funding of volunteer activities, various organizations and standards-setting bodies. Determining the right mix of activities has been a difficult process. Through it all, it has been paramount in our minds to remain good stewards of the profession and the association while maintaining the high-quality products, services and representation that you expect and value.

The right mix of resetting and reengineering will keep AIHA a strong and vibrant organization.

At its July Board meeting, the leadership agreed to a number of decisions that impact the organization, including addressing the future size of the Board and the frequency of Board meetings. Further, the Board discussed resetting the amount of staff time and direct dollars devoted to related stakeholder groups, including the Local Sections Council Officers, the Academy of Industrial Hygiene, and the Foundation. The Board also determined that many of the liaison and representative travel and membership dues that AIHA has covered over the past three to five years will largely go unfunded for 2010 and beyond.

In addition, the Board agreed to set a course to reengineer AIHce, PCIH, government affairs, standards-setting activities, and as mentioned above, the size and number of meetings of the Board. "Reengineer" does not mean eliminate. It means undertaking more strategic discussions about how to most effectively support these and other AIHA products and services while delivering them efficiently and cost effectively. Finally, the AIHA staff will have been reset by FY2010 to approximately 49, a reduction from 58 just two years ago. Fortunately, nearly all of this has been the result of natural attrition and integration of responsibility.

The Right Mix

AIHA is an incredibly fortunate organization. We have the world's best, most engaged volunteers, a strong staff team supporting the organization's goals, and strong reserves to weather the current economic downturn. While these reserves have taken a beating and we project an approximate $700,000 deficit in 2009, we believe that the right mix of resetting and reengineering will keep AIHA a strong and vibrant organization.

The Board and I welcome your feedback. Please feel free to send your comments to cathycole@aiha.org. We will collect your thoughts and find a way to provide an overview in a future issue of *The Synergist*.

My thanks to you for your membership and your support of AIHA.

Cathy Cole, CIH, CSP, is president of AIHA and director of corporate occupational health at The Sherwin-Williams Company in Cleveland, Ohio. She can be reached at (216) 566-3096 or cathy.l.cole@sherwin.com.

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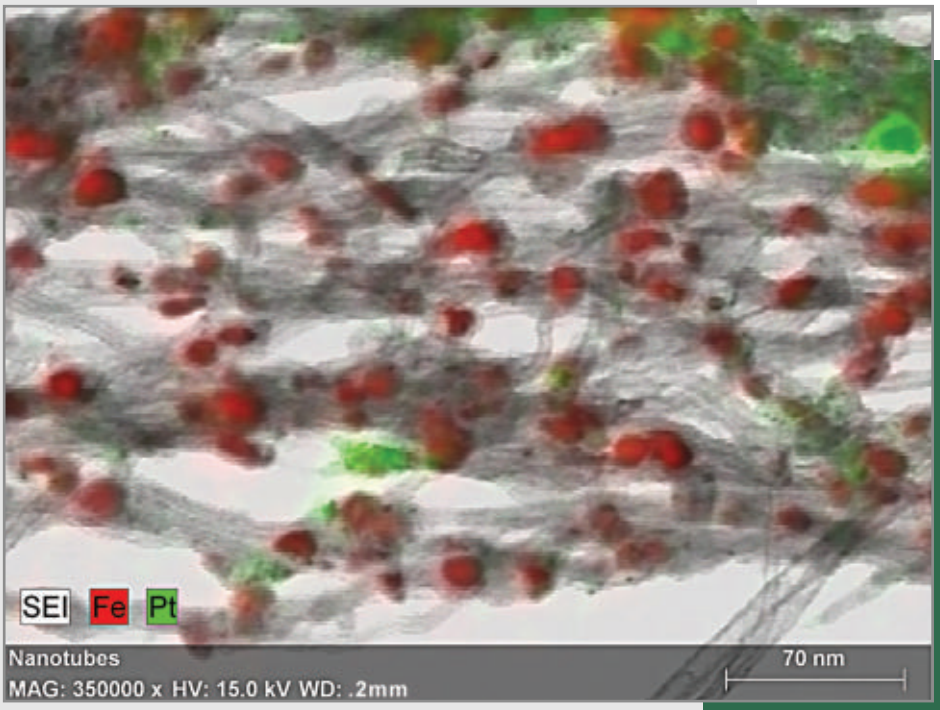

▲ *High resolution elemental map illustrating residual iron and platinum catalysts associated with carbon nanotube growth.*

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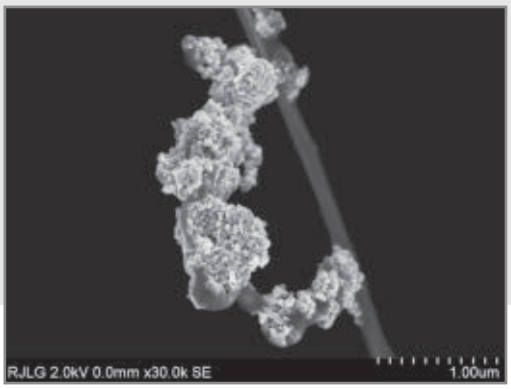
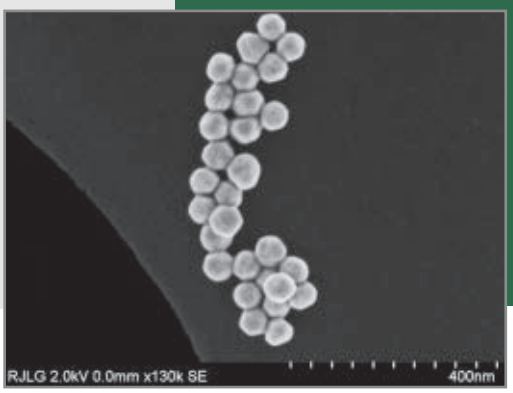
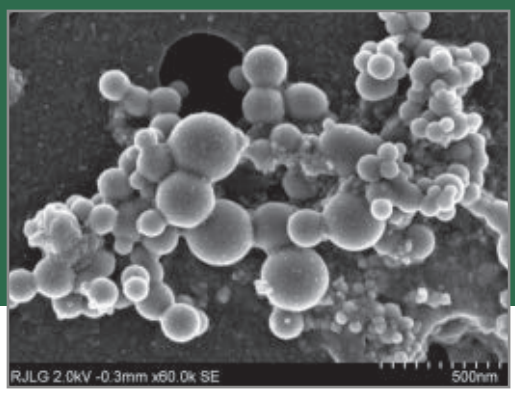


▲ 5 nm TiO_2 NANOPARTICLE AGGLOMERATION
Secondary electron image at 30 kX and 2.0 kV



▲ GOLD NANOPARTICLES
Secondary electron image at 130 kX and 2.0 kV



▲ AIR PARTICULATE FROM WELDING
Secondary electron image at 60 kX and 2.0 kV

All images acquired using a Hitachi S-5500 STEM and Bruker microanalysis system.

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Washington Insider

Full Steam Ahead for OSHA

BY AARON TRIPPLER, DIRECTOR, AIHA® GOVERNMENT AFFAIRS

Those who have complained about very limited activity from OSHA and other federal agencies over the past few years can complain no more. This summer, OSHA generated more activity than it had in several previous years combined. Much of this action is due to the commitment of the Obama administration and agency leaders, including Labor Secretary Hilda Solis and Acting Assistant Secretary of Labor for OSHA Jordan Barab.

As of early September, no date had been set for David Michaels' Senate confirmation hearing. Most observers believe it won't take place before mid-October. Still, a quick look at current OSHA activity suggests that the agency is poised to continue down its current path.

Issue Roundup

During the summer, OSHA moved forward on the following issues:

Silica. OSHA expedited silica rulemaking by accepting public comments on the Preliminary Health Effects Analysis and Quantitative Risk Assessment at the same time as the proposed rule. The agency expected to complete the analysis and risk assessment in September. After publication of the rule, OSHA will accept public comments and submit amendments.

Acetylene. OSHA took the same approach with acetylene as it did with silica, publishing both the proposed rule and a direct final rule on August 11. The direct final rule was slated to take effect unless the agency received comments in opposition.

Voluntary Protection Program. OSHA announced changes to its VPP in response to findings in a government report that OSHA had not provided adequate oversight of the program and that some VPP participants had high injury and illness numbers. OSHA has stated on numerous occasions that it would "thoroughly review" the program to address the problems found in the government report. It's possible that more action will follow.

Combustible dust. OSHA was preparing to announce an advanced notice of proposed rulemaking (ANPR) based on some of the findings from OSHA's national emphasis plan (NEP) on combustible dust. OSHA had already published a hazard communication guidance document. Some observers were concerned that OSHA would base the ANPR only on findings from the NEP instead of examining all industries with combustible dust concerns.

Hazardous chemicals. OSHA established a Chemical National Emphasis Program that outlines policies and procedures for compliance officers to follow when inspecting workplaces covered by the Process Safety Management Standard.

PPE rule. Oral arguments in the lawsuit over OSHA's 2008 rule establishing per-employee penalties for employers who violate agency PPE and training requirements have been scheduled for November. In the interim, the rule stands and is being enforced.

Cranes and derricks. A final rule, originally proposed in October 2008, is not expected until sometime next year—and some industry stakeholders say that even this date is optimistic.

NEP on recordkeeping. The NEP will review low-rate reporting in high-rate industries and examine incentive programs.

Diacetyl. The final small-business report on diacetyl did not decide whether OSHA should base a diacetyl rule on a PEL or non-PEL approach. The report recommended that the agency consider exempting employers with minimal diacetyl exposures and those that use the chemical naturally. In the meantime, NIOSH started writing the Diacetyl Criteria Document and hoped to have a draft available for review next year. This document will include a recommended exposure limit and guidance for controls.

Fall protection. OSHA planned to rescind a compliance directive on fall protection for its steel erection standard.

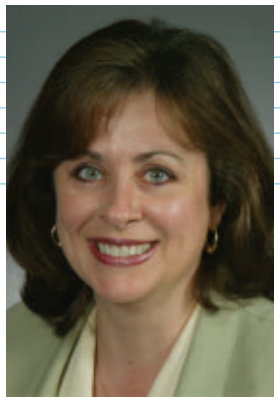
Control banding. NIOSH has published Qualitative Risk Management and Management of Occupational Hazards: Control Banding. For more information about control banding, see the article beginning on p. 43.

OSHA Reform

The Senate version of the OSHA reform bill (the Protecting America's Workers Act) was introduced in August. The Senate and House versions are identical, which suggests that the Senate will allow the House to take the lead on the issue. As for timing, it's hard to say when anything might take place.

Aaron Trippler directs government affairs for more than 70 local sections and serves as AIHA's chief liason with Congress and federal agencies. He can be reached at (703) 846-0730 or atrippler@aiha.org.

Staff Works



Check Your E-mail for Renewal Reminders

BY KIMBERLEE BACON, MANAGER, AIHA® MEMBER SERVICES AND ACADEMY RELATIONS

AIHA has a history of adopting green processes. For example, AIHce began implementing green meeting initiatives in 1999, and the conference has become more environmentally friendly every year. AIHce 2009 in Toronto, our greenest conference ever, featured green PDCs with downloadable electronic handouts and related online communities for collaborative learning. The AIHce abstract book, formerly a printed resource, was distributed online this year. And a number of recycling and transportation initiatives designed to reduce AIHce's carbon footprint debuted in Toronto.

Inspired by the success and popularity of AIHce green meeting processes, AIHA's member services department is helping the organization adopt a deeper shade of green. Beginning this month, AIHA's renewal notifications will be distributed entirely via e-mail, with the goal that all renewals will be processed through the secure online form at www.aiha.org. Lessening the number of paper renewals is expected to increase processing efficiencies and reduce print and postage costs.

Of course, mailed payments—checks, money orders—will also be accepted, and members can still download and submit a paper renewal form from www.aiha.org. However, AIHA encourages all members to renew online.

Because AIHA will no longer mail paper renewal notifications, it's imperative that you update your e-mail address with AIHA. You can do this at the Member Center on www.aiha.org or by contacting AIHA Member Services at (703) 849-8888 or infonet@aiha.org. Membership dues will remain $190 in 2010.

Members can do much more at www.aiha.org than just pay dues. You can also join one or more of AIHA's special interest groups or participating local sections, make a tax-deductible donation to the American Industrial Hygiene Foundation, or order an optional print subscription of the *Journal of Occupational and Environmental Health* for $60. (Online access to the *JOEH* is included as part of your membership benefits.)

More Than a New Look

When you go to www.aiha.org to renew your membership, you'll find that AIHA's website has been redesigned. You'll notice immediately that the site is more colorful and user-friendly than AIHA's old site. But the biggest changes are behind the scenes—the new site offers vastly improved information management capabilities that will allow staff to make changes much more quickly than in the past.

AIHA.org has long been the hub of member activity, and members consider it one of the most valuable benefits of AIHA membership. Rest assured that all of the quality content responsible for the site's popularity is still there. To learn more about AIHA's redesigned website, see page 28.

Programs and Services

Thank you for being a member of AIHA. You are part of the largest international association of industrial hygienists and other OEHS professionals dedicated to health and safety in the workplace, community, and environment. Whether you are a practicing professional, student, professor, or consultant, AIHA membership offers many benefits:

- Education and professional development opportunities
- Information and publications
- Advocacy and connection
- Communities for discussing common problems and solutions
- Opportunities to further the profession, including volunteering and community service

AIHA staff have developed a full agenda of programs and services designed to benefit you—our members. In response to this year's challenging economy, AIHA waived 2009 membership dues and extended complimentary AIHce registration to unemployed members. AIHA also hosted five career and employment seminars at AIHce; podcasts of selected seminars will be posted to the Career and Employment Services page of the AIHA website. You can access the podcasts at no charge.

AIHA keeps you connected to the latest developments in industrial hygiene and to other OEHS professionals. I hope that you will renew and continue to experience the value that membership provides. If you have any questions about your AIHA membership, comments or suggestions, I welcome the opportunity to speak with you personally.

Kimberlee Bacon, CAE, IOM, is AIHA's manager of member services and liaison to the Academy of Industrial Hygiene. She can be reached at (703) 846-0780 or kbacon@aiha.org.

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From the Grassroots

The Value of Local Section Scholarships

BY CHRISTINE LORENZO

Over the last 10 years, local sections have contributed more than $190,000 to the American Industrial Hygiene Foundation (AIHF). In 2009 alone, the New England, Western Michigan, Chicago, Northern California, Georgia, St. Louis, and Connecticut River Valley Local Sections have given generously to the Foundation. In addition, scholarships were awarded this year from the Alabama, Deep South, and Michigan Industrial Hygiene Society Local Sections.

The mission of AIHF is to advance the profession by awarding scholarships to students in industrial hygiene and related disciplines. Since 1982, AIHF has awarded more than $1,077,000 to more than 45 different schools and universities. Nearly 400 students have benefited.

AIHF simply would not have been able to help as many students over the years without the contributions of local sections. These scholarships have enabled talented students to complete their education and have encouraged the most promising scholars to enter or remain in the industrial hygiene profession.

Funds for Future IHs

Scholarship monies can assist with some simple yet essential needs of students, as Nancy Brinton, an AIHF scholarship recipient from the University of Utah, can attest. "My scholarship means I can replace my ailing computer," she says. "With a new computer, I will be able to finish and hopefully publish my research."

A scholarship can be particularly timely for students who have already established a family and would like to pursue an advanced degree. "As a married graduate student with a small family, finances are often tight," says Kevin M. Abernethy of the University of Michigan. "[The George and Florence Clayton Scholarship] has made it possible for me to work fewer hours outside of school and focus more on completing my degree. I hope to be able to give back to the Foundation one day so that other students can benefit."

Support for the Foundation has never been more important than it is in these challenging times. By generously donating to the AIHF, local sections help secure the future of our profession. Consider these testimonials from local section officers:

- "Our members place a high priority on contributing to the future of IH. We see that a lot of our members are getting older. We want to see more young people have the opportunity to become industrial hygienists. It's really important to us to support the Foundation as a means of encouraging and growing the profession." (Andrew Kalil, ScD, CIH, president of the New England Local Section)
- "The Chicago Section believes that it is essential to support and provide opportunities to students who have made the commitment to pursue a career in industrial hygiene." (Robert Rottersman, MS, CIH, president of the Chicago Local Section)
- "The Georgia Local Section (GLS) had been interested in donating to AIHF over the years, but we wanted to help support a local school and were somewhat restricted by what we thought was a requirement that limited Foundation scholarships only to ABET-accredited schools. In 2005, the University of Georgia (UGA) formed a College of Public Health (CPH). Although not ABET-accredited, the College was in the process of pursuing accreditation by the Council on Education for Public Health (CEPH). We were very pleased that AIHF allowed us to earmark UGA's CPH for scholarship applications." (Barb Epstien, MPH, CIH, president of the Georgia Local Section)
- "Giving to the AIHF encourages qualified people to enter and pursue our profession, which is exactly what our profession needs to keep it strong—especially in light of the baby boomer generation approaching retirement." (Timothy J. Martin, CIH, president of the Western Michigan Local Section)

For more testimonials, visit the Foundation web page of the AIHA® website.

Your Support Is Vital

Scholarship recipients have been inspired to give back to AIHA and become more actively involved in our profession. Beauregard Middaugh, for example, credits his 2007 AIHF scholarship with motivating him to serve as president of the Purdue University Local Section. "I hope to expand this involvement in the future," Middaugh says.

By generously supporting the Foundation, your local section can help other talented students complete their education and encourage others to enter or remain in the profession. For more information, visit the Foundation page of the AIHA website or contact Vicky Yobp at (703) 846-0769.

Christine Lorenzo, CIH, is an industrial hygienist with OSHA in Denver, Colo. She can be reached at (303) 844-5285 ext. 118 or lorenzochrisaiha@q.com.

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Two Reasons to Update Your E-mail Address with AIHA®

With AIHA's recent conversion to a new association management system and adoption of an online-only renewal notifications process, members are asked to update their e-mail address with AIHA. If AIHA does not have your current e-mail address on file, please visit www.aiha.org to update your member profile or contact Member Services at (703) 849-8888 or infonet@aiha.org.

New Procedure for AIHA Website Login

In late September, AIHA converted to a new association management system (AMS). One of the changes brought about by this conversion is that members have a new user ID and password for accessing portions of the AIHA website.

To access restricted content, members must enter their e-mail address in the "user ID" field on www.aiha.org and their AIHA member number in the "password" field.

Membership Renewal Notifications to Be Online Only

As part of its effort to adopt greener, more efficient processes, AIHA® has changed to an online-only membership renewal notifications process. The change takes effect in October 2009 with the first 2010 renewal notification e-mail.

Eliminating paper membership renewal notifications is expected to increase efficiencies and save time for AIHA office staff. And without the expense of sending paper dues invoices through the mail, the new process will also be more cost-effective.

To avoid delays in receiving renewal notifications, members should make sure that their e-mail address is updated in AIHA membership records. Members can update their e-mail address through the AIHA Member Center at www.aiha.org or by contacting AIHA Member Services at (703) 849-8888 or infonet@aiha.org.

Membership dues payments, participating local section dues payments, special interest groups payments and AIHF donations may be made quickly and securely through AIHA's website. Members may also choose to pay by check or money order by mailing payments to:

AIHA
P.O. Box 1519
Merrifield, VA 22116-9990

AIHA® Mourns the Loss of Senator Kennedy, Tireless Advocate for Worker Safety and Health

Upon hearing of the death of Senator Edward "Ted" Kennedy, who passed away August 25, AIHA offered its condolences to the Kennedy family and commented that occupational health and safety has lost a strong supporter who will be hard to replace. AIHA President Cathy L. Cole, CIH, CSP, said that throughout the years Senator Kennedy has been a friend to both AIHA and the profession of industrial hygiene.

Cole stated, "Senator Kennedy put worker health and safety above politics. He worked tirelessly to deliver the necessary laws to help achieve our mutual goal: to provide workers and communities a healthy and safe environment and prevent occupational disease and injury."

Cole cited one example of Senator Kennedy's most recent efforts to improve worker health and safety—his introduction of Senate Bill 1580, which would increase penalties for employers who were not diligent enough in protecting their workers—as well as his goal of seeing that every employee in the United States was afforded coverage under the OSH Act.

"It will be difficult to replace someone with Senator Kennedy's passion for worker health and safety," Cole continued. "AIHA, employers, and employees should all work to take worker health and safety more seriously. With Senator Kennedy's efforts, we made great strides over the years. He will be sorely missed."

For further information, please contact Aaron Trippler at (703) 846-0730 or atrippler@aiha.org.

Rediscover the Value of Membership

At AIHA®, we believe that our members are afforded the very best information, advocacy, education and networking opportunities, and we know that's important to busy industrial hygienists and other OEHS professionals. We understand your priorities, which is why we're asking you to rediscover the value of your affiliation with AIHA by renewing your membership today.

Here are just five reasons why you should renew:

Professional Advancement—Employ cutting-edge education courses, seminars and hot topic symposia to soar to the top of your field.

Professional Credibility—Boost your credibility when you join the leader in the occupational and environmental health and safety profession.

Industry Information—Stay on top of the latest trends, industry standards and regulations through AIHA's many publications and its website.

Networking Opportunities—Exchange ideas and solve challenges through a national network of OEHS professionals that's 10,460 members strong.

Knowledge—Gain priceless information and expertise from involvement in some of AIHA's volunteer committees, task forces, working groups or special interest groups.

AIHA has the benefits and services you need—start using them today! For additional information, or to renew, visit www.aiha.org.

Membership renewal information will be e-mailed to you later this month. To update your e-mail address with AIHA, please contact AIHA member services at (703) 849-8888.

2010 Board of Directors Nominations

AIHA® is currently seeking nominations for five AIHA Board positions that will be vacated in June 2010: vice president, secretary-elect and three director positions. The deadline for nominations for elected leadership positions is Nov. 1, 2009. Electronic submission forms are available on the AIHA website. The annual online election will be held the first quarter of 2010.

The Board of Directors plays a critical role at AIHA. The Board is the face of the association. It establishes the direction and goals of AIHA and monitors the progress toward reaching those goals on behalf of the membership. For more information or a nomination form, visit www.aiha.org.

DOL Cites Opposition from Public in Withdrawal of Risk Assessment Rule

Citing opposition from worker advocacy organizations, labor unions, and risk assessment experts, the U.S. Department of Labor has withdrawn a controversial risk assessment rule that critics charged would have unnecessarily delayed rulemaking to protect workers from toxic substances. AIHA® opposed both the substance of the rule and DOL's determination to proceed without allowing additional public comment.

In August 2008, DOL published a notice of proposed rulemaking intended to codify DOL's risk assessment procedures for health standard rulemakings that address workplace exposure to toxic substances. The proposal would have required DOL agencies to issue an advanced notice of proposed rulemaking (ANPR) for every health standard involving toxic substances or hazardous chemicals, apart from emergency temporary standards; post documents related to a rulemaking on the Internet; and discard the assumption of a 45-year working life per worker in favor of industry-by-industry exposure data.

Opponents contended that the ANPR requirement would delay rulemaking, that a 2002 law already required department agencies to post information related to rulemaking on the Internet, and that a reliance on industry-by-industry data would underestimate worker exposures.

DOL declined requests from members of Congress to hold public hearings on the proposed rule and extend the 30-day public comment period.

In extensive comments submitted in September 2008, AIHA stated, "After review of the proposed rule by the AIHA Risk Assessment Committee, AIHA is concerned that the proposed approach will result in increased exposure to workplace toxins based on assumptions which do not accurately reflect workplace conditions or worker experience. AIHA is also concerned that DOL has not solicited input from those individuals who have wide ranging expertise in evaluating worker exposure from chemicals and toxins, including industrial hygienists."

The rule was withdrawn on Aug. 31, 2009.

Academy Election Results

AIHA® is pleased to announce the results of the 2009 election for the Academy of Industrial Hygiene Council. Council members will assume their new terms on Tuesday, Oct. 6, at the Academy Council meeting after PCIH in Vancouver, B.C., Oct. 3–6. Among those on the council is newly elected Vice President Perry Logan, CIH. Council members include:

- **Donna M. Doganiero, CIH**, President
- **Gayla J. McCluskey, CIH, CSP, ROH, QEP**, President-elect
- **Perry W. Logan, CIH**, Vice President
- **Jaswant Singh, PhD, CIH**, Past President

The other councilors for 2009–2010 are AIHA President Cathy L. Cole, CIH, CSP, Nicole M. H. Greeson, CIH, Scott E. Merkle, CIH, and ACGIH® Chair Jimmy L. Perkins, PhD, CIH.

For further information regarding the 2009 Academy elections, please contact Kim Bacon, AIHA's manager of membership and Academy relations, at (703) 846-0780 or kbacon@aiha.org.

What Inspires You?

Novelist and poet Victor Hugo once said, "Inspiration and genius—one and the same." It is in this spirit that AIHA invites you to tell us what motivates you in your journey through life. Whether you are inspired by your children, a hobby or life-changing experience—we want to hear about it. In 50 words or less, share your passions, purpose or fascinations with the rest of the AIHA community. New stories will appear weekly on our website. Send us your inspirational story today and you could end up "home page news."

Send stories (50 words or less) to Connie Paradise, director, communications and product development, cparadise@aiha.org. Include your name, company and phone number. For more information, contact Connie at (703) 846-0742.

Be on the Lookout for the 2010 AIHA® *Buyer's Guide*

The 2010 AIHA *Buyer's Guide* will be mailed later this month. Be sure to keep it handy for easy access to information on products and services that you need in your daily work. The *Buyer's Guide* will also be available online at www.aiha.org.

CIH Examination Results

The American Board of Industrial Hygiene (ABIH) has announced the names of 81 newly certified industrial hygienists:

Ali M. Al-Hemoud
Aaron W. Apostolico
Anca Bejan
Scott C. Billings
Lisa D. Bolin
Daniel B. Brust
Wilson S. Bull
Matthew C. Call
Joseph L. Catyb
Darren J. Cayton
Lilia Chen
Zhonghua Chen
James R. Couch
John L. Culley
James R. Davis
Jason A. Demeter
James R. Dick
David H. Dicks
Katherine P. Dietrich
Kevin M. Dikes
Frank A. Disori
Srinivas Durgam
Kenneth C. Eck
Kendra S. Fletcher
Victoria M. Fulimeni
Brian D. Gardner
Ira E.A. Gaul
Susan A. Gonzales
Emily R. Goswami
Keith E. Green
Stephanie Christine Griffin
Kaleb Lloyd Grittner
Eric S. Hartman
Michael W. Holton
Erica N. Jones
Aaron L. Jones
Jason R. Joyce
Ryan G. Kamerzell
Aaron J. Kong
Samuel A. Langley
Andrew J. Lawson
Eun Gyung Lee, PhD
Lan Liu
Matthew G. Lloyd
Francis Egedio J. Luciani
Andrea M. Markey
David E. Martin
John A. Martin
Christopher D. Miele
Nobuyuki Mochida
Patrick J. Murphy
Valerie D. Murray
Ivan Dean Myers
Cary T. Negus
Matthew E. Nolen
Kathleen D. Pass
Amee G. Patel
Shawn R. Price
Brooke N. Proctor
Robert Romano
Michelle C. Rosales
Daniel R. Rude
MD Idris Salim
Kurtis Weslee Salter
Michael Garrick Schomburg
Nathan L. Seward
Shijie Song
Amanda H. Stone
Jason N. Stookesberry

Daniel W. Stuckrath
Paul R. Sullivan
Matthew J. Terrell
Travis H. Trader
Sean G. Walker
Ricky Dean Ward
Patricia K. White
Richard M. White
Paula M. Williams
Hongbin Xiao
Don Yang
Christopher L. Younger

ABIH is the world's largest organization for certifying professionals in the practice of industrial hygiene. CIH examinations are offered twice each year at various sites around the world. For more information, visit www.abih.org.

AIHA® Applauds Chemical Industry's Support for Reform

In August, AIHA lent its support to the chemical industry and other groups in their efforts to seek more robust federal regulation of chemicals. AIHA's support followed the chemical industry's announcement that it is open to substantial changes to the Toxic Substances Control Act (TSCA).

While a coalition of unions, labor federations, environmentalists, and public health groups advocates a series of reforms to the TSCA, this is the first indication that the chemical industry supports changing the law.

"We are pleased to learn that the American Chemistry Council, for the first time ever, is joining this effort and is willing to provide the Environmental Protection Agency with health and exposure data related to chemicals, and to allow the agency to determine whether the chemicals are safe to use," said AIHA President Cathy L. Cole, CIH, CSP.

AIHA believes that without a clear and concise federal law, activity at the state level will create numerous laws that will be difficult to follow. The support of industry, labor, and consumer groups provides perhaps the best opportunity in years to enact legislation that truly makes government regulation of hazardous chemicals more protective of workers and their families.

AIHA offers its full assistance to Congress, industry, the coalition, and others to deliver the standards, regulations, compliance assistance, and enforcement necessary to help provide a healthy and safe environment for workers and communities.

For further information, please contact Aaron Trippler at (703) 846-0730 or atrippler@aiha.org.

AIHce Certificates E-mailed in July

On July 22, AIHA e-mailed certificates of completion for courses offered at AIHce 2009. The e-mails were sent to the addresses participants provided when they registered for the conference. Each e-mail contains a unique URL linked to an individual's custom certificate of completion.

Printed certificates will not be sent.

To download, save or print your certificates, please note that Adobe Reader 6.0 or higher is required. Participants are responsible for retaining certificates for re-certification.

Downloadable certificates will be available until Oct. 31, 2009. Starting Nov. 1, a $50 fee will be assessed for all certificate requests.

If you have any questions or need assistance accessing your certificate, please contact eduassistant@aiha.org.

Correction

In the August issue of *The Synergist*, the article "A New Standard for Spore Trap Analysis" incorrectly identified the designation for ASTM's Standard Test Method for Categorization of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy. The correct designation is ASTM Method D7391-09. *The Synergist* regrets the error.

IOHA Calls for Paper Submissions

The International Occupational Hygiene Association (IOHA) will hold its 8th Annual International Congress in Rome, Italy, Sept. 28–Oct. 2, 2010. The conference will feature an international panel of occupational health and safety experts who will discuss current occupational risks related to emerging technologies.

IOHA welcomes abstract submissions on traditional industrial hygiene issues, such as risk assessment and indoor air quality, and new topics emphasizing innovation and proficiency. The deadline for abstract submissions is Dec. 1. Topics will be posted to the IOHA web site. For additional information on submitting abstracts or general conference details, visit www.ioha2010.org.

You Got Promoted? Tell *The Synergist*

The Synergist is looking for information about members' career successes. If you or a member you know recently published an article, was promoted, received an honor, or achieved a similar feat, let the editors know at synergist@aiha.org. The next member you read about could be you!

Ventilation 2009 Conference to Be Held in Zurich

BY MELISSA HURLEY ALVES

The 9th International Conference on Industrial Ventilation will be held October 18–21, 2009, in Zurich, Switzerland. Hosted by the Chair of Building Systems, Institute for Building Technology (HBT), Department of Agriculture, and sponsored by AIHA®, the conference will focus on future trends in the industry. The conference theme is "Clean Industrial Air Technology Systems for Improved Products and Healthy Environments."

Since its inception in Toronto in 1985, this conference series on Ventilation for Contaminant Control has aimed to guarantee high product quality, protect human health, and prevent environmental pollution. Ventilation 2009 brings together researchers, technology developers, engineers, equipment suppliers, practitioners, and government officials to present innovative, cutting-edge technology to a variety of industry stakeholders. The conference will incorporate technical presentations, poster and paper sessions, and new "Interactive Forums" in which specialists will discuss technology-specific problems, solutions, and future advancements.

Keynote speaker Gyan Rajhans will open the conference with "Energy and Industrial Ventilation—A Perspective in 2009." Jens Feddern will present his address "Demand Driven Ventilation in Critical Life Science Environments" on Oct. 20, and Morad Atif will close the conference Oct. 21 with a talk on "Indoor Health Initiative and IEA ECBCS Vision of Efficient Ventilation."

Additional presentations include topics such as air quality and occupational health; energy efficiency and sustainability; ventilation systems and components; contaminants, particles, and aerosols; and hospitals and health care.

The deadline to register for the AIHA-sponsored Ventilation 2009 Conference is Oct. 1, and the full participant registration fee is CHF (Swiss Franc) 750. Students pay a discounted fee of CHF 450 with a valid student ID. For more information on Ventilation 2009, visit www.ventilation2009.ethz.ch or contact Stacey Talbot, AIHA's education manager, at stalbot@aiha.org or (703) 846-0747.

Stay Connected to AIHA®

Follow AIHA on Twitter, "friend" us on Facebook, or join our group on Linked In. As a member of these social networking sites, AIHA allows you to keep up with all the latest activities, events and publications that we have to offer. Joining is simple and free:

Twitter—Twitter allows you to keep in contact with people through quick, frequent updates on your whereabouts or activities. Join today to start receiving "tweets" from AIHA. Visit http://twitter.com/AIHA.

Facebook—Sign up to become our friend on Facebook and receive news and announcements from AIHA. You can also network with AIHA's friends and connect with others in the profession. Visit www.facebook.com to join, then "friend" us at www.facebook.com/aihaglobal.

Linked in—Network and exchange ideas, information and opportunities with other industry professionals from around the world. Sign up at www.linkedin.com and join the AIHA Group.

AIHA® Member Benefits

Whether you are a practicing professional, student, professor, or consultant, AIHA membership offers many benefits:

- Award-winning publications written by industry experts. AIHA members receive free shipping and member-only discounts.
- A free subscription to *The Synergist*, AIHA's monthly news magazine.
- Online access to the *Journal of Occupational and Environmental Health*.
- Member discounts on premier educational events.
- Resources that help members obtain or maintain the CIH certification through publications, distance learning courses, and other educational opportunities.
- The opportunity to participate in volunteer groups that facilitate networking among members; develop products, services, educational activities, standards, and guidelines; contribute to public policy debates; and collaborate with other institutions.

For more information on these and other benefits of membership in AIHA, visit www.aiha.org.

New-look *Synergist* to Debut in November

Starting with the November 2009 issue, readers will notice some changes to *The Synergist's* look and feel. The publication will debut a new cover design and new graphics for columns and the AIHA Community, NewsWatch, and Insight sections. The new look will complement AIHA's redesigned website, which launched Oct. 1.

The Synergist will also switch to a standard magazine size and a lighter, less expensive paper. These changes are expected to save AIHA thousands of dollars in printing and mailing costs. Look for the new *Synergist* to reach your mailbox in early November.

AIHA® Congratulates Howard on Reappointment to NIOSH

AIHA congratulates Dr. John Howard on his reappointment to lead NIOSH for another six-year term. Howard served as director of NIOSH from 2002 through 2008.

Cathy L. Cole, CIH, CSP, AIHA president, said, "Since the creation of NIOSH back in 1970, the agency has been well-served by directors with an understanding, dedication, and knowledge of occupational health and safety. However, I believe I am safe in saying that never in the history of the Institute has a director been as successful and respected by partners and stakeholders as Dr. John Howard. This applies to one and all—professional associations, labor, industry, employers, and workers. He has been more than a director of NIOSH; he has been a partner and friend to AIHA and many others."

AIHA also cited some of Dr. Howard's many accomplishments during his previous time at NIOSH and is hopeful that Dr. Howard will continue to pursue this agenda. His accomplishments include:

- Establishment of a "Research to Practice" office to foster transfer and diffusion of NIOSH-generated knowledge to partners and stakeholders.
- Use of the Internet and electronic communications to provide access to NIOSH research and results.
- Early recognition of the importance of nanotechnology, which positioned NIOSH as a key partner in the National Nanotechnology Initiative.
- Assurance that NIOSH policy decisions were based on sound science.

"It goes without saying that occupational health and safety research is in good hands," Cole said. "We offer our thanks to Dr. Christine Branche, who served admirably this past year, and we wish Dr. Howard well as he returns to lead NIOSH once again."

For further information, please contact Aaron Trippler, AIHA's director of government affairs, at (703) 846-0730 or atrippler@aiha.org.

Attendees Discuss the Value of AIHce

An AIHA video posted in September features several attendees at AIHce 2009 explaining how they benefit from the conference. The video was shot on-site at the Toronto Convention Centre. To view the video "Why Do You Attend AIHce?," visit www.vimeo.com/6359339 or www.youtube.com/watch?v=VVz9ejXNXRc.

[Continued: 27]

From the AIHA Government Affairs Blog:

"Occupational safety and health received the best news in nearly a year last week when Dr. John Howard was reappointed to be director of NIOSH for another six-year term."

–Aaron Trippler, AIHA director of government affairs, in a Sept. 8 post.

Journal of Occupational and Environmental Hygiene

October *JOEH* Online

The October issue of the *Journal of Occupational and Environmental Hygiene* is available online and includes the following articles:

Performance of an N95 Filtering Facepiece Particulate Respirator and a Surgical Mask During Human Breathing: Two Pathways for Particle Penetration
By Sergey A. Grinshpun, Hiroki Haruta, Robert M. Eninger, Tiina Reponen, Roy T. McKay, and Shu-An Lee

Objective Color Scale for the SWYPE Surface Sampling Technique Using Computerized Image Analysis Tools
By Diana M. Ceballos, Michael G. Yost, Stephen G. Whittaker, Janice Camp, and Russell Dills

Etiology of Work-Related Electrical Injuries: A Narrative Analysis of Workers' Compensation Claims
By David A. Lombardi, Simon Matz, Melanye J. Brennan, Gordon S. Smith, and Theodore K. Courtney

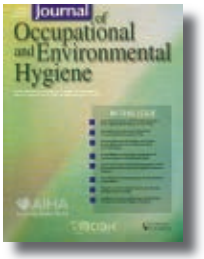
Man-Made Vitreous Fibers in Office Buildings in the Helsinki Area
By Heidi J. Salonen, Sanna K. Lappalainen, Henri M. Riuttala, Antti P. Tossavainen, Pertti O. Pasanen, and Kari E. Reijula

Short-Term Heat Stress Exposure Limits Based on Wet Bulb Globe Temperature Adjusted for Clothing and Metabolic Rate
By Thomas E. Bernard and Candi D. Ashley

Indicators of Hearing Protection Use: Self-Report and Researcher Observation
By Stephanie C. Griffin, Richard Neitzel, William E. Daniell, and Noah S. Seixas

Changes in Collection Efficiency in Nylon Net Filter Media Through Magnetic Alignment of Elongated Aerosol Particles
By Christopher O. Lam and W. H. Finlay

Members can access the full texts of *JOEH* articles via the AIHA website at www.aiha.org. Abstracts are available to everyone at http://oeh.informaworld.com. Members can also access the full-text archives of the *AIHA Journal* from 1940 to 2003. Full-text archives of *Applied Occupational and Environmental Hygiene* from 1999 to 2003 also are available.



Committee Spotlight

Respiratory Protection Committee Identifies Research Priorities

BY HARRY ETTINGER, LARRY JANSSEN AND RICH METZLER

In 2007–2008, the AIHA® Respiratory Protection Committee (RPC) determined that it would identify priorities for respirator research and development. A subcommittee headed by Larry Janssen was assigned responsibility for identifying technical topic areas that were appropriate for consideration and of prioritization by the entire RPC. The subcommittee identified 18 priority topics in fit-testing, anthropometry/test panels, respiratory protection programs, device performance, and physiology/user considerations.

As this effort progressed, the RPC decided to develop a white paper identifying a limited number of priority areas and submit it to NIOSH, the primary source of funding for respirator research and development in the United States. The RPC is finalizing the white paper and seeking approval from the AIHA Board of Directors prior to submission to NIOSH. Our hope is that the paper's recommendations will be incorporated into the NIOSH program.

Many current practices in respiratory protection are based on assumptions, professional experience, best judgment or extrapolation from laboratory studies. Limited studies have evaluated the efficacy of, or the need for, each practice. The RPC believes that the practical, applied research topics presented in the white paper will significantly enhance the safe and effective use of respiratory protection.

Research Priorities

Following are the seven research priorities identified in the white paper. Some of the topics involve operational considerations, and the proposed studies would benefit from coordinated efforts by operational and research and development or health and safety professionals.

1. Conduct a comprehensive literature search on the measurement of respirator performance to identify what is known and what is not known on this topic. This review would establish a set of research projects to fill gaps in information and technology. Ultimately, these projects would permit reliable assessment of respirator performance in the laboratory and in the workplace and relate their performance in these settings. At this time, no clear consensus exists on the "correct" way to measure respirator performance—for example, total inward leakage, workplace protection studies, simulated workplace protection studies, laboratory studies, etc.—or how to interpret test results from these techniques.
2. Develop a qualitative fit-test (QLFT) capable of screening for a minimum fit factor of 500. This would allow full facepieces to be qualitatively fit-tested and used in atmospheres where exposures are up to 50 times the occupational exposure limit. Because the current QLFT screens only for a minimum fit factor of 100, full-facepiece respirators must be quantitatively fit-tested if they will be used in a work situation that requires an assigned protection factor (APF) greater than 10. This situation is problematic for many smaller employers.
3. Determine whether the current fit factor screening level of 100 for qualitative and quantitative fit-testing of half facepieces is necessary and appropriate in light of the APF of 10 for these respirators. Limited simulated workplace protection factor (SWPF) information indicates that a SWPF of 50 might be acceptable while maintaining wearer protection at an assigned protection factor of 10. Resolving this question might provide workers with more options, comfort and flexibility in some situations.
4. Investigate in-face piece contaminant measurement technology and methods to determine whether current methods provide accurate estimates of total inward leakage. Current U.S. regulations specify probe placement, but measurement of performance is meaningful only if the inside sample accurately represents penetration into the device and inhalation by the wearer.
5. Determine the necessity and value of each element of an acceptable respiratory protection program (RPP). The relative importance of all the elements of the traditional RPP, such as those required by OSHA, has never been studied systematically. Some RPP elements may not be necessary to provide respirator users the appropriate level of protection.
6. Determine the efficacy of user seal checks in trained user populations to determine if they are necessary to assure protection, and determine the real-world frequency of performing seal checks. These simple tests are required by regulation, called out in respirator user instruction manuals, and emphasized in user training programs. However it is not clear if workers perform these checks at every donning in the workplace, or if they actually increase worker protection.
7. Determine if there are conditions under which organic vapors are significantly desorbed from powered air purifying respirator (PAPR) cartridges during periods of non-exposure, and if certain organic vapors are more likely to undergo desorption than others. This type of desorption could potentially result in overexposure of the wearer under realistic respirator use conditions.

Comments Welcome

The RPC will post the complete white paper as well as summaries of the 18 original subject areas to the committee page of the AIHA website. Individuals may comment either to the RPC or directly to NIOSH. The RPC recognizes that some health and safety professionals may disagree with our prioritization of the research areas. All comments, suggestions, and constructive criticism are welcome and should be directed to Jay Parker, chair, RPC, ezp3@cdc.gov.

Harry Ettinger, Larry Janssen and Rich Metzler are members of the AIHA Respiratory Protection Committee.

[From: 24]

ACGIH® Announces Additions to the 2010 Board of Directors and 2010 Nominating Committee

In September, ACGIH announced the new members for its 2010 Board of Directors and its 2010 Nominating Committee. The new board members, whose four-year terms begin Jan. 1, 2010, are:

Bill R. McArthur, PhD, CIH, will assume the position of vice chair-elect. As an occupational safety and health professional, Dr. McArthur has more than 36 years of experience in the private sector, academia, and both federal and state government. Dr. McArthur is certified in the comprehensive practice of industrial hygiene and holds a PhD in environmental health engineering from Johns Hopkins University, an MSPH from the University of Washington, and a BS in chemistry from St. Martins University.

Heather D. Borman, MS, CIH, CSP, will assume the position of secretary-treasurer-elect. Ms. Borman is an industrial hygienist with the California State Compensation Insurance Fund, where she conducts corporate projects such as developing training curricula and providing technical support for the development of State Fund safety products. She holds an MS in industrial health from the University of Michigan's School of Public Health.

Stephanie R. Carter, PhD, CIH, will assume the position of director-at-large. Dr. Carter recently completed the doctoral program in occupational and environmental health sciences at the University of Washington. She received a BS in environmental health from the University of Georgia and an MSPH from the University of Alabama at Birmingham. She was an industrial hygiene specialist with Exxon Company U.S.A. for seven years before returning to graduate school.

The 2010 ACGIH Nominating Committee will include four new members. They are:

Madalyn E. Ferrell, MS. Ms. Ferrell is a senior industrial hygienist with the U.S. Department of Labor/OSHA in Houston, Texas. Her primary responsibility is to enforce OSHA's federal regulations throughout all industries and the federal sector.

Vickie R. Hawkins, MS, CIH. Ms. Hawkins is the industrial hygiene field services program manager for the U.S. Army Center for Health Promotion and Preventive Medicine located at Aberdeen Proving Ground, Maryland. She has 22 years of experience as an industrial hygienist.

David C. May, ScD, CIH. Dr. May teaches industrial hygiene at Keene State College, where he was recently appointed assistant professor to the safety studies program. He is also principal of Concord Cymorth LLC, a small firm that focuses on workplace safety, health and employment issues. Dr. May currently serves on the ACGIH Threshold Limit Values for Chemical Substances (TLV®-CS) Committee.

Edward T. Ochi, CIH, CSP. Mr. Ochi is the senior industrial hygienist for the San Francisco General Hospital and Trauma Center. He has over 25 years of experience working in a variety of government, industrial, research and development, and consulting settings.

AIHA® Presents 28th Annual Smyth Award to Outstanding Association Member

BY MELISSA HURLEY ALVES

AIHA recently announced the 2009 recipient of the Henry F. Smyth Jr. Award. John R. Mulhausen, PhD, CIH, CSP, was recognized at the 2009 Professional Conference on Industrial Hygiene (PCIH) hosted by the Academy of Industrial Hygiene Oct. 3–6 in Vancouver, Canada.

John R. Mulhausen

"It is a great honor to present this award to Dr. Mulhausen on behalf of the Academy," said Jaswant Singh, PhD, CIH, Academy president. "His dedication to promoting the industrial hygiene profession through his research and many achievements, especially in the area of exposure assessment strategies and statistics, has earned great respect from his peers."

Mulhausen, an AIHA fellow, is the director of corporate safety and industrial hygiene at 3M. He received a BA in

chemistry from St. Olaf College and an MS and PhD in environmental health from the University of Minnesota. Mulhausen is also an adjunct assistant professor at the University of Minnesota School of Public Health.

Mulhausen is a member of the NIOSH Board of Scientific Counselors, the Midwest Center for Occupational Health and Safety Advisory Board, the University of Minnesota Industrial Hygiene Advisory Forum, the AIHA Exposure Assessment Strategies Committee, the Delta Omega Honorary Public Health Society, and the AIHA Upper Midwest Local Section. He was the 2002 recipient of the AIHA Edward J. Baier Technical Achievement Award.

"I am humbled by this honor," said Mulhausen. "We all rely on collaborations with current partners and the previous work of those who have contributed before us, but I am particularly blessed to be surrounded by people who continually teach me, challenge me, and support me—at home, at 3M, at the University of Minnesota and at AIHA. It has been, and continues to be, a wonderful, rich and rewarding adventure."

The Academy established the Henry F. Smyth Jr. Award in 1981 and presents it to an individual who has recognized the needs of the industrial hygiene profession and made major contributions, contributing to the improvement of the public's welfare. Henry F. Smyth Jr. was a dedicated teacher and productive researcher whose projects enhanced the profession.

For more information regarding the Henry F. Smyth Jr. Award, please contact Kim Bacon at (703) 846-0780 or kbacon@aiha.org.

Melissa Hurley Alves is AIHA's manager of strategic communications. She can be reached at (703) 846-0740 or mhurley@aiha.org.

Upcoming TeleWeb on H1N1

AIHA will host the TeleWeb Virtual Seminar "H1N1 The Second Wave—Are You Ready?" on Oct. 8, 2009, from 2 to 4:30 p.m. ET. Presenters Thomas P. Fuller, ScD, CIH, MSPH, MBA, of Illinois State University, and John H. Murphy, BSc, MHSc, MBA, ROH, CIH, GradIOSH, of Resource Environmental Associates Limited will discuss the latest status of the H1N1 pandemic, useful concepts for evaluating the level of risk associated with a pandemic, and most importantly, what actions might be most effective in protecting workers. Participants will review modes of transmission, virulence, environmental viability and routes of worker exposure.

To register online for this TeleWeb, visit www.aiha.org. Every site registered will receive materials that may be duplicated for each participant.

For more information on this and other TeleWebs, visit www.aiha.org or contact Cinthia Minan, AIHA's distance learning coordinator, at (703) 846-0749 or cminan@aiha.org.

Redesigned AIHA® Website Showcases Modern Look and Functionality

On Oct. 1, AIHA launched its redesigned website, www.aiha.org. The new site features a colorful, clean design, improved navigation and search functionality, and enhanced social media capabilities.

While visitors to www.aiha.org will immediately notice the new look and improved navigation, most of the changes took place behind the scenes. "The new website runs on the Microsoft SharePoint platform," explains Jim Myers, AIHA's webmaster and senior manager of periodicals and technology. "With the new platform, AIHA staff can make updates across the site much more quickly and better manage website files. This will help improve site performance, and allows staff to devote more time to other projects."

Myers adds that degradation of the code on which the old website ran was slowing the search functionality and increasing the amount of time needed for pages to load in a browser.

The redesign was part of a year-long project that occurred in tandem with development of a new association management system, which debuted in late September.

Features of the new website include additional multimedia and social networking capabilities, including use of RSS (really simple syndication) feeds, podcasts, and videos. A better taxonomy for describing page content allows improved searching, and contextual navigation will help visitors locate quickly the content they need.

The design of the new website reflects an association-wide re-branding project intended to freshen and coordinate the look and feel of AIHA communications. As part of this effort, *The Synergist* will adopt a new cover design (see the article on page 24).

NEW MEMBERS

AIHA welcomes the new members who joined the association between March 16, 2009, and Aug. 15, 2009. Your support and participation greatly enhance the mission of protecting worker health worldwide.

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RISK ASSESSMENT

Risky Business: Smoke Gets in Your Eyes

If Introduced Today, Would Cigarettes Be Regulated?

BY FRANKLIN MIRER

Our painful experience with cigarette smoking provides clear evidence that carcinogenicity at high exposure levels to chemicals in laboratory studies predicts a cancer risk at much lower exposures in people. The carcinogenicity of environmental tobacco smoke shows persistence of the risk over a wide range of exposure. Those who ignore or denigrate evidence from laboratory studies, confuse a no-effect level with a population threshold, or insist on epidemiologic evidence before acting to protect people are placing them at continuing risk.

The nominee (hopefully confirmed by the time you read this) for Assistant Secretary of Labor for OSHA, David Michaels, authored a meticulously researched and referenced account of the culture war over regulation of chemical exposures titled *Doubt is Their Product: How Industry's Assault on Science Threatens Your Health* (Oxford University Press, 2008). The book provides a fully sourced account of the co-evolution of scientific knowledge, public response and policy change. Dr. Michaels has tapped information beyond the peer-reviewed literature and formal hearing records to produce new historical knowledge in public health.

I call this a culture war because framing determines the reality that communities perceive, and frames come from the conflict of ideas. This conflict takes place among groups with different levels of engagement with science, including the general public, policy makers and activists, and the scientifically literate (including, one hopes, industrial hygienists). People in each of these communities don't see something until they believe it.

Science and Spin

Dr. Michaels' book starts with a history of tobacco science and counter-science, so I'll start there as well. The story of cigarettes is mostly portrayed as a cautionary tale about corporate defense, but it also has an important scientific side.

The early days of national cigarette promotion in the 1920s are recounted in *The Father of Spin* (Crown, 1998), a biography of Edward Bernays. The nephew of Sigmund Freud and father of

modern public relations techniques, Bernays is best known for promoting cigarette smoking among women by staging a demonstration on March 31, 1929, in which upscale women puffing on their Lucky Strike "torches of freedom" joined the New York City Easter Parade. More importantly, Bernays' advertising campaigns included physician testimonials to the healthfulness of cigarettes, which prefigured the modern corporate defense approach. (For an example, visit http://naturallygoodmagazine.com/blog/images/smoking_doctor.jpg.)

Bernays eventually became an anti-smoking activist, saying that if he'd known in the 1920s what he'd learned by the '60s, he'd not have done what he did. He lived to over 100 years and probably would have agreed with jazz pianist Eubie Blake's sentiment, "If I'd known I was going to live so long, I would have taken better care of myself when I was young."

Studies of Smoking

In the 1990s, I served on the National Toxicology Program (NTP) Board of Scientific Counselors subcommittee, which reviewed recommendations for listing in the *Report on Carcinogens*. We were required to review tobacco smoke for listing, which I thought was a waste of effort and possibly political—everybody knows cigarette smoke is carcinogenic, and the devastating impact of cigarettes is used to deflect concern for involuntary exposures to "industrial"

chemicals. Much of lay cancer prevention literature portrays lung cancer patients as guilty victims of their own risky behavior. Politically, the tobacco industry and tobacco smoke are scapegoats that carry away the sins of other industries and products. Nevertheless, the exercise provided important lessons in relating cancer bioassays to human health effects at low exposure.

The human evidence that cigarette smoking causes lung cancer is overwhelming. Considerable health evidence existed prior to 1950, but that year saw the scientific peer-reviewed publication of modern epidemiologic studies—cohort mortality studies, which form the template for most of the occupational epidemiology done since. Still, the percentage of lung cancer attributed solely to tobacco is probably inflated. Are the cancers among smokers all caused by tobacco, or are they partially attributable to, say, asbestos and silica? How about diesel particulate? Particulate air pollution is also associated with increased lung cancer in community studies—are those pollution-related cancers all being attributed to tobacco?

The document we reviewed at NTP included clear evidence that, as had been known since 1973, cigarette smoke caused larynx cancer in hamsters. The exposure level in the 1973 study and others was unclear because exposures were generated by smoking machines, and the practice of measuring particulate matter of whatever size was not yet a common approach. Exposure level is very important to interpreting bioassays, but sometimes it isn't even included in abstracts.

Remarkably, even in the late 1990s, studies in the "workhorse" for inhalation bioassays of particles, the rat, were equivocal at best. Mouse studies were also equivocal, although most bioassays of known human particulate carcinogens in the mouse are null. Studies in dogs and primates were too small to provide much evidence. Mechanistic studies and skin painting provided a lot of supporting evidence. Overall, I considered the laboratory evidence more than sufficient. But for any other agent, the failure to demonstrate clear evidence in a second species would have been subject to withering attack and a Houdini risk assessment. (For an example, see my column on gasoline in the June/July 2009 *Synergist*.)

Finally, in 2004 and 2005, the Lovelace Inhalation Toxicology Research Institute published clear evidence for lung carcinogenicity in rats and mice. Both publications emphasized that previous toxicology literature was null for lung cancer.

In the Lovelace experiment, exposures for rats were 0, 75 and 250 mg/m^3. Over 80 animals were in the high exposure group and 175 in the low exposure group—a great improvement in statistical power over the standard NTP bioassay size of 50 animals per group. Additionally, exposures were longer than 30 months, compared to the 24-month exposure in standard NTP bioassays. No significant increase in tumors was found in male rats exposed to cigarette smoke, even at the high dose; the increase in females achieved statistical significance at the high dose and for trend. For mice, Lovelace didn't bother with the lower dose, exposing over 300 female mice to 250 mg/m^3 of smoke for 30 months and then observing for nearly three years (compared to the NTP 24-month terminal sacrifice). The exposed mice had lower body weights than the controls—just as human smokers would—but enjoyed better survival. Smoking mice suffered a big and statistically significant increase in lung tumors: 45 percent vs. 10 percent in nonsmoking mice—a very strong result, but Lovelace had to work hard to get it, doing an experiment far more aggressive than the standard bioassay.

Take-Home Lessons

1. Those who don't learn from history are condemned to repeat it, so it's important to study the history of regulation and the toxicology of known human carcinogens (Group 1) to interpret the toxicology of possible human carcinogens (Group 2B).
2. Tobacco smoke provides clear evidence that high-dose carcinogenicity predicts low-dose risk—for example, environmental tobacco smoke vs. direct smoking.
3. A chemical that behaves like tobacco smoke in a bioassay should be regulated like a carcinogen.
4. Tobacco smoke provides clear evidence that proposals for testing chemicals at less than the maximum tolerated dose (or ignoring those results), shortening the bioassay to 18 months, using fewer animals, or testing in only one species or gender will miss important carcinogens.
5. In an era when known human carcinogens are unregulated (silica, beryllium, acid mists containing sulfuric acid), we can't forget the 2A (for example, diesel particulate) and 2B carcinogens.

Thought Experiment

Imagine that a manufacturer came forward to introduce cigarettes in 2009 as a new product or a significant new use of an existing material. Epidemiologic data of carcinogenic and other disease risk for this new product would not be available. (In reality, these data emerged in 1950 after decades of cigarette use and acquired more force following additional studies, but they were not generally accepted or acted on for more than ten years.) In our thought experiment, cigarettes could even be

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considered a safer substitute for cigars and pipe tobacco, especially for bystanders; their weight control benefits could be touted for people who can't tolerate cigars. Now imagine that the laboratory bioassay data that accumulated from the 1950s onward, including the Lovelace studies, were available for hazard evaluation. Would they carry the day in the current regulatory climate?

Experience suggests no. Claims that "high"—compared to prevailing—exposure levels in laboratory bioassays are suspect or irrelevant have undermined concerns for health risks to people at lower levels. For example, the observation that pigment-grade titanium dioxide caused lung cancer in rats was denigrated by the producers because the exposure level was 250 mg/m^3. The "clearance overload" hypothesis was trotted out, as it was for silica. There was less complaint about the results of bioassays of ultra-fine titanium dioxide (about half of current nanotechnology by weight), which is more potent and causes increased cancer at lower gravimetric doses. Although IARC classified both size types as Group 2B carcinogens, possibly carcinogenic to humans, nothing has been done on the regulatory front.

Franklin Mirer, PhD, CIH, is a professor in the Environmental and Occupational Health Sciences Urban Public Health Program at Hunter College School of Health Sciences in New York. He can be reached at (212) 481-7651 or fmirer@hunter.cuny.edu.

References

U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program: "Tobacco Related Exposures," from *Report on Carcinogens*, Eleventh Edition. Washington, D.C.: 2005. Online at http://ntp.niehs.nih.gov/ntp/roc/eleventh/profiles/s176toba.pdf.

EXPOSURE ASSESSMENT

Video Exposure Monitoring: The Wow Factor

Learn Why Your Workers are Overexposed

BY JAMES D. MCGLOTHLIN

Editor's note: *This article is the first of two parts. Part II will appear in the January 2010 issue.*

"Wow!" That was my reaction back in the early 1980s when I was working with two colleagues from NIOSH on a routine study of how to control dust at a tire manufacturing plant. Fresh off my PhD training in ergonomics from the University of Michigan, I was asked to help videotape workers and break their job down to fundamental work elements. My colleagues, a fellow IH and a chemical engineer, had fastened a real-time hand-held particulate air-monitoring device in the breathing zone of the worker who was performing a scooping task (see Figure 1). Our intent was to determine whether we could synchronize the second-by-second particulate data with the video camera and store this information on a computer.

This idea sounds elementary in today's high-tech environment, but back then it seemed like the Wild West of industrial hygiene. Instead of horses, we had an Apple computer, a VHS video camera, and a hand-held aerosol monitor particulate collection device. With wires running everywhere, we stitched together the video and real-time particulate data and figured out the basic work elements.

Once we pulled the pieces together, we discovered that the worker's exposure increased exponentially after he had scooped

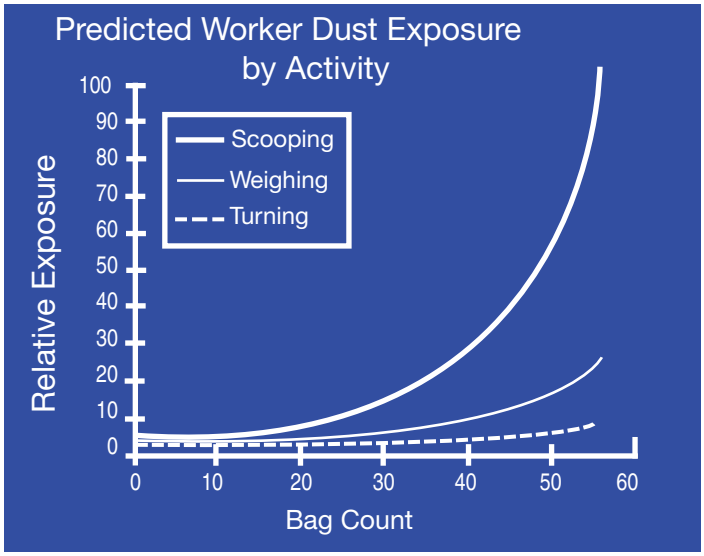
Figure 1. A worker performs a scooping task.

about half of the powder from the drum. Interestingly, the worker's particulate exposure was relatively low until that halfway point.

If we had used traditional industrial hygiene integrated sampling, a filter loaded with particulate would have told us, "Yes, the worker is overexposed and this is a nasty operation." But we would not have been able to show when the particulate was highest. The traditional solutions using basic sampling methods would be to increase the ventilation, clean out the exhaust pipes, get a larger fan motor to increase CFM (cubic feet per minute), improve work practices, and so on. Instead, based on the precise information we obtained from video, we cut the drum in half and modified the layout of the workstation to reduce work cycle time by nearly 70 percent (see Figures 2 and 3). Problem solved.

That was the first time I saw the potential for improving working conditions using video exposure monitoring (VEM). I have been pursuing this line of research ever since and now have a portfolio of projects showing just how effective VEM can be.

Figure 2. Modeling of real-time particulate exposure data.



Still Not Standard

More than 25 years have passed since VEM was first used as a systems approach to provide better documentation for workers who were at risk. Since that time it has been used around the world by like-minded health and safety professionals who know the value of VEM. But despite these success stories and amazing advances in technology, VEM is still not the standard.

Industrial hygienists certainly know that this technology exists—we have been exposed to several presentations, posters, and publications (a few are listed in the sidebar) that show how VEM benefits workers. VEM is relatively inexpensive; all the costs are on the front end, and in the long run it is much cheaper than traditional sampling methods. So why isn't VEM used by every industrial hygienist, safety professional, ergonomist, and other health practitioner with access to a video camera, a computer, and a real-time sampling unit?

One plausible theory for VEM's failure to catch on is that it is not yet a NIOSH-approved method. VEM also suffers from the perception that it is nothing more than a training tool for showing workers what they are doing wrong.

These reasons should not outweigh VEM's benefits. Using VEM, you can evaluate problem workstations, establishing results in real time. You can experiment with what works in real time, present your solutions to workers and management, and still be home in time for dinner. Some critics argue that VEM can never replace traditional sampling methods because of our heavy

Suggested Readings

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Figure 3. Modified workstation with half-height drum to scoop powder.

reliance on standards based on older technology. I agree that, in the short term, VEM will not replace integrated sampling where methods are published and standardized. But until those methods are changed, VEM is a valuable tool that provides better results when used in tandem with traditional sampling protocols.

Real-Time Results

In the many years that I have used VEM for physical (heat, noise, vibration, heart rate, etc.), chemical (particulates), radiological (alpha, beta, gamma), and biological (bacteria, viruses) analyses, my experiences have had two constants. First, I always discover something that I could not have discovered using traditional sampling methods. Second, about 80 to 90 percent of the overexposure occurs in approximately 10 to 20 percent of the work cycle. In other words, VEM identifies with pinpoint accuracy the key activities and processes that lead to excessive exposures. Industrial hygienists who use VEM can create specific, sustainable solutions.

Integrated IH sampling is to VEM what the X-ray is to magnetic resonance imaging. VEM allows industrial hygienists to see details in real time that they could not see before. While integrated IH sampling can show that a problem exists, VEM can show why it exists. In addition to helping protect workers, this powerful capability benefits industrial hygienists, too—employees who recommend cost-saving (and, in many cases, greener) solutions time and again are tremendously valuable to their organizations.

James D. McGlothlin, MPH, PhD, CPE, is director of the graduate program in occupational and environmental health sciences at Purdue University, School of Health Sciences. He can be reached at (765) 496-6359 or jdm3@purdue.edu.

Updating PELs:

Is Now the Time?

AIHA Weighs Another Attempt at Changing OSHA

BY ED RUTKOWSKI

Change at OSHA has rarely, if ever, seemed as likely as it does today. Labor Secretary Hilda Solis and Acting Assistant Secretary for OSHA Jordan Barab have initiated activity on a number of issues that had languished at the agency for years. And David Michaels, President Obama's choice to lead OSHA, has been openly critical of the agency, raising hopes that his confirmation would lead to reform.

Has the time finally come to fix the broken OSHA PEL process? Could a solution to the problems that have kept most PELs at or near levels established in the 1960s be within reach?

Or should change at OSHA run a different course? Have the rise of control banding, the European Union's REACH regulation, the increasing number of countries developing their own OELs, and broader proposed federal policy initiatives to manage chemicals diminished the need to update PELs? Do the recent changes throughout government signal not that conditions are ripe for updating PELs but that OSHA should abandon standards-setting and focus its limited resources on something else?

These questions will be front and center at an as-yet unscheduled meeting of organizations dedicated to occupational health and safety. The intent of the meeting, which AIHA hopes to hold before the end of the year, is to explore whether OEHS stakeholders can reach consensus on an approach to change at OSHA.

Round Two

AIHA has been down this road before. In 2002, AIHA convened a meeting of industry, labor, and professional organizations to discuss possible solutions to what seemed to be a permanently dormant process for setting PELs. Attendees at the meeting ran the gamut of OEHS stakeholder organizations, including labor unions, industry organizations, and non-profit associations.

The meeting led to the formation of a task force that lasted for three years and garnered support from a member of Congress, who promised to introduce legislation if the group could achieve consensus. Legislation outlining a procedure for updating and expanding PELs was drafted, but ultimately, no consensus could be reached and the task force disbanded.

While the task force did not achieve its goal of initiating change at the federal level, its process was adopted by the California Division of Occupational Safety and Health, which is reviewing and updating existing state PELs based on more recent health-based data.

"If we create another working group, we'll try to build upon what we learned" from the task force, says Aaron Trippler, director of AIHA government affairs. The main lesson, according to Trippler, is to start with a smaller group of organizations whose experience with OELs can help create a viable proposal for setting health-based values. It's possible that meeting participants—including ASSE, AIHA's Workplace Environmental Exposure Levels (WEEL) Committee, and other standards-setting bodies—will decide to focus on OEL-setting processes that consider something other than PELs alone. Once the group knows what it wants, Trippler says, affected stakeholders will be brought into the discussion.

A Global Concern

AIHA has a longstanding commitment to updating PELs. Annual surveys have repeatedly shown that AIHA members consider updating PELs to be the association's top priority in public policy. In May 2009, the AIHA Board of Directors reiterated its commitment to updating PELs. But the rapid pace of change and uncertainty about the priorities of OEHS stakeholders require AIHA to be open to different approaches.

For Chris Laszcz-Davis, MS, CIH, REA, any effort to change PELs must begin with a broad education initiative and an acknowledgment that PELs are only one part of a global concern in managing risk. This conviction led her and an international group of experienced OEHS leaders to set aside their employer affiliations and coauthor a "green" paper titled "Occupational Exposure Limits—Do They Have a Future?" The paper, which is available on the website of the International Occupational Hygiene Association (www.ioha.net/activities.html), summarizes the evolution of occupational exposure limits, describes contemporary challenges facing occupational health and safety professionals, and explores potential remedies, including control banding.

"Our paper was an attempt to educate folks so that they could move the dialogue forward," Laszcz-Davis says. (Excerpts from the paper appear on pages 46–48.) "We agreed early on that probably one of the reasons there has been little movement forward is that people don't understand the broader affiliated issues, nor their potential impact. Many don't understand what's gone on historically, nor do they understand that this is not a domestic issue alone. It's an international issue, particularly since so many of our business sectors today operate globally. Stakeholders from government, industry, academia and labor may not be fully aware of the range of options that ought to be considered."

Laszcz-Davis has witnessed firsthand the relative importance of PELs—and environmental health and safety regulations in general—rise and fall over the years. When she entered the industrial hygiene profession in 1973, OSHA and EPA were at the crest of a regulatory wave that . had a galvanizing effect on industrial hygiene and related professions. Increased demand opened many doors for OEHS professionals, and AIHA membership shot up 400 percent between 1973 and 1983.[1] Laszcz-Davis embarked on a career that included executive-level industry, government and private consulting positions. She now runs a private OEHS consulting practice out of California, occasionally lectures at the University of California-Berkeley's Center for Occupational and Environmental Health and remains professionally active internationally. For the forthcoming edition of *Patty's Industrial Hygiene*, Laszcz-Davis and several coauthors will contribute a chapter on risk assessment that addresses the importance of OELs.

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"In the seventies, in this country particularly, government was the real driver for the evolution of OEHS," Laszcz-Davis explains. "Many of us were very standards-compliance oriented because we needed a common blueprint in this new changing era. And then, as we moved into the eighties and nineties, we began to recognize that numbers and standards conformance alone certainly didn't guarantee that an organization would deliver good OEHS processes and good outcomes. We began to integrate management processes, organizational leadership initiatives and systems safety processes with the expectation that our OEHS processes would ultimately make a difference. . . . And so, there was less reliance on PELs alone—they were always there, but when you dealt with management—whether staff or line—you certainly didn't place a PEL in front of them. While PELs were necessary resources, they didn't really drive things as they did in the seventies."

For Laszcz-Davis, the value of PELs lies in the scientific information gathering and collaboration used to arrive at a commonly understood exposure limit for a substance. Once everyone is in agreement on the basic science, she says, the limit generally takes care of itself.

"I don't know that the final number is as important as the process of scientists getting together to arrive at a consistently understood, internationally set database that provides us with the toxicology of different compounds and chemicals that our workers use or that our customers or the community are potentially exposed to," Laszcz-Davis says. "What seems to be missing is not so much final numbers, although we certainly see a huge gap here, but making sure we have the quality data, the research and the resources necessary so people understand what the potential toxic effects are for different end uses and for full life cycles, how best to work around them to mitigate risk, how to make substitutions if possible, and what to share with users so they can take the appropriate precautions."

Game Changer

REACH, possibly the most significant development in environmental and occupational health and safety regulations in recent years, requires manufacturers of chemicals intended to be introduced in Europe to register with the European Chemicals Agency. Manufacturers must also present hazard and exposure data or risk having their substances removed from the market. For these reasons, Laszcz-Davis and her colleagues describe REACH as a "game changer."

A key feature of REACH is the Derived No Effect Level (DNEL), a new health- and ecotoxicity-based exposure limit. DNELs express the maximum amount of a substance that humans can be exposed to. A given substance may have multiple DNELs that specify limits for certain populations, durations of exposure, and types of effects.[2]

According to Laszcz-Davis, the process used to arrive at a DNEL bears little resemblance to the rounds of review and comment attending the typical OSHA PEL standards development process. "The OSHA PEL process has generally been collaborative," she explains. "There is initial work performed by scientists within the government, and then there is an opportunity for public input. Once one takes into consideration technology, feasibility and cost, and integrates it with the health-based data, a PEL gets proposed. The dilemma is that the OSHA PEL process moves at glacial speed.

"In the REACH system, the final DNEL number is a health-based number, with no consideration for technological capability or feasibility. And the other thing the DNEL does is [take into account] ecotoxicity. So [REACH] is very good about embracing the environmental piece. OSHA's scope limits it to the workplace alone."

Some studies indicate that the "worker-inhalation-chronic-systemic" DNEL—the kind of DNEL that most resembles a PEL—is significantly lower for many substances than the corresponding PEL.[3] Will the need for U.S. companies to adjust to the more protective REACH requirements doom PELs to insignificance? No one can say for sure, though businesses are already feeling the effects of REACH, which is being implemented in stages over several years.

"Many companies in the U.S. recognize that what they end up with 'over the pond' could be distinctly different from what we have stateside," Laszcz-Davis says. "It's a problem. You're doubling resources, you're doubling efforts. And this is one of the reasons why I think we need a broader perspective in dealing with OELs."

Control Banding

In 2002, when AIHA's first attempt to kick-start the OSHA PEL-setting process was just getting underway, Deborah Imel Nelson sat in on AIHA conference calls

related to the PEL project and participated in a roundtable on PELs at AIHce in San Diego. At the time, some of Nelson's colleagues at the World Health Organization, including her boss, didn't think that updating PELs was a goal worth pursuing. And while Nelson's belief in the importance of health-based OELs has not wavered, her frustration over the persistence of outdated PELs convinced her that the key to protecting workers lay elsewhere.

"That's really when I started to go down the road of control banding," Nelson says. Now the campus emergency manager at the University of Colorado-Boulder, Nelson coauthored (with David Zalk) a literature review and analysis on control banding. A recent NIOSH publication, *Qualitative Risk Characterization and Management of Occupational Hazards: Control Banding*, is based on Nelson and Zalk's work, and the authors are currently writing about control banding for the forthcoming edition of *Patty's*.

Control banding evolved from the pharmaceutical industry's attempts to protect workers from the effects of chemicals with little or no exposure data. The industry devised protective control strategies by comparing these chemicals' toxicological properties to those of similar chemicals about which much more was known.

Most recent developments in control banding have come from Europe. The Netherlands and Germany have developed control banding toolkits to help employers comply with REACH. One of the most widely used control banding schemes grew out of the United Kingdom's Control of Substances Hazardous to Health (COSHH) regulations, which require employers to conduct risk assessments in the workplace and control exposures to hazardous substances. COSHH Essentials is an online tool that employers can use to determine control strategies for a variety of hazards. These strategies are grouped or "banded" into four approaches: general ventilation, engineering controls, containment, and "special" (a recommendation to seek expert advice). Because the information is intended for a non-technical audience, critics maintain that COSHH Essentials provides an oversimplified approach to worker protection.[4]

Some industrial hygienists, including Nelson and Zalk, have called for additional exposure monitoring to verify that the control strategies suggested by control banding schemes adequately protect workers. Other professionals fear that widespread adoption of control banding will devalue the profession by providing a cheaper alternative to industrial hygiene expertise. A counterargument mentioned in the recent NIOSH publication is that control banding will educate employers about industrial hygiene and "promote IH expertise as needed."[5]

Nelson acknowledges that control banding is not an ideal approach in all situations. "We've got a really good idea what the PEL ought to be for lead," she says. "Why would you ever want to use

control banding for lead? You really wouldn't." Control banding, Nelson says, is most useful in situations where resources are scarce and knowledge incomplete. For example, small and medium-size employers who struggle to meet the requirements of occupational health risk assessment—collecting samples, having them analyzed, and comparing the results to PELs—would benefit from control banding, as would developing nations that have few industrial hygiene professionals.

"In many developing countries, they haven't got an industrial hygiene laboratory. There isn't a single MSA Model G pump in the country," Nelson says. "For many chemicals there is no analytical technique, there's no standard. So we're forced to be creative and use some different kinds of solutions to help protect workers. And that's what control banding is all about: taking the information that we have and using it in the best way to provide good protection for workers."

Is control banding poised to catch on in the U.S.? Nelson and other supporters acknowledge that much work remains to be done, but she was heartened by the reappointment of John Howard, a proponent of control banding, as director of NIOSH in September.

A PEL Groundswell?

Despite the changes evident throughout government, updating PELs may not be possible. Michaels, for example, has indicated that OSHA resources would be better spent elsewhere. In an article for the winter 2009 issue of *SafetyRep*, the newsletter of the New York Committee for Occupational Safety and Health, Michaels wrote, "OSHA is constrained by both budget and legal authority. . . . The OSHA standard setting process is broken and OSHA lacks the resources or political clout to issue an adequate set of new standards."[6]

"While the existing personnel at OSHA support updating the PELs, there may be a change of focus on that issue when Michaels is confirmed," Trippler says. "And we haven't found any support for the issue in Congress right now either. It's going to take legislative action to update the PELs—there's no doubt about it. And that makes it even more difficult. It's one thing to get the agency to agree. Then you have to get Congress to change the law."

Although Laszcz-Davis acknowledges these difficulties, she believes that significant professional support for updating PELs exists. "I think there is an opportunity to get it done, but you have to have the right people working the issue with OSHA, labor, academia and industry," she says. "Given the sentiment we've seen out of Washington so far, I believe they'd like to see change, but my only caution is that [OSHA] has to have a few good home runs first before they tackle something as controversial as the PELs. Having said that, it might be a good time to begin the groundwork of educating the folks back in D.C. about PELs, OELs, their value in the broader chemical policy picture, options to be considered and so on. It's not just a PEL issue. It's much bigger than that."

Nelson, too, expresses support for updating PELs. "If we're going to have PELs and OSHA's going to enforce them, then they need to be consistent with our modern understanding of industrial toxicology," she says. "I think it's pretty sad that we're supposedly one of the most advanced nations in the world and we're not updating those numbers. As long as they're still out there, they need to reflect what we know at this point in time."

Ed Rutkowski is managing editor of The Synergist. *He can be reached at (703) 846-0734 or erutkowski@aiha.org.*

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Hyped about Hazard Banding

New Hope for an Established Practice

BY SUSAN D. RIPPLE

Occupational exposure limits (OELs) are an important part of managing chemical health and safety programs. But constant changes in the work environment have resulted in an exponential increase in the number of chemicals for which adequate toxicity or exposure data—the information needed to set traditional OELs—are not available.

The majority of chemical substances in global commerce do not have formal OELs. Furthermore, employers and workers often have difficulty determining how to control exposures with OELs. In fact, the International Labor Organization has estimated that over 90 percent (about 2.7 billion) of the world's workers do not have the assistance of a professional to even assess the hazards in the workplace, much less provide guidance on proper risk management techniques.[1]

Control banding arose in response to this lack of guidance. Based on a process similar to the U.S. Centers for Disease Control (CDC) Biosafety Levels for control of pathogenic microbials, control banding is a qualitative strategy that allows industrial hygienists to manage risk in situations characterized by many uncertainties, particularly a lack of OELs. Control banding augments the traditional industrial hygiene approach—anticipation, recognition, evaluation and control of stressors—by grouping chemicals according to the severity of their effects.

A variety of control banding toolkits are used around the world. Users adapt the process to their needs and their risk management strategy. Because "control banding" does not translate well in many languages, terms such as "Risk Management Toolbox"[2] and "International Chemical Control Toolkit"[3] are being used with increasing frequency.

Control Banding Guidance from NIOSH

On Aug. 17, NIOSH issued Publication No. 2009-152, *Qualitative Risk Characterization and Management of Occupational Hazards: Control Banding*. The document reviews published literature and related proceedings on control banding and provides critical analyses of control banding strategies. To download the document, visit www.cdc.gov/niosh.

Hazard banding, the subject of this article, is simply the first step in the control banding process. Hazard banding groups agents of similar toxicity or similar toxic mechanisms into "hazard groups" or "hazard bands." For chemicals, hazard banding provides a range of acceptable exposure levels based on expert evaluation of the dose-response relationships determined through animal testing. Although many hygienists prefer the more official peer-reviewed OELs, control banding and hazard banding provide a mechanism for evaluating hazard and risk in situations where OELs do not exist.

For this discussion, hazard banding strictly refers to "health hazard banding" and does not include the often controversial qualitative exposure assessments (risk characterization) done in control banding, nor does it touch on the predicted control strategies that might be used to perform risk management in control banding. However, once the hazard banding process has been completed, the occupational hygienist can determine the risk assessment and control strategies, thereby completing the IH process. Hazard banding does not replace industrial hygiene expertise—specific operating knowledge and professional judgment are required for implementation of the best "reasonably practicable" combination of controls to minimize risks to workers.

Origins of Qualitative Risk Management

Prior to the creation of OELs, most large chemical manufacturers used qualitative exposure assessment processes and qualitative health hazard reviews. Since the early 1950s, for example, The Dow Chemical Company has assigned risk management control strategies based on a "health effects rating." Using these ratings in conjunction with information about the degree, duration and frequency of exposure, hygienists at Dow would create a monitoring plan to verify that a control strategy adequately controls exposures at the targeted levels.

The pharmaceutical industry has embraced control banding, also known as performance-based exposure control limits (PB-ECLs), extensively for over 20 years. In the late 1980s, the pharmaceutical industry began using PB-ECLs and controls to protect workers from exposure to drugs with known therapeutic effects. The high potency of some pharmaceutical compounds required alternatives to setting OELs, especially for early development compounds with limited information. Because there are rarely R-phrases for these drugs, utilization of the actual toxicity and therapeutic data are used in a matrix.

Although the pharmaceutical companies agreed on a strategy for categorizing the health hazards into safe PB-ECLs, there are still today as many control strategy schemes as there are pharmaceutical companies. Due to the varying degrees of risk in their facilities, some companies want more options for controls; others prefer to limit control options. For example, a company that manufactures only one or two products may need only five control options, particularly if those substances are all solid particles. Facilities that handle a variety of substances in various physical states, such as dusts and vapors, with a wide range of operating temperatures and pressures may desire more options to control exposure potential.

Applications of Hazard Banding

Decoupling hazard banding from control banding allows assessment of hazards to be utilized in hazard communication and awareness efforts after a substance has been introduced in a workplace. Better yet, the hazard assessment can aid the substitution or design of controls. Although hazard banding is not a substitute for OELs, it yields insight into the relative toxicity of substances. Occupational hygienists can use this information to provide expert guidance for hazard ranking and prioritization.

In the European Union—particularly in applications of the toolkit provided by the

Figure 1. A hazard-band evaluation of Dichloracetic Acid using the matrix provided by eCOSHH.

		Virtually Non-Toxic	Low Toxicity	Moderate Toxicity	Toxic	High Toxicity	Comments/Rationale
Criterion	**ND**	**A**	**B**	**C**	**D**	**E**	
Acute toxicity (Rat oral LD50)		>2,000 mg/kg Rats: 2820 to 4480 mg/kg Mice: 5520 mg/kg Dogs: >5000 mg/kg, dog emesis at 250 mg/kg	300-2,000 mg/kg	50-300 mg/kg	5-50 mg/kg	<5 mg/kg	
Acute toxicity (Rat inhalation LC50)- Not Available		>10,000 ppm	>10,000 ppm	1000-10,000 ppm	100-1000 ppm	1-100 ppm	Extrapolated from comments only
Sensory irritation (RD50)- Not Available		>3,000 ppm	>3,000 ppm	300-3000 ppm	30-300 ppm	1-30 ppm	Corrosive to respiratory tract
Skin or eye irritation		mild to moderate	moderate to severe	severe to corrosive	corrosive	corrosive	Corrosive to eyes, skin and respiratory tract; Inhalation of high concentrations can cause pulmonary edema
Irritation threshold (ppm)- Not Available	x	>1000	100-1000	10-100	1-10	<1	
Target organ toxicity NOEL **Neurotoxicity**		>1000 ppm >100 mg/kg/d	**>1000 ppm 10-100 mg/kg/d**	**100-1000 ppm 1-10 mg/kg/d Moser: 16 mg/kg/d LOAEL Neurotox**	10-100 ppm 0.1-1 mg/kg/d	1-10 ppm <0.1 mg/kg/d	
Severity of target organ toxicity		**severity of the toxicity can push the above NOEL into a higher cell**					
Repro/dev tox NOEL		>300 mg/kg/d	30-300 mg/kg/d	3-30 mg/kg/d	0.3-3 mg/kg/d LOAEL 12.5 mg/kg/d (90d study in dogs)	<0.3 mg/kg/d	LOAEL 12.5 mg/kg/day (sodium salt) in dogs 90 day study showed degeneration of testicular germinal cell epithelium and syncytial giant cell formation
Reproductive toxicity		**severity of the toxicity can push the above NOEL into a higher cell**					
Developmental toxicity		**severity of the toxicity can push the above NOEL into a higher cell**					14 mg/kg/day was identified as a NOAEL for dev. Tox
Genetox		negative	equivocal	likely / limited or based on in vitro	positive WOE including *in vivo*	positive WOE and potent	
Cancer dose-NOEL/NOAELs		>300 mg/kg/d	30-300 mg/kg/d	3-30 mg/kg/d	0.3-3 mg/kg/d	<0.3 mg/kg/d	
Carcinogenicity potential		**severity of the toxicity can push the above NOEL into a higher cell**					
Warning properties / odor		good: 0.04 ppm	good	fair to none	poor to none	poor to none	
OEL range (mcg/m^3 and ppm)		≥1000	≥100, <1000	≥10, <100	≥1, <10	<1	
Skin notation		No	Yes LD50=510 mg/kg				greater than 200 mg/kd
Sensitization notation		No	Yes				

Control of Substances Hazardous to Health regulations (COSHH)—health hazard bands are determined using regulatory risk phrases, or R-phrases. These R-phrases are assigned to a particular hazard or toxicity profile for each tested toxicity endpoint. For countries that do not utilize R-phrases, the EU toolkit offers little assistance. For example, in the U.S., workers, employers, and even hygienists must use the confusing toxicity phrases found in Section 11 of most material safety data sheets (MSDSs). Translating those phrases into R-phrases in order to determine hazard bands has been virtually impossible; experts must first translate the toxicity endpoints. As a result, various groups are working together to establish guidance for employers and workers on the relative (albeit qualitative) health hazard groups.

The United Kingdom Health and Safety Executive developed an electronic tool, referred to as the eCOSHH toolkit, to aid employers in performing the control banding risk assessments, with the ability to archive the assessment and return for future reference[3]. The simple matrix provided by the eCOSHH toolkit allows hygienists to derive a health hazard group—and thus an acceptable range of exposures for further controls. Figure 1 shows the evaluation of Dichloroacetic Acid (DCA) using the eCOSHH methodology.

The example in Figure 2 is an alternative matrix for evaluating the toxic effects of DCA utilizing a matrix that evaluates the toxicity endpoints. This matrix uses the toxicity dose-response data found in a compendium of toxicity studies and summarizes the most pertinent health effects. Figure 2 portrays a combination of the WEEL hazard banding project and matrices used by pharmaceutical and chemical companies. Both Figure 1 and Figure 2 derive essentially the same OEL-range to use for controls: < 1 ppm according to the eCOSHH matrix (Figure 1) and between 0.5 ppm and 5 ppm vapor according to the AIHA-WEEL matrix (Figure 2). If R-phrases are not readily available, the MSDS phrases and data found in the AIHA-WEEL matrix can supply the same or better guidance. (For more information about the AIHA-WEEL hazard banding project, see the sidebar.)

Advantages and Disadvantages

Hazard bands are screening-level hazard groups, often based on limited data. Critical limitations of hazard banding include the lack of standardized hazard phrases in MSDSs and the lack of expertise to translate those phrases into hazard

[Continued: 60]

Figure 2. Dichloroacetic acid matrix evaluation of toxicity endpoints.

Hazard Group vs. Target Exposure Range

Hazard group	Target airborne concentration range	R phrases
A -Skin and eye irritants	>1-10 mg/m3 dust >50-500 ppm vapor	R36, R38 All substances that do not have R phrases in groups B - E
B - Harmful on single exposure	>01-1 mg/m3 dust >5-50 ppm vapor	R20/21/22, R40/20/21/22
C -Severely irritating & corrosive, skin sensitizers	>0.01-0.1 mg/m3 dust >0.5-5 ppm vapor	R48/20/21/22, R23/24/25, R34, R35, R36/37, R37/38, R36/37/38, R37, R39/23/24/25, R41, R43
D -Very toxic on single exposure, reproductive hazard	< 0.01 mg/m3 dust < 0.5 ppm vapor	R48/23/24/25, R28/27/28. R39/26/27/28, Carc Cat 3 R40, R60. R61, R62, R63
E - Carcinogen, occupational asthma	*Seek Specialist Advice*	Muta Cat 3 R40, R42, R42/43, R45, R46, R49
S: Skin and eye contact	*Prevention or reduction of skin and/or eye exposure*	R21, R24, R27, R34, R35, R36, R38, R41, R43, R48/21, R48/24, plus R -phrase combinations containing these. Skin

Hazard Banding's Role in WEEL Development

BY ANDREW MAIER

The mission of the AIHA® Workplace Environmental Exposure Levels (WEEL) Committee is to develop health-based airborne chemical occupational exposure limits (WEELs) where adequate guidance for use by health professionals is not available. WEELs are developed using science-based risk assessment methods by a multidisciplinary volunteer team of industrial hygienists, epidemiologists, occupational medicine professionals and toxicologists. The committee uses a tiered review process that includes a scientific review of all the health effects, exposure, and toxicity information for the chemical. The product of this effort is the WEEL documentation that summarizes the data and provides the rationale for the WEEL and any notations that are assigned. The full WEEL documentation is published, and the WEEL value and notations are also published in the *WEEL Handbook*. Currently, over 100 WEEL values are available.

A cornerstone of developing a WEEL is the critical examination of the available data. Hazard banding has provided an important tool to organize the available data, identify key data gaps that affect the overall weight of evidence for the WEEL, and help set priorities for WEEL development. If the evaluation indicates that data are too limited for a WEEL, then the data matrix may be used by other groups for hazard banding to provide interim guidance. The WEEL committee continues to evaluate and validate hazard banding methods and is studying best practices for making use of this tool.

AIHA members interested in lending their expertise to developing additional occupational exposure limit resources for the profession or who want to learn more about WEEL development are encouraged to visit the WEEL web page at www.aiha.org or contact Andrew Maier, WEEL Committee chair, at maier@tera.org.

Andrew Maier, PhD, CIH, DABT is chair of the AIHA WEEL Committee and director of the nonprofit organization Toxicology Excellence for Risk Assessment.

The Future of Occupational Exposure Limits

Can OELs Be Saved?

Editor's note: *These pages present edited excerpts from "Occupational Exposure Limits—Do They Have a Future?" To read the paper in its entirety, including information about the historical evolution of OELs and the known OEL-setting processes, visit the International Occupational Hygiene Association website at www.ioha.net/activities.html. The authors are listed in the sidebar on page 48.*

Do we still need traditional Occupational Exposure Limits (OELs) to compare with exposures, perform risk assessments and identify control approaches? Or have traditional OELs run their course of usefulness? Some certainly think so!

On the other hand, if we think that OELs are important to risk assessment and risk management, and recognizing the limited global infrastructures to generate them at the rate needed, do we need to build on what we have and also explore measures and approaches which take our discussions and solutions beyond traditional OELs alone? We have many in this camp as well.

OELs have been established for airborne workplace chemicals by various regulatory and authoritative organizations for well over 60 years now. With the changing regulatory arena, shifting centers of manufacturing growth, and move towards a more global view on issues, the time to pause and re-examine their continued value is now.

The authors of this paper, who represent decades of experience in occupational health in all sectors of the profession, believe that OELs continue to be critical to protecting workers from chemical exposures. We believe that most industrial hygienists and other allied risk management professionals strongly support the concept that OELs should be updated, consistent with current scientific knowledge. We also believe that the infrastructure to generate and utilize OELs desperately needs shoring up.

In an effort to suggest a future approach (or several future approaches), we attempted to highlight the historical evolution of OELs, the known OEL setting processes today, their role in industrial (or occupational) hygiene and risk assessment, and today's world community challenges. This paper presents ideas to revive and reinvent the process. Because the issues and potential remedies are many and complex, we do not necessarily support each potential remedy or historical interpretation that follows. In fact, the views and opinions expressed in this paper are those of the individual authors and may not necessarily represent those of the authors' employers. We do agree, though, that in working together, our profession can lead the way forward.

OELs and Risk Assessment

Risk assessment (RA) is the integration of toxic potential and potency with the exposure to that potential. Industrial hygienists measure or estimate exposure in the scenarios of interest.

Thus, exposure is only half of the story, and industrial hygienists almost invariably rely on health-based OELs to put that estimated exposure into context.

It should be reasonably obvious that exposure assessors measure or otherwise estimate human exposure, and this exposure has no contextual meaning without a valid toxicological benchmark—an exposure limit—with which to compare it. Chosen by a group of experts, the health-based OEL is the single point of exposure that embodies the concept of an acceptable level of toxic response. Given the importance of health-based OELs to the practice of risk assessment and industrial hygiene, their continued development seems critical.

Still, not everyone places a high value on OELs. In some countries, OELs are rarely employed except by a few large companies. Other countries have OELs and no industrial hygienists to gauge conformance to them. Still other countries apply risk assessment schemes and control measures without knowing whether they work. For example, control banding, which is employed when quantitative exposure and hazard data are lacking, appears to offer a convenient but perhaps somewhat loose approach compared to a more rigorous setting of an OEL followed by adequate exposure assessment.

Challenges for the World Community

The world community's challenges relative to risk assessment and OELs include the following:

1. OEL-developing organizations cannot keep pace with the number of chemicals entering commerce.
Globally, OELs exist for only 3,000 chemicals, while over 100,000 are bought and sold in the world marketplace. Many OELs are more than 10 years old.

2. OELs are not true thresholds of toxic effect.
They are intended to control exposures to an acceptable risk. Unfortunately, the residual risk is often not stated in quantitative terms. The acceptability of the risk should ultimately be determined by the cultural body politic of the society and thus could be different for different groups.

The U.S. limits—mainly TLVs® and AIHA Workplace Environmental Exposure Limits (WEELs)—are based on toxicological considerations, but statistical considerations about the occupational exposure distributions play an important role when, as is often the case, toxicological data are inadequate for setting short-term limits. The EU approach is predominantly based on toxicological considerations. The difference between the U.S. and EU approaches becomes an issue in the global marketplace.

3. The REACH regulations will change the playing field.
REACH will have substantial impact on the quality and availability of hazard assessment input data, especially in these areas:

Klemisch scoring. The reliability of a study that becomes part of the OEL toxicological data set needs to be understood and evaluated using a verified scoring system to rate the validity of a study for use in setting an OEL. The Klemisch scoring system is a systematic, internationally accepted approach for evaluating the quality of experimental toxicological and ecotoxicological data. The U.S. Office of Management and Budget requires this scoring for some EPA work. In the EU, REACH and the Biocidal Products Directive protocols require Klemisch scoring.

Public access. Capturing all pertinent data for setting OELs is difficult because most company data has not been made public. Efforts to encourage companies to share their scientific data should be considered beyond the REACH submissions, which may remain proprietary or business confidential. However, all endpoints selected as a point of departure for the derivation of a Derived No Effect Level (DNEL) must be published on the Internet for public access. The REACH legislation also requires the European Chemicals Agency (ECHA) to publish a database on the Internet of the DNELs that are officially accepted for various substances.

4. Resources and expertise needed to establish OELs.
While many countries today require that employers provide a "safe workplace" (thus suggesting the need for risk assessments and OELs for use as comparators), most employers do not have the infrastructure to provide an adequate risk assessment and often rely on the information provided in a supplier's material safety data sheet (MSDS).

In the absence of governmental support, development of exposure levels worldwide places an ever increasing burden on already overworked volunteers to review scientific literature, which is sometimes voluminous and other times scarce. In some cases, these groups work under the threat of lawsuits that cause much greater attention to process than to science.

After health-based OELs are set by organizations such as ACGIH®, volunteers are under increasing stress from the need to respond to challenges. Often, this activity requires more time from volunteers than was required to define the OEL.

5. The possibility of scientific bias.
Avoiding the appearance of bias through the proper balance of expertise and affiliations on committees that develop OELs is critical. A template exists within the EPA's tripartite Acute Exposure Guideline Levels Committee (AEGL), which requires a rigorous review by all voting members of the group followed by an independent review by the National Academy of Science. Although laborious and slow, this process is an excellent example of collaboration by all interested parties, including global participation by Russia and EU states. Nonetheless, OELs are always viewed as biased by someone and thus are often controversial.

6. Process inconsistencies in determining OELs.
Generally, the processes used to set OELs involve the review of toxicity data to determine critical studies, health effects, and toxicity endpoints. Safety and uncertainty factors are applied to the critical data to derive an OEL value. In other cases, a mathematical approach that quantifies residual risk is used. Considerable judgment is involved in selecting the critical studies, health effects, and endpoints and in applying appropriate safety and uncertainty factors and models. Even when considering the same toxicity data, variability in individual or institutional criteria for selection and application of those aspects can lead to large differences in final OEL value recommendations.

7. The lowering of OELs over time.
Many more OELs have decreased with time than have increased. The reasonable

explanation for this fact is that some toxic effects associated with the substances of interest were not known or not yet proven with sufficient scientific evidence at the time the OEL was set. Over time, the generation of better scientific knowledge of these adverse effects has lead to systematically lowered OELs. Given that perhaps the largest portion of scientific uncertainty resides in a basic lack of information, this heretofore historic trend could be interpreted as a failure to handle the uncertainty stemming from an admitted lack of basic knowledge. Given modern advances in toxicology, it is hoped and anticipated that information about the potential adverse effects associated with chemical exposure will be anticipated and predicted more often and with better accuracy. This, in turn, will allow for a reasonable consideration of scientifically uncertain, but possible, adverse outcomes and appropriately gauged OELs that account for them. Such an approach would imply an acceptance of the "precautionary principle" for the occupational environment.

Future Direction

We believe that industrial hygienists and allied professionals consider OELs to be one of the most effective tools for performing risk assessments upon which risk management strategies for worker protection can be based. We may never have OELs for all chemical hazards; however, it is critical that we accelerate the establishment of credible and respected OELs to provide a basis for protecting workers.

The first step in this large task may be to come to some agreement on a unitary scientific approach to assessing hazards and applying hazard assessments to the setting of OELs. However, many impediments exist to this seemingly obvious solution, including legal, regulatory, economic, political and cultural issues and other factors outside of the usual scientific arguments on health effects. These difficulties have stalled development of OELs in the U.S. and, seemingly, the rest of the world. OELs that have been developed outside of the regulatory system as guidance have been subject to significant litigation. At our present rate of progress, it is extremely unlikely that significant numbers of new OELs will be developed.

Authors

The authors of this paper represent decades of experience in occupational health in all sectors of the profession who are concerned enough about the lack of a more global initiative in this arena that they agreed to set aside their affiliations and speak to a broader advocacy:

Chuck Adkins, CIH, cadkins4@kc.rr.com

Lindsay Booher, CIH, lindsay.e.booher@exxonmobil.com

Dwight Culver, MD, MS, dculver@uci.edu

Tom Grumbles, CIH, tom.grumbles@us.sasol.com

Michel Guillemin, PhD, michel.guillemin@gmail.com

Frank Hearl, MS, PE, frank.hearl@cdc.hhs.gov

John Henshaw, CIH, john.henshaw@comcast.net

Michael A. Jayjock, PhD, CIH, mjayjock@gmail.com

Chris Laszcz-Davis, MS, CIH, REA, chrisld@EQ-Organization.com

Zack Mansdorf, PhD, CIH, CSP, QEP, mansdorf@tiac.net

Franklin E. Mirer, PhD, CIH, fmirer@hunter.cuny.edu

John Mulhausen, PhD, CIH, CSP

Frank M. Parker, III, CIH, CSP, PE, DEE, fparker3@calicheltd.com

Jimmy L. Perkins, PhD, CIH, perkinsjl@uthscsa.edu

Susan Ripple, MS, CIH, sdripple@gmail.com

Paul Schulte, PhD, paul.schulte@cdc.hhs.gov

Robert D. Soule, EdD, CIH, CSP, PE, bobsoule@auxmail.iup.edu

Litigation could further reduce, restrict or eliminate the efforts of organizations like ACGIH to generate new OELs. Many in our profession consider this possibility unacceptable. So, how can we revive the OEL-setting process in a way that benefits all parties?

In Europe, REACH requires the development of DNELs. However, these values will not be consensus recommendations—they will be determined by the manufacturer or supplier of the material. Small manufacturers will not have the resources to do exhaustive studies, and the level of scientific review of the DNELs, once submitted, is unclear. How effective this system will be in protecting workers remains to be seen.

Control banding may be an alternative approach to OELs. In theory, a well executed process, guided by professionals who appreciate the science of toxicology, can set hazard bands for materials that lack adequate toxicity and hazard data needed for a formal OEL. However, the theory has not been adequately tested to see if indeed the process is protective. The specificity and sensitivity of control banding has been only minimally validated, and the preliminary results have not been impressive.

Some governments around the world are still establishing OELs. These values are not generally applied outside of the host country and may include many more considerations than just health effects. Additionally, actual measurements for ambient air levels of the OEL substances are rarely performed except in a few countries. This suggests that the traditional use of OELs is not widely practiced worldwide.

In closing, we believe that OELs are absolutely critical! We hope that this paper will encourage stakeholders worldwide to discuss the critical issues, continue the dialogue and help determine the future for OELs. By working together, our profession can, with others, forge a way forward.

We welcome your feedback!

All Hail "Local Hero"

Winning Idea in the AIHA Breakthrough Thinking Competition Proposes IH Marketing Campaign in Developing World

BY ED RUTKOWSKI

Imagine a time in the not-so-distant future when trained industrial hygienists are plentiful in the developing world. Communities hold hygienists in such high regard that they come to symbolize "help," much the way doctors do today. Locally-trained hygienists feel such a strong connection to their communities that they pass up higher-paying jobs in the western world to remain with the workers who have the greatest need for their services. Most importantly, increasing numbers of workers who today experience severe exposures to a horde of unregulated substances come home safe and well every night. Work-related illnesses and fatalities are receding everywhere.

If such a future comes to pass, it may be due in part to a social marketing campaign that promotes industrial hygiene in the developing world. This idea is at the heart of "Local Hero," the winning proposal in AIHA's Breakthrough Thinking Competition. This month, Jason Hoffman, CIH, the representative of the team that proposed Local Hero at AIHce 2009 in Toronto, will present the idea to the AIHA Board of Directors at PCIH in Vancouver. The idea has won praise from judges and competitors alike for its novel approach to one of the most intractable problems facing the industrial hygiene profession: how to increase the number of practicing industrial hygienists in places undergoing rapid industrialization.

Constructive Competition

Hoffman first learned about the Breakthrough Thinking Competition from the *Final Program* for AIHce 2009 in Toronto. The idea intrigued him: AIHA was holding a "constructive competition" modeled on the X Prize, a series of technological and scientific challenges that draws competitors with the promise of large rewards. The first X Prize of $10 million was awarded in 2004 to a team that constructed a private spacecraft.

Intended to do for industrial hygiene what the X Prize had done for space flight, the AIHA Breakthrough Thinking Competition invited conference attendees to propose solutions to two problems facing

Nothing short of a grassroots movement

the profession: the state of health and safety regulations in the U.S., and global practices for protecting workers. Panels of experts would discuss the background and opportunities for advancement in each area, and then, after the conference, select the winning idea.

Hoffman's familiarity with the panel of experts on global practices was one reason the competition appealed to him. The panel included the incoming and outgoing presidents of the British Occupational Hygiene Society: Roger Alesbury of British Petroleum, and Stephen Bailey of Glaxosmithkline. Hoffman was particularly interested in Alesbury's pioneering work on BP's international training modules for occupational hygiene. The other panelists were Sharann Johnson, president of the Australian Institute of Occupational Hygienists, and Gayla McCluskey, a past president of AIHA.

Chance Encounter

On Monday, June 1, Peter Diamandis, the chairman and CEO of the X Prize, addressed attendees at the opening general session of AIHce 2009. Diamandis explained how competition was responsible for two of the 20th century's greatest achievements: Charles Lindbergh's 1927 solo flight across the Atlantic Ocean, and the 1969 Apollo moon landing. Lindbergh was competing for the $25,000 Orteig Prize, while the success of the Apollo project owed much to Cold War-era fears of Soviet technological supremacy.

The Breakthrough Thinking Session on global practices—a topic that stemmed from an Academy of Industrial Hygiene project on promoting the profession worldwide—was held the day after Diamandis' address. Hoffman found himself seated at a roundtable with three people he'd never met before: John Mulhausen, director of corporate safety and industrial hygiene at 3M in St. Paul, Minn.; Jeanne Fallon-Carine, EHS manager at General Electric in Minden, Nev.; and Rob Ferrie of the South African National Institute for Occupational Health in Johannesburg. All four were strangers to each other.

"It was quite random," Hoffman says of his team's formation. "Basically, [the team was] whoever sat down at that table by chance."

It seemed that chance had dealt Hoffman's group a good hand. All four had significant international experience and brought the perspectives of three nations to their discussion. Mulhausen and Fallon-Carine worked for large multinational companies, while Ferrie was based in South Africa and Hoffman in Ontario. When he was younger, Hoffman had traveled around the world. "I've got a lot of experience in developing countries from a backpacker's sense," he says. After obtaining his masters in occupational and environmental health science, Hoffman took a job in the steel industry. A few years ago, the Hamilton-based company he worked for was acquired by Luxembourg-based ArcerlorMittal, the world's largest mining and steel company. Hoffman had traveled recently to ArcerlorMittal sites in the Ukraine.

Hoffman credits his group's international experience for the turn in their discussion that produced the Local Hero idea. Someone brought up Maslow's hierarchy of needs, a theory posited in the 1940s by the American psychologist Abraham Maslow, who observed that human beings must satisfy basic physiological and safety needs before they can fulfill other needs. According to

Ending OSHA As We Know It?

Runner-up Envisions New Role for Agency

"Responsible and progressive companies don't consider OSHA a factor anymore; they are moving to adopt occupational exposure limits that reflect the latest research data."

Sound familiar? If so, you may recall David Downs' article "Rethinking Federal Regulation of Occupational Health and Safety," which appeared in the April 2009 *Synergist*. Downs proposed that OSHA end its nearly forty-year fixation on exposure limits and, instead, focus on risk assessments. As in the European Union, companies would have to demonstrate that they implemented controls to reduce risks or face fines and other enforcement actions from OSHA. This change in focus would free the agency from the costly court battles that have accompanied every attempt to update PELs since the late 1980s.

At AIHce 2009 in Toronto, two months after his article appeared, Downs and other supporters of a risk assessment approach for OSHA presented their ideas at the Breakthrough Thinking Session on the U.S. regulatory environment. A panel of experts that included former OSHA leaders John Henshaw and Frank White selected the risk assessment idea as the most promising presented at the session. Ultimately, the Local Hero idea from the Breakthrough Thinking Session on global industrial hygiene practices was selected as the winner.

"I think [Local Hero] is a great idea, and one that the association should be more productively involved in," Downs says graciously. "But I also think that [changing OSHA's focus] is something that, at some point, the association could have a great deal of influence in."

will bring about the necessary changes.

Maslow, the need for security, for example, exists at a lower level in the hierarchy than the needs for love, esteem, and self-actualization.

"The other groups talked about information systems and delivery mechanisms for information, and we didn't spend too long going there," Hoffman says. "I've worked a little globally and I know that [information systems] are something people need. But they aren't always the top priority when people are a little lower down" on Maslow's hierarchy.

To Hoffman's group, the need for industrial hygienists in the developing world was obscured by deeper problems that interfered with daily life. It's difficult to recognize that you need industrial hygiene when you're worried about access to clean water, or when your job keeps your family from starving. The group wrestled with the dilemma that although the developing world has a tremendous need for industrial hygienists, the demand is almost nonexistent.

"People [in the developing world] don't necessarily know they need hygienists," Hoffman explains. "They don't recognize hygiene as a profession. So, there's a lack of knowledge about what the [occupational] hazards are in developing countries, and certainly there are no [industrial hygiene] professionals on a widespread basis." If people don't know they need industrial hygienists, an industrial hygiene information system won't do them much good.

"It's not a matter of just having the information," Hoffman says. "It's a matter of having a network of competent people who can deliver the information. The how is more important than the what in this situation."

Downs' passion for his topic is evident from the *Synergist* article and from the care he took in formulating his team for the Breakthrough Thinking Session. Before AIHce, Downs recruited Nancy Orr of Becton Dickinson, Franklin Lakes, N.J.; Bill Heim of Seagate Technology, Bloomington, Minn.; and Gary Olmstead of General Mills, Minneapolis, Minn. All three are directors of environment, health and safety at their companies. (Olmstead ultimately could not attend the session.) At AIHce, his group was joined by Jan Rhodes of Zenith Insurance Company, Woodland Hills, Calif.; Glenn Barbi, also of Becton Dickinson; and David Ablinus of Lockheed Martin, El Segundo, Calif.

"I wanted to make sure we had a cogent message to put forward," Downs says of his recruitment efforts.

That preparation gave the group time to consider how to bring about the radical change they were proposing. "Some people in the group thought that you'd have to go back and rewrite the legislation and restructure OSHA," Downs explains. "Some other people thought, 'You know, you'll never get legislation through in this environment, so it's best just to work through OSHA and have them propose it as part of their management systems standard.' And the consensus we all came down to is that it really doesn't make any difference. In fact, we wouldn't necessarily propose one or another approach. The more important thing is to get the discussion going, to get the idea out there. The mechanism for making it happen will come about once there is broad recognition for the need to make this change."

Broad support would be necessary to overcome what would likely be significant resistance from inside OSHA. "I'm not wearing rose-colored glasses. This would be a very tough sell," Downs admits. "There would be opposition from all directions that could only be overcome by creating an initial groundswell of support around the idea. Once there was that kind of push, it would have more of a chance to move forward."

Driving Demand

The Local Hero idea proposes a social marketing campaign to spur demand for industrial hygienists in the developing world. The campaign would encourage local populations to view industrial hygienists as respected members of the community who can help protect workers and families from exposures to hazardous materials. A multimedia approach involving plays and skits, posters, radio and newspaper advertisements, and online videos would craft an image of the industrial hygienist as a "local hero." Hoffman's group did not have time to discuss implementation, but he envisions a network of partnerships between local communities, multinational corporations, and groups such as the International Labour Organization and the World Health Organization to deliver training for "local heroes."

Social marketing traces its origins to the 1971 publication of "Social Marketing: An Approach to Planned Social Change" in the *Journal of Marketing*. Authors Philip Kalter and Gerald Zaltman define social marketing as "the explicit use of marketing skills to help translate present social action efforts into more effectively designed and communicated programs that elicit desired audience response." Instead of selling a product, social marketing aims to change people's minds—and, in some cases, their behavior, too.

Successful social marketing campaigns in the developing world have raised awareness of the importance of clean water and HIV and malaria prevention. In Australia, worker safety was the focus of a social marketing campaign conducted by WorkSafe Victoria, a government-run occupational safety and health organization. WorkSafe Victoria's "Homecoming"

campaign, which includes a video of family members greeting workers as they return home at the end of a workday, won the 2007 Australian Marketing Institute Marketing Program of the Year award. (To watch the video, go to www.youtube.com/watch?v=R8vkxXyB96o.)

Hoffman argues that a focus on family protection will be key to a successful marketing campaign for industrial hygiene. "This marketing image [of the hygienist] would be someone who is helping the community, helping the family, much the way a physician [is portrayed]," he explains. "If the image of the occupational hygienist was helping the worker and their family, I think [the campaign] would be farther-reaching, because, again, people [in the developing world] are on a different level" of Maslow's hierarchy. "This image, we thought, would raise awareness about hazards as well as make [industrial hygiene] a desirable career path.

"One of the biggest problems, when you do get a few people trained in the profession in developing countries, is that they realize they can make a lot more money in the developed world, so they don't stay. It's not just an issue of finding people to do it—we want them to feel like they're valued members of the community."

According to Sharann Johnson, one of the judges for the Breakthrough Thinking Competition, that community connection will make the "local hero" a more effective ambassador for industrial hygiene than an outsider would be. "My experience shows that when a worker promotes an OHS issue, the quality of the communication is just right for that group of people, rather than me trying to guess what they want to hear," Johnson explains. "It's more believable and convincing, and [produces] a better result all around."

McCluskey, another Breakthrough Thinking judge, credits the uniqueness of the social marketing concept for making Local Hero stand out from competing ideas. "All of the ideas were good," McCluskey says. "But this one was completely outside the box. . . . We Americans are so education-focused, and [Local Hero] kind of flipped it on its ear, saying [that] someone in a country that didn't have formal training and education in our field could learn enough to advocate

for a safe workplace. There are countries where you're not going to have a masters in industrial hygiene program anytime soon. As developing countries industrialize and plants and factories are built, there's going to be a huge lag time in getting qualified professionals in there to have responsibility for running the program. So rather than a top-down approach like we normally see, [Local Hero] is more of a bottom-up approach."

Tending the Grassroots

No one can say to what degree a Local Hero initiative could change working conditions in the developing world. Everyone can agree, however, that the dreary reality demands a response. McCluskey believes that nothing short of a grassroots movement will bring about the necessary changes.

The judges' deliberations, McCluskey says, included discussion of Upton Sinclair's 1906 novel *The Jungle*. Sinclair's depictions of conditions in the U.S. meatpacking industry caused a public furor that led to passage of the Pure Food and Drug Act and the Meat Inspection Act. If Local Hero is to be a catalyst for similarly extensive change in working conditions in the developing world, it will need an organization such as AIHA to provide the initial spark.

"Someone's got to develop the idea and refine it," Hoffman says. "What we see is AIHA sort of being the keeper and the go-between that works with a marketing firm to develop the materials for use worldwide."

With PCIH, and Hoffman's presentation to the AIHA Board of Directors, right around the corner, what does he plan to say to the Board?

He pauses, considering. "We're all working on the same goal here—preventing occupational disease," he says. "And if we can drive demand in the developing world, the scale of disease prevention will be orders of magnitude beyond what we've achieved in the West to this point."

Ed Rutkowski is managing editor of The Synergist. *He can be reached at (703) 846-0734 or erutkowski@aiha.org.*

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IH/EHS NewsWatch

CONTROL BANDING

NIOSH Publishes Control Banding Guidance

In August, NIOSH published a new document on control banding, an approach to managing risk in situations where little guidance is available. *Qualitative Risk Characterization and Management of Occupational Hazards: Control Banding* reviews relevant literature, discusses the origins of control banding, and analyzes control banding strategies.

Proponents of control banding have argued that it is an effective method for managing risk, particularly regarding substances that do not have occupational exposure limits or for which little toxicological data exists. More information about control banding appears in the article beginning on page 43 of this issue.

The NIOSH control banding publication is available at www.cdc.gov/niosh.

TOXIC CHEMICALS

EPA Makes Preliminary Toxics Release Data Available to the Public

In August, the EPA published preliminary data on the release of toxic chemicals occurring in the United States between Jan.1 and Dec. 31, 2008. The publication marked the first time that EPA has released raw data prior to completion of its analysis.

The Toxics Release Inventory is a database that contains detailed information on nearly 650 chemicals and chemical categories that more than 23,000 industrial and other facilities manage through disposal or other releases, recycling, energy recovery, or treatment. The data are collected from industries including manufacturing, metal and coal mining, electric utilities, commercial hazardous waste treatment, and other industrial sectors.

The preliminary data account for approximately 80 to 85 percent of the data to be collected. The agency will update the data in September and October. More information is available at www.epa.gov/tri.

ENVIRONMENTAL PROTECTION

EPA Issues Proposed Rule on Airport Deicing Operations

A new rule proposed by the EPA would require airports to collect spent deicing fluids and implement other measures to protect the environment. An agency press release states that "discharges from deicing operations at airports can have major impacts on water quality, causing reductions in wildlife, contamination of drinking water sources, and impacts in residential areas and parkland."

The agency developed the rule with the Federal Aviation Administration, which determined that implementation of the rule would not affect the safety of airline workers or passengers, according to EPA. The new rule would affect approximately 200 airports in the U.S.

More information on the airport deicing proposed rule is available at www.epa.gov/guide/airport/.

WORKPLACE ACCIDENTS

Statistics Available from First European Work Force Survey

Eurostat, the European Union agency for statistics, has released results from the EU's 2007 Labour Force Survey on workplace accidents, work-related health problems and exposures to risk. The survey was the first of its kind for the European work force and focused on workers aged 15 to 64 years in the EU's 27 member states.

Survey findings include:

- Approximately 7 million workers had an accident at work in 2007.
- 41 percent of workers (approximately 81 million) in the EU are exposed to factors that can adversely affect physical health.
- 28 of workers (approximately 56 million) are exposed to factors that can adversely affect mental well-being.

For more information, visit the Eurostat website at http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home.

MANAGEMENT TRAINING

University Program Specifies Measures to Promote Emotional Health at Work

Researchers from Michigan State University (MSU) and Portland State University have been awarded a $4 million federal grant to further develop a training program that specifies behaviors supervisors can use to support employees' work and family demands, according to a July 27 press release from MSU.

The new training program encourages managers to provide emotional support, allow for flexible scheduling, and facilitate

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Standards Update

New ANSI/AIHA Standards

The Accredited Standards Committee Z9 on Ventilation Systems is proposing two new standards for development. The formation of subcommittees for both standards has been approved by the Z9 Committee members and the Committee is seeking new members.

Design, Operation and Maintenance of Combustible Dust Collection Systems

This standard will apply to dust control systems with combustible solids that are a fire, deflagration, explosion or detonation hazard. This standard will augment the content of other Z9 standards and will offer prudent practice regarding:

- Analysis of systems for combustible dust hazards
- Design guidance to mitigate combustible dust hazards
- Maintenance recommendations to insure systems operate per original design intent

The subcommittee chair is Lee Hathon and the vice chair is Theodore Knutson.

Design, Operation, Testing and Maintenance of Laminar Flow Fume Hoods

This standard will apply to laminar flow fume hoods (LFFH) that use filtered supply air and ducted exhaust to protect products inside the hood from external contamination and exhaust hazardous effluents from the building. This standard will provide guidelines for design, operation, testing and maintenance of laminar flow fume hoods.

Laminar flow fume hoods are complicated exposure control devices that must be designed and operated properly to provide both product and personnel protection. At present, no standards provide guidelines for design, operation and testing, and there is little consistency among LFFHs and how they operate. In addition, there is no guidance on methods to conduct tests to ensure proper performance or monitor and maintain reliable operation. This standard will provide the necessary guidelines to improve performance of LFFHs and ensure better protection for personnel working with potentially hazardous materials.

The subcommittee chair is Thomas C. Smith and the vice chair is Dr. Gerhard Knutson.

Performance Testing and Maintenance of Non-NFPA Covered Respirators and Personnel Qualifications

The Z88 Committee is expected to vote in December to approve the formation of a subcommittee to work on this standard. It will cover all respiratory equipment not covered by NFPA testing requirements, including but not limited to airline respirators, PAPRs, airline escape respirators, sandblast and painting helmets and hoods, and negative pressure respirators (non-limited use). The standard will establish properly trained technicians who will follow appropriate performance testing standards to assure respirators continue to perform at their designed protection factors after maintenance and on an ongoing basis. Stakeholders will include manufacturer's designers, testers, program administrators, and end users.

Public Review Notices for Revisions

ANSI/AIHA Z88.10 2001 Respirator Fit-Testing Methods. This standard provides guidance on how to conduct fit-testing of tight-fitting respirators. Fit-testing is only one element of a complete respiratory protection program. Comments are due by Nov. 2, 2009.

ANSI/AIHA Z88.7 2001 Color Coding of Air Purifying Respirator Canisters, Cartridges and Filters. The requirements of this standard apply to the identification of air-purifying respirator canisters, cartridges and filters used to provide respiratory protection against gases, vapors or particles. These requirements apply to canisters, cartridges, and any high-efficiency filters, whether encapsulated or un-encapsulated, used as components of air-purifying respirators. Comments are due by Nov. 9, 2009.

ANSI/AIHA Z9.5 Standard on Laboratory Ventilation

The draft standard is currently being balloted by the subcommittee. In November 2009, the standard will be balloted by the ASC Z9 committee and be available for public review.

Notable changes to this revision of the ANSI/AIHA Z9.5 standard include:

- Adding energy considerations within the scope of standard
- Reverting back to use of the term "fume hood," which the committee tried to banish with the 2003 standard because the technical AIHA definition of "fume" is a solid particle
- Replacing the current lower limit on air flow through a fume hood (25 cfm/sq. ft.) with a range of values and guidance on how to select the minimum flow
- Increasing emphasis on a Laboratory Ventilation Management Plan
- Increasing information on capabilities and limitation of ductless fume hoods
- Designing information relative to emergency modes of operation (e.g., ensuring that emergency mode operations do not prevent emergency egress due to extreme pressure differentials)
- Updating the Preventive Maintenance section

All notices for public comment and Project Initiation Notification were published in the ANSI Standards Action publication as well as on the AIHA website (www.aiha.org). If you have any questions or comments, or would like to join a subcommittee, contact Mili Mavely, AIHA's manager of standards and guidelines, at mmavely@aiha.org.

[From: 53]
employees' abilities to respond to work and family demands.

The program is featured in the August edition of the *Journal of Management*.

NOISE EXPOSURE

NIOSH Develops New Software for Use in Mines

The July 2009 issue of *Technology News*, a NIOSH publication, describes a new software tool intended to help mine safety and health professionals reduce noise exposures. The goal of the NIOSH Determination of Sound Exposures (DOSES) software is to help identify exposure problems by simplifying record-keeping and analysis.

DOSES tracks start- and stop-times of worker tasks. When sound data are entered into the program, DOSES allows safety professionals to monitor noise exposures over time. DOSES can be downloaded from the NIOSH mining website at www.cdc.gov/niosh/mining/products/.

VOLUNTARY PROTECTION PROGRAM

OSHA Changes VPP in Response to GAO Report

A Government Accountability Office (GAO) report issued in May that criticized aspects of OSHA's Voluntary Protection Program (VPP) has persuaded the agency to make several changes to the VPP, according to an article in the Aug. 20 issue of *Occupational Safety and Health Reporter*. The changes include:

- Barring on-site OSHA evaluators from sharing recommendations on how to achieve VPP status with employers
- Requiring thorough follow-up responses to fatalities at VPP workplaces
- Requiring thorough analysis of VPP workplaces that do not meet program requirements
- Reviewing VPP participants' self-evaluations

The GAO report found that OSHA does not require VPP sites to provide information about employers' responses to workplace fatalities and injuries. In addition, the report revealed that 12 percent of VPP worksites had injury and illness rates that were higher than the rate for their industries. Despite this finding, from 2003 to 2008 OSHA doubled the number of VPP participants. The report is available at www.gao.gov.

ENFORCEMENT

Public Input Sought on EPA Priorities

In August, the EPA announced that it was seeking public input about its national enforcement program. Suggestions can be submitted through Dec. 1 via the EPA blog (http://blog.epa.gov/enforcementnationalpriority/).

EPA's current enforcement priorities include pollution from stormwater runoff, air toxics, concentrated animal feeding operations, and mineral processing. More information on enforcement priorities can be found at www.epa.gov/compliance/data/planning/priorities/index.html.

[Continued: 61]

By the Numbers

BLS Releases Preliminary 2008 Workplace Fatality Data

In August, the U.S. Bureau of Labor Statistics (BLS) released preliminary data from its National Census of Fatal Occupational Injuries (CFOI) for 2008. The preliminary total of 5,071 fatalities and the rate of 3.6 fatal injuries per 100,000 full-time workers are the lowest ever recorded since the survey was first conducted in 1992.

The 2008 data are the first CFOI data based on hours worked. Previously, all CFOI data were calculated based on employment estimates from the BLS Current Population Survey. According to the BLS website, "Hours-based rates measure fatality risk per standardized length of exposure, and are generally considered more accurate than employment-based rates. Hours-based rates use the average number of employees at work and the average hours each employee works."

Further information on the rates is available at www.bls.gov/iif/oshnotice10.htm. Hours-based rates for years 2006 through 2008 and employment-based rates for years 1992 through 2007 can be found at www.bls.gov/iif/oshcfoi1.htm.

BLS states that economic factors, such as a one percent drop in average hours worked in the U.S., probably affected the preliminary data. Reductions in employment and hours worked in high-fatality industries such as construction may also have contributed to lower fatality numbers.

Highlights from the preliminary 2008 CFOI data appear below; visit www.bls.gov for more information. Final 2008 CFOI data will be released in April 2010.

680	Fatal falls in 2008, a 20 percent decline from the 2007 total (847), the highest ever recorded.
432	Fatalities from exposure to harmful substances or environments, a 13 percent decrease.
251	Workplace suicides in 2008, the highest total ever reported by the CFOI.
90.8	Fatality rate per 100,000 workers for loggers, the highest rate recorded in 2008.
40	Percent of fatalities attributed to transportation incidents.
20	Percent decrease in fatalities in private construction.
14	Percent increase in workplace fatalities involving fires and explosions.

Opportunities

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AIHce 2009 technical, general and keynote sessions are available as DVDs and downloads. Contact: (703) 849-8888; EduAssistant@aiha.org; www.conferencemedia.net/store/stores/aihce.

October 5–9
Chapel Hill, North Carolina
Building Inspection and Management Planning for Asbestos. CMs: 3.0. Contact: (888) 235-3320; osherc@unc.edu; http://osherc.sph.unc.edu.

October 7
Edmonton, AB, Canada
Alberta Local Section's 25th Anniversary Social. Contact: www.aiha-ab.com/events.php.

October 7–8
Greer, South Carolina
Carolinas Local Section PDC and Conference. CMs: 1.0. Contact: Connie McElroy-Bacon; cbacon@mindspring.com; www.aiha-carolinas.org/upcoming-meetings.html#fallconf.

October 7–8
Vancouver, BC, Canada
Pacific Northwest Local Section's Northwest Occupational Health Conference. Contact: administrator@pnsaiha.org; www.pnsaiha.org.

October 8
TeleWeb Virtual Seminar: H1N1 The Second Wave—Are You Ready? CEUs: 0.25; COCs: 0.25. Contact: Cinthia Minan; cminan@aih.org; www.aiha.org.

October 8
Austin, Texas
Texas Hill Country Local Section meeting. Contact: www.texashillcountryaiha.org/THCAIHA_Members.html.

October 8
Grand Rapids, Michigan
West Michigan Industrial Hygiene Society meeting: Noise Induced Hearing Loss and Strategies. Contact: www.aiha.org/localsections/html/W.Mich/upcoming%20events.htm.

October 12–14
Birmingham, Alabama
30th Annual Industrial Ventilation Conference. CEUs: 2.1; CMs: 3.0. Contact: (520) 621-3054; epd@engr.arizona.edu; www.engineering.arizona.edu/visitors/epd/conferences.html.

October 15
Aiea, Hawaii
Hawaii Local Section half-day seminar: Emerging Issues in Air Sampling. CMs: 0.5. Contact: Tavia Shiroma; tavias@hawaii.edu; www.aihahawaii.org/calendar.html.

October 15
Troy, Michigan
Michigan Industrial Hygiene Society (MIHS) Mini-Conference 2009. CMs: 1.0. Contact: Laura B. Randall; lrandall@askenviroair.com; www.mihsweb.org/public_calendar. htm.

October 15
Scotch Plains, New Jersey
New Jersey Local Section dinner meeting. Contact: www.njaiha.org/Home/tabid/36/Default.aspx.

October 16
New York, New York
Metro New York Local Section meeting: PDC on combustible dust. Contact: www.aiha.org/LocalSections/html/Metro%20NY/default.htm.

October 18–21
Miami, Florida
52nd Annual Biological Safety Conference. Contact: www.absaconference.org/index.html.

October 18–21
Zurich, Switzerland
Ventilation 2009: The 9th International Conference on Industrial Ventilation. Sponsored by AIHA. Contact: www.ventilation2009.ethz.ch.

October 20–23
Chapel Hill, North Carolina
Occupational Health Nursing: Introduction to Principles and Practice. Contact: (888) 235-3320; osherc@unc.edu; http://osherc.sph.unc.edu.

October 20–23
Elsinore, Denmark
USE2009: Understanding Small Enterprises—A Healthy Working Life in a Healthy Business. Contact: use2009@use2009.dk; www.use2009.dk.

October 21
Long Beach, California
2009 Joint Technical Symposium. Contact: www.jts2009.com. Co-sponsored by OC AIHA and SC AIHA.

October 21–22
Medford, Oregon
19th Annual Southern Oregon Occupational Safety and Health Conference. Contact: (888) 292-5247; www.orosha.org/conferences.

October 26
Atlanta, Georgia
Georgia Local Section (GLS) PDC: Anticipation, Recogition, Evaluation and Control of Welding Health Hazards. Contact: http://georgialocalsectionaihamember.camp8.org/Default.aspx?pageId=106855&eventId=69942&EventViewMode=EventDetails.

October 26–28
Atlanta, Georgia
2009 National Environmental Public Health Conference: Healthy People in a Healthy Environment. Contact: staff@neha.org; (303) 756-9090, ext. 300; www.neha.org/AEC/2009/index.html.

October 26–28
Calgary, AB, Canada
8th Annual Alberta Health and Safety Conference and Trade Fair. Contact: info@hsconference.com; www.hsconference.com/CONFERENCE-Intro.html.

October 26–30
Minneapolis, Minnesota
American Association for Aerosol Research (AAAR) 28th Annual Conference. CMs: 4.0. Contact: http://aaar.conference2009.org/index.php.

October 27
TeleWeb Virtual Seminar: Mastering the Art of Safety: Advanced Communication Techniques. CMs: 0.5; CEUs: 0.25; COCs: 0.25. Contact: Cinthia Minan; cminan@aiha.org; www.aiha.org.

October 27
Albuquerque, New Mexico
Rio Grande Local Section Fall Technical Conference 2009. Contact: www.aiha.org/localsections/html/RGAIHA/index.htm.

October 28
San Diego, California
San Diego Local Section meeting. Contact: www.sdaiha.org/meetings.html.

October 31
Deadline for Submission of abstracts for International Symposium of Reproductive Hazards in the Workplace and Environment (RHICOH). Contact: www.rhicoh2010.tw/index.html.

October 31
Deadline for submission of abstracts for EPCOH-Medichem 2010: Occupational Health under Globalization and New Technology. Contact: www.epicohmedichem2010.tw/index.html.

November 2–5
Columbia, South Carolina
ASP/CSP Review Workshop. CMs: 4.0; COCs: 4.0. Contact: www.BowenEHS.com.

November 4
Orlando, Florida
ASSE Central Florida Chapter Ergonomics Professional Development Conference. Contact: www.centralfl.asse.org.

November 5–8
San Juan, Puerto Rico
8th Annual International Conference on Occupational Stress and Health: Global Concerns and Approaches. Contact: Wesley Baker; (202) 336-6033; WSHConference @apa.org; www.apa.org/pi/work /wsh.html.

November 7–11
Philadelphia, Pennsylvania
American Public Health Association's 137th Annual Meeting and Exposition. Contact: www.apha.org/meetings.

November 9–12
Atlanta, Georgia
Fundamentals of Industrial Hygiene. Sponsored by AIHA. CEUs: 3.2; CMs: 4.0; COCs: 3.2. Contact: (703) 849-8888; eduassistant@aiha.org; www.aiha.org.

November 9–13
Chapel Hill, North Carolina
Certified Safety Professional Review Course. CEUs 3.5; CMs: 4.5; COCs: 2.9. Contact: Contact: (888) 235-3320; osherc@unc.edu; http://osherc.sph.unc.edu.

November 10–13
New Delhi, India
Ninth International Mine Ventilation Congress. Contact: www.9thimvc.org/hom.htm.

November 11
Call for abstracts for poster presentations deadline for Agricultural Safety and Health Council of America (ASHCA)-NIOSH Joint Conference: Be Safe, Be Profitable: Protecting Workers in Agriculture. Contact: ashca@mcrf.mfldclin.edu; www.ashca.com/dotnetnuke/Portals/0/Cincinnati%20flyer_call_8-06-09.pdf.

November 17
Delafield, Wisconsin
Wisconsin Local Section dinner meeting on ethics. Contact: http://aihawi.org.

November 19
Gaithersburg, Maryland
Chesapeake and Potomac Local Sections joint meeting with ASSE-NCC: Global Issues Facing the EHS Profession. Contact: www.aiha.org/localsections/html/potche/calendar.htm.

November 19
New York, New York
Metro New York Local Section meeting: Globalizing EHS. Contact: www.aiha.org/LocalSections/html/Metro%20NY/default.htm.

December 1
Rome, Italy
Deadline for abstracts. IOHA's 8th International Scientific Conference. Contact: Congress Secretariat; info@ioha2010.org; www.ioha2010.org.

December 3
Fairfax, Virginia
Potomac Local Section dinner meeting. Contact: www.aiha.org/localsections/html/potche/calendar.htm.

May 22–27, 2010
Denver, Colorado
AIHce 2010: New Frontiers in Science and Practice. Contact: www.aihce2010.org.

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NSC Booth 2267

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NSC Booth 1815

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To obtain further information on the listed products and companies, please circle the numbers on the fax-back card (p. 69) that correspond to the new products.

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NSC Exhibitors

Kinetics Noise Control, Inc.
Product/Service: Sound Control Curtains
NSC Booth 3117

Kinetics Noiseblock™ Sound Control Curtains are modular, reinforced limp-mass barrier and quilt composites designed to block noise and absorb sound. The product can incorporate a self-supporting track system allowing the sound curtain to open for access at any point along a barrier or enclosure wall.

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OHD
doseBadge
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SiteHawk
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To obtain further information on the listed products and companies, please circle the numbers on the fax-back card (p. 69) that correspond to the new products.

[From: 45]
groups by non-toxicologists. Since hazard banding is a preliminary attempt to categorize relative hazards of a substance to assist OEHS personnel in assigning the right controls, such as ventilation and PPE, the inability to categorize hazards can seem insurmountable. Another concern is that, for substances that are solid particles or aerosols, hazard banding confronts the same dilemma that exists for setting an OEL: insufficient inhalation toxicology data.

But, where hazard data exist, hazard banding compares a substance's relative hazard risk to other, better characterized substances. Some experts are working to validate aspects of control banding and hazard banding, including their estimation of exposure limits, prediction of exposures and adequacy of controls. Verification of these methodologies might build occupational hygienists' confidence in control banding and hazard banding. In their current form, control banding and hazard banding will not reduce the need for OELs, but they can protect workers in situations where guidance is not available.

Hazard banding provides a tool for EHS professionals to anticipate, recognize and evaluate hazards in the workplace. This is the goal we all try to achieve in our practice. The AIHA Control Banding Working Group and the WEEL Committee believe that providing the relative hazard bands for the substances under review by qualified and seasoned toxicology and IH specialists will serve the IH community in the qualitative aspects of risk management.

Volunteers Sought for Control Banding Working Group

AIHA members interested in promoting effective control banding strategies are encouraged to join the Control Banding Working Group (CBWG). For more information, visit the CBWG web page at www.aiha.org or contact Susan Ripple, CBWG chair, at SDRipple@dow.com.

Susan D. Ripple, MS, CIH, is the North America Industrial Hygiene Expertise Center Resource Leader and principal coordinator for occupational exposure limits at The Dow Chemical Company in Midland, Mich. She can be reached at sdripple@dow.com or (989) 636-5572.

CONNECT FOR CREDIT

Resources

1. **International Labour Organization (ILO):** ILO Toolkit. [Online] Available at www.ilo.org/public/english/protection/safework/chemsfty/index.htm (accessed Mar. 9, 2007).
2. **International Labour Organization (ILO):** ILO Toolkit. [Online] Available at www.ilo.org/public/english/protection/safework/ctrl_banding/rm_toolbox.pdf (accessed Aug. 26, 2009).
3. **International Labour Organization (ILO):** ILO Toolkit. [Online] Available at www.ilo.org/public/english/protection/safework/ctrl_banding/toolkit/icct/sheets.htm (accessed Aug. 26, 2009).
4. **Health and Safety Executive:** COSHH Essentials. [Online] Available at www.coshh-essentials.org.uk/ (accessed Aug. 26, 2009).

[From: 55]

H1N1

IOM Issues Report on Respiratory Protection for Health-Care Workers

In September, the Institute of Medicine (IOM) recommended that fit-tested N95 respirators be provided to health-care workers who are in close contact with patients suffering from the H1N1 influenza and other flu-like illnesses. The recommendation is based on a review of scientific evidence regarding methods of respiratory protection for health-care workers in the workplace.

IOM released "Respiratory Protection for Healthcare Workers in the Workplace Against Novel H1N1 Influenza A: A Letter Report" on Sept. 3. OSHA and the U.S. Center for Disease Control and Prevention had requested IOM to provide guidance on respiratory protection for health-care workers out of concern that current guidelines are not protective enough.

Free access to the report is available from the website of The National Academies Press, www.nap.edu. For more information about IOM, visit www.iom.edu.

In August, an IOM committee held a three-day workshop in Washington, D.C., on personal protective equipment for health-care workers against the Novel H1N1 Influenza A virus. Audio and presentation files from the workshop can be accessed from www.iom.edu/CMS/3740/71769/71867.aspx.

APPOINTMENT

Howard Returns to NIOSH

John Howard, MD, was named the new director of NIOSH in early September. Howard previously served as NIOSH director from 2002 through 2008 but was not reappointed by the Bush administration. Christine Branche served as interim director until the announcement of Howard's return on Sept. 3.

According to an agency press release, Dr. Howard is board-certified in internal medicine, legal medicine, and occupational medicine. He holds an MD from the Stritch School of Medicine at Loyola University of Chicago, an MPH from the Harvard University School of Public Health, a doctor of laws from the University of California, Los Angeles, and a master of laws in administrative law and economic regulation from The George Washington University.

Introductions

Michael W. Watson

Introductions features profiles of OEHS professionals working in diverse sectors of the health and safety industry. As an industrial hygienist with the International Brotherhood of Teamsters (IBT), an international labor union representing 1.4 million members primarily in the transportation sector, Michael W. Watson, CIH, CSP, CHMM, REHS, has responsibility for a broad range of safety and health issues, including training, collective bargaining, technical assistance and regulatory issues.

Prior to joining the Teamsters, Watson worked as a senior environmental health specialist at the Virginia Department of Health, where he performed residential indoor air quality investigations and epidemiological surveillance of rabies and West Nile Encephalitis. Previously, he worked at the Tidewater Coal Inspection Bureau, where his duties included exposure monitoring for occupational noise, asbestos, lead, and other hazards.

Watson received a BS in biological sciences and an MS in industrial hygiene and environmental and occupational health from Old Dominion University. He can be reached at (202) 624-6960 or mwatson@teamster.org.

What health and safety issues involving union members do you deal with the most? I'm assigned to the Teamsters' Building Material and Construction Trades, Beverage and Brewery, and Parcel and Small Package Divisions. Typically, I serve as a technical adviser on issues regarding workers' rights under OSHA and DOT, transportation safety, chemical hazards, hazard communication, construction safety, exposure assessment, and the prevention of work-related injuries and illnesses. Truck drivers must meet stringent medical qualifications and hours of service limits. It is my job to advise Teamster local unions on compliance with the DOT medical requirements and hours of service limits.

What is your role in negotiating safety and health language for national contracts? The IBT is party to the National Master United Parcel Service Agreement, which covers more than 230,000 UPS workers. In 2002 and 2007, I participated in bargaining sessions as a member of IBT's National Safety and Health Committee. We successfully negotiated language that addressed safety and health equipment, accidents and reports; temporary work for injured workers; medical and return to work examinations; and drug and alcohol testing. I also participate in grievance and arbitration proceedings related to the interpretation and implementation of the negotiated agreement.

What were your experiences at the AIHA Future Leaders Institute in 2006? It was an honor to be selected to participate in the 2006 FLI. There were a variety of social activities, networking opportunities and personality evaluation exercises geared toward enhancing professional leadership skills. Attendees remained engaged throughout the entire weekend. I met a bunch of great people, and many of them remain friends to this day.

You gave a presentation on preparing for the CIH exam at AIHce 2007 and AIHce 2008. What advice do you give people who are preparing for the exam? It's no secret that the CIH examination is one of the toughest around. In my opinion, the most important thing is to concentrate most on what you least comprehend. It is really easy, and sometimes fun, to just focus on your strengths, especially if you are using flash cards, self-quizzes, or computer software. It feels good to answer questions correctly! But it's very difficult to focus for weeks on topics that you have trouble comprehending. My advice would be to learn it all, no matter how difficult or burdensome it might seem.

What do you think is the key to fostering young people's interest in industrial hygiene? This is a question we have been struggling with for some time now on the AIHA® Students and Early Career Professionals Committee. Teams on the SECP have reached out to students before they enter university, and some have even reached out to kids in middle school. AIHA has done so much in this realm already—the student local sections, social networking sites, CIH preparation material, AIHF scholarships, just to name a few. In my opinion, we need to focus more on first- and second-year university students, many of whom are unsure about a prospective major.

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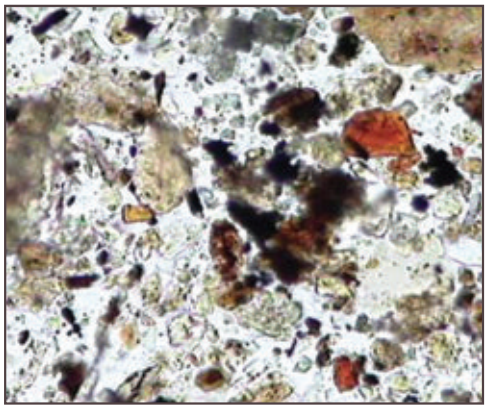
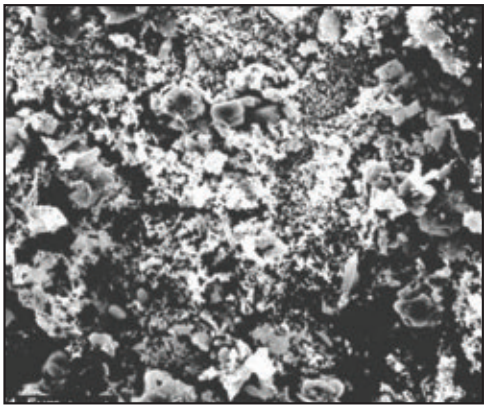
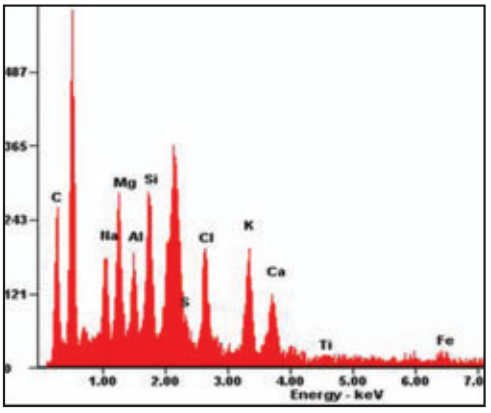


Optical Microscopy ~400X
Sample reveals fire-soot opaque particles and lofted soil dust.



SEM ~2510X
Reveals presence of soot-like opaque particles and confirms high concentrations of mineral dust and clay material.



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