



THE DIPLOMATE

News From the Academy of Industrial Hygiene

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The AIH Diplomat

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Mission Statement

The AIH Diplomat is intended to inform Academy of Industrial Hygiene diplomates and other occupational and environmental health and safety professionals of activities, programs and priorities of the Academy of Industrial Hygiene. The intended audience includes diplomates, prospective diplomates and other health and safety professionals and certifying organizations. The Academy welcomes feedback on any news appearing in *The AIH Diplomat* or submission of other information of importance to health and safety professionals. *The AIH Diplomat* will provide a forum for issues affecting certified OEHS professionals and others interested in issues such as academic certification, education, ethics and the Professional Conference on Industrial Hygiene.

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A Message From the President



President's Ponderings

Carolyn F. Phillips, CIH, CSP, PE

It has been five years since the pros and cons of unification and a merger between the American Academy of Industrial Hygiene and AIHA were discussed in the September 1998 *AAIH Newsletter*. The 1999 merger led to the creation of the Academy of Industrial Hygiene within AIHA. AIH is composed of all CIHs that were or became AIHA members. I believe it is time to take another look at the merger benefits as further defined in the March 1999 *AAIH Newsletter* and see where we are today.

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Of course, many things have changed since the benefits were contemplated: The economy has soured considerably, the job market is changing, there are more IHs functioning as consultants, there are changes in the manufacturing sector and there are more combined health, safety and environment jobs. I have reviewed the 11 benefits listed in the March *AAIH Newsletter* (www.aiha.org/TheAcademy/html/march99.htm) and noted our progress to date.

- Increased effectiveness in speaking for the profession:** This item is probably not as fully developed as it could be but there has been increased ability to have the voice of the CIH heard and its importance recognized in the regulatory arena both on the federal and state levels through AIHA staff expertise. We have played a role in the title protection activities of AIHA.
- Increase in resources for accomplishing goals important to the CIH:** AIHA certainly has significant resources that were not available to the much smaller Academy. We have been learning to use those resources more effectively. One related area is that AIH now has the role of supporting the ABET/ASAC university accreditation program for the profession. This is the process that evaluates IH programs for accreditation. The American Industrial Hygiene Foundation uses the criteria of "an accredited program" in its scholarship selection process. Financially, our budget has been tightened, of course, but so have AIHA's and those of most other organizations. It is becoming a more effective process.
- Important first step in unification:** While further unification of the profession has not been formally discussed, there is much more cooperation between AIHA and ACGIH, as can be seen in the recently announced joint journal for the profession. The Academy acts as

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A Message From the President

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- secretariat for the Joint IH Ethics and Education Committee (made up of representatives from AIH, AIHA, ABIH and ACGIH).
- 4. Increase our effectiveness in communicating with the membership:** The AIHA Web site has certainly made it easier for the Academy to reach its membership as well as the entire AIHA membership and external interested parties. *The Diplomat* (the Academy newsletter) is included in *The Synergist* so that all AIHA members have access to the information. There is more of an overall communication strategy and a single online directory for members. This is still an area to be continually explored for improvement. Recent PCIHs have been very well received and its reputation is strengthening as a member resource.
 - 5. Decrease in membership confusion about the IH organizational structure:** The merger has moved us closer to “one stop shopping” for IH-related information. It does seem to have reduced the confusion about what AAIH did versus AIHA. However, not all members have a clear picture of the role of AIH.
 - 6. Potential financial savings to members:** The Memorandum of Understanding (see the AIHA/AIH Web site) setting up the merger committed AIHA to not raising dues for three years due to the merger. At the time of the merger, members of AAIH and AIHA were paying dues to both organizations. AAIH dues were paid through ABIH. After the merger we paid a reduced ABIH fee and AIHA dues—a decrease in total payout. Although AIHA dues have increased, this increase is not directly related to AIH activity—it is across the board for all AIHA members. If we still had dual memberships, we would still be paying more.
 - 7. Decrease of confusion of outside constituencies by the profession:** It was hoped that the merger would decrease the confusion about who speaks for the industrial hygiene profession. It is difficult to determine the effectiveness of efforts toward this goal. AIHA has always spoken for the profession, but perhaps there is a clearer input to that voice from the CIHs—this is an area that could use more dialogue. Explaining “IH” to the outside world is still a concern.
 - 8. Increase the profession's effectiveness in recruiting IH candidates:** The merger gave the Academy more direct access to candidates for certification. AIH has developed and published (with AIHA assistance) two brochures related to the profession, *Why Become a CIH* and *Why Hire a CIH*. Perhaps we need

These are my personal observations, and I am sure that some of you will disagree or see benefits I have missed. Are we where we had hoped to be? Not surprisingly, the answer is yes and no. I think we are stronger in some areas and yet have a number of things to focus on for improvement. The Academy needs to think ahead to the next five (or more) years and plan for progress. We do have work to do.

to focus on increased distribution. With what has been happening in the economy in recent years, this has become a difficult issue in terms of available job challenges. The Academy has developed a mentoring program for young hygienists that will play a role in developing IH professionals. In terms of increasing the number and stature of CIHs, the Academy has been working with OSHA on increasing certification goals within the agency, and recently has been able to leverage the AIHA/OSHA alliance by working with OSHA to spread the word about the value of certification.

- 9. Increase the effectiveness of alliances with allied safety and environmental organizations:** AIHA had alliances with numerous related organizations. It is hard to see that there have been any significant changes in this area other than one less IH organization to work with other organizations.
- 10. Align both AIHA and AAIH members in an organization whose primary role is membership service:** Membership in AAIH was part of maintaining certification by ABIH. ABIH staff were also providing administrative support for AAIH. The merger has allowed ABIH to focus entirely on certification issues and the Academy (within AIHA) to focus on the services. PCIH has been strengthened in recent years by access to more experienced conference and meetings staff support and other resources and by learning from AIHce experience.
- 11. There would be membership choice in the new organization:** The new organization allows a CIH to decide the value of membership as AAIH membership no longer is mandatory as part of the certification process.

These are my personal observations, and I am sure that some of you will disagree or see benefits I have missed. Are we where we had hoped to be? Not surprisingly, the answer is yes and no. I think we are stronger in some areas and yet have a number of things to focus on for improvement. The Academy needs to think ahead to the next five (or more) years and plan for progress. We do have work to do.

We would like to hear from you. Are there things that the Academy should be including in its strategic plan to increase the effectiveness of any of these benefits? Are there other benefits to be considered? Should we be reaching out more to non-CIHs? Please let us know.

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Ergonomics and the Role of the Industrial Hygienist

Jas Singh, PhD, CIH

When I asked Dan MacLeod, a certified professional ergonomist, to write an article encouraging industrial hygienists to take a more active role in identifying and solving ergonomics problems, I also asked if he thought ergonomics is an integral part of

professional IH practice. Dan appeared genuinely surprised at this suggestion.

"You mean, does anyone feel industrial hygienists should *not* do ergonomics?" he asked.

"Maybe some people do," I said. "Because I hear this endless debate on whether ergonomics comes under 'safety' or 'industrial hygiene' or should be treated as a stand-alone field."

Dan's belief that ergonomics is clearly a part of IH work is not surprising, because for a number of years he was the industrial hygienist for the United Auto Workers in Detroit. During his practice of IH there, he became deeply interested in ergonomics and the powerful influence it can have in improving not only workplace safety and health but also quality and productivity. He started practicing ergonomics on a full-time basis, starting his own company providing ergonomics consulting and product development.

I asked Dan to write this article because I have noticed that many industrial hygienists seem to be shying away from addressing ergonomics issues. Some seem to think that ergonomics is a specialty that should be left to full-time professional ergonomists. Others feel that it fits better with safety.

While specialists are needed to address and solve some technically complex ergonomics problems, ergonomics should be the responsibility of every professional who is involved in improving health and safety in the workplace. Many ergonomic problems are evident to health and safety professionals, and the solutions in many cases are commonsense and inexpensive. Dan once told me that 90 percent of ergonomics is commonsense, and all you need to do to identify problems and make ergonomic improvements is to "wear your ergonomics glasses" when

assessing workplace hazards. The other 10 percent involves more complex technical issues, research and specific experience in certain processes or industries.

Changing Times and the Role of the IH

There appears to be a consensus that the era of the specialist is ending and that businesses need well-rounded health and safety professionals who can address a broad range of workplace health and safety issues. I find it somewhat discouraging that instead of broadening the IH practice, we seem to be narrowing it. Sometimes it appears to me that just about every IH is involved with asbestos, lead or mold. During a recent conversation I had with Jennifer Shishido, administrator of the Hawaii Occupational Safety and Health Department, she commented that most industrial hygienists in the state appear occupied with mold and no one seems to be concentrating on ergonomics issues, which have become the latest focus of HIOSH.

Adding Value

The entire health and safety field is facing the challenge of how to articulate and demonstrate the contribution health and safety makes to the bottom line of a business, as well as show the intrinsic value such programs impart to the overall reputation and health of an organization. Diplomat Rick Fulwiler has articulated this in his speeches and in his writings. Despite such efforts, it remains a daunting task. Many H&S professionals feel like the Rodney Dangerfields of the business world—they "don't get no respect." Demonstrating a clear relationship between a good H&S program and a company's bottom line is certainly not easy. In my experience, however, I have found that making this link can be easier when solving ergonomics issues and making ergonomic improvements. In many cases, an IH can implement ergonomic improvements at little cost and demonstrate improvements not only in health and safety but also in quality and productivity.

When addressing ergonomics issues, IHs will not be encroaching upon any territories but only doing what is expected of any health and safety professional to make the workplace safer and healthier.

Singh can be reached at mjassingh@aol.com.

Wanted: Contributors to *The Diplomat*

The Diplomat regularly profiles CIHs who are engaged in important, interesting and unusual projects or who have otherwise contributed to the advancement of the professional practice of industrial hygiene. If you know of a diplomate fitting that description and would like us to feature him or her in a forthcoming issue, please let me know. You can send brief information on the individual, including contact details, or propose writing an article about the person yourself.

Readers are also encouraged to submit articles relevant to the overall mission of the Academy, including but not limited to the following:

- Industrial hygiene education
- Enhancing IH practice
- Promoting the CIH certification
- Promotion and improvement of PCIH

Please send material to me at mjassingh@aol.com. I'm looking forward to hearing from you.

Jas Singh
Editor

Ergonomics—Are You Up-to-Date?



Dan MacLeod, CPE

By now, I would expect that every IH has a good working knowledge of ergonomics. If you do not, you need to catch up—and quickly. A formal ergonomics process should be part of every occupational health and safety practice.

IHs are in a natural position to deal with ergonomic issues in the workplace. Indeed, just a few years ago, there was hardly anyone else.

At this point, IHs should be familiar with the

following:

- The basic principles of ergonomic design, such as the various neutral working postures and the concepts of minimizing force requirements.
- The common “rules of work”—the literal meaning of the word ergonomics—such as “most work should be done at about elbow height” and “the top part of a computer screen should be at about eye level.”
- How to assess a workstation or task, at least for basic issues such as contact stress or the adequacy of an office chair. You should know how to evaluate your own desk and work area.
- The standard solutions to common workplace problems, such as the various lifters and tilters that are useful in industrial operations or the variety of work aids for computer workstations.
- A basic understanding of standard quantitative techniques such as anthropometry, biomechanics and the various numeric guidelines.
- How to apply at least some type of ergonomics improvement somewhere.

Putting on Your Ergonomics Glasses

Fortunately, learning all this is pretty easy, at least regarding the common workplace issues. For practical applications, much of the trick is simply getting in the habit of “putting on your ergonomics glasses.” Often, the issues are not complicated, but a matter of taking a step back and thinking from a new perspective about the everyday tasks that people do.

Ergonomics is much more intuitive and commonsense than many traditional IH issues. Most problems are easily within view, unlike, for example, vapors and fumes. There is less need to measure anything and compare your results to a PEL. In fact, there are not many equivalents to PELs yet in ergonomics.

On the other hand, there are more opportunities—and requirements—for employee involvement. For all the reasons listed above, employees themselves are capable of helping identify problem tasks and brainstorm improvements. Because employees often know more about the details of some tasks than anyone else, they need to be involved. Consequently, an IH may need more people skills than are normally required to resolve chemical or dust exposure issues, as teaching employees about the principles of ergonomics or facilitating a group problem-solving process may be part of the job.

An experienced IH can add value from having been in many workplaces and knowing a lot about workplace equipment. You may have seen a device or setup in one worksite that may help in another. A lot of practical ergonomics involves knowing the best ways to design the tools and tasks at hand. The more encyclopedic your knowledge, the more you can potentially contribute.



It is important to maintain the natural S-curve of the back, whether sitting or standing. When standing, putting one foot up on a footrest helps to keep the spinal column in proper alignment.



Good lumbar support is often helpful to maintain the curve in the small of your back.

You would not want to work for any length of time bent over like this.



One common improvement would be to use a lifter or tilter.

Or there may be more ways of making improvements.



The best way to make changes is to adjust equipment so that your neck is in its neutral posture.



Wrong



Right

Images courtesy www.danmacleod.com.

Cognitive Ergonomics

IHs may also benefit from knowing a bit about cognitive ergonomics. Cognitive issues have to do with how humans perceive information and react, such as the ease with which dials and displays can be read and understood.

These issues can have important safety implications. If machine controls are not standardized, it is easy to make mistakes that can cause human injury or other damage. If signs are confusing, in an emergency employees may do the opposite of what you intend. If the design of knobs and switches is not user-friendly, errors can easily happen.

Cognitive ergonomics in industrial operations is still a new field and can be rewarding to those who become involved. The topic is quite interesting and worthy of some reading, even if you never get involved in its application.

Human Factors or Ergonomics?

Almost everyone is confused by “human factors” versus “ergonomics.” The two terms are synonymous. The distinction should be between “cognitive” issues versus “physical” ones. The branch of ergonomics that deals with cognitive issues has historically been the larger part of the field. It is only in recent years that the physical side has come into its own, primarily because of its value in prevention of musculoskeletal disorders. However, technically, “ergonomics” is not synonymous with “preventing MSDs.” The whole field of ergonomics and its applications is much broader than merely prevention of MSDs, as even a cursory glance at any publication of the Human Factors and Ergonomics Society shows. We talk about the OSHA “ergonomics” standard; however, this is a misnomer—it is an MSD-prevention standard.

The Future

Not too long ago, ergonomics (at least that portion which dealt with preventing MSDs) could easily have been viewed as a subset of IH. We had discovered a handful of cumulative disorders that seemed to fall naturally into the IH bailiwick.

However, in the past couple of decades, the field has grown. There is a large crop of young ergonomists who have entered the workforce. Once they gain experience, they will be excellent. One implication is that, in addition to knowing the basics of ergonomics, IHs should know when it is time to call in the specialist.

Some ergonomists actually believe that industrial hygienists should stay out of the world of ergonomics. This is nonsense, of course. I have reviewed ergonomics reports written by IHs that were practical and entirely credible. I have also read ergonomics reports written by highly credentialed ergonomists that were unfathomable in writing style and downright silly in terms of recommendations.

What matters to employers and employees alike is getting assistance from people who are down-to-earth, knowledgeable and capable of clear writing and speaking. A good IH has spent a lot of time in the workplace, knows how to communicate and can deal with both technical and organizational issues. The basic model of “Recognition, Evaluation and Control” applies to ergonomics as well as to IH.

An experienced IH who is well versed in basic ergonomics and keeps up to date on changes in the field can perform as well as most professional ergonomists.

MacLeod, a CPE, is the author of several books on ergonomics, including The Rules of Work and The Ergonomics Kit for General Industry. He can be reached at dan@danmacleod.com or visit www.danmacleod.com.

Putting on Your Ergonomics Glasses: A Case Example

One of the intriguing aspects of ergonomics is the number of important improvements that can be made in the workplace for little or no money. Most people who have worked any length of time with practical ergonomics have their favorite stories to tell. This is one of mine:

In a large vehicle repair shop, about once a year the mechanics need to prepare used delivery trucks for resale. Part of the process had involved scraping off old decals that covered the trucks—using a small razor blade tool that essentially removed one inch at a time. It would typically take one or two days to remove all the decals from a single truck.

I had been setting up the ergonomics process in this company, when a mechanic was assigned to clean about 20 trucks—about a month’s worth of scraping. On the second day his arm started aching and he remembered my instruction to tell somebody if you are having a problem. So he went to the union safety committee chairman.

The two of them started to brainstorm alternatives, as I

had taught them. As an experiment, they thought they would try using the nearby power wash and heat the body of the vehicle—and lo, the decal peeled right off.

The employees slapped themselves on the side of the head and said, “You mean we’ve been killing ourselves all these years and the solution was right there at our feet?”

The power wash reduced the time to remove the decals to one or two hours per truck, roughly a three-week savings in time for the vehicles being sold. It eliminated what might have been a serious injury to the employee’s hand and arm. And it was free.

This story illustrates much of what needs to happen in the workplace. Employees need to be trained in the basics and taught to take a step back from time to time and think about what they do. Everyone needs to put on their ergonomics glasses and take a look at all day-to-day activities, a process that IHs clearly can and should be involved with.

Understanding the Health Effects of Mold



Ajit S. Arora, MD, PhD

Frequently, aggressive plaintiff lawyers find gold because of the gullibility of lay, nonscientist juries and the availability of pseudo-experts who are willing to abuse their professional degrees to provide nonscientific and factually worthless opinions on environmental health issues. As a result, many insurance carriers prefer to settle nuisance environ-

mental claims for a few thousand dollars to avoid expensive litigation. This then promotes an explosion of such nuisance claims and creates a dreamland for opportunists.

Today, the hot issue is mold. Not only are the health effects of exposure to molds not well understood, there is a lack of standard procedures for sampling and analysis of molds. Further complicating the matter is the lack of numerical standards against which a professional industrial hygienist can render judgment relative to the "degree of contamination" of a particular environment. From a health standpoint, there is a serious lack of information in the area of dose-response relationships for exposure to pathogenic fungi.

Molds have been an integral part of the human environment since the inception of life in the universe and rarely have been implicated in medically recognized and established serious human illnesses. However, in the past five years, increased litigation and media coverage has stimulated the interest of the medical and scientific community in mold issues, and some useful information has begun to come forth.

The health effects of concern from exposure to mold contamination in an indoor environment can be classified into three categories.

- **Allergic responses through immunosensitization because of repeat exposures.** These may take the form of allergic rhinitis, asthma or hypersensitivity pneumonitis, as well as aspergillosis and allergic fungal sinusitis.
- **Systemic infections, specifically in immunocompromised individuals.** Examples include aspergillosis, histoplasmosis and cryptococcosis.
- **Toxic effects from mycotoxins produced by certain fungal species.** This may include disruption of cellular function, alteration of immune competence and cytotoxic effects with DNA damage and mutations resulting in cancer such as with aflatoxins.

Allergic Responses

Genetically predisposed individuals who are repeatedly exposed to high levels of mold spores may develop immunological sensitization. It is estimated that above 10 percent of population has allergic antibodies to fungal antigens. However, only half of these would be expected to show clinical allergy. In other words, presence of antibodies does not always mean there is allergy.

Allergic rhinitis is known to affect between 20 and 30 percent of the U.S. population. Multiple aeroallergens other than molds (dust mites, pollens, weeds, plants, animal dander,

grasses) may be involved besides molds. However, when a person is also sensitized to molds, an indoor environment contaminated with mold spores may aggravate the symptoms.

Asthma is known to affect approximately 5 percent of the U.S. population. In those cases where sensitization to molds is a component of pathogenesis of asthma (multiple factors may be involved in this), exposure to a moldy environment may cause serious, life-threatening exacerbations of asthma. The molds most commonly contaminating the household environment are *Cladosporium*, *Penicillium* and *Alternaria*, and these are primarily responsible for allergic diathesis in sensitized individuals. Less commonly involved molds include *Aspergillus*, *Fusarium*, *Mucor* and *Dizopus*.

It is noteworthy that *Stachybotrys* has not been documented as an allergen causing asthma or rhinitis. It is probably because the spores of *Stachybotrys* are not viable once released to the air and die rapidly. Significant contamination of the air by *Stachybotrys* spores rarely occurs. It must be recognized that molds are not dominant allergens, and outdoor molds are primarily involved in mold allergies rather than the indoor ones.

Hypersensitivity pneumonitis (also called extrinsic allergic alveolitis) is a type IV immune mediated allergic disease produced by inhalation of a wide variety of biological aerosols and organic dust. HP is rare today because of the elimination of water-cooling systems in air conditioning units and absence of moisture necessary for growth of offending agents. It is now primarily an agricultural disease where contaminated organic dusts could be involved.

Allergic bronchopulmonary aspergillosis occurs in individuals who are sensitized to *Aspergillus* and have airways that have been damaged by previous inflammatory conditions involving the airways.

Systemic Infections

Pathogenic fungi that can cause serious infections in normal healthy individuals include *Blastomycosis*, *Coccidioides*, *Cryptococcus* and *Histoplasma*.

Blastomycosis is a rare human infection that starts in the lungs, usually caused by *Blastomycosis dermatitidis*. It can spread to the skin, causing characteristic skin lesions. Systemic dissemination is uncommon. The natural habitat of this organism is not known. It is a common infection in dogs in endemic areas; however, there is no evidence that animals or humans can transmit it. However rare, small outbreaks have occurred in rural riverbanks and beavers.

Coccidioides immitis is endemic in soil in the southwest United States and is responsible for Valley Fever in the San Joaquin Valley of California. It is not an indoor fungus.

Cryptococcus is associated with bird droppings. The most common human pathogen is *Cryptococcus neoformans*. It is primarily an infection of immunocompromised individuals such as those with AIDS. However, the infection can occur in normal healthy adults, causing cryptococcal meningial encephalitis. The infection is initiated by inhalation of the cells, which are dry, minimally encapsulated and easily aerosolized. *Cryptococcus* can be a building-associated illness if buildings are infested by pigeons and pigeon droppings.

Histoplasma is associated with bat droppings and is the most prevalent form of pulmonary mycotic infection in humans and animals. It is typically caused by *histoplasma capsulatum*. The infection is contracted through inhalation of conidia and occurs worldwide. In healthy individuals, it is a self-limited infection, presented as a flu-like syndrome with fever, chills, myalgias, headaches and nonproductive cough. Chest X-ray abnormalities may be seen. In immunocompromised patients, including AIDS patients, it can become disseminated and even fatal.

Toxic Effects From Mycotoxins

The mycotoxins produced by the common indoor molds—such as *Aspergillus*, *Fusarium*, *Stachybotrys*, *Penicillium*, *Alternaria* and others—have been classified into several categories depending upon structural and functional similarities and toxic profiles. The primary recognized groups are aflatoxins, fumonisins, trichothecens and ergot alkaloids.

For mycotoxins to produce human health effects, the following conditions must be met:

1. There must be actual presence of mycotoxins. In other words, the right environmental conditions should exist for molds to produce mycotoxins.
2. There should be a pathway of exposure from the source to susceptible occupant.
3. There should be absorption of a toxic dose of the mycotoxin over a sufficiently short period of time.

The mere presence of a toxigenic mold in an environment does not establish the presence of mycotoxin. The pathway of exposure in homes, schools and office settings could be dermal, such as from direct contact with colonized building material; or inhalation of aerosolized spores, other fungal fragments or contaminated substrate. Because the mycotoxins are not volatile, the transmission can occur only through active generation of aerosols, which are inhaled. For a toxicity to occur, concentration and duration of exposure must be sufficient to deliver a toxic dose.

Very little is known about what constitutes a toxic dose for humans. However, some estimates based on animal data can be made. For example, the highly toxic spores of *Stachybotrys chartarum* strain s72 are known to contain 1.0×10^{-4} nanograms of satratoxin H per spore. To have one milligram of satratoxin H per cubic meter of air, 10 billion spores of s72 *S. chartarum* must be present in one cubic meter of air.

In a study of mice or rats where a single high dose of *S. chartarum* spores were given either internasally to mice or interthecally to rats, a dose of 30 million spores per kilogram or higher produced pulmonary hemorrhage in both species. In studies of dose-response relationship, no effect was noted when the dose was down to 3 million spores per kilogram. When these numbers were extrapolated to determine the comparable dose of spores of airborne *S. chartarum* that would provide a comparable dose per kilogram weight to humans, it was calculated that a no-effect dose in rats of 3 million spores per kilogram corresponded to a 24-hour exposure to 3 billion spores per cubic meter of air for an infant; 9.5 billion spores per cubic meter for school-age children; and 22



Mold growth behind wallpaper.

billion spores per cubic meter for adults. Here one is talking about 24-hour inhalation kinetics and not a single-dose administration. Therefore, the risk was overestimated because toxicity would be less when the dose is delivered over a period of time versus the same dose given in a bolus.

Based on other similar calculations and extrapolations, it was recognized that exposure at that level of concentration to spores was highly improbable in common indoor environments, in buildings, homes and schools. For example, in data from 9,619 indoor air samples from 1,717 buildings where *S. chartarum* was detected in the indoor air, the median airborne concentration of the spores was 115 colony-forming units per cubic meter, the range being between 12–118 colony-forming units per cubic meter. This is minuscule compared to what would be necessary to produce toxicity.

Experts believe that even though potentially toxic chemicals can be produced by certain molds and may even contaminate the indoor environment in small amounts, it is highly unlikely that exposures can occur at a level that can deliver toxic doses of these mycotoxins to humans and cause human toxicity. This opinion is echoed in some of the recent reviews of the subject in the literature as well in the evidence-based statement *Adverse Human Health Effects Associated With Molds in the Indoor Environment* issued by the American College of Occupational and Environmental Medicine on Oct. 27, 2002. That statement can be accessed at www.acoem.com/guidelines/evidence.

References for this article can be accessed at the online version of *The Diplomat* at www.aiha.org. Click on “The Academy,” and then on “Newsletters/*The Diplomat*.”

Arora is a diplomate of the American Board in Internal Medicine, Forensic Medicine and Forensic Examiners. He is also a fellow of the American College of Forensic Examiners and board qualified in Medical Toxicology through the American Board of Emergency Medicine. Arora can be contacted at the Parthenia Medical Group Inc. in Los Angeles at aaroramd@partheniamedical.com or pmsg@partheniamedical.com.

Nam Won Paik: Korea's Grandfather of Industrial Hygiene



Dean Nam Won Paik.

Steve Levine, CIH

Editor's note: Professor Steve Levine, who has known Nam Won Paik since his days at the University of Michigan, says: "Part of Nam Won's story was told by Jas Singh in the June 2003 issue of The Diplomat. I will, as Paul Harvey says, tell 'the rest of the story.'"

In Korea, Dean Nam Won Paik is known as the Grandfather of Industrial Hygiene. Nam Won's students—now the country's leaders—represent the first generation of IHs in Korea. The students of his students call him "grandfather."

Korea, one of the world's fastest-growing free market democracies, is a model for the developing world. In the old model, big countries engulfed small countries. Today, the fast economies lead the slow. Korea is one of those fast economies, and it needs industrial hygienists.

How did Nam Won and Korea accomplish so much? Both he and his country followed the path of education, faith, hard work and an increasingly democratic, free-market model that overcame the otherwise crushing issues of poverty, lack of natural resources and the devastation of war. Both Nam Won and Korea started with nothing and created a prosperous, ethical, humanistic life through positive behaviors.

At the Beginning

Nam Won's grandfather, a Korean hero, was honored as "One Who Fought for Korea's Independence" against the Japanese occupation of Korea between 1910 and 1945. To this day, Nam Won carries an identity card that, as the grandson of a hero, entitles him to great honor as well as a 30 percent discount for many purchases. In Korea, heroic acts are remembered both symbolically and in ways you can touch, even if it's just when you go to the store.



North Korean soldiers.

Nam Won was raised in Pyongyang, North Korea, the son of a Presbyterian minister. When the communist dictator Kim Il Sung took over, his father fled. The alternative was to be killed, the fate of those missionaries and ministers who stayed. The family expected the separation to be a short one, but as year stretched into year, Nam Won's mother decided to

escape to the south. She took all the money the family had and paid it to a smuggler. During a cold, black, fall night in 1947, little Nam Won and his mother, with no possessions and only thin clothes to protect them from the cold, were led on a long, tortuous path through a minefield to safety and freedom. Nam Won's mother carried him on her back to a future where he would serve the Korean people and the profession of industrial hygiene.



Seoul National University.

The Early Years

When Nam Won was thirteen years old, the communists invaded from the north and swept over Korea. The resulting death and destruction left a land devastated by war—but it was fertile ground for those who would work long and hard to plant new seeds to grow into the prosperity of the future. Nam Won was one of the generation called upon to rebuild this country. When Nam Won was of college age, he was one of the few students—the best of the best—selected to attend prestigious Seoul National University. After graduation, he went to work as a research assistant in industrial hygiene at Catholic University. During that period, he spent a year in England learning the literature, methods and instruments used in modern IH. Upon returning to Korea, he found that it was not possible under any circumstance to practice proper IH. There were no books, no laboratories and no awareness of the need for the industrial hygiene profession. He decided to go to the United States to gain experience in industrial hygiene.

IH and the United States

Nam Won arrived in Chicago in April 1977. He slept on the couch of a family friend. He had neither possessions nor money. He did not know how to drive, or even how to make a phone call. In May 1977, he attended the AIHA conference in New Orleans to look for a job. After many months of effort, he was hired by Clayton Group Services in Michigan. His first boss was Bob Soule. During his eight years at Clayton, Nam Won worked with Pat Brogan, the 2003 Alice Hamilton Award winner, and with Jas Singh, editor of the *AIH Diplomat*. While at Clayton, he and his colleagues published the first papers on asbestos sampling results and on the proper method of sampling for welding fumes. Because of his accomplishments,

Shortly after he started his doctoral work, Seoul National University and the government of Korea invited Nam Won to return to start Korea's first IH graduate program. While he was launching the program, he was also developing and teaching IH courses, founding the Korean Industrial Hygiene Society, becoming the first CIH in Korea and doing IH work at steel mills, coke ovens, shipyards, refineries and IH labs, as well as finishing his doctoral studies at the University of Michigan.

Clayton agreed to support Nam Won's doctoral study at the University of Michigan.

Serving Korea and IH

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On the first IH exam of each semester, Nam Won's students know that one of the questions will be: "What are the three questions you, as an industrial hygienist, have to ask before you begin your work?" The answer is: "1) Is it OK for the workers to work there?; 2) Could you work there?; and 3) Would you allow your children to work there?" He always teaches his students to "work hard to be a knowledgeable industrial hygienist, but put more effort into being a good industrial hygienist." The students understand that the meaning of good comes from "good Samaritan."



First two rows: Nam Won (center, first row) with Steve Levine and Nam Won's first generation students, now professors of IH. Back rows: Some of the second-generation students. Pusan, Korea, May 2003.

His favorite song, which he sings in class, is a classic Korean song, "The Pioneer." One of his students, Jeongim Park, says, "I guess—because I have not asked him—that he felt that he was a pioneer who was lonely but can't stop going forward."

Nam Won is a loving husband to his wife of 33 years, father to two bright and accomplished sons and now he is "grandfather" and dean of the School of Public Health at Seoul National University. In a country that truly honors its professors and patriots, he stands out above others. In a profession that honors its best, he stands out, a quiet, pleasant, self-

effacing man who believes in and works for the missions of the IH profession. He is a benchmark for personal and professional excellence. Korea needs Nam Won, and he feels honored to serve his country and his profession.

Levine can be reached at slih@adelphia.net.



Why I Decided to Become a Councilor



Lamont Byrd, CIH

I would like to take this opportunity to thank all of you who supported me and have allowed me the privilege to serve as a councilor of the Academy of Industrial Hygiene. I would also like to share with you a little bit about my professional background and what motivated me to become a councilor.

I currently serve as the director of safety and health for the International Brotherhood of Teamsters and have served in this capacity for a little more than seven years. As director, I have responsibility for developing the Teamsters' occupational safety and health agenda and in conjunction with various IBT trade divisions and departments, developing strategies for implementing this agenda in our collective bargaining agreements, rulemaking and lobbying activities and in our various communications to our membership and the media. I also manage a group of occupational safety and health professionals (including several CIHs) who provide technical and regulatory support and occupational safety and health training to local union officials and rank and file membership.

Needless to say, my job responsibilities are extremely challenging and require extensive travel, attendance at numerous meetings, grievance panels and negotiating sessions. They also include the heavy load of routine "firefighting" activities that one might expect when working for an organization that represents nearly 1.5 million workers in dozens of different types of industries.

I also decided that my experience developing and implementing strategies could lend itself to AIH's mission, especially as it applies to recruiting and educating CIHs; promoting the field of IH with those in government, industry and labor; advancing the ABIH certification process; and promoting and educating CIHs with respect to the Code of Ethics.

Like nearly all certified industrial hygienists, in an effort to fulfill the certification maintenance requirements, I attend as many AIHce and PCIH conferences as my busy schedule will permit. To this end, I have also participated in numerous professional development courses and have even enrolled in distance learning courses sponsored by AIHA. In addition to obtaining the much-needed certification maintenance points, my participation in these annual conferences has provided me with feelings of enjoyment and enthusiasm. Furthermore, having the opportu-

nity to spend time at the conferences and PDCs with my friends and colleagues, away from the "daily grind" of work, is analogous to being totally immersed in an environment where the people "speak your language" and share common interests.

Becoming More Involved

After these experiences, I often take time to reflect upon the reasons why I decided to pursue a career in industrial hygiene and the ways that decision has impacted my life. I am also left with a strong desire to become more involved in the organizational aspects of our profession. These feelings contributed to my decision to become a candidate for councilor.

My first opportunity to work with the Academy occurred a couple of years ago when, at the invitation of Frank Renshaw and Patricia Brogan, I participated in a work group that was charged with the responsibility of developing test questions for the CIH examination. I left that Saturday session with a feeling of satisfaction at having had the opportunity to work with colleagues on a project that was very important to the field of industrial hygiene. During the session, the atmosphere was friendly and respectful, and I looked forward to a future opportunity to work with the Academy. This experience also significantly influenced me in my decision to become a candidate for councilor.

Sharing My Experience

As I contemplated running for the position of councilor, I carefully considered my experience working with the Academy, my thoughts about being a CIH and the contribution that I might make to the organization. I concluded that as a CIH who practices our profession from the perspective of a worker advocate, I possess a wealth of experience that I feel is vastly different from that of a majority of CIHs. Considering the increasing diversity of the U.S. workforce, an organization that is seeking to remain viable in the future should actively seek input from individuals from a variety of backgrounds and experiences.

I also decided that my experience developing and implementing strategies could lend itself to AIH's mission, especially as it applies to recruiting and educating CIHs; promoting the field of IH with those in government, industry and labor; advancing the ABIH certification process; and promoting and educating CIHs with respect to the Code of Ethics.

The mission of the Academy is vitally important to our profession and is something that I am committed to promote and support. Thanks to your support, as a councilor, I will have the opportunity to strive toward making my thoughts a reality.

Byrd is director of safety and health for the International Brotherhood of Teamsters, Washington. He can be reached at lbyrd@teamster.org.

Pat Brogan Receives Alice Hamilton Award

AIH extends its congratulations to Patricia Brogan, CIH, who received the prestigious Alice Hamilton Award for 2003.



Patricia Brogan.

The Alice Hamilton Award is presented to an outstanding woman who has made a definitive lasting achievement in the field of occupational and environmental hygiene through public and community service, social reform, technological innovation or advancements in the scientific approach to the recognition, evaluation and control of workplace hazards.

Established in 1993 by the AIHA Board of Directors, the first Alice Hamilton award was granted in 1995. To qualify for the award, the recipient must have been engaged in occupational hygiene or a related discipline a minimum of 10 years and be recognized by her peers as “competent in her chosen field, dedicated to scientific truth and committed to positive change for worker health.”

Pat is no stranger to the industrial hygiene community. In addition to her many years of IH practice, she has served on numerous IH committees and boards, most recently as president of the Academy.

Please join us in congratulating Pat for winning the Alice Hamilton award, a well-deserved recognition!

Alice Hamilton (1869-1970) was the founder of industrial medicine, the first woman professor at Harvard Medical School and a leader of the social reform movement through much of the 20th century. She pinpointed the link between health problems among workers and unsafe conditions at work, including carbon monoxide poisoning in steelworkers, mercury poisoning in hat-ters and “dead fingers” syndrome among laborers using jackhammers.

Among her many accomplishments during her long life, Hamilton served on the faculty of the Harvard School of Public Health, as the first director of the Occupational Disease Commission in Illinois—the first such commission in the world—and as a consultant to the Federal Bureau of Labor Statistics, where she examined the occupational hazards of lead, arsenic, mercury, organic solvents and radium.

Her pioneering work in occupational epidemiology and industrial hygiene sparked sweeping reforms in workplace health and safety, many of which still protect workers today.



Alice Hamilton.

ABIH News

Board Actions

ABIH took action on several items at its March 22–23 board meeting in San Antonio, Texas. The two most important items discussed were nonpayment of dues and computer delivery of exams.

- **Nonpayment of Dues.** Diplomates pay an annual renewal fee of \$75 that is due by the end of each year. If dues are not paid until after January 15, diplomates will incur an additional \$25 reinstatement fee. Effective in 2004, the ABIH board will notify all diplomates who have not paid by March 1 that they are no longer eligible to use the CIH/CAIH designation. Payment of all back renewal and reinstatement fees will return them to good standing and the right to use their CIH/CAIH.
- **Computer Delivery of Exams.** The board will be switching to computer delivery of the exams in 2004. Updates will be posted on the ABIH Web site shortly.

Welcome New CIHs

ABIH is pleased to announce that 137 individuals have been certified in the practice of industrial hygiene and three have been certified as associate industrial hygienists as a result of the Spring 2003 CIH exams. Exam results are available by clicking on “Examination Information” on the ABIH Web site at www.abih.org.