

## MIHS PRESIDENT'S MESSAGE

Sarunas Mingela, CIH



In a few weeks The Michigan Industrial Hygiene Society will begin its seventieth year as a formally organized group of occupational health professionals in southeast Michigan. In 2007 we will, in various ways, be commemorating and celebrating the rich history that is MIHS. Please refer to the MIHS Newsletter and our frequent "broadcast" messages from Laura

Randall, the MIHS Communications Chair, for announcements of these events. Please support the efforts of your colleagues on the MIHS Board of Directors by participating whenever and wherever you can. Now let's take a trip back in time to the founding of MIHS.

In mid 1930s the United States was slowly scratching its way out of the economic "depression" that plagued the entire nation just a year or two earlier. By contemporary standards working conditions in almost every respect were primitive, but were gradually improving. Industrial safety was a relatively new profession and industrial hygiene was largely unknown. Coal was king and smoke stack industries and their emissions were signs of economic progress and prosperity. At the time, men predominated in the industrial workforce and despite the poor working conditions were happy to have any job after the depression. Those working in Detroit's blossoming auto industry were especially grateful for they not only had a job, but one of the best paying jobs in the country. Detroit's population was almost two million residents and a very large number of these worked for the auto manufacturers or its various satellite industries. I don't think I need to remind anyone of the origins for the terms "The Motor City" or "Motown" used are to describe Detroit.

Any discussion of early modern occupational health in Michigan can not be accomplished without including the automobile industry; for it was there and then that the first industrial hygiene organization in the United States was born. Following many years of building "boxy" cars, in any color you wanted as long as it was black, the car stylists won over the hearts and minds of the auto industry's decision makers. Almost simultaneously, all of the major

automobile manufacturers changed the designs of their cars by incorporating smoother and more flowing lines. These vehicles, while much more aesthetically pleasing, were well ahead of contemporary metal forming technology necessary to efficiently and safely manufacture these vehicles. A solution to this technology gap was found in the form of metallic lead used as a filler metal.

In order to smooth out body joints and make them less apparent, lead metal was melted and flowed into the joints. Lead was the ideal metal for this purpose. It could be made plastic at a relatively low temperature using nothing more than a gas torch. And, because it is a soft metal, excess lead could easily be removed by using a high speed pneumatic grinding tools. While the health effects of lead had been know for centuries, grinding and metal finishing of the lead was performed on the open plant floor, without enclosure, ventilation, or the use of personal protective equipment. Given our current state of industrial hygiene knowledge, it is not surprising that a significant and widespread health problem soon surfaced in the Detroit area.

It is indicated that in a relatively short period of time approximately 5000 Detroit area workers were affected, and 150 died of lead poisoning. Occurring almost simultaneously with Detroit's lead epidemic was the Hawk's Nest Tunnel "incident" at Union Carbide's Aluminum Plant in West Virginia. These two occupational health disasters are thought to be the worst industrial occupational health epidemics in American history. Fortunately for Detroit, critical industrial hygiene mass was achieved. Occupational health experts of the day, mostly physicians and now all considered titans of industrial hygiene and occupational medicine, were assembled to investigate and to bring Detroit's lead epidemic under control.

Drs. Stuart Meek, Carey McCord, John Pendergast (our first President in 1938), and William Bradley (President 1941), William Witheridge, Warren Cook (President 1958), and others led the charge head on to control lead and other exposures in the automobile manufacturing industry. These same individuals, in 1936, comprised the

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*President's Message Continued...*

nucleus of what would ultimately be The Michigan Industrial Hygiene Society in 1937. As indicated above, many of these individuals would later become officers in the Michigan Industrial Hygiene Society and / or the American Industrial Hygiene Association that was formed a year later in 1938. As organized industrial hygiene gathered momentum the formation of The Detroit Bureau of Industrial Hygiene soon followed. Some of these individuals would also be founders of the new industrial hygiene educational programs at the University of Michigan and Wayne State University.

No less important are the other industrial hygiene leaders from MIHS's past. How many of us can say we have never heard of Frank Patty and his seminal treatise on industrial hygiene and toxicology? Mr. Patty was our President in 1952 and an AIHA President before that in 1946. Other MIHS and AIHA leaders include: Jack Radcliffe; Vincent Castrop; Paul Woolrich; Paul Toth; Ralph Smith, PhD; Gene Kortsha; William H. Krebs, PhD; Steven Levine, PhD, and Henry Lick, PhD. Some of these individuals are more well known than others, but each is or was a dedicated industrial hygienist and leader from Michigan and each a member of MIHS.

Since 1937 The Michigan Industrial Hygiene Society has provided guidance and health protection for working men and women as well as providing leaders at the national level. Since 1939, no less than 12 AIHA Presidents came from The Michigan Industrial Hygiene Society. I know of no other local section that can claim more national AIHA leaders than The Michigan local section. And, as you read this, we have at least one, possibly more potential

national leaders, in the wings serving AIHA as officers or on the Board. As I said we have a rich history indeed; one that we must strive to preserve and maintain.

All of which leads me to the second purpose for writing this message. According to our Bylaws, elections for The MIHS Board and Officers must occur in February. The slate of candidates must be assembled by December. Participate in our future and become part of the rich history of MIHS, please consider offering yourself as candidate for a leadership position in the organization. Typically our Past President assembles the candidate slate for the next year's election. If you are interested in running for MIHS office, I urge you to contact the Past President or any member of the MIHS Board as soon as possible. If you want more information regarding the responsibilities or duties of the MIHS Executive Committee speak with any members of the committee. Become an active part of MIHS's future; be more than a member and participate. As we all know, when discussing statistics the past is always the best indicator of the future. If you have national AIHA aspirations begin with the MIHS. No one knows where the future AIHA leaders will come from, but statistically your chances are better if you are part of MIHS.

## Dues Notice Reminder

Please note that your 2007 MIHS membership dues are payable between September 1st through December 31st.

Please go to [www.MIHSweb.org](http://www.MIHSweb.org), then click on "Member Dues" in the upper right-hand corner.

If you would like to verify that MIHS received your payment, please go to:

- 1) [www.MIHSweb.org](http://www.MIHSweb.org)
- 2) click on "Members Area" in the upper right-hand corner
- 3) click on "Log In" and enter your Username\* and Password\*
- 4) click on "Update Your Profile"
- 5) view the following fields: "Payment Method" and "Expiration Date"

(\*Can't remember your Username and Password? Please contact [Laura Randall Irandall@argus-group.com](mailto:Laura.Randall.Irandall@argus-group.com))

MIHS thanks you for your continued support!

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## AIHA and OSHA Partner on Safety Alert

Safety Alert designed to make shipyard employers and employees aware of deadly hydrogen sulfide and shipyard sewage

FAIRFAX, VA (August 1, 2006) <sup>3</sup>/<sub>4</sub> As a result of the Occupational Safety and Health Administration's (OSHA) Alliance Program, a Safety Alert was developed through the cooperative efforts of the American Industrial Hygiene Association (AIHA), the American Shipbuilding Association, the National Shipbuilding Research Program, and the Shipbuilders Council of America. The Safety Alert, "Deadly Hydrogen Sulfide and Shipyard Sewage," was created for shipyard employers and employees to make them aware of the hazards of sewage systems on ships and in shipyard shore facilities. The document also describes how to prevent accidents involving hydrogen sulfide gas.

Shipyard employers and employees need to be fully aware of the hazards and dangers of sewage systems on ships and at shipyard shore facilities. In recent years, there have been several fatal accidents where up to four workers were killed while working on a sewage system. The principal cause of these worker deaths was the inhalation of hydrogen sulfide (H<sub>2</sub>S) gas, which can be generated by sewage. H<sub>2</sub>S gas smells like rotten eggs and, when inhaled, can render workers unconscious in

seconds and kill them. With proper training and procedures, employers can prevent accidents involving H<sub>2</sub>S gas from sewage systems.

This Safety Alert was developed through OSHA's Alliance Program. OSHA and AIHA recently agreed to re-establish their alliance for another two years. The two organizations plan to continue working closely to seek opportunities to jointly develop information, further support AIHA member participation in OSHA's cooperative programs, facilitate dialogue among occupational and environmental health and safety organizations, and establish avenues and processes for AIHA members to mentor and assist OSHA personnel with professional certification.

The Safety Alert was developed for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor. To view the Safety Alert, please visit [www.aiha.org](http://www.aiha.org). For more information on the AIHA-OSHA alliance agreement, please visit [www.aiha.org/AIHA-OSHA-Alliance.htm](http://www.aiha.org/AIHA-OSHA-Alliance.htm). For questions regarding the Safety Alert or the alliance agreement, please contact Peter O'Neil, AIHA's assistant executive director, at (703) 846-0760 or [poneil@aiha.org](mailto:poneil@aiha.org).

## Hexavalent Chromium Seminar

MIHS offered a hexavalent chromium seminar on September 14. It was presented by 3M Occupational Health & Environmental Safety in Livonia, Michigan.

It was a popular topic, since there were 40 people registered to attend, (5 over the "comfortable" capacity of the room) and there were more on the waiting list.

The Seminar included:

- Welding Safety, Electroplating Safety, Heavy Duty Paints and Coatings Safety
- New Hexavalent Chromium Standard
- Manganese Update
- Beryllium Update
- Titanium Dioxide Update

It was worth 0.5 ABIH CIH CM Points (ABIH Approval Number = 06-1569; Rubric/Point Area = IH)

Thank you to Pier-George for the photos.



## **MIHS Hosts AIHA Teleweb: Third Party Liability in Construction Safety and Health**

By Pier-George Zaroni, CIH, MIHS President-Elect



On August 10, 2006, MIHS sponsored the AIHA teleweb, "Third Party Liability in Construction Safety and Health" with a total of 12 people participating. The event was held at the Marsh offices -

Renaissance Center in downtown Detroit. It was an excellent opportunity to network with colleagues and earn 0.5 certification maintenance points. Marsh graciously hosted the event and provided parking, conference facilities, and refreshments. This is the third time they have hosted a teleweb, and MIHS would like to extend a special word of thanks.

Mille gratia!

The presenter, Richard Gleason, CIG, CSP, CHMM from Seattle, Washington helped illuminate the tangled web of contractor liability. Attendees learned about correcting employers, controlling employers, exposing employers and creating employers and how they are all potentially liable in the event of a workplace accident. Did you know that a General Contractor could be cited under OSHA even though he had no exposed employees?

If you missed this TeleWeb, be sure to watch for the MIHS offerings of future AIHA Tele Web conferences.



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## What's In The Synergist?

by Andy Crause, CIH, MIHS Board



### Diffusive Samplers: A Breakthrough in Sampling Technology...or Bad Science?

August 2006, Volume 17, No 7.

Passive monitors ("badges") used to perform exposure monitoring for volatile organic compounds (VOCs), formaldehyde, and ethylene oxide have been in use since the early 80s. This breakthrough technology certainly makes things easier than traditional "tube and pump" sampling, as the person being monitored does not have to wear a bulky pump, and the hygienist does not have to lug bulky sampling pumps around or calibrate them before and after use.

There are a variety of samplers produced by several manufacturers such as 3M, SKC, and Assay Technologies, but each works on the principal of diffusion of air across a membrane. The samplers depend on a constant flow of air over the badge, and the sampling rate is calculated by the manufacturer based on collection of samples in known atmospheres at a variety of concentrations, under a variety of conditions. OSHA is currently working on validation of 3M 3520, and SKC 575-002 monitors for 20 specific compounds. Currently, there are OSHA-validated methods for benzene, ethylbenzene, formaldehyde, MEK, MIBK, perchloroethylene, toluene, trichloroethylene, and xylene.

The title of the article is somewhat misleading, as the author did not present evidence of "bad science" associated with passive monitors. Like any other sampling and analytical method, there are limitations to use of this technique, and the primary limitation is that the sampler has to be exposed to air movement. For use of passive monitors for chemicals where OSHA has not established a validated method, the hygienist should proceed with caution if the monitoring results are to be used for compliance purposes. As long as (1) the sampling and analytical method has been evaluated, (2) the hygienist is using the sampling technique recommended by the manufacturer, and (3) the laboratory is using the analytical technique recommended by the manufacturer, use of passive monitors is defensible.

The following article was reprinted with permission from *The Synergist*.

### Diffusive Samplers: A Breakthrough in Sampling Technology or Bad Science?

By Fred Posey and Sue Salkin

#### Can It Really Be That Easy?

Imagine a sampling protocol designed to assess the exposure of 50 workers to a number of potentially hazardous volatile organic compounds. The traditional approach would involve the tedious and time-consuming method of calibrating and attaching sampling pumps and media to each worker. At the end of the sampling period, each pump would have to be checked to ensure the sampling rate had not significantly

changed or, indeed, that the pump had not failed (an all too common occurrence). If any of the pumps did not perform according to standard sampling guidelines, new samples would have to be taken, perhaps requiring an additional day of the investigator's time.

Compare that scenario to one involving the use of diffusive samplers. In this situation, the investigator simply opens each sampler, attaches it to the worker in question and records the starting time. At the end of the sampling period the samplers are removed, the stop time is recorded and the sampling is concluded; no resampling is required because passive sampler sampling rates never change under normal sampling conditions.

#### Important Questions That Need Answers

Is it possible that these passive sampling devices actually work as well as active sampling methods? What about the legal questions? Will exposures assessments using this technique hold up in court? What does OSHA have to say about their use? How many of these devices are currently being used? What are their limitations, if any? These are a few of the questions that you need to answer before you decide to begin using these amazingly simple products.

#### History

One of the first diffusive samplers to appear on the market was 3M's mercury monitor, which appeared in 1977. It was followed in rapid succession by the 3500 Organic Vapor Monitor (1980), the 3520 Organic Vapor Monitor with a backup section (1982), the formaldehyde monitor (1983) and the ethylene oxide monitor (1984).

In 1981, Assay Technology, a California company, entered the market with an ethylene oxide monitor, and today it offers 17 diffusive samplers capable of sampling for 233 analytes, including VOCs, amines, aldehydes, ozone, ethylene oxide and acrylates.

According to SKC, the 1986 publication of The NIOSH Protocol for the Evaluation of Passive Monitors led the company to develop and market samplers that were validated to parameters specified in the protocol. SKC now offers a wide variety of samplers designed for specialty application, including samplers with chemically treated paper, samplers with specialty sorbents and samplers with sorbents that allow thermal desorption.

The next significant development in the passive sampler timeline was the U.S. OSHA methodology Determination of Sampling Rate Variation for Passive Samplers, which came out in 1998. This methodology allowed OSHA to establish a sampling and analytical error for passive samplers and led to the publication of OSHA's Sampling and Analytical Methods for specific compounds using passive samplers. The OSHA initiatives have advanced the usage of passive samplers more than any other single event from the perspective of SKC.

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### How Do Passive Samplers Work?

Unlike active sampling methods, passive samplers depend on a constant flow of air over the monitor sampling face. If the movement of air is not rapid enough, the monitor goes into what is known as a "starvation mode," resulting in an underestimation of exposure. It is this rate of air movement found in normal working conditions that limits the sampling rate of passive samplers. Users often complain about the slow sampling rates of the samplers and wonder why it is not possible to make them with sampling rates they are accustomed to using with active sampling methods. Unfortunately, monitors with sampling rates of 100 to 200 ml per min require very high air movement that is not typically found in the workplace. As a result, high sampling passive samplers are not practical.

### From Where Do Chemical Sampling Rates Come?

Basically, the sampling rate for a given chemical compound is determined by comparing the amount of the chemical collected on the passive sampler in a known atmosphere with the amount collected by an active sampling method in the same atmosphere. The sampling rate then can be calculated using the following formula:

$$\text{sampling rate (ml/min)} = \frac{\mu\text{g collected by passive sampler}}{\text{sample time X active method } \mu\text{g/liter}}$$

This sounds simple. However, in practice the above experiment must be performed numerous times under different conditions (concentration, temperature, humidity, wind speeds, etc.) to determine the range of conditions under which the sampling rate for the chemical in question is linear. According to the SKC validation data, 124 samples were collected and analyzed to determine the sampling rate of acetone alone. In practice it means that this complicated protocol is too expensive and time consuming to be used to calculate the sampling rates of potentially thousands of VOCs that could be analyzed using passive samplers. To make sampling rate determination more cost effective, manufacturers have resorted to determining just one chemical in a homologous series (alkanes, alcohols, ketones, aromatics, etc.) and then using a mathematical model to calculate the sampling rates for the remaining members of the series. When using sampling rates supplied by manufacturers, it is important to determine if the sampling rate in question was determined experimentally or calculated using a model.

### Warning to End Users of Passive Samplers!

What this actually means to end users of passive samplers is that they should not be used under conditions that are not defined by the manufacturer's validation protocol. If the validation conditions are based on a face velocity range of 20 to 150 ft/sec, then they should not be used under conditions outside of this range without additional testing. The same restriction applies to temperature range, humidity effects and sampler capacity. The conditions under which samplers are validated are available in manufacturers' published literature and on their Web sites. Before using these products, customers should make sure they are operating within these guidelines.

### What Are Current Trends in the Manufacture and Use of Diffusive Samplers?

According to the manufacturers of diffusive samplers, sales have been increasing in popularity with time. There has been an increase in popularity of a given monitor for a while after OSHA has changed a PEL. Sorbents that allow for thermal desorption are now used by the U.S. EPA for VOCs in indoor air. Many health and safety professionals are compliance focused. If OSHA has a method, users are more likely to believe that passive samplers are a viable option to active samplers. As the number of OSHA validated methods increase, so will the use of diffusive samplers. Current OSHA policy is the diffusive samplers with OSHA-validated methods can be used for compliance sampling. Diffusive samplers that have sampling rates provided by the manufacturer can be used for screening purposes, providing OSHA has a sampling rate variation for that sampler.

### How Does OSHA Approach the Problem of Validation and Use in OSHA Field Work?

Before using passive monitors in the field, preliminary work is performed and sampling rate is evaluated. Depending on the analyte, published sampling rate or theoretical sampling rate is usually different from the actual sampling rate. Highly volatile analytes cause reverse diffusion, which in turn effects sampling rate. The variation is taken as corresponding to the pump sampling and analytical error. An OSHA methods development team currently is validating passive samplers for the top 20 organic chemicals requested, which includes 3M 3520 OVMS and SKC 575-002 passive samplers. The chemicals with OSHA-validated methods for diffusive samplers are benzene, ethyl benzene, formaldehyde, methyl ethyl ketone, methyl isobutyl ketone, perchloroethylene, toluene, trichloroethylene and xylene.

### Productivity-Are Diffusive Samplers Increasing Productivity in IH Field Work?

Based on the response to a recent survey on the use of passive monitors, general IH laboratories analyze 50-300 passive monitors per month. Large labs that specialize in passive monitors average about 2,500 per month. A large industry uses about 100 per month. The survey also indicated that the use of passive monitors peaks during the months of May, June and July. Although most labs recommend using passive monitors instead of charcoal tubes for common solvents, some government industries in general do not use passive monitors due to cost, but when they do, only OSHA-validated methods are used.

Not all laboratories have the capability of determining uptake rates or reverse diffusion using an exposure chamber. When reporting results without an OSHA-validated method, most labs refer to "OSHA modified," "NIOSH modified," or "3M method" and use the published uptake rate from the manufacturer. If the rate is not in the published guide, they obtain a theoretical rate from the manufacturer.

### What if There Is No OSHA Method? Two Laboratories Respond

Question: "IH laboratories analyze various solvents without an

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OSHA-validated method for the POVM. Are you confident that the lab desorption efficiency validation procedure meets legal criteria?"

Lab A:

It depends. SKC recommends using only validated methods for compliance purposes. There is a difference between survey monitoring and compliance monitoring. I believe OSHA allows use of methods equivalent in performance to OSHA methods for compliance monitoring. I think good judgment needs to be used. Compliance monitoring probably becomes more of an issue when results by any method show results near the limit, and less so when results by any method are significantly below the limit. Whatever method or methods are used, enough data is required to show statistically what percent of results are below the exposure limit and at what degree of confidence.

Lab B:

If the question is whether spike-and-recovery testing is enough, my comment would be "no". Typically, the lab will be relying on two additional things: (1) OSHA has evaluated a method for the same solvent on an active charcoal tube sampler and (2) someone other than OSHA (e.g., sampler manufacturer or a large company) has provided an evaluated method saying that the sampler can be used for that solvent.

From the legal perspective, the "law of the land" is that any employer may use any method that works to monitor employees. It is prudent to have documentation showing that a method has been evaluated. The OSHA Air Contaminants Standard 29CFR1910.1000 says nothing whatsoever about what methods to use. The more recent standards for specific substances such as vinyl chloride, benzene, ethylene oxide and formaldehyde (29CFR.1017, .1028, .1047 and .1048) specify the accuracy required for time-weighted average monitoring but do not specify methods. When the ethylene oxide and formaldehyde regulations were published, OSHA included lots of comments in the preamble indicating that non-OSHA methods are permissible and may even be better than OSHA methods.

#### Another Resource of Method Database

The AIHA Industrial Hygiene Methods Exchange Network is a database where unpublished sampling and analytical methods from private industries are shared with the public. This exchange network is maintained and operated by members of the Sampling and Laboratory Analysis and Computer Application Committees. To determine if there are private companies, besides OSHA and manufacturers, who have done validation work on passive samplers, check this link: <http://www.aiha.org/Content/InsideAIHA/Committees/IHMENdaabase.htm>.

#### Diffusive Samplers Can Make Life A Lot Easier For Everyone

Passive monitors are indeed a breakthrough in sampling technology. Think of all the manual calibrations we don't have to do in the field and all those pumps and tubes we don't have to drag around, and most importantly for the employee being monitored, not needing to wear a pump all day on the belt or

in the pocket that is competing with the tools and personal protective equipment already attached to his or her body. Personal experience with field side-by-side sampling using large charcoal tubes has indicated a difference of 5-15 percent at 25-100 ppm concentrations. This is not bad when compared with the standard error of estimate at 5-10 percent for the common solvents.

#### Conclusion: The Decision To Use Passive Samplers Should Be Based on Sound Science!

As we have seen, the decision to use passive samplers is not a straightforward yes or no but should be based on an understanding of how it can be determined if these amazingly simple devices are going to meet your sampling requirements. Before making a decision, see if you have answers for these questions.

1. What is the monitoring in question going to be used for-compliance or just a survey?
2. Is there an OSHA method?
3. Has the manufacturer of the passive monitor in question conducted any kind of validation study?
4. Is the sampling rate of the chemical(s) under consideration been calculated or empirically derived?
5. Has a third party performed an OSHA-type validation?
6. Have you checked with your laboratory to get its recommendations?

If you don't have satisfactory answers to these questions, what you might be getting instead of cost-effective air sampling data is bad science.

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## Is It Time To Update Your Resume?

The motto "Be prepared," isn't just great advice for Boy Scouts; it's also great career advice. You never know when the perfect career opportunity will present itself. If a recruiter called you today with your dream job, would you be prepared to send out an up-to-date resume right away? There are four critical times to update your resume:

- At least once a year
- Any time your career focus changes
- When you anticipate layoffs with your company
- When you begin to feel dissatisfied with your current position

### 1. Update your resume every year.

This is where many people fall short. When that recruiter calls with the perfect job, you may suddenly find your resume is years out of date, and you'll have to scramble to catch up. Keep your resume current by including your best accomplishments each year. Don't count on your memory to recall everything you achieved in years past! You are likely to overlook critical achievements and contributions. If you need assistance, a resume coach may be able to help you through the process with some targeted questions on your most recent jobs.

### 2. Update your resume when your career focus changes.

If you want to change your career path, then you also need to change your resume. There are several ways to shift the focus away from your current job and toward your new career. By focusing on the skills that will be useful in your new career, you can position yourself as a stronger candidate for the job. Highlight those transferable skills in your new resume, bringing them front and center.

In addition to highlighting your transferable skills, shift your list of accomplishments to support those skills. Accomplishment statements give credibility to transferable skills and prove your ability to cross industry or occupational lines. Well-crafted accomplishments make a big difference in whether you win the interview or are passed over.

Finally, be sure you understand your audience. As you shift career focus, it is critical to understand the hiring motives of your target market. Use your resume as an effective selling tool by correctly anticipating the recruiter's "wish list" for great job candidates.

### 3. Update your resume when you anticipate layoffs within your company.

A harsh reality of today's economy is the need for corporate downsizing. Layoffs and losses are becoming more and more common. But you can prepare for any worst-case scenario by keeping your resume up-to-date.

Don't make the mistake of being overly optimistic. It's safer to assume that you are on the "out" list. Most people who get caught unexpectedly in a layoff thought they were indispensable to their employers. You might be important or well-liked, but remember that the bottom line always has a louder voice than you do. Get your resume ready as soon as you see any indications that downsizing is on the way.

Don't mistake company loyalty for a fear of change. Often employees would rather take their chances with a potential layoff than make proactive steps toward finding a new job. Once they're laid off, it's already too late. Remember, as a candidate, you are always more marketable while still employed. Avoid this trap and start your job search early with self-marketing tools (resume and cover letter) that are up-to-date and top quality.

### 4. Update your resume when you are dissatisfied with your current position.

Job dissatisfaction leads to feelings of frustration, worthlessness, and often hopelessness. But there is no reason to stay in a job you hate. Being prepared with an updated resume can help you feel better in your current job. When you have a really terrible day at work, you can respond to job opportunities that same evening with confidence in your up-to-the-minute resume. Taking proactive steps toward a new career will give you back your optimism and self worth. If it's time for you to update your resume, first decide whether your resume requires a simple update or a complete rewrite. If you have been using the same resume format throughout your career, it's possible that you have outgrown the old look. What your resume promoted ten years ago may not be appropriate or significant for your career choices today. And if you've simply been "tacking on" to your old resume, it may start to resemble a house with too many additions, with little sense or direction.

A professional resume critique can help you decide exactly what you need to move forward. A well-written resume can make an incredible difference in:

- The length of time it takes to make your career move
- The quality of your next position
- The income potential of your next position

Your resume is your best sales tool in finding a new job, and it deserves the investment of your time and commitment. With a little extra effort now, you'll be prepared for anything that comes your way-and be well on the path to your next great job.

*Deborah Walker, CCMCCareer Coach ~ Resume Writer Find more job-search tips and resume samples at: [www.AlphaAdvantage.com](http://www.AlphaAdvantage.com) Email: [Deb@AlphaAdvantage.com](mailto:Deb@AlphaAdvantage.com)*

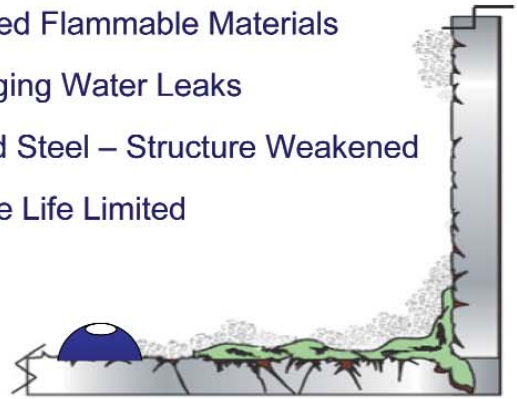
# Problems With Your HVAC Condensate Pan?



**Non-Compliant System**

## BEFORE...

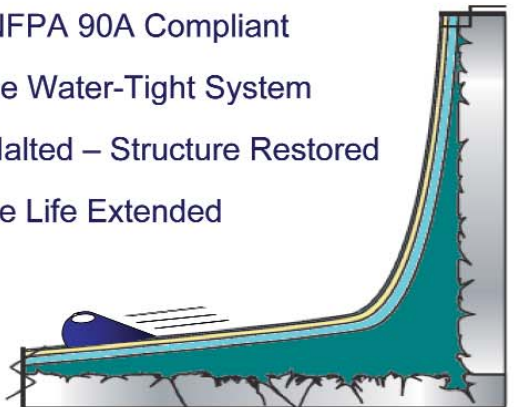
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## MIHS TREASURY REPORTS

By Aaron Jacob, MIHS Treasurer  
09/15/2006

### MIHS Checking Account from March 1, 2006 - September 15 2006

**Account Name**  
MIHS Checking Account

**Available Balance**  
\$31,981.31

#### MIHS Joint Dinner Meeting with ASSE & CHMM

Date: 16 January 2006  
Attended Meeting 34  
Cash in for Meeting \$ 1088.00  
Cost of Meeting \$ 1333.00  
Loss [\$ 245.00]

#### MIHS Student Night

Date: 14 Feb. 2006  
Attended Meeting 32  
Student (free) 12  
Cash in for Meeting \$ 640.00  
Cost of Meeting \$1353.00  
Loss [\$ 640.00]

#### MIHS Past-Presidents' Breakfast & Annual Business Meeting

Date: 14 March 2006  
Attended Meeting 22  
Past Presidents (free) 12  
Cash in for Meeting \$ 148.50  
Cost of Meeting \$ 609.60  
Loss [\$ 461.10]

#### MIHS Dinner Meeting - AIHA Govt Affairs Update

Date: 6 April 2006  
Attended Meeting 14  
Cash in for Meeting \$ 350.00  
Cost of Meeting \$ 443.61  
Loss [\$ 93.61]

#### Leadership, Listening and Strategic Alignment - PDC 0.5 CIH CM Points

Date: 17 April 2006  
Attended Meeting 19  
Cash in for Meeting \$ 1425.00  
Cost of Meeting \$ 1642.53  
Loss [\$ 217.53] SPLIT with WMIHS LOST \$71.25

#### AIHA TeleWeb: Third Party Liability in Construction Safety and Health

Date: 10 August 2006  
Attended Meeting 13  
Cash in for Meeting \$ 220.00  
Cost of Meeting \$ 282.98  
Loss [\$ 62.81]

#### Hexavalent Chromium Seminar

Date: September 14, 2006  
Attended Meeting 40  
Cash in for Meeting \$ 800.00  
Cost of Meeting \$ 0  
Profit \$800.00

## 2006 Donald E. Cummings Memorial Award Lecture

Below, please find a reprint of the JOEH article authored by MIHS member, Steven Levine. Watch for special mentions of MIHS members: Pat Brogan, Jim D'Arcy, Cindy Ostrowski, and Warren Cook, who was an MIHS Member and President in 1958-59.

Also, many thanks to Dr. Levine for donating CDs of the NIOSH Pocket Guide to Chemical Hazards, which were distributed to MIHS members at the MIHS Mini-Conference on October 10, 2006 at the MSU Management Education Center in Troy, MI.

The following article was reprinted with permission from *The Journal of Occupational and Environmental Hygiene*. (October 2006)



**2006 Donald E. Cummings Memorial Award Lecture  
Industrial Hygiene: The Founders, The Pioneers, and The Next Generation**

Steven P. Levine, PhD, CIH, AIHA Fellow, and Emeritus Professor

*The Donald E. Cummings Memorial Award was established in 1943 as a tribute to Donald E. Cummings, AIHA's third president. The award is given for outstanding contributions to the knowledge and practice of the profession of industrial hygiene.*

This paper is about the Founders of industrial hygiene, the Pioneers who followed them, and the Next Generation of industrial hygienists. It highlights the development of industrial hygiene and how that development did not necessarily follow a master plan but has nonetheless been constructive and manageable.

There has been and continues to be much conversation and debate about the status of our profession (from within our profession, most of which seems to center on what is wrong and how we are threatened. But as long as we focus on the core definition of what it means to be an industrial hygienist, change has been and will continue to be beneficial in the long run.

To help us understand why our profession should feel confident about the future, I offer the reader a tour of some of the people who have guided and influenced the direction of the profession in the past, recent past, and present, and those who are likely to be guiding us into the future. The Founders planted the seeds that "became" industrial hygiene. The Pioneers "grew the trees and harvested some low-hanging fruit" (and some "not so low hanging fruit"). (The Founders and Pioneers are in their sixties, seventies and eighties, and some have passed

on.) The Next Generation is planting "new types of crops and becoming better farmers."

Two rules must be understood when reading this paper: (1) Most of the luminaries in an imagined industrial hygiene "Hall of Fame" are neither listed nor discussed because of limitations of space and time. Whether or not a person is included in this article does not represent a judgment about a person's contribution to the profession, so please forgive errors of omission. (2) I will not list each person's elected or appointed office in professional societies nor, in most cases, will I list the awards that they have received.

### THE FOUNDERS

The story begins with Alice Hamilton:

"Thirty-two years ago, in 1910, I went as a pioneer into a new, unexplored field of American medicine, the field of industrial disease. ... It was a voyage of exploration that we undertook ... for nobody knew even where we should [start] ... ignorance and indifference was not confined to the medical profession - employers and workers both shared it." (1)

The role of the physician as occupational physician, toxicologist, industrial hygienist, and epidemiologist was the global model used during much of the 20th century. By the latter part of the 20th century, this now-archaic and ineffective model had been abandoned by developed nations but still lived on in the communist and newly post-communist world.

"The employers could, if they wished, shut their eyes to the dangers workmen faced, for nobody held them responsible, while workers accepted the risks with fatalistic submissiveness as part of the price one must pay for being poor ... there was no use going to the [government] factory inspectors: they were ignorant and powerless." (1)

It is striking to reflect on the accomplishments of Dr. Hamilton. She almost single-handedly created a niche between the plant and the physician - a niche that is now occupied by industrial hygienists and occupational physicians. Also, it is easy for readers in the year 2006 to forget that Dr. Hamilton was a woman working in a man's world. This was certainly unimaginably harder to do 100 years ago than it is today. In recognition of Dr. Hamilton's tireless and inspiring work, the Cummings award was bestowed on her in 1948.

The next of the Founders I will briefly mention is Warren Cook. One of his accomplishments was the clear

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articulation of the role of the industrial hygienist in the casualty insurance business:

"It assists industry in economic control of health hazards and, for the wage earner it strives to obtain improved environmental conditions." (2)

Another of his accomplishments was the publication in the *Journal of Industrial Medicine and Surgery* in November 1945.(3) It included a list that would become the underpinning of the threshold limit value (TLV) list of that time, and to an extent that would have both delighted and dismayed him, remain today the values of all too many of the modern OSHA permissible exposure limits (PELs). In recognition of his contributions to the field of industrial hygiene Warren Cook received the 1953 Cummings Award. He clearly articulated the need for quantitative occupational exposure limits (OELs) in his Cummings paper:

"In discussing ... the advantages of quantitative over the qualitative ... if we want to buy a rug for a room, we stand a better chance not to be disappointed if we go to the shop... to tell the salesman that the rug is for a room four yards by five yards rather than merely to say: Well it is really quite a nice big room. ... The emphasis on the quantitative may seem too evident to discuss but it has been a long time being accepted."(4)

When reading the above quotation, please remember that he was speaking in 1953. In 1987, when Professor Cook was 87 years old, he published the landmark work *Occupational Exposure Limits - Worldwide* (an AIHA publication). Professor Cook was also an academic scholar. He was one of the founding faculty of the industrial hygiene program at the University of Michigan. The Founders of industrial hygiene created the profession by integrating related scientific disciplines using a public health model. They began professional societies to foster collaboration. During the late 20th century, toward the end of the "period of the Founders," there were many well-respected leaders of our profession. Two who are especially worthy of mention are Morton Corn, the first industrial hygienist to lead OSHA and who worked to craft a role for industrial hygiene in government, and Harry Ettinger, who indefatigably toiled to draft and implement the PEL Update Project of 1989.(5) In addition, they must be acknowledged for their work in mentoring scores of young IHS. Both men worked throughout their careers to define where the profession is or should be headed.(6) Ettinger advocated that industrial hygienists should be industrial hygienists and not dilute their skills and knowledge by trying to be experts in allied fields.(7) Professor Corn (then a professor at Johns Hopkins University) and Mr. Ettinger were the recipients of the Cummings Awards in 1986 and in 2003, respectively.

## THE PIONEERS

The Pioneers of industrial hygiene followed the Founder's generation. I will arbitrarily put industrial hygienists who are in or almost in their sixties in the Pioneers' generation (Pioneers are those who started to contribute in the 1970-1980 period, and will continue to contribute into the early years of the 21st century.) My list of the Pioneers starts with Professor Patricia Brogan of Wayne State University. She fashioned and implemented a strategy and program in noise control while employed at Ford Motor Company. This program, which defined the corporate OEL for noise as 85 db, used the strategy of "Buy It Quiet." Ford Motor Company, as a major purchaser of industrial machinery, used its leverage with suppliers to make them design and sell quiet machinery if they wanted to keep Ford as their customer. This underscored the power and importance of the customer-supplier interaction. For this, and other accomplishments, Professor Brogan received the Alice Hamilton Award from the AIHA in 2003.

The Pioneers made chemical exposure assessment a legitimate and central issue of inquiry, and by doing so made the possibility of obtaining quantitative information a reality for all industrial hygienists. Eugene Kennedy is one such Pioneer: He spent his career at the NIOSH Alice Hamilton Laboratory developing methods of sampling and analysis for trace levels of organic compounds in air. He contributed to the NIOSH Manual of Analytical Methods, (8) which is the most important publication in the world on this subject.

Professor Roy Rando of Tulane University is another Pioneer. In one of his projects, he worked on the development and validation of a denuder to differentiate vapor-phase from aerosol diisocyanates. Professor Rando faced the problem that during the late 20th and early 21st centuries, NIOSH funding for research fell and became increasingly focused on direct support of projects that were primarily or entirely occupational epidemiological projects. Therefore, for Professor Rando, funding from the International Isocyanate Institute was critical. If we allow government funding for research in exposure assessment to wither, then a major accomplishment of the Pioneer generation will be lost.

Yet another industrial hygiene Pioneer worthy of mention is Jim D'Arcy of General Motors Corp. who just completed a 1-year rotation through the position of chief scientist for General Motors' global operations. He was the organizer, convener, and co-chair of two national conferences on metal removal (also called metalworking) fluids. In the past 5 years his efforts have been focused on the issue of field evaluation for auto production processes of aerosol monitors including those capable of monitoring particles in the sub-micrometer (nanometer) size range. This is the first work of its kind. It will lead the way to Next

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Generation research and practice. D'Arcy's favorite quote is from Dr. Hamilton:

"For me the satisfaction is that things are better now, and I had some part in it."

When they retire, will there be replacements for Kennedy at NIOSH, Rando at Tulane, and D'Arcy at GM? What will the Next Generation do if these and related fields of research and application do not continue?

Once air contaminant assessment methods have been developed, they are used in investigations of the exposure of workers. Perhaps the single most important group of field industrial hygienists in the U.S. is the group supervised by Dawn Tharr at NIOSH. If you want a team of IHs that performs the most, most varied, high-quality, and well-focused field studies of high-priority industrial hygiene problems: "Who ya gonna' call"? Although this started out as a line from the movie Ghost Busters, this quote has pervaded our society with 242,000 references on Google. Nonetheless, the metaphor is aptly applied to Ms. Tharr's Industrial Hygiene Section. This group was and is the single best example of Pioneers who applied IH principles and practices in industrial settings.

Leadership in industrial hygiene research by industry continues to be an important factor in the health of our profession. For example, an appropriate model or guide for sampling strategy and statistics, is the definitive book on the subject by the pioneers of this field, John Mulhausen of 3M Corporation and Joseph Damiano of Alcoa. Their textbook is the globally accepted guide for this subject.(9)

This generation must be recognized as the generation who improved and applied industrial hygiene curricula for undergraduate and graduate education. With the Spanish language quickly becoming the second language of Americans, the needs of the Spanish-speaking population must be recognized. One of the educational programs that has filled that void is the Industrial Hygiene Program at the University of Puerto Rico. They prepare industrial hygienists where the need for Spanish language practitioners exists, and serve as a local, regional, national and international resource for Spanish-language information dissemination, continuing education and consultation services. The program director is Professor Jesus Gonzalez.

Spreading the "western model" of industrial hygiene practice globally has been an accomplishment of the Pioneer generation. One such Pioneer is Professor Roy Buchan of Colorado State University who works to advance global industrial hygiene practice (or occupational hygiene as it is most often referred to outside the U.S.). As just one example, he worked in Romania to help them convert from a "post-communist" model of our profession

to a functional model that will serve the Romanian economy and workers well when that country becomes a full member of the European Union.

The subject of international industrial hygiene must include Guy Bourgeoisat. He started his career as a laboratory technician with 3M France, and is now the Global IH Manager with L'Oreal Corp. He is also the founder (1991) and president of the Société Française des Hygiénistes du Travail, and a board member of the International Occupational Hygiene Association (IOHA). Guy has implemented modern industrial hygiene methods for French and the world's industries and workers, while at the same time, being a leading industrial hygiene educator in France.

Another non-American global Pioneer is Professor Namwon Paik, Emeritus Professor and Dean, School of Public Health, Seoul National University. Prior to the start of the Korean War, Paik's mother had strapped little Namwon to her back and walked in the black of night through a minefield north of Seoul to escape from Pyongyang. Paik has memories of the Korean War-the invasion of the south by the marauding armies from the north. After the war, Paik went to the U.S. where he was trained as an industrial hygienist. During his stay in the U.S., he and Professor Brogan published the first peer-reviewed paper on exposure assessment of and laboratory methods for asbestos.(10) Paik then went back to Republic of Korea (South Korea) where he founded the profession of industrial hygiene. Virtually all of the "second-generation" of college-trained industrial hygienists in Korea are his students.

It is evident that world-class contributors to industrial hygiene can come from any country. I have mentioned only two of many such contributors. If we knew the true measure of workers that were protected through these efforts, we might be pleased beyond our wildest dreams. We might also be stunned by the magnitude of the global problems still facing industrial hygienists.

The principles and practices of industrial ventilation have been for some time almost universally known. (The truth of that statement notwithstanding, I have encountered instances of seemingly wanton disregard and/or lack of knowledge of the principles and practices of ventilation on more than one occasion.) The Pioneer in the field of ventilation has been and still is D. Jeff Burton. Jeff has led the way in both the U.S. and on a global scale. He, more than most, understood, taught and applied the hierarchy of interventions. For his accomplishments, he earned the Cummings award in 2004.(11)

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## THE NEXT GENERATION AND VERSATILISTS

The Next Generation of industrial hygienists is leading the profession into the 21st century. The IH profession will be defined for the 21st century by new leaders who will define and implement new policies, procedures, methods, devices and regulations. Professions grow and flourish if there are leaders who recognize that a necessary survival skill is the ability to adapt to rapidly-changing requirements of the marketplace. One can easily observe that many if not most segments of the marketplace are not static, so why should a person assume that the customers of industrial hygienists will always have the need for the same services requiring an unchanging skill set? Customers will always require that industrial hygienists have the capability to tackle the important problems of the day. The key to this is lifelong learning, and the ability to systematically apply new knowledge to new problems. The leaders in the field of industrial hygiene must understand the IH marketplace and thereby understand the skills and knowledge needed to supplement core scientific and mathematical skills. One way to do this is for industrial hygienists to be educated and trained as

- "Versatilists ... Building employee versatility and finding employees who already are or are willing to become versatilists will be the new watchword for career planning."(12)

In the past, words commonly used in the industrial hygiene profession were:

- Specialist: Deep skills and narrow scope-expertise that is "recognized by their peers but may be rarely valued by the marketplace."(13)
- Generalist: Broad scope and narrow skills-expertise that enabled them to "respond or act quickly but often without gaining ... the confidence of their partners or customers."(12)

But now we must value:

- "Versatilists apply depth of skill to a progressively widening scope of situations, and experiences, gaining new competencies, building relationships and assuming new roles"(12)

Clearly, this applies to the profession of industrial hygiene in the twenty-first century. Surprisingly, given the tenor of recent discussions and debates, this was always the case for at least some members of our profession.

The Next Generation: OEL's and Other Unfinished Jobs

One of the "unfinished jobs" of both the Founders and the Pioneer generations, possibly a result of the intractable nature of the underlying problem and/or cloudy vision of members of both generations, is the problem of

occupational exposure limits. A set of unified criteria for OELs is needed. Why did we develop OELs that have diverging criteria such as "financial and technological feasibility" in some OELs and "nearly all workers" in another set of OELs? What does "nearly all workers" mean? What were we thinking when we introduced inefficient/ineffective methodology for developing OELs that are applicable to OSHA? Why do we not have OELs that use appropriate groupings of chemicals to cover more chemicals? How should we approach the issues surrounding OELs for simultaneous multihazard exposures involving presumably additive adverse health effects? What about the need for biologically based OELs for materials that are contaminated with viable organisms (i.e., metal removal fluids)? Why, in our failure to develop and apply new OELs, have we not dealt with the escalating role played by litigation? Exactly what role should litigation play in the development and promulgation of OELs?

But that is not all of the subjects on the list of unfinished jobs that my generation (The Pioneer Generation) is bequeathing to The Next Generation. The list includes: evaluation and control of exposure to "difficult" air contaminants such as ultrafine particles; understanding the impact of a mobile workforce taking with them the cumulative effects of exposures without a system to either track the exposures or understand the cumulative effects; improved linkage between exposure assessment and epidemiology; improved linkage between exposure assessment and medical surveillance; reinvigorating academic and applied IH research; linking OHS aspects of financial and process management; implementation of the U.S. national OHS management standard; international corporate IH management in the environment of a "flat world;"(12) reshaping the structure and role of government for OHS; ergonomics; workplace violence; IH in service industries; global IT systems; global analytical accreditation; and last but not least, replacement and recruiting for the profession.

## Established Leaders of The Next Generation

Future contributions in industrial hygiene will come from The Next Generation of young people. If the Founders "planted the seeds" and the Pioneers "nurtured the seeds and harvested the low hanging fruit" then the Next Generation is "planting new types of crops and becoming better farmers"

One member of the Next Generation is Mark Puskar. He was the first member of his family to get a college degree, no less a doctorate. Puskar had dual skill sets-industrial hygiene and computer programming, both of which he applied to his doctoral work and his professional career. His doctoral work pioneered the use of an advanced instrumental method "Attenuated total reflectance - Fourier

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transform infrared spectroscopy (ATR-FTIR)" to identify hazardous waste mixtures. Now instrument manufacturers are selling the next generation of such instruments to the next generation of emergency responders to identify the next generation of important unknown mixtures-the so-called potential chemical/biological warfare agents. Interestingly (and alarmingly) this next generation of instruments ignores the spectral interpretation issues that Puskar addressed in his thesis 20 years ago. In his professional work at Abbott Laboratories, Puskar supervises the industrial hygiene laboratory. He was also the Founder and first Chair of AIHA Analytical Accreditation Board. Now he spends most of his time on the corporate information technology (IT) system.

"We have five large global IT systems [for] managing our EHS risks. I am the system owner of these applications."

So we see that, for the Next Generation, "traditional IH practice" is transcended by IH practice that includes new major skill and knowledge areas (IT), and we see that the borders of the U.S. are transcended by a global corporate effort.

A second member of the Next Generation is Alan Leibowitz. He is Director, Environment, Safety, Health and Security for ITT Industries. He manages global (40 countries) aspects of compliance for ITT. He is editor/author of the important book *Industrial Hygiene Auditing: A Manual for Practice* AIHA press (1994). As his "extracurricular activity," Mr. Leibowitz was chair of the AIHA-ANSI Z10 Accredited Standards Committee for the development of a "Safety and Health Management System" standard for the U.S.. This effort to write an American national standard on occupational health and safety systems was a long, demanding project fraught with land mines placed by conflicting interests and levels of knowledge of the stakeholder groups (primarily industry and labor). We would never have had a successful process leading to this national standard if not for the extraordinary interpersonal skills and situational awareness of Mr. Leibowitz. His quiet, self-effacing manner belies (and perhaps complements) those interpersonal skills.

A third member of the Next Generation is Christopher Strang. Strang started his IH career as a plant industrial hygienist specializing in air monitoring and hazmat response when he worked at AT&T. He then moved to the corporate IH group at Monsanto, reporting to John Henshaw before Mr. Henshaw went on to become the director of OSHA during the first George W. Bush administration. These were "traditional" IH jobs in "traditional" settings. Then, his next major career step occurred when he moved to the position of director of environment, occupational hygiene (including medical), safety, security and fire protection at the world's largest integrated nylon manufacturing facility near Pensacola, Florida. Note that this was not a "traditional" IH job, but

Strang (now a CIH and a CSP) still considered himself to be an industrial hygienist. He now performed many jobs involving environmental issues such as hazardous waste and water quality. He was also in charge of security, which certainly does not fall under the category of "traditional IH." He has recently moved to a job that is roughly equivalent but is now in the pharmaceutical industry (Bristol Myers-Squibb). In this position he does not have responsibility for either the medical or the security staffs. Now, instead of working with nylon and its precursors, he is working with potent pharmaceutical agents with very low corporate OELs.

The most consistent and applicable descriptor of Strang's career is that he had-he was expected and required by his employer-to engage in lifelong learning. He was, and still is, a "Versatilist." That is why he is successful. In a recent paper, an author commented "If we broadly expand our scope we compromise our technical excellence and replace it with superficial familiarity."(13) For those for whom that statement is true, failure is inevitable. However, industrial hygienists of The Next Generation will be expected to efficiently and effectively engage in real lifelong learning, and to thereby become true versatilists. While it may be true of some the Founders and the Pioneers that they were (and still are) "traditional industrial hygienists," I believe that more and more of The Next Generation will be expected to be versatilists as a condition of continued employment. I am skeptical of the claim that most of the Pioneers were or are "traditional industrial hygienists." I started my career in industry as an analytical chemist evaluating the efficiency of a wet electrostatic scrubber on a stack at a sulfuric acid sludge recycling plant (Environment). My second assignment was to evaluate existing and develop, validate and train plant personnel on a new method for sampling and analysis of VCM in workplace air (Industrial Hygiene). My third assignment was to measure near-LEL conditions at a parathion intermediate plant (Safety). All three assignments were while I was in the same job for the same employer. My employer expected me and my contemporaries to learn and perform such tasks as a condition of employment.

My next example of The Next Generation of established IH leaders is Jonathan Rosen. Rosen started the first 17 years of his career as a factory worker and activist prior to attending college and getting his industrial hygiene degree. He is now the director of occupational hygiene and safety at the N.Y. State Public Employee's Federation (PEF) in which job he facilitates 130 PEF joint OHS committees. He says:

"[My] work experience has helped me to be more effective in leading the [union's] H&S program...My focus has been on workers in the state institutions such as Mental Health, Mental Retardation, Corrections, Youth Detention Facilities, etc. ... the biggest hazard is violence from patients, inmates, clients. ... I am co-investigator on two

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NIOSH grants to do intervention studies on violence prevention."(14)

Is his job "traditional industrial hygiene"? In the context of The Next Generation, I believe that the answer is and indeed must be "yes!"

Another established leader of The Next Generation is Michael Brandt. Brandt not only has advanced degrees in industrial hygiene, he also has an advanced degree in health care administration. Since his industrial hygiene thesis was on the subject of management methods,(15) it is not surprising that he has gravitated to jobs that utilize his skills and knowledge. At the time of the writing of this paper he was acting chief of staff for operations at Los Alamos National Laboratories. As AIHA Treasurer in 2001-2004, he (with active and effective collaboration from Steven Davis and Peter O'Neil of AIHA staff) both turned AIHA finances around and introduced a zero-based budget program. In the 2005 election, AIHA members voted Brandt back on the Board of Directors. He is an exemplar of the "versatilist archetype" that I expect is and will be the norm for many, if not most, industrial hygienists of The Next Generation.

Another of my examples of established leaders of The Next Generation of industrial hygienists is Donna Doganiero. She is the director of the Occupational Health Sciences Department at the U.S. Army Center for Health Promotion & Preventive Medicine. She and her staff have responsibility for ergonomics, ionizing and nonionizing radiation, vector-borne diseases (entomology), medical safety, and health hazard assessment for base and field units worldwide. In all past wars the number of injuries, illnesses and fatalities from noncombat deaths exceeded those numbers from combat deaths. It is the job of Donna and her staff to reduce those numbers.

Her staff also has had the lead responsibility for worker safety and health protection during nuclear, biological and chemical (NBC) readiness, incident responses and cleanups.(16) This is an expanded role for her staff forced on them by the "War on Terror." For each task, she and her staff were forced to acquire and utilize new knowledge and skills-to be versatilists as a condition of employment. How did Doganiero work her way up from a Mine Safety and Health Administration (MSHA) field project officer? She did it by being an effective versatilist.

Established industrial hygiene leaders work for industry, national laboratories, the military, unions, and a very few work for county governments. One of the benchmarks of industrial hygiene within a Public Sector/County government is the program "created"-if not created, then shaped, focused and improved-by Brian Berke. Berke is the Safety and Health Manager for Employee Safety and Loss Control for Palm Beach County's Risk Management Division. (Admittedly, the tax base of Palm Beach County,

Florida, allows the county to perform such functions when many other counties cannot do so or lack the understanding of the value of such a program.) His work includes everything from "A to Z" in industrial hygiene. He is responsible for OHS aspects of: animal control; asbestos remediation; building indoor air quality in a hot, humid climate; construction site safety; emergency response in hurricanes; office ergonomics; public transportation safety and third-party liability both for employees and for the public (many of whom are elderly and infirm); and youth affairs. (This, I understand, is a list that only goes from "A to Y," not from "A to Z." While there is a Palm Beach Zoo, its employees do not fall within Berke's jurisdiction.) Berke has just been elected to his second term as Florida AIHA Local Section President. Let the reader think that Berke has abandoned the field of "traditional industrial hygiene" for a Palm Beach "boutique" practice, Berke put in his years as an industrial hygienist working for Pratt and Whitney in Florida where, at an asbestos removal project, the asbestos had become infested with poisonous pigmy rattlesnakes. Understandably, his favorite saying is:

"Any time things are going well you have probably overlooked something."

with which he closes his emails. He is not a pessimist. In reality, by saying this, he indicates that success comes only when all details of a project/program are considered. One example of a non-American established leader of The Next Generation of industrial hygienists is Professor Dooyong Park. Park is a "second generation" Korean industrial hygienist, the "first generation" being Professor Namwon Paik the "father of Korean IH" at Seoul National University of whom I wrote earlier. Park is now, at age 40, the youngest person to ever be the director of Korea's NIOSH (the KOSHA Institute). He was propelled into this position as a result of his successful project to review OSHA/NIOSH organizational structures worldwide and to recommend optimal solutions to the Korean government. What is the optimal structure? The structure could be (but I doubt it), at one extreme, the U.S. structure with OSHA in the Department of Labor and NIOSH buried within the Centers for Disease Control. Many of the Korean governments OELs are ACGIH TLVs that Korea has adopted. What will Professor Park do about Korean government OELs? Professor Park is doing "traditional industrial hygiene" albeit at a very high level.

I will finish this category of "Established Leaders" of The Next Generation with comments from the 1999 Kusnetz Award winner, Tom Hethmon, who is vice-president for Environment, Safety and Occupational Health of Rinker Materials Corporation. Hethmon is quoted:

"There are many US companies that need IH services, but don't know it. Instead of waiting for them to call us, generalist-IH's (HSE generalist) need to get into those

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companies as safety or environmental professionals or risk managers and educate management about the need for IH services: Grow from within!"

"There remains an inadequate supply of IH's across the globe and a growing global economy with multinational companies operating in many countries, fewer and fewer of which are American. If you want to expand the horizons of the profession, you will have to get on a plane or boat. Think global."

"Historically, we have done a poor job of educating the general public about our profession. If the public knew about us and what we do on behalf of their communities and working men and women, there would be greater direct and indirect demand for industrial hygiene. The public may create demands for our services in ways we have not even considered."(17)

These quotes represent positive, constructive thinking that is a far cry from the writings of those who either warn against the devolution and degradation of "traditional industrial hygiene" and/or from those who warn of the decrease in demand for the services provided by industrial hygienists.

### **The Next Generation-Emerging Talent**

The AIHA Leadership Workshop and the Future Leaders Institute is helping to identify, train and nurture young leaders. One of The Next Generation who was one of the developers of the Future Leaders Institute is Cynthia Ostrowski. The AIHA is eager and excited to continue to offer this program for years to come. Ostrowski, who has had experience working in the workers' compensation insurance industry, is now an IH consultant who has been a long-standing member of the very important Michigan Governor's State Health and Safety Compliance and Appeals Board. She was previously a board member and then president of the Michigan Industrial Hygiene Society. She is now a board member of the AIHA.

A second of my examples of the emerging talent of The Next Generation of industrial hygienists is Shelley Wheeling-Park. Wheeling-Park has, early in her career, become the director of Environmental, Health & Safety, plus the Regional Safety Officer of Kaiser Permanente in Honolulu. Her job is to develop, implement and manage all EHS programs for the Hawaii Region, which includes: 4500+ employees, a 250-bed hospital, and 25 clinics and peripheral facilities. She attended AIHA's Future Leaders Institute and AIHA's Leadership Workshop in her role as the AIHA's Hawaii Local Section President. She sees "real value in those leadership training programs."

A third emerging talent is Trina Redford. She is a U.S. Navy industrial hygienist where she performs the duties of supporting fleet and on-shore IH service; develops and

administers IH training; evaluates fleet workplaces; provides IH lab support; and provides career counseling. She is a member of the AIHA Minority SIG; the Epidemiology, Social Concerns, and Emerging Issues Committees, and she is an active volunteer for many community charities. She attended the AIHA's Future Leaders Institute.

Another person who is clearly an emerging talent in The Next Generation is Perry Logan. Logan is a doctoral student in industrial hygiene at the University of Minnesota; the manager of industrial hygiene (with responsibility for global oversight and support) for the 3M Specialty Division where, in 1999, he won a 3M corporate award for performing IH monitoring using Fourier Transform Infra-Red (FTIR) methods. In the year in which he was chair of the AIHA Gas and Vapor Detection Systems Committee that committee won an award for Outstanding Committee. For these and other accomplishments before the age of 40, Logan won the 2006 Kusnetz Award. He attended the AIHA's Future Leaders Institute.

My final example of an "emerging talent" is Laurie Scott. She works for Philips Semiconductor where she established (as a team member) an Environment, Health (industrial hygiene) and Safety (EHS) department with programs, policies and procedures. She is EHS program and services owner for "everything you can think of" in that department. She reviews, inspects and approves new manufacturing equipment purchases, facility layouts, installations, and engineering controls for compliance with government regulations and standards, and is also Laser Safety & Radiation Safety Officer. She attended AIHA's Future Leaders Institute. Clearly, at a young age, she is a "versatilist."

### **CONCLUSION**

My message about the "generations" of the industrial hygiene profession and the profiles of individual industrial hygienists give me reason to predict that the profession of industrial hygiene will continue, adapt and flourish in the 21st century. My conclusions are:

- Industrial hygiene's leaders during the 20th century defined the goals and objectives of that century.
- The strength of the industrial hygiene profession in the 21st century is and will be ensured by the high quality of people who have taken the leadership reins.
- These new leaders have been and will be redefining the goals and objectives of industrial hygiene to meet ever-changing challenges.
- Industrial hygienists of the 21st century will be required by the marketplace to be "versatilists" and will do so by engaging in effective lifelong learning.

*Continued...*

Lecture Continued...

- The recruiting and training of such young industrial hygienists will ensure the continued strong stewardship and leadership of the profession.
- There remain many complex technical and political issues that are likely to have a direct impact on the perceived and real future role of industrial hygiene.

I am confident that The Next Generation is committed to recognizing these challenges. With the aid and counsel of the Founders and Pioneers, these challenges will give The Next Generation another chance for the profession to show its best characteristics.

#### ACKNOWLEDGMENTS

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#### Disclaimer

*I have made every effort to check the accuracy of my facts. However, if I have made mistakes in the biographical descriptions of persons or their accomplishments, I offer my heartfelt apologies. Any such error was inadvertent.*

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## Meet Your Colleague

Pier-George Zanoni, PE, CSP, CIH  
MIHS President Elect



Pier-George Zanoni is a registered Professional Engineer in Michigan where he received his B.S. degree in engineering (Engineering Arts with Mechanical Engineering) from Michigan State University in 1978. He is both a Certified Safety Professional and a Certified Industrial Hygienist.

Pier-George currently works for the Michigan Department of Community Health in the Health Facilities Engineering Section reviewing health care construction/renovation projects and conducting facility surveys. As the industrial hygienist for the section, he handles various industrial hygiene issues including ventilation, indoor air quality, hazardous materials and infection control.

Pier-George has over 30 years of experience in the health care industry including 20 years with the Michigan Health & Hospital Association (MHA) in Lansing, Michigan. Between 1989 and 1999 Pier-George was an industrial hygienist for the Occupational Health and Environmental Safety department at MHA where he served as manager/director.

From 1990 to 1998 Pier-George was a member of the National Safety Council Executive Health Care Committee where he held various positions including secretary, newsletter editor, and chair.

From 1997 to 2000 Pier-George served on the American Society for Healthcare Engineering (ASHE) Environmental Management Committee. In 2000, Pier-George wrote a paper entitled Mercury Elimination in Healthcare Facilities that was published by ASHE as a technical document.

Since 1999, he has been a member of the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) Committee on Healthcare

Safety. He is also currently a member of the AIHA Healthcare Working Group.

Pier-George grew up in an Italian suburb of Chicago (Melrose Park) and went to high school in Oak Park, but moved to the UP his senior year and finished up at Norway High School. He spent all his summers in the UP at the Zanoni's Big Pine Resort in Vulcan, MI. He currently lives in Saint Johns, Michigan with his wife Brenda and his four daughters Chiara (17), Ariella (15), Jianna (14), and Kassia (13). They enjoy traveling to the UP to visit family and friends in Norway, MI and enjoy time off at the lake at his same childhood vacation spot, Zanoni's Big Pine Resort. Pier-George likes woodworking, home improvement projects, hiking, and reading history, theology, and science fiction.

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