

nayati ICT

FIRST ANNUAL WORKSHOP ON  
OCCUPATIONAL HEALTH, HYGIENE & SAFETY

Feb 11-15, 2008



Volume 2 Issue 1  
May 2008.

# Occupational Health, Hygiene & Safety

# OHHS NEWS

# CONTENTS

## In this issue

3. From nayati to you  
*By Lalitha Burra*
4. Reminiscing the Annual workshop
12. People, Public Trust, Profit – A Health & Safety Model That Enhances Value  
*By Rick Fulwile*
15. Exposure Assessment as a Business Strategy – How Can Industrial Hygiene Grow With a Company?  
*By C.J. Alfonso*
19. Case Studies – Lessons Learned  
*By Tom Selders*
20. Risk Communication: Talking to Top Management about Safety  
*By Peter Sandman*

### Occupational Health Topics in this Issue:

Metal working Fluids, Waste Anesthetic gases, Hazardous Drug Exposures in Health Care, Antineoplastic Agents.

## About us

nayati international is a non-profit and tax exempt organization committed to working for a better quality of life through research and education. Some of the areas of our interest include Occupational and Public Health Issues, Environment, Consulting, Epidemiological Studies and Surveys, Technology and information sharing etc. With a Board of qualified and committed members, our goal is to educate and train the global community and promote research activities that will continue to enhance the quality of our lives.

## Our Board

**Dr. Lalitha Burra**  
Ph.D., CIH

**Dr. Subbarao Burra**  
Ph.D

**Mr. Robert Davies**  
CIH

**Dr. Edward Golla**  
Ph.D., CIH

**Dr. Thomas Selders**  
Ph.D., CIH, CSP



Dear Colleagues,

Hope you all had a wonderful year so far and as always, we at nayati wish you all a happy, healthy and safe future ahead. We are glad to bring to you, Volume 2 of the OHHS magazine. We are also happy to let you know that the newsletter is now available for download on our web site [www.nayati.org](http://www.nayati.org). That is not to say that we will not have hard copies of the issue. We plan on continuing to distribute the newsletter to more than 1000 of you on our mailing list. Hopefully the number would increase with each issue.

We have begun this year with a very productive event – our first Annual workshop on the Fundamentals of Occupational Health, Hygiene & Safety. Many of you received our brochure intimating about the event. For those who have been able to attend, thank you very much for your support and we hope you have benefited from it. The response we received from the participants was very encouraging particularly about the format of the workshop which included, in addition to lectures, interactive sessions. The group discussions, case studies and the interaction that the participants had with each other and with the faculty were productive and enlightening. We have included information and a short pictorial of the workshop events in this newsletter and hope you will get a feel of the format of the workshop. For those who were able to attend, this magazine has given an opportunity to reminisce over the event and how it was also a great week of participation and interaction. This was also an opportunity for our international faculty and out of town participants to enjoy Hyderabad, its historical sights, cuisine and shopping.

We extend our gratitude and thanks to Dr. J.S. Yadav, Director and Indian Institute of Chemical Technology (IICT) for co-sponsoring the event and permitting the use of their facilities, to American Industrial Hygiene Association (AIHA) USA, National Institute for Occupational Safety and Health (NIOSH), USA for their support and co-sponsoring the event and our esteemed faculty. Thanks to all of you participants without whose support this event would not have happened.

The input and suggestions we received from the participants was invaluable and we plan on incorporating them into our next event so that it is organized in a way that would benefit most – technically as well as professionally.

It has been about two years since nayati International began interacting, communicating and trying bring to you information on issues related to Occupational Health, Hygiene and Safety. With your support and participation, we hope to continue this endeavor and many more activities to the benefit of the professional community. Please give us your feed back through our website [www.nayati.org](http://www.nayati.org) and help us serve you better.

Thank you and please keep in touch.

**Lalitha Burra, Ph.D., CIH**  
**Director, nayati International**

We thank the sources of articles, excerpts and information published in this newsletter for giving us approval. All the opinions, views and positions published are those of the authors or the sources cited and do not necessarily represent those of editors, the foundation or its Board.

While we take all possible measures to make sure that the information provided is accurate, nayati, its editors or Board are not legally or in any way responsible for the information provided in the news letter or for any consequences that arise due to the use of this information.

Please send all submissions – articles, news items, letters, sponsorship and advertisement details via email to [lalitha@nayati.org](mailto:lalitha@nayati.org).

Our editors' reserve the right to choose the material for publication, to edit for style, content and length of articles.

The material published in the news letter shall not be reproduced in any manner without the written permission of nayati International.

For all other questions or information, please email to [services@nayati.org](mailto:services@nayati.org).

## FIRST ANNUAL WORK SHOP PRESENTED BY



At: INDIAN INSTITUTE OF CHEMICAL TECHNOLOGY, HYDERABAD, ANDHRA PRADESH, INDIA  
Monday, Feb. 11 – Friday, February 15, 2008



National Institute for Occupational  
safety & Health, USA

World Health Organization  
Collaborating Centers



 **AIHA**  
*Protecting Worker Health*  
American Industrial Hygiene Association



This workshop is for:

Safety Managers \* Facility Managers \* Plant Managers \* EH&S Professionals \* Physicians \* Chemists \* Industrial Hygienists \* Administrators, and....

Everyone who is interested in

- Creating a safe & healthy work environment
- Working in a safe & healthy work environment
- Participating in building a profession committed to "safe-work"
- Becoming part of a professional network

A work shop design based on training modules developed by World Health Organization to provide education for professionals who are charged with the responsibility of protecting the health of workers.

- Faculty that has helped design, implement and conduct internationally accepted curriculum for educating and training occupational health & safety issues around the world and across industries.
- Comprehensive curriculum for identifying hazards and risks, through assessing, evaluating, interpreting, controlling, intervening, communicating and preventing.
- Workshop based on the premise that prevention is the optimal approach for protecting workers health.
- Interdisciplinary approach to addressing work related injuries.
- Combining lectures, demonstrations, problems solving and skills building through interactive, small group and individual activities.
- Where participants can begin applying the skills learned to their jobs and begin or improve their Health & Safety programs.

PLEASE PASS THE INFORMATION TO YOUR COLLEAGUES, FRIENDS AND PEERS  
nayati can be contacted at [services@nayati.org](mailto:services@nayati.org), [www.nayati.org](http://www.nayati.org)



### General Information:

The health and safety of workers is generally given a low priority across economic sectors. Sustainability, human and material resources, and production are primary concerns in both large and small enterprises; in the informal sector, subsistence is critical. The trend toward “globalization” provides additional challenges to worker health and safety. This course is designed for health & safety professionals who are charged with the responsibility of protecting the health of workers and is designed so that the participants will become self-sufficient in learning more about Occupational Health. The goal is to give the participants knowledge, skills and tools to continue working in this area after the course has ended.

This curriculum takes an interdisciplinary approach to addressing the hazards related to work. It is based on the premise that primary prevention is the optimal approach to protecting the health of workers. Each section of this course helps to complete the puzzle of the people, methods, technology and policy it takes to reduce worker injury. By mastering the knowledge and skills presented, participants will be able to respond to a wide range of occupational health and safety problems across industries.

The course is designed around the following principles:

- Workers are entitled to a healthy and safe work environment
- Risk evaluation requires a systematic approach that is essential for control and prevention of work related injuries and hazards.
- Sentinel health events have been traditionally used as an indicator of exposure to an occupational hazard. However, currently there is enough knowledge of workplace hazards to intervene prior to an adverse health outcome.

### The Aim:

A major aim of this curriculum is to provide the participants with skills to address workplace health and safety problems in their communities. In addition to increasing their knowledge of the content material, participants will develop skills in using a framework for approaching workplace health and safety problems including hazard/risk identification and characterization, qualitative risk assessment, control strategies development and risk communication.

### Objectives:

At the end of this course participants will be able to:

- Describe the process for assessing workplace health and safety exposures
- Conduct a qualitative assessment of a workplace
- Recognize a work related injury or hazard
- Complete an occupational history
- Complete a job hazard analysis
- Conduct an incident investigation
- List exposure groups
- Complete an exposure and health effect rating chart
- Develop a strategy for collecting quantitative data
- Recommend intervention strategies for reducing exposure
- Begin a program plan for their workplaces

## Team

**Dr. Kalpana Balakrishnan, Ph.D** is the Professor & Head of Dept. of Environmental Health & Engineering and the Director of WHO Collaborating Center for Occupational Health at Sri Ramachandra University, Chennai. Dr. Balakrishnan obtained her Doctoral degree in Bio-physics and subsequent post doctoral training in Environmental Health Engineering at the Johns Hopkins University, Baltimore, Maryland, USA. Her fields of specialization include occupational and environmental health risk assessment, exposure assessment, industrial hygiene and industrial toxicology. Her primary extra-mural research involvement has been in the area of exposure assessment and environmental epidemiology. She is also involved in multi-disciplinary projects in the areas of environmental physiology & toxicology and more recently environmental genomics and impact assessments. As the head of the department her responsibilities include coordination of all activities of the department with special emphasis on management of extramural grants, industrial consultancy and administration of occupational safety and health training. Under her direction, her department provides occupational safety and industrial hygiene monitoring services to a wide cross-section of local industries and conducts graduate (Masters and Ph.D.) programs in occupational and environmental health, industrial hygiene and safety and occupational medicine.



**Dr. Lorraine Conroy, Ph.D, CIH**, is Associate Professor (with tenure) of Environmental and Occupational Health Sciences at The University of Illinois at Chicago, School of Public Health, Chicago, IL. She is also Director of Occupational and Environmental Health Education and Research Center, a NIOSH-funded ERC. Dr. Conroy obtained her masters and Doctoral degrees from the School of Public Health, Harvard University and is also a Certified Industrial Hygienist. With more than twenty years of experience as an Industrial Hygienist, Dr. Conroy's research interests include characterizing workplace contaminant sources, ventilation system model development and validation, and workplace exposure assessment. Her teaching activities include industrial hygiene, engineering controls, and industrial ventilation. She has national and international experience including service on the NIOSH Safety and Occupational Health Study Section, a term as Visiting Professor at University of Leeds, UK, and teaching occupational safety and health courses in the US, Costa Rica, South Africa, and Turkey.

**CAPT Kenneth F. Martinez, MSEE, CIH** is currently the acting Deputy Director, Division of Surveillance, Hazard Evaluation and Field Studies for the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention. Mr. Martinez is an Engineer and Certified Industrial Hygienist and has been associated with NIOSH for more than 27 years. Previously, he served as the acting Associate Director for the NIOSH Coordinating Office of Emergency Preparedness and Response. Mr. Martinez is currently involved in planning, developing, evaluating, and managing the programs related to the management of public health and establishing overall guidelines and policies; developing basic recommendations for studies and analyses. He actively participates in and is the driver for project and program evaluations, formulates, develops and directs broad programs of active research which lead to advances in the field of occupational safety and health and determines the critical areas of needed research, develops creative approaches and solutions to both scientific and feasibility issues. His professional interests include exposure assessment and control evaluation of microorganisms in industrial, agricultural, and indoor environments. Special interests include evaluation of exposures to infectious diseases in various occupational environments and emergency response to bioterrorist events and emerging infectious diseases; sampling and analytical methods development for bio-aerosols and application of real-time aerosol measurement instrumentation in the occupational environment. He



also served as an environmental team leader for the CDC emergency response to the World Trade Center attack, an environmental team leader for many of the CDC anthrax outbreak investigations, and was deployed to Toronto, Canada as part of the CDC response team for the SARS outbreak investigation. He is current member of the American Conference of Governmental Industrial Hygienists Bio-aerosols Committee (past-Chair) and past-Chair of the American Industrial Hygiene Association Environmental Microbiology Laboratory Accreditation Committee. Mr. Martinez is the recipient of several awards and commendations from US Public Health Service, served on various committees, published several peer reviewed articles and authored and co-authored several books and technical reports.

**Maharshi Mehta, CIH, CSP** currently runs an international Hygiene and safety company - International Safety Systems -with offices in USA, India, China and Brazil. He is the first person to have started the Masters program in Industrial hygiene in 1997 at the Sardar Patel University, Gujarat, in collaboration with Department of Occupational Hygiene at University of Cincinnati. The program has been running successfully for the past ten years with about 100 graduates who are all successfully employed. Mr. Mehta is a certified Industrial Hygienist and a safety professional with several years of experience as a consultant to various multinational and national corporations in India and is committed to contributing to health and safety issues globally. He is also the current Ambassador of American Industrial Hygiene Association (AIHA) to India and is actively involved in promoting Occupational Health and Hygiene around the world.



**Ms. Leslie Nickels, M.Ed** is the Executive Director of Great Lakes Centers for Occupational and Environmental Safety and Health, a WHO collaborating center, at University of Illinois at Chicago School of Public Health. Ms. Nickels oversees administrative and programmatic activities, in education and research and global occupational health. She is involved in curriculum development, implementation of technical, undergraduate, and graduate academic courses and programs, continuing education and short courses for professional development, training for labor inspectors, employers and workers, and train the trainer programs. As the area Manager of the WHO Network of Collaborating Centers she is responsible for coordinating the implementation of the work plan for education, training, and technical materials; dissemination and adaptation of education and training programs and technical materials through a variety of mechanisms, with collaborating centers in occupational health in developing countries and focus on occupational health issues. Ms. Nickels' international experience includes providing assistance on training programs to South Africa National Institute of Occupational Health for capacity building, consultation on curriculum development and implementation of United Nations Development Program -GEF "Demonstrating and Promoting

Best Techniques and Practices for Reducing Health Care Waste to Avoid Environmental Releases of Dioxins and Mercury" in Vietnam, Argentina, Philippines, Senegal, Latvia, Lebanon, and India; Global Administrator of the Global Environmental and Occupational Library, [www.GeoLibrary.org](http://www.GeoLibrary.org) a database of free public domain training tools and technical materials in six languages; trainer for the International Labour Organization's InFocus Program on Safety and Health at Work and the Environment (SafeWork) Addressing Psychosocial Problems at Work (SOLVE), Turin, Italy and organized courses and conferences in Ankara, Turkey, Cape Town, South Africa, Fogarty Conference on Bio Ethics in Bulgaria and Ukraine. Ms. Nickels is the author of several articles, reports and publications in reputed international journals and conferences.

**Ms. Inakshi Naik** graduated with BSc in Chemistry in Rajkot from Gujarat University, India and obtained her Masters in Physiology from the Potchefstroom University for Christian Higher Education in South Africa. She completed her post graduate Diplomas in Medical Technology specializing in Chemical Pathology, Microbiology and Haematology from the Technikon Witwatersrand, and Diploma in Occupational Health from the University of Witwatersrand, South Africa. For the past 16 years, Inakshi has worked at the National Institute for Occupational Health in Johannesburg,

South Africa. Since 1997 she is the Head of the Analytical Services laboratory which is specialized in analysis of hazardous substances for biological and environmental monitoring in occupational and environmental health. The state of the art laboratories staffed with highly trained staff is SANAS accredited and is the only laboratory that provides the analytical capacity to the public sector in South and Southern Africa.

In her experience of 16 years as head of the department, she has noticed that practitioners, to some extent, lack the confidence in implementing a "Biological Monitoring" programme in the workplace. This is because a number of factors need to be considered before starting a programme i.e pharmacokinetics, half life of a chemical, ethics, sample collection, storage, transport, interpretation of results etc. Therefore Inakshi started training and programmes in "Biological Monitoring" in South Africa. She organizes educational seminars, workshop and lectures for the health

professionals and at tertiary academic levels, in the field of chemical exposures in the workplace and advises health professionals from industries, health sectors, military etc. on biological monitoring programmes. She has published number of articles in peer reviewed journals and presented papers at national and international conferences. She also serves on the Scientific Committee on Toxicology of Metals (SCTM), Scientific Committee on Occupational Toxicology (SCOT) and the Scientific Committee on Rural Health (SCRH) of the International Commission on Occupational Health (ICOH).



**Dr. Lalitha Burra, Ph.D., CIH** is a Certified Industrial Hygienist and the founder Director of nayati International (USA, India) a non-profit organization involved in promoting Occupational Health and safety in India. Dr. Burra obtained her doctoral degrees from University of Kanpur in India and also from Louisiana State University, Baton Rouge, USA. She has almost 20 years of experience in laboratory and analytical aspects of Occupational Health and Hygiene exposures, sampling, monitoring and assessment of chemical and biological hazards and was the technical director of accredited Industrial Hygiene Laboratories in USA for several years. She has co-founded and directed a fully equipped, chemistry and microbiology accredited Industrial Hygiene Laboratory for almost a decade. After more than 20 years of successful professional and business career in US, Dr. Burra has recently relocated to India to share her knowledge and expertise and help promote Health and safety through education, training and research activities.

On behalf of nayati, we thank

Indian Institute of Chemical Technology (IICT), Hyderabad, India

American Industrial Hygiene Association (AIHA), USA

National Institute for Occupational Safety & Health (NIOSH), USA

WHO Collaboration Center, Great Lakes Center for Occupational and Environmental Health and Safety, University of Illinois, USA

WHO Collaboration Center, Sri Ramachandra Medical College, Chennai, India

Faculty : Dr. Kalpana Balakrishnan, Ph.D., Mr. Ken Martinez, CIH, Ms. Leslie Nickels, M.Ed., Dr. Lorraine Conroy, Ph. D., CIH, Maharshi Mehta, CIH, CSP, Ms. Inakshi Naik, M.S.

Dr. Max Lum, EdD, MPA, Associate Director, Office of Health Communication and Global Collaboration, NIOSH, USA

SKC, Inc., USA.

Mr. D. Jeff Burton, P. E, CIH.

Volunteers and Participants

For their support and making this workshop a success.



## ACTIVITIES



**Sampling workshop: Demonstration of calibration of sampling pumps and use of other sampling equipment. Demonstration facilitated by staff of WHO Collaborating Center, Sri Ramachandra Medical College, Chennai.**



# Reminiscing . . .



**FINAL DAY HANDING OVER CERTIFICATES, CONGRATULATIONS EVERY ONE.....**



**SUPPORT**

**KNOWLEDGE**

**CHOICE**

[www.skinc.com](http://www.skinc.com)

[www.skinc.com](http://www.skinc.com)

[www.skinc.com](http://www.skinc.com)



SKC is Support, Knowledge, and Choice for the occupational health, safety, and environmental professional. The world leader in sampling technologies for 45 years, SKC has served the industry with a complete line of air sampling pumps and accessories, sorbent sample tubes, filter sampling media, passive samplers, sample bags, and application-specific samplers. Industry professionals world wide rely on SKC.



World Leader in Sampling Technologies

[www.skinc.com](http://www.skinc.com)



## A Health & Safety Model That Enhances Value

**By Rick Fulwiler**

*This article was originally published in the January 2007 issue of The Synergist, the publication of American Industrial Hygiene Association. For more information, visit [www.aiha.org](http://www.aiha.org).*

Presented is a simple, yet powerful, model comprised of three elements that are clear values to any enterprise. Of critical importance is the fact that H&S professionals play a stewardship role in protecting and enhancing all three of these values.

During the past several years there has been considerable discussion regarding the value H&S brings to an enterprise. Despite this discussion, very few models have been presented or actually applied. Why? Some answers could be this is outside of the scope of H&S pros, they don't have the skills to express H&S outcomes as business value outcomes, they see the models as limited in scope or too complicated, e.g., ROSHI, or they simply don't get the fact that when the business value case is added to the human value case the positive impact is not additive but synergistic, which is a clear win/win for the enterprise, the H&S pros and the folks both inside and outside the fence line.

Merely accepting the value enhancing element is not enough. H&S pros must sell this element by demonstrating its validity by expressing H&S outputs as outputs of critical and strategic importance to the enterprise and to its SLM. One way to clearly make the case that H&S is value enhancing is to apply a simple model, linking specific examples to each portion of the model that further demonstrate the value enhancing influence H&S can have on an enterprise. You will see below how this model also applies to nonprofit enterprises.

There is clearly an H&S value continuum operating:

Elements of the Continuum	Those most likely to accept the element and likely quality of their H&S results
Value depleting	<ul style="list-style-type: none"> <li>• Hard-nosed senior line management</li> <li>• H&amp;S results likely to be below average</li> </ul>
Value protecting	<ul style="list-style-type: none"> <li>• Most H&amp;S pros and some SLM</li> <li>• H&amp;S results likely to be average</li> </ul>
Value enhancing	<ul style="list-style-type: none"> <li>• A few enlightened SLM and H&amp;S pros</li> <li>• H&amp;S results likely to be above average</li> </ul>

### The Value Enhancing Model: People, Public Trust and Profit

Anyone who has heard me speak or attended one of my professional development seminars knows that I deal only in simple, straightforward models, and such is the case with the H&S Value Enhancing Model. This model is comprised of only three components—people, public trust and profit. The model not only is value enhancing but it represents three elements that in and of themselves are the key values for any successful enterprise. The model is simple, powerful and logical. Note that people come first. Protecting people is our first and foremost professional and ethical responsibility. Next comes public trust, which embraces the concept of integrity as well as brand and institutional reputation; who wants their enterprise or its products to have a bad reputation? Finally, there is profit—without it a company cannot survive. How about for nonprofit organizations? Don't discount this model. How does a nonprofit spell profit? They spell it B-U-D-G-E-T. Both profit and budget are measured in dollars, and without dollars no enterprise can survive.

When I first developed this model I thought it applied only to my enterprise (Procter & Gamble). When I retired and started to consult with other enterprises it became apparent that the model applies to any enterprise that wants to be better than average and applies best to those enterprises that want to achieve excellence. Once broken down into its three components, it can be seen just how an H&S pro can use it to demonstrate the value enhancing contributions H&S can make to any enterprise.

### People

This clearly embodies the human case for H&S. Protecting people both inside and outside the



fence line is our primary professional and ethical responsibility. People are entitled to the preservation of life and limb. People, of course, are essential for the success of any enterprise. It was the renowned and revered expert on management, Peter Drucker, whose “concepts turned companies away from treating employees as cogs, persuading management to think of workers as assets and partners.” This was the genesis of high performance works systems, self-directed work systems and empowered work systems, which is how most successful enterprises operate today. Logic supports the fact that you can’t get trust and commitment from employees if they feel their safety and well-being are being threatened by their work environment. As a real-world example, H&S played a key role in P&G’s transition into a high performance work system, which is clearly an enhanced business value.

### Public Trust

This embodies both the human and business case for H&S. Public trust is an umbrella term embracing integrity, high ethical standards and the reputation of the enterprise and its products. Workplace outcomes impact directly on this. There is not a single enterprise that wants it or its products to have a poor reputation. Consider a consumer products company where employees get sick while manufacturing a well-known product due to the addition of an improperly controlled new ingredient. Even though there is no safety issue related to the end use of the product, adverse publicity will impact the consumer’s loyalty to that brand. What about an enterprise that wants to expand its operation in a community but has a history of serious injuries or illnesses, process upsets and contaminant releases to the environment? There have been numerous occasions where community pressure has prevented the enterprise with adverse H&S experiences from expanding, forcing an expensive and undesirable relocation of the enterprise. Public trust also requires obeying the law. What enterprise wants to open the Wall Street Journal or USA Today and see an article about itself on a large OSHA or EPA citation and the ensuing multimillion dollar fine?

### Profit

This embodies the business case. Remember also that if you work for a nonprofit enterprise you spell profit B-U-D-G-E-T. They both are measured the

same way, as dollars. Profit is truly the bottom line because without profit (or a budget) any enterprise ceases to exist. And what a critical role H&S plays, albeit, a poorly developed story to date. Because this is the crux of the value enhancing element, let’s break it down into smaller pieces.

- Productivity
- Business continuity
- Technology enabling
- Reducing nonvalue added cost
- Communicating H&S’s value enhancing role

**Productivity:** This piece indexes back to the people element and Drucker’s reference to how important people are to optimizing performance and productivity. Simply said, productivity cannot be optimized when workers are fearful for their well-being.

**Business continuity:** Realizing that the human tragedy and cost is orders of magnitude greater in the event of a catastrophic injury or illness, there is still a major impact on productivity when a department deals with these major adverse outcomes. First, there is the element of distrust between labor and management, then the down time to investigate the cause, then management’s time spent on managing and minimizing the downtime—all major hits on productivity. Usually, a serious outbreak of

**Public trust is an umbrella term embracing integrity, high ethical standards and the reputation of the enterprise and its products. Workplace outcomes impact directly on this. There is not a single enterprise that wants it or its products to have a poor reputation.**

occupational disease or a catastrophic injury brings an OSHA inspection. Even though the enterprise gets back to its normal productivity, the time and energy management must spend on the regulatory issues takes their eyes off the strategic work necessary to increase production, quality or cost reduction.

**Technology enabling:** This is a favorite of mine, even though when I mention it to a group of H&S pros I often get the “deer in the headlights” look. Unfortunately, we don’t think of ourselves as technology enablers, but that is just what we are. Without H&S, could

any enterprise handle hazardous processes or materials—of course not! So, if your enterprise handles a hazardous process or materials safely due to your input, you are a technology enabler! Does SLM see us as such? I doubt very many do.

Early in my career I had the good fortune to recognize just how critical industrial hygiene was to the business success at P&G. Without industrial hygiene controls it would not have been able to continue to put enzymes in its detergents in England when competitors were forced to remove them due to occupational health issues. Because P&G could handle enzymes safely and our competition could not, we went from being number 2 in detergent sales to being number 1. Industrial hygiene enabled the enterprise to use enzyme technology safely to gain market leadership. We are technology enablers, but we don't do a good job of communicating this to SLM.

**Reducing nonvalue added cost:** Every injury or illness has a cost, and those costs are nonvalue added. Likewise, every injury or illness that is prevented reduces the nonvalue added costs. Correspondingly, for every injury or illness that occurs greater, nonvalue added costs are incurred. The most effective way to make this case to SLM is to express the costs or savings as sales equivalent dollars; yet, we as H&S pros rarely do that. It is a simple and straightforward calculation to go from the cost of an injury or illness to SE\$. For example, the average workers' compensation case costs about \$9,000 (Workers Compensation Research Institute). The average profit margin for a U.S. business is 7.1 percent (Business Week). Each \$9,000 workers' compensation case requires an enterprise to sell an additional \$126,760 worth of product. No smoke and mirrors here; the calculation is quite simple. See below:

$$\text{SE\$} = \frac{\text{\$ saved or lost due to injuries or illnesses X 100 percent}}{\text{profit margin as a percent}}$$

$$\text{SE\$} = \frac{\text{\$9,000 X 100 percent}}{7.1 \text{ percent}}$$

$$\text{SE\$} = \$126,760$$

We need to represent injury and illness costs, or savings, as SE\$.

### Communicating H&S's Value Enhancement to SLM

H&S pros, and even some SLM, say and believe that a healthy and safe enterprise is better run and more likely to be successful. However, that is not a view held nearly widely enough by SLM. H&S pros have to be effective in communicating the value enhancing contributions of H&S. The single best way to do this is not by hanging posters stating "SAFETY PAYS," which is just another empty slogan. No, the best way is to state H&S outcomes as outcomes critical to the success of the enterprise such as reduced costs, increased productivity, technology enablement or reduced nonvalue added costs expressed as SE\$.

### Conclusion

This simple yet powerful model reflects those values held in highest regard by most, if not all, enterprises.

**The best way is to state H&S outcomes as outcomes critical to the success of the enterprise such as reduced costs, increased productivity, technology enablement or reduced non-value added costs expressed as SE\$.**

We H&S pros are stewards of all three. Because of this logical and powerful alignment, H&S is not value depleting or value protecting but is, indeed, value enhancing. However, it falls to us H&S pros to apply this model in our enterprise, using our own examples to make the case to SLM that H&S is value enhancing.

*Fulwiler, a CIH and CSHM, is president of Technology Leadership Associates, Cincinnati. After 28 years with P&G, he retired as director of health & safety-worldwide with responsibility for occupational medicine, industrial hygiene, safety, workers' compensation and OSHA. Fulwiler is also an adjunct professor at the College of Medicine, University of Cincinnati; course director for the Leadership and Management course at the Harvard School of Public Health; and course director for the Qualified Safety Sales Professional course. He can be reached at (513) 941-1377 or rdfbmw@fuse.com.*

***Health is not merely the absence of disease but a positive state of physical, mental and social well-being***

***- World Health Organization***

## Exposure Assessment as a Business Strategy

### How Can Industrial Hygiene Grow With a Company?

By C.J. Alfonso

*This article was originally published in the May 2006 issue of The Synergist, the publication of American Industrial Hygiene Association. For more information, visit [www.aiha.org](http://www.aiha.org).*

To be successful, a business enterprise must have established patterns of producing predictable and repeatable outcomes. Some enterprises have used innovative processes to advance their market share well beyond their competitors. For example, Dell computers remain highly competitive in the marketplace because Dell has adopted a unique business strategy called direct sales, which allows Dell to quickly assemble and ship computers to fill customer orders. Dell's secret to success lies in its excellent vendor relationships, which deliver superior results to its customers.<sup>1</sup>

Like other enterprise processes, industrial hygiene processes interact directly with the businesses they serve.

Therefore, processes that drive such programs must be tailored to fit the parent enterprise and must be scalable to align with future enterprise growth.

### Coping With Growth

Consider this example: An industrial hygienist, John Smith, is employed at Anywhere Home Furniture, which manufactures traditional hardwood items at a single manufacturing plant of 500 workers. Smith has ownership of the air and noise exposure measurement and control programs and is very familiar with the exposures generated by the various processes in the plant. The industrial hygiene program consists of routine monitoring campaigns to determine whether manufacturing controls are effective.

Smith has operated this program for several years and is convinced that he has a good understanding of the exposures in the plant and that defensible decisions have been based on these exposures. He becomes aware of new process introductions or process changes because he has a close working relationship with the process engineering manager.

In a recent staff meeting, Smith learned that Anywhere Home Furniture has joined with venture capital partners to develop a business strategy aimed

at acquiring multiple smaller furniture companies. The goal is to provide customers with an enhanced product line.

The first acquisition consists of two plants. One employs 1,200 workers engaged in upholstered furniture. The second has 800 employees engaged in specialty hardwood items that require exotic finishes for durability. Neither plant has processes that are similar to the parent plant, and both are a great distance away. Each has outside industrial hygiene support services via consultants. Although the consultants are qualified, their work consists of a series of projects that are not linked together to form a cohesive program. Their efforts have been inconsistent because both plants lack a qualified

**To serve the need of a growing business, the industrial hygiene entity must anticipate growth by staying informed of the path the business will take and by being prepared to accommodate expansion and increased complexity.**

individual to coordinate them.

Smith is asked to present a plan to extend his exposure control program to the new facilities, ensuring a uniform standard of care across the new organization. His first proposal includes hiring two industrial hygienists, one for each plant. To his surprise, the proposal is accepted, and he is asked to proceed with replicating the exposure control plan in the new facilities.

After a full year, the parent organization calls for a third-party safety and health audit of all three plants. The auditor's findings are as follows:

- The three programs are providing varying degrees of exposure evaluation and control. Therefore, the quality of worker protection varies significantly from plant to plant.
- The exposure evaluations (monitoring campaigns) are executed in an inconsistent manner and have no consistent rationale.
- There is no enterprise-wide system in place to alert the plant's industrial hygienists when a process changes or when a new process is introduced.
- There is inconsistent connectivity between the exposure evaluation program and the control



programs (personal protective equipment, respiratory protection, hazard communication, ventilation control and hearing conservation).

- The narrative industrial hygiene reports are in a paper-based system that contains recommendations for improvements. There is no central system for storing and tracking progress on these recommendations.
- The cost of operating the extended IH departments is more than three times the cost of the original program.
- The audit has determined that the programs across the enterprise are not demonstrating consistent results.

## Growth Is a Business Strategy

The industrial hygiene issues encountered in this scenario occur frequently when an enterprise grows. The root cause of the expanded industrial hygiene program deficiencies came from trying to replicate a champion-based program multiple times. Anywhere HomeFurniture's growth and diversity are contributing to increased complexities that the original exposure control program cannot accommodate. To achieve repeatable results, a documented business process with standardized inputs and outputs is required that can be replicated in each of the three facilities.

It is axiomatic that growth is a goal of every business. Companies that fail to grow actually shrink as the economy around them grows and their competitors claim more market share. Business growth is defined as permanent increases in profit as a result of measurable and sustainable increases in sales. Today's growth ensures tomorrow's profitability, and profit becomes the catalyst to drive more growth.

Businesses grow in multiple ways. Maximizing current investments is a natural growth path. This growth is generated internally by creating improved or new marketable products. Growth also can be achieved via mergers and acquisitions. Both of these avenues for growth add size and complexity to existing industrial hygiene programs.

## Anticipating Growth in the Enterprise

To serve the need of a growing business, the industrial hygiene entity must anticipate growth by staying informed of the path the business will take and by being prepared to accommodate expansion and increased complexity.

As the parent business grows, industrial hygiene

capabilities must grow. The challenge is to increase capability through productivity gains and not by adding repeating costs. In the scenario above, the natural reaction to enterprise growth was to replicate the IH department. That strategy cannot continue because it will add cost each time there is growth, and it will be counterproductive to increasing profit. Although it is true that IH departments cannot survive indefinitely without growing, the growth of the enterprise and the growth of the IH department need not exist in a linear relationship.

In the case of Anywhere Home Furniture, replicating the IH department appeared to be the most plausible solution but it was not because the department used champion-driven processes that were not replicated easily. The lack of a defined industrial hygiene business process is precluding the IH departments from providing services equally across the new enterprise in a cost-efficient manner.

Other business disciplines have demonstrated that best practices exist across entire disciplines. Over time, these best practices become industry standards and are adopted as a way of performing the business process, which leads to reproducible and defensible outcomes. A business process is "a set of logically related tasks performed to achieve a defined business outcome."<sup>2</sup> For example, accountants would be foolish to create their own practices and procedures because accepted best practices already have been identified.

The obvious question becomes: What are the best practices to drive industrial hygiene? Once identified, these best practices must be linked together to form a cohesive business process that will be sustainable and scalable to support the growth of the parent enterprise.

## Using the AIHA Exposure Assessment Strategy

The strategy outlined in the second edition of A Strategy for Assessing and Managing Occupational Exposures defines a generic business process that is adaptable to any parent business.<sup>3</sup> Because the strategy is a framework, not a recipe, each enterprise that adopts it must also adapt it to integrate with other, established business processes. When the industrial hygiene business process is implemented

- Programs attain an offensive rather than a defensive posture and are adaptable to enterprise growth.
- Programs provide a consistent standard of



care for all employees across large and small enterprises.

- A high probability of repeatable outcomes is assured.
- The business process can be continuously refined, adding to increased industrial hygiene capabilities, productivity and quality.
- The business process becomes the foundation for industrial hygiene growth as the parent business grows.
- Industrial hygiene startup time in a new acquisition is reduced.
- Documented processes reduce the learning curve for new industrial hygiene hires.

Industrial hygiene cannot meet the needs of a growing business enterprise with random or champion-driven processes. Increasing the size of the IH department to accommodate the growth of the enterprise often is not acceptable because this can add repeating, ongoing cost. The AIHA exposure assessment strategy defines a generic business process that is adaptable to any parent business and produces repeatable results. Once adapted, the process can be implemented across large and small enterprises to yield a consistent standard of care. The process will be scalable to meet the needs of a growing business and can undergo multiple rounds of refinement to make it increasingly more efficient.

**Alfonso**, a CIH, is with 3M's corporate industrial hygiene department, St. Paul, Minn. He can be reached at (651) 778-4813 or [cjalfonso@mmm.com](mailto:cjalfonso@mmm.com).

### References

1. CHIPS interview with Michael Dell, chairman of the board and chief executive officer, Dell Computer Corp. Available online at [www.chips.navy.mil/archives/01\\_summer/dellinterview.htm](http://www.chips.navy.mil/archives/01_summer/dellinterview.htm).
2. **Davenport, T.H. and J.E. Short:** "The New Industrial Engineering: Information Technology and Business Process Redesign." Sloan Management Review, Summer 1990, pp. 11-27.
3. **Mulhausen, J.R. and J. Damiano:** A Strategy for Assessing and Managing Occupational Exposures, Second Edition. Fairfax, VA: AIHA Press, 1998.

***The opinions expressed in this article are solely those of the author and do not necessarily reflect those of the 3M Company.***

### Metalworking Fluids

Source: <http://www.cdc.gov/niosh/topics/metalworking/>

Metalworking fluids (MWFs) are used to reduce heat and friction and to improve product quality in industrial machining and grinding operations. There are numerous formulations, ranging from straight oils (such as petroleum oils) to water-based fluids, which include soluble oils and semisynthetic/synthetic fluids. MWFs may be complex mixtures of oils, emulsifiers, anti-weld agents, corrosion inhibitors, extreme pressure additives, buffers (alkaline reserve), biocides, and other additives. In use, the fluid complexity is compounded by contamination with substances from the manufacturing process (such as tramp oils, hydraulic fluids, and particulate matter from grinding and machining operations). Furthermore, water-based metalworking fluids support microbial growth, which introduces biological contaminants (such as bacterial and fungal cells or cell components and their related biological byproducts such as endotoxins, exotoxins, and mycotoxins).

Some 1.2 million workers in machine finishing, machine tooling, and other metalworking and metal-forming operations are potentially exposed. Workers can be exposed to the fluids by breathing aerosols generated in the machining process, or through skin contact when they handle parts, tools, and equipment covered with the fluids. The National Institute for Occupational Safety and Health (NIOSH) defines MWF aerosol as the mist and all contaminants in the mist generated during grinding and machining operations involving products from metal and metal substitutes.

Occupational exposures to metalworking fluids may cause a variety of health effects. Respiratory conditions include hypersensitivity pneumonitis (HP), chronic bronchitis, impaired lung function, and asthma. Work-related asthma (WRA) is one of today's most prevalent occupational disorders, imposing significant costs in healthcare and workers' compensation. Dermatologic exposures are most commonly associated with, but not limited to, allergic and irritant dermatitis (skin rash). In addition, substantial evidence shows that past exposures to some metalworking fluids were associated with increased risk of some types of cancer. Although actions taken in the last several decades have reduced that risk, it is not known if these actions have totally eliminated the risk.

NIOSH recommends that exposures to MWF aerosols be limited to 0.4 milligrams per cubic meter of air (thoracic particulate mass), as a time-weighted average concentration up to 10 hours per day during a 40-hour workweek [<http://www.cdc.gov/niosh/98-102.html>]. The recommended exposure limit (REL) is intended to prevent or greatly reduce respiratory disorders associated with MWF exposure. Some workers have developed WRA, HP, or other adverse respiratory effects when exposed to MWFs at lower concentrations. This REL is technologically feasible for most metalworking operations.

Several preventive measures are available to reduce MWF exposures and their effects. Formulations have been developed with safer, less irritating additives and MWF components. Machinery has been modified to limit the dispersal of MWF mists. In addition, the use of protective gloves, aprons, and clothing, the education of workers regarding the safe handling of MWFs, and the importance of workplace personal hygiene are all key to controlling the exposures to MWFs.

## Waste Anesthetic Gases – Occupational hazards in Hospitals

Source: Excerpt from NIOSH website. For details, please visit <http://www.cdc.gov/niosh/docs/2007-151>

Waste anesthetic gases are small amounts of volatile anesthetic gases that leak from the patient's anesthetic breathing circuit\* into the air of operating rooms during delivery of anesthesia. These gases may also be exhaled by patients recovering from anesthesia. Waste anesthetic gases include both nitrous oxide and halogenated anesthetics such as halothane, enflurane, isoflurane, desflurane, sevoflurane, and methoxyflurane (no longer used in the United States). The halogenated anesthetics are often administered in combination with nitrous oxide. Nitrous oxide and some of the halogenated anesthetics may pose a hazard to hospital workers.

\*The anesthetic breathing circuit includes the mask, endotracheal tube, anesthetic gas machine, ventilator, pumps, scavenging devices, all connecting tubing, and other elements, depending on the type of anesthesia delivery system

## Hazardous Drug Exposures in Health Care

Source: Excerpt from NIOSH website. For details, please visit <http://www.cdc.gov/niosh/topics/hazdrug/>

Health care workers who prepare or administer hazardous drugs (e.g., those used for cancer therapy, and some antiviral drugs, hormone agents, and bioengineered drugs) or who work in areas where these drugs are used may be exposed to these agents in the workplace. About 5.5 million U.S. health care workers are potentially exposed to hazardous drugs, including pharmacy and nursing personnel, physicians, environmental services workers, workers in research laboratories, veterinary care workers, and shipping and receiving personnel.

It seems counter-intuitive that the health care industry, whose mission is the care of the sick, is itself a "high-hazard" industry for the workers it employs. In fact, published studies have shown that workplace exposures to hazardous drugs can cause both acute and chronic health effects such as skin rashes, adverse reproductive outcomes (including infertility, spontaneous abortions, and congenital malformations), and possibly leukemia and other cancers. The health risk depends on how much exposure a worker has to these drugs and how toxic they are. Workers can be protected from exposures to hazardous drugs through engineering and administrative controls, and proper protective equipment.

Passing a Health and Safety Certification Exam can be a long road if you're not prepared.

Prepare to pass with CertiStep!

PASSING ZONE

Order online at [www.CertiStep.com](http://www.CertiStep.com)

### Take the shortest route to success — with CertiStep!

Our success-guaranteed study method puts you in the driver's seat. Pop in the CD and critical questions and answers are right at your fingertips. CertiStep gives you these advantages:

- save time and money studying where, when, and how you want
- diagnose how well you know each subject area
- focus on your weaker subject areas using keyword searches
- detailed explanations for all bodies of knowledge
- develop your computer test-taking skills as you learn

#### Take it out for a spin...

Take our **FREE** online practice quiz and you'll get your test results immediately. Order your study program right away at [www.CertiStep.com](http://www.CertiStep.com), or call us at **1-800-377-9717** for more information or to place your order. And remember the **CertiStep Guarantee: If you don't pass, we'll refund your purchase price!**

*Datachem, developer of the interactive computer-based CertiStep method, is the market leader in exam certification preparation software.*

#### CertiStep Study Programs

Licenses	Individual	Site
CSPprep V6.1	\$399	\$1099
ASPprep V4.1	\$299	\$ 999
CIHprep V8.3	\$399	\$1099
CHMMprep V3.0	\$349	\$1099
CPEprep V2.0	\$349	\$ 999
OHSTprep V4.0	\$299	\$1099

NOW AVAILABLE!

STS-Cprep V1.0	\$149	\$ 899
Safety Bained Supervisor-Construction		

Pricing subject to change without notice.

*Call about pricing on other licensing needs.*

#### Exclusively from Datachem

#### Safety in Numbers:

*Formulas, Examples and References for Occupational Safety Professionals*

**Price: \$89**

This 184 page desk reference provides over 100 formulas and example problems in mathematics, physics, and engineering, as well as quick references to technical, legal, and managerial terms and definitions.



Developers  
of CertiStep

69 Milk Street, Suite 300  
Westborough, MA 01581



## Lessons Learned

By Tom Selders

Both of these cases involve employees getting dermatitis while operating metal working machines such as lathes, broaching, milling etc. Each of the machines used some form of cutting oil. There were established procedures for testing, replacing and adding biocides to the cutting oil on a routine basis.

### Case 1

Employees working on different machines began reporting dermatitis. They were long time machinists with no routine history of dermatitis.

Initial investigations examined the work process, cutting oil supply, personal hygiene, oil maintenance and replacement, etc. All results of the investigation indicated that there had been no changes in the type/supplier of the cutting oil, no new procedures on machining the parts, the actual parts were machined for a number of years and thus were not new and personal hygiene was very good. A sample of the oil was sent out for analysis and came back with no indicators of concern.

The oil in the machines was flushed out, the circulating system cleaned and fresh oil put into the machines. The employees continued to have dermatitis.

One day the plant industrial hygienist was discussing the problem with the laboratory director when by accident a "shop towel" fell into a lab sink with water in it. The towel was retrieved from the sink and upon wringing it out soap suds were formed. The towel was clean and had not been used before it fell into the sink. A second clean shop towel was put into the water and again upon being wrung out soap suds were formed. A number of additional shop towels were collected from throughout the plant and all discharged soap suds when put in water and wrung out.

These "shop towels" were provided by the employer for employee use as needed. The towels were approximately 15 inches by 13 inches. Employees would get clean towels and as they became dirty the towels were collected and sent to a commercial laundry for washing and returned to the plant for use.

Discussion with the commercial laundry indicated that they had changed the washing process for the towels. It was decided that the laundry would do a double rinse on all shop towels for the plant in question. All towels in the plant were collected and replaced with clean double rinsed towels. The dermatitis problems went away. The residual soap

in the non double rinsed towels was causing the problem with employee's skin.

### Case 2

Same plant as Case 1 above. A number of machinists began to experience dermatitis. Not all machinists working on the machines exhibited dermatitis. The cutting oil was supplied from a common system.

As in case 1, procedures, work practices, personal hygiene, oil supply, etc. were checked. Shop towels were also tested with no suds upon wringing them out. Oil samples were also sent out for analysis.

On a periodic basis a biocide was added to the oil to prevent the growth of biological organisms. Oil maintenance records were examined and all procedures were performed and documented as per established work practices.

Even though documentation and discussion with maintenance employees confirmed that proper procedures were followed it wasn't until in depth discussions were held that one maintenance employee noted he was adding larger than required amounts of biocide to the cutting oil. His thoughts were that if "X" amount is good than "2X or 3X" was better. He wanted to make sure the bugs were killed. This additional biocide altered the cutting oil and resulted in the dermatitis.

Procedures were reviewed with the maintenance employees including not to modify procedures without approval.

Even the best of intentions can cause problems.

*Tom Selders, Ph.D., CIH, CSP is an Industrial Hygienist and Safety Consultant with Selders consulting. He can be reached at selders@mail.com*

Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.

**William Foster**



## The Boss's Outrage: Part I

### Talking with Top Management About Safety

By Peter M. Sandman

*This article was originally published in the December 2006 issue of The Synergist, the publication of American Industrial Hygiene Association. For more information, visit [www.aiha.org](http://www.aiha.org).*

Most of my risk communication work focuses on ways to talk about risk with publics and stakeholders—your employees, your neighbors, etc. If the risk is serious and they're pretty apathetic, your job is to get them more concerned. If the risk is tiny and they're pretty upset, your job is to calm them down. If the risk is serious

**Safety outrage is on one side of the ambivalence seesaw; a genuine desire to prevent accidents is on the other side. Managing this safety seesaw better is crucial to talking with top management about safety.**

and they're (rightly pretty upset, your job is to help them bear it and guide them through it. These are all tough jobs.

They're a lot tougher if your boss doesn't get it. This issue arises in many of my consultations and presentations.

"Fine, okay, thanks

for all the good advice. But there's no way my senior management will go for it. How do I convince them?"

The problem of convincing senior management is really two problems.

First, how do you get your boss to see the risk the way you see it? This is usually a problem when you think people aren't taking a risk seriously enough, and you want management support to sound the alarm. You're a corporate safety professional who wants to launch a campaign urging employees to reduce their hazardous chemical exposures by implementing stricter procedures. Or you're a municipal health officer who wants to launch a campaign urging citizens to prepare for a possible influenza pandemic by stockpiling food, water, medications and other necessities. Assume the data are on your side. You can demonstrate that stricter hazchem procedures or more pandemic precautions are worthwhile investments. Even so, the plant manager or the mayor balks. Now what?

The second problem usually comes up when people are upset about a risk, rather than when they're apathetic. Having studied a little risk communication, you have learned that ridiculing people for getting upset isn't an effective way to help them relax (if the risk isn't really serious) or help them cope (if it is). Nor

will technical data do the trick. You know it's wiser to legitimize their emotions, to acknowledge some of the reasons why they're upset, to apologize for some of the ways the situation has been mishandled, to share control and share credit, to avoid over-reassurance and overconfidence, etc. Your problem is that none of this makes sense to your boss. Senior management wants you to tell people the situation is under control, period. Now what?

This month's column will address the first problem: Why do bosses sometimes resist taking serious risks seriously, and what can you do about it? My next column will take on the second problem.

### It's the Outrage, Stupid!

Sometimes, of course, senior management is as determined as you are to take safety seriously. And sometimes when it's not, its reservations are sound: The risk is smaller than you're claiming, or the evidence is weak, or the precautions are untested or too expensive. But what's going on when a senior manager nixes your risk reduction recommendation even though you can prove that it's cost-effective, a good business decision?

As a rule, when smart people act stupid, something emotional is usually getting in the way. I use the term outrage for the various emotion-laden factors that influence how we see risk. Whether or not a risk is actually dangerous, for example, we are all likely to react strongly if the risk is unfamiliar and unfair, and if the people behind it are untrustworthy and unresponsive. Factors like these, not the technical risk data, pretty much determine our response. Risk perception researchers can list the outrage factors that make people get upset about a risk even if it's not very serious.

Is there a similar list of outrage factors that can make senior managers shrug a risk off even if it's serious? I think there is. Here's some of what's on the list.

1. **Guilt/responsibility:** A senior manager who accepts that safety can be greatly improved must also accept that it could have been greatly improved in years past—that past accidents could have been prevented. Working to improve safety means dwelling on those past accidents and taking responsibility for them. That could lead to confrontations with employees, neighbors or regulators. "Why did you wait so long to deal with this?" It could also lead to confrontations with one's own conscience. But if management can convince itself that accidents are inevitable and the proposed new precautions are ineffective, then the organization's accident history is guilt-free.



2. **Ego/stature:** Let's face it: Compared to other important management tasks, safety is low-status. It is all too often seen as boring, easy, low-tech and stodgy, a backwater for low achievers. Even among EH&S professionals, safety typically lags behind environment and health. So when you ask a VP to think about safety, you're asking him or her to focus on a low-status preoccupation. "I have an MBA. I negotiate deals. I don't wrap duct tape around tool handles. I hired you for that!" Not that a boss who thinks safety is low-status will necessarily give safety managers a lot of autonomy. To the VP's eye, your safety innovation may look simultaneously too big to leave in your hands and too small to dirty his own. So it falls through the cracks.
3. **Hostility/contempt:** Lurking deep in the heart of at least some senior managers is a mostly unconscious suspicion that employees probably deserve the accidents they have. They're not very smart; they don't pay attention to safety training; they don't even bother to learn English; they daydream on the job; they're looking for some time off courtesy of workers' comp. And aren't they paid to take some risk? I'm not suggesting there are lots of senior managers who consciously, wholeheartedly believe these canards. There aren't. But where labor-management relations have been strained, hostility and contempt can make employee safety feel like an unwelcome chore, not a mission.
4. **Fear/denial:** Thinking about possible future accidents, especially bad ones, engenders some level of fear. If the level is uncomfortably high, denial kicks in. A woman who doesn't do breast self-examinations, for example, isn't just protecting herself from the awful moment when she finds a lump, but also from the anxiety of looking. Employees sometimes ignore safety rules in order to avoid fretting over what might go wrong. Senior managers sometimes ignore safety opportunities for the same reason. In order to escape their own fearfulness, they convert hope to belief: It won't happen on their watch. So why take precautions?
5. **Performance anxiety:** If you can think of things I ought to do that I haven't thought of, then I must not be very good at my job. As a recommendation passes from an outside consultant to a middle manager, or from middle manager to senior manager, it's tempting to dismiss the recommendation rather than accept the implied criticism. In a crisis situation, similarly, senior

managers may experience panicky feelings that they might not be up to the job. If such feelings are repressed as professionally unacceptable, they may well be projected instead onto the work force or the public: "People are panicking. They're making a mountain out of a molehill."

I have a list of 24 reasons why employers sometimes ignore safety, and I don't have any data that these five are the biggest. But they're certainly among the least likely to be noticed and properly addressed. They're among the likeliest to be dismissed as both shrinky and insulting. Some of the other factors on my list are closer to the surface, more psychologically and socially acceptable—factors like

- **Fatalism** – "Accidents just happen. Nobody is responsible and nobody can prevent them."
- **Routinization** – "Accidents are statistical and predictable. They're already in the budget."
- **Normalization** – "Our company's safety record is no worse than anyone else's."
- **Productivity** – "We've got deadlines, budgets, real problems. We can't afford to dilute our focus."
- **Cluttered desk** – "I have too much to do already. Come back in six months."

Do I think senior managers are constantly incapacitated by safety-related outrage? Of course not. But if senior management is being inexplicably unresponsive to your safety recommendations, I do think you should consider whether some kind of outrage might be responsible.

### Coping with Management's Safety Outrage

So what should you do when you have diagnosed your boss with a possible case of safety outrage?

Bear in mind that safety outrage is often under the surface, not right on top. If so, it probably won't help to announce your diagnosis; you'll get a denial, maybe a heated one. You have to get the possibility into the room without actually accusing your boss of letting guilt, ego, hostility or the rest distort her risk management judgment. So take the onus off of senior management. Talk about how you sometimes feel that way, or how somebody you used to work with felt that way or how some people might be tempted to feel that way. This is the "I—you—it—some people" approach; it lets you talk about a touchy issue with less chance of making the other guy defensive.

Bear in mind also that your boss's safety outrage is probably only half the story. Senior management may well be ambivalent about your safety recommendations. Safety outrage is on one side of the ambivalence seesaw; a genuine desire to prevent accidents is on the



other side. Managing this safety seesaw better is crucial to talking with top management about safety.

Suppose your VP half thinks safety is beneath her. On the other hand, she realizes that a bad safety record can really hurt the bottom line. She's ambivalent. So she does what ambivalent people do—she goes to whichever seat on the seesaw you leave vacant. If you tell her that safety needs more of her attention, she's likely to feel her stature/ego reservations that much more strongly. "I don't do safety. I'm a VP." So instead you might want to say something like this: "Look, you're much too busy for this stuff. I figure the most I deserve is 10 minutes of your time to brief you on what I want to do. You're a VP and safety is not your main thing." The odds are pretty good that she'll answer: "I need much more information than that. I want to give much more attention to safety than that."

Or suppose you suspect hostility to employees may underlie the VP's resistance. How do you get on the other side of that seesaw? You'd be unwise to voice the hostility yourself. Suggesting that employees deserve their accidents could easily get you fired or sued. So put it in the third person: "You know, a lot of people say there are limits to what's possible with such high turnover and a work force that's pretty uneducated and pretty careless. Some would say most of our accidents are the employees' own fault." You're not claiming this is so, and you're definitely not accusing the VP of thinking it's so, but you are getting it into the room. So he can get on the other side of his own ambivalence. He can simultaneously agree with you that a lot of people would say that and identify himself as not that sort of person at all. And he's that much readier to endorse a new safety initiative.

Guilt is one of the toughest nuts to crack. One possibility is to offer your management some kind of absolution. "There's no way you could have known five years ago what you know today about ways of reducing this sort of accident." (If "you" feels too accusatory even for an absolution statement, try "we" ... or "anyone.") Don't point out that management probably feels guilty. Don't say, "Stop feeling terrible." Address the guilty feelings without labeling them by just making the case that "it's not your [our, anyone's] fault." This approach will often work. But it won't work if the guilty feelings are deeply buried; your manager will just look at you funny and say, "Of course it's not my fault." And it won't work if the guilt is largely justified, if there are ways it pretty obviously is the company's fault.

In those cases you'll have to ride the seesaw. "I feel awful. Here's a change that looks like it can cut our accident rate significantly. I'm aghast that I missed it.

Finding cost-effective safety improvements, win-wins for employee safety and the bottom line — that's my job. And I missed this one for years!" Let the VP give you absolution.

By the way, some of these safety outrage factors—guilt, ego, hostility and the rest—afflict industrial hygienists too, not just VPs. Were you thinking that as you read? Was it easier for you to think about it because I was offloading it all onto senior management? That's the "I—you—it—some people" seesaw at work.

*Sandman is a risk communication consultant and speaker. Much of his work on risk communication can be found on his Web site, [www.psandman.com](http://www.psandman.com), and in videos and a book published by AIHA. Comments on this and future columns can be sent to [peter@psandman.com](mailto:peter@psandman.com).*

### Occupational Exposure to Antineoplastic Agents

Source: NIOSH Safety & Health Topics: <http://www.cdc.gov/niosh/topics/antineoplastic/>

The adverse health effects associated with antineoplastic agents (cancer chemotherapy drugs, cytotoxic drugs) in cancer patients and some non-cancer patients treated with these drugs at 125 cells. For cancer patients with a life-threatening disease, there is certainly a great benefit to treatment with these agents. However, for the health care workers who are exposed to antineoplastic agents as part of their work practice, precautions should be taken to eliminate or reduce exposure as much as possible. Pharmacists who prepare these drugs or nurses who may prepare and/or administer them are the two occupational groups who have the highest potential exposure to antineoplastic agents. Additionally, physicians and operating room personnel may also be exposed through the treatment of patients. Hospital staff, such as shipping and receiving personnel, custodial workers, laundry workers and waste handlers, all have potential exposure to these drugs during the course of their work. The increased use of antineoplastic agents in veterinary oncology also puts these workers at risk for exposure to these drugs.

In addition to acute or short-term effects related to treatment with antineoplastic agents, there are a number of long-term or chronic effects that have been identified in patients. These include liver and kidney damage, damage to the bone marrow, damage to the lungs and heart, infertility (temporary and permanent), effects on reproduction and the developing fetus in pregnant women, hearing impairment and cancer. The International Agency for Research on Cancer (IARC) in Lyon, France has identified a number of antineoplastic agents and two combination therapies as having an association with cancer in patients who are treated with them. These include both cancer and non-cancer patients. IARC currently lists eleven agents and two combined therapies as Group 1 (Human carcinogens), twelve as Group 2A (Probable human carcinogens) and eleven as Group 2B (Possible human carcinogens).

A number of studies have documented environmental and worker exposure to the antineoplastic agents. A variety of biological endpoints have been used to evaluate worker exposure. These include, urine mutagenicity, chromosomal damage, sister chromatid exchange, micronuclei induction, DNA damage, HPRT mutations, and thioether excretion.

Additionally, analytical methods have been used to document worker exposure to antineoplastic agents by measuring these drugs and/or their metabolites in the urine of health care workers.

Similar analytical methods are currently being employed to measure the level of environmental contamination in the workplace. Although the studies on air sampling are limited, there have been numerous studies published on environmental wipe sampling for these drugs.



Working for Better  
**Quality of Life**  
through Research & Education

[www.nayati.org](http://www.nayati.org)



Environmental Health and Safety  
Occupational Health and Safety

Public Health  
Medicine and Health Sciences

Education and Training  
Contract Research  
Consulting Services  
Studies and Surveys  
Social and Economic Development  
Technology Transfer



Working for Better Quality of Life through Research & Education



B-88, Sainikpuri  
Secunderabad 500094  
Andhra Pradesh  
India

[services@nayati.org](mailto:services@nayati.org)

[www.nayati.org](http://www.nayati.org)

615, N. Upper Broadway  
Suite 1100, Corpus Christi  
Texas 78477 USA

**nayati**

*International  
is a non-profit tax exempt organization*