nayati
INTERNATIONAL

B-88, Sainikpuri
Secunderabad 500094
Andhra Pradesh
INDIA

P.O. Box 10301
Corpus Christi,
Texas 78460, USA
www.nayati.org

Occupational
Health, Hygiene & Safety

OHHS
NEWS

Working for Better
Quality of Life
through Research & Education

nayati
INTERNATIONAL

B-88, Sainikpuri
Secunderabad 500094
Andhra Pradesh
INDIA

www.nayati.org

P.O. Box 10301
Corpus Christi,
Texas 78460, USA

nayati
INTERNATIONAL

CONTENTS

In this issue

About us

∩ayati 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

From nayati to you

राष्ट्रपति के प्रेस सचिव
Press Secretary to the President

राष्ट्रपति सचिवालय
राष्ट्रपति भवन
नई दिल्ली -110004
President's Secretariat
Rashtrapati Bhavan
New Delhi - 110004

MESSAGE

The President of India, Dr. A.P.J. Abdul Kalam, is happy to know that the inaugural issue of the Nayati is being published in January, 2006.

The President extends his warm greetings and felicitations to all those associated with the Publication and wishes the inaugural issue all success.

PRESS SECRETARY TO THE PRESIDENT

Dear Colleagues,

On behalf of nayati International, we wish you a Safe, Happy and prosperous Year.

nayati is a non-profit corporation committed to working towards a better Quality of life for the global community, through education, training, extension and research. We take up issues and projects with a focus and commitment and try to make a difference in communities, especially in the developing world with the help of professionals like you.

India, still an industrially developing country, has been showing phenomenal growth since the past few years in several areas - Information technology, manufacturing, automotive and pharmaceutical industry and many more. Several multinational companies in all categories of industry and manufacturing have come up and along came scores of supporting small and medium sized plants and facilities. Most of the consequences of this growth have been positive giving rise to increased standard of living, global presence and competition. However it is disconcerting to note that the same pace has not been observed in the occupational health and safety sector mostly because of lack of education, awareness and probably effectiveness on the part of the regulatory agencies. While dealing with the later is more complicated but no doubt needed, education and awareness will most certainly bring about a great change in the attitude.

This newsletter is a first step by nayati to share information and experiences of developed countries that have gone through this process long ago, with a fast developing country like India. We could start with a few very basic issues which are simple enough that education can bring about an awareness. It would not be too difficult to motivate construction workers and contractors to have proper scaffolding before workers climb on billboards or high rise buildings. Supervisors and contractors could very easily encourage workers to take proper precautions and not allow electric cables and wires plugged into live sockets and make them understand that the provision of work boots and suitable gloves and educating the crew of proper lifting techniques would increase productivity. Janitorial workers would breath easy and work harder if they had some acid resistant gloves and instructed to work with proper ventilation. Educating the utility workers of safety precautions would prevent electrocutions and accidents and children would be safer in schools if we made sure that every school had fire extinguishers handy……. And we have issues ranging from such simple ones to more complicated ones like dealing with confined spaces, gas leaks and explosions, pharmaceutical companies working with anti-cancer drugs, nanotechnology etc.

This Newsletter is only the beginning but working together we can create a professional community that will bring about a grass roots change in the attitude while educating and bringing about a healthy awareness in all categories of work force- employer, employee, management and may be even policy makers.

This is by no means to say that all companies and employers are insensitive to the needs of workers. There are several multinational and corporate employers who take excellent care of their work force. We request the help of all such established companies to realize the vision of safe and healthy communities and work force. It is mostly the small and medium sized companies and the up-coming enterprises that tend to overlook the importance of safety and health due to lack of education, awareness and financial challenges.

nayati appreciates your support in this venture. Please use this forum to share your thoughts, opinions, information and more importantly your experiences so that other people in the profession can benefit from it. Feel free to pass this publication along to your friends and colleagues in the profession and let us know of additional contacts that may be benefited from this so that we can expand the readership. This publication is intended to promote awareness about Occupational Health and safety issues. We appreciate all the support we can get through your sponsorships and advertisements while giving you an opportunity to educate the professional community about your services.

We thank SKC Inc., for their trust and support in this first venture of ours. We request all the generous sponsors and readers out there to help us make this publication a success and assist the community in creating a safe and healthy environment.

Please also take a few minutes to complete and send us the reply card and assist us in making this publication serve your needs better.

Lalitha Burra, Ph.D., CIH

Director, nayati International.
Editor, OHHS News

nayati
INTERNATIONAL

Volume 1 | Issue 1 | January to March 2006.

Building Business Value

OHHSNEWS

Volume 1 | Issue 1 | January to March 2006.

Building Business Value

OHHSNEWS

The New Path to Preferred Supplier Status

By Joe Bialowitz

This article was originally published in the February 2005 issue of "The Synergist", the publication of American Industrial Hygiene Association (AIHA) For more information on AIHA visit www. aiha.org.

Environment, health and safety programs have traditionally been geared toward managing risks and achieving compliance with regulatory requirements. Success was once measured by the extent to which a company avoided costly penalties, lawsuits and cleanups. But now, added incentive to improve EHS performance beyond "material compliance" is coming from the most important entity of all-the customer.

This article explores why customers are demanding stronger EHS performance across the supply chain, how customers are getting information about their suppliers' EHS performance, the likely consequences of these new demands for suppliers and specific steps that EHS professionals can take to enhance their performance.

Strong EHS Performance: An Added Customer Requirement

In this era of globalization, multinational companies have intricate buying and selling relationships. These companies are often themselves large customers near the top of a huge supply chain, procuring goods and services via vast networks of suppliers. The successful management of quality (including EHS operating standards) within supply chains is a major factor in the success of companies, especially those who depend on "just-in-time" supply and/or use hazardous materials.

Indeed, even if a customer's own EHS programs have yielded important gains for the company, each supplier still has its own set of EHS challenges that can easily become the problem of the customer. For example, the recent European Union directive on the Reduction of Hazardous Substances, which limits the use of six specific hazardous substances in most electronic products, has resulted in major compliance costs to some electronics companies. They must now verify their suppliers' compliance and in some cases redesign their products using suppliers that provide less toxic components.

Furthermore, thanks in part to media participation in globalization, companies like Nike have learned the importance of gaining control over the labor practices of their far-flung suppliers. And in the semiconductor industry, the leading manufacturers have joined together to standardize minimum EHS guidelines for the equipment they purchase, because they want protection of employees, the environment and facilities throughout all stages of the equipment's life: design, development, installation, operation, maintenance and service. (The primary guidelines are Semiconductor Equipment and Materials International S2 "Safety Guidelines for Semiconductor Manufacturing Equipment" and SEMI S8 "Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment." Intel demands that its suppliers comply with both these requirements and additional EHS requirements imposed by Intel.) Thus, large companies with mature EHS programs are increasingly managing their risks and protecting their reputations by focusing their attention on the EHS performance of their suppliers.

A few of the largest manufacturing companies including Canon, Daimler- Chrysler, Dell, Ericsson, Hewlett Packard, Lucent, Motorola, Nokia, Royal Philips Electronics, Sony and Toyota - now demand that all their suppliers (of both goods and services) implement some form of management system that ensures legal compliance and continuously improves EHS performance. Dell requires that its suppliers comply with both the ISO 14001 standard for environmental management systems and the OHSAS 18001[2] standard for workplace health and safety management systems.

Philips, which recently announced that all of its suppliers must have an EMS based on the ISO 14001 standard, offers a prime example of the rationale behind placing these new demands on suppliers. From their desks in the small city of Eindhoven in the Netherlands, a group of purchasers and environmental managers at Philips have decided to protect the environment and their company's reputation by catalyzing environmental improvements in the operations of Philips' 50,000 suppliers around the world. This includes many suppliers in countries where environmental regulations are either weakly developed or minimally enforced. Of course, the environmental benefits of this decision are somewhat limited in the case of suppliers that have few environmental impacts, or

> **But now, added incentive to improve EHS performance beyond "material compliance" is coming from the most important entity of all the customer.**

suppliers so small that they provide goods and/or services primarily to Philips.

But if the supplier is an international shipper such as DHL, both the environmental impacts and customer base are considerable. In such a case, the environmental benefits demanded by Philips will be cascaded to the tens of thousands of DHL customers whose goods will be shipped via planes, trains, ships and trucks and stored in warehouses that are all likely more resource-efficient (and less carbon-intensive) than before. Consequently, just a few managers at companies like Philips might end up doing more to reduce greenhouse gas emissions than all the governments of the world combined. To be sure, individual governments have already taken steps to improve companies' energy efficiency and carbon intensity, but international agreements addressing greenhouse gas emissions have thus far been implemented (via the Kyoto Protocol) only for major CO_2-emitting installations, not the transport industry or other "less polluting" industries.

Getting Information About Suppliers' EHS Performance

Customers are increasingly developing supplier codes of conduct, which require that suppliers (especially "first-tier" or "strategic" suppliers) go beyond legal compliance. Furthermore, customers are benchmarking the EHS performance of their disparate suppliers by using questionnaires to help determine levels of compliance to their codes of conduct. Environmental questionnaires typically request a description of each supplier's EHS management system(s), as well as specific information about risks and compliance issues (e.g., hazardous substances contained in their product) as well as key performance indicators (e.g., injury rates, CO_2 emissions reduction rates).

Customers can also use publicly available information to assess their suppliers. For example, customers can consult with the findings of the many well-respected nongovernmental organizations that routinely publicize the EHS performance (or lack thereof) of major companies. Or, customers can look to the investment community, which now provides evaluations of companies' overall EHS performance, including their respective global climate change strategies, as part of the sustainability ranking process. Prominent examples of this are the Dow Jones Sustainability Index and the FTSE4Good Index. [4] These indices, which include only the most socially responsible companies (selected using rigorous criteria),

are used by not just the investment community but also by procurement departments, as a tool to identify companies that meet globally recognized EHS standards.

Finally, for suppliers in high-risk industries (e.g., those that are chemical-intensive) or locations (e.g., countries where child labor is used), or for any supplier that does not respond adequately to questionnaires, customers are likely to seek information by conducting an EHS audit of the supplier. Hewlett Packard's actions to date provide a useful example of how large customers are proceeding with their supply chain initiatives. Since introducing its supplier code of conduct in 2002, Hewlett Packard has acquired EHS performance data from all of its 50 top suppliers (accounting for more than 70 percent of HP's total expenditures), 13 of which (at 15 sites in Mexico and China) have been subsequently audited by HP staff.

> **Faced with a choice between two suppliers who are both cost-competitive, customers are indeed selecting the supplier with the best EHS program...**

Potential Consequences of Increased EHS Performance Demands

If purchasing managers for large companies must now balance both cost and EHS considerations and if they now have enough information to do so the consequences for suppliers are clear. Suppliers will find that a growing number of customers incorporate minimum EHS requirements into supplier agreements, and any supplier that cannot meet these demands can expect to lose revenue. This goes for both new and continuing businesses.

The pharmaceutical company AstraZeneca provides evidence of the former, reporting that in 2003 it audited two "potential new chemical suppliers ... and at one of these, we identified the need for an improvement in [EHS] standards before any work could be commissioned." And with regard to continuing business with existing suppliers, Philips states that in cases where a supplier's "view of sustainability" issues does not align with Philips' standards, "the overall approach is one of finding solutions through open and honest discussions with the supplier, but if no satisfactory solution can be found, suppliers can expect that this will affect the business relationship." [7] Similarly, AstraZeneca has stated that "the overarching

principle is that it is our objective to increase suppliers' awareness and seek improvements, rather than excluding suppliers based on poor Corporate Responsibility performance. However, if performance remains poor, we will take steps to place our business elsewhere[8]."

Furthermore, even if a supplier meets a customer's minimum expectations, preferred supplier status may now hinge on a supplier's success at exceeding the EHS demands of its customer. Faced with a choice between two suppliers who are both cost-competitive, customers are indeed selecting the supplier with the best EHS program. A case in point is Hewlett Packard, which tells its suppliers: "HP does not require its suppliers to be ISO 14001 certified, or require its suppliers to use ISO 14001 certified suppliers. However, as part of an ongoing effort to select environmentally responsible suppliers, HP gives preference to existing or potential suppliers who have achieved ISO 14001 registrations.[9]"

Thus, suppliers that can show evidence of an environmental management system (and/or a health and safety management system aligned with OHSAS 18001) can often meet and exceed their customers' demands. On the other hand, a supplier without a management system can be at a severe competitive disadvantage. This has no doubt contributed significantly to the recent explosive growth in the number of ISO 14001 certifications acquired worldwide. As Figure 1 indicates, nearly 50,000 organizations now hold ISO 14001 certifications, and this total has been growing at a rate of more than 20 percent per year since 1998.

Figure 1. Existing ISO 14001 Certificates at Year End, By Region
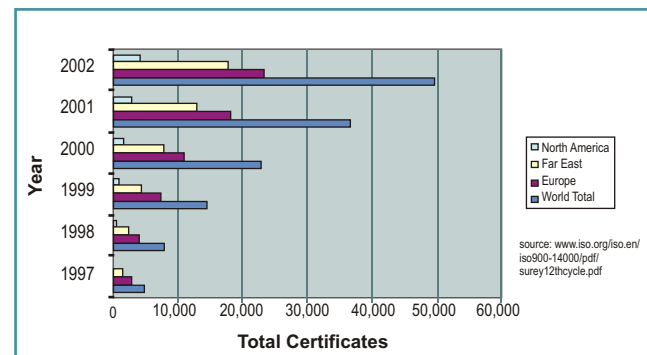
Finally, while a supplier with an existing environmental management system may be able to exploit this advantage over those companies without one, this company will still

need to compete against other suppliers with such systems. The victor in the latter instance will be the supplier who has achieved the best EHS performance, as judged by the information acquired through questionnaires, third parties and audits.

Performance-Enhancers for EHS Professionals

When senior managers devote more attention to customers' demands for excellent EHS results, this often leads to better integration of EHS functions with business functions. It also means that EHS professionals assume higher profiles. This presents EHS professionals with exciting, cross-departmental leadership opportunities. On the other hand, EHS professionals must be up to the challenge. Senior management continues to demand EHS efficiency along with effectiveness. To meet the challenge, EHS professionals should focus on proven ways of using EHS programs to build business value (see sidebar below)*.

Performance is indeed the reality on which EHS professionals will be judged by both internal stakeholders (i.e., senior managers) and external stakeholders (i.e., customers, the general public, nongovernmental organizations, governments and even future generations). However, perception also matters a great deal. Therefore, EHS professionals must work with their companies' marketing and public relations departments to garner recognition for their achievements. They should also seek to scale up both performance and image by participating in coalitions and partnerships that help to leverage resources while raising their company's EHS profile. This means joining forces with governments, NGOs, industry partners and the financial sector to take advantage of available subsidies, resources, best practices and public relations campaigns. By working with multiple stakeholders, a company can use their internal EHS initiatives (including EHS management systems) to participate in the more systematic approaches (including region-wide EMSs, emissions trading schemes and international initiatives to combat chronic diseases) that are truly needed to solve the biggest EHS problems of today and tomorrow.

Bialowitz is an EHS specialist employed by Environmental and Occupational Risk Management Inc., a management consulting firm in Sunnyvale, Calif. As part of his work with EORM, he has helped develop and implement certified EHS management systems for companies in North America and Europe.

* Part of separate article not included

References

1. www.iso.org/iso/en/iso9000-14000/iso14000/iso14000index.html

2. www.osha-bs8800-ohsas-18001-health-and-safety.com/ohsas-18001.htm

3. www.sustainability-indexes.com

4. www.ftse4good.com/ftse4good/index.jsp

5. "Raising Standards in HP's Supply Chain." [Online] Available at www.hp.com/hpinfo/globalcitizenship/environment/supplychain/results.html (accessed Aug. 6, 2004).

6. "2003 CR Summary Report." [Online] Available at www.astrazeneca.com/sites/7/imagebank/typearticleparam503063/CR_rep_2003_English.pdf (accessed Sept. 21, 2004). p. 11.

7. "Sustainability Report 2003." [Online] Available at www.philips.com/Assets/Downloadablefile/SAR-2003-2759.pdf (accessed July 28, 2004). p. 35.

8. "CR Principles in Purchasing (Corporate Responsibility Guideline 01, version 01)." [Online] Available at http://gp.ops.astrazeneca.net (accessed Sept. 21, 2004).

9. Supply Chain SER Frequently Asked Questions." [Online] Available at www.hp.com/hpinfo/globalcitizenship/environment/supplychain/scserfaqs.html (accessed July 28, 2004).

A high standard of occupational health and safety correlates positively with high GNP per capita. The countries investing most in occupational health and safety show the highest productivity and strongest economy, while the countries with the lowest investment have the lowest productivity and the weakest economies. Thus, active input in occupational health and safety is associated with positive development of the economy, while low investment in occupational health and safety is disadvantage in the economic competition.

Source: Excerpt from "Global strategy on Occupational Health for all. The Way to Health at work" a World Health Organization (WHO) document : WHO/OCH/95.1. For more information visit http://www.who.int/occupational_health/en/oehstrategy.pdf

Fig. 2a: Fatalities caused by occupational accidents and work-related diseases and occupational accidents, year 2000

	Economically active population	Total employment	Global Estimates Total Worl-related Fatalities	Global Estimates Fatal Accidents	Fatal accidents reported to the ILO
ESTABLISHED MARKET ECONOMIES	409'141'496'	380'833'643	**297'534**	16'170	14'608
FORMERLY SOCIALIST ECONOMICES	184'717'127	162'120'341	**166'265**	21'425	8'665
INDIA	458'720'000	419'560'000	**310'067**	48'176	211
CHINA	708'218'102	699'771'000	**460'260**	73'615	17'804
OTHER ASIA AND ISLANDS	404'487'050	328'673'800	**246'720**	83'048	5'631
SUB-SAHARAN AFRICA	260'725'947	10'540'604	**257'738**	54'705	1'675
LATIN AMERICA AND THE CARIBBEAN	193'426'602	114'604'962	**137'789**	29'594	6'998
MIDDLE EASTERN CRESCENT	112'906'300	48'635'240	**125'641**	28'019	1'876
WORLD	**2'732'342'624**	**2'164'739'590**	**2'001'717**	**354'753**	**57'468**

Source: www.ilo.org/safework

Source: Excerpt from "Safety in numbers. Pointers for a global Safety Culture at work" a document published by International Labor organization, Geneva. For more information visit www.ilo.org/public/english/protection/safework/worlddayreport_eng.pdf

The Business Case:

OHHSNEWS

Safety and the Bottom line

Many of the world's foremost companies accept that, quite apart from a human concern for their employees' well-being, a "business case" can be made for achieving the highest occupational health and safety standards.

Impacts of poor health and safety on a company's bottom line may include:

- Higher absenteeism and more downtime, leading to loss of productivity, underutilization of expensive production plant and a possible decrease in economies of scale.

- Low morale, leading to loss of productivity.

- Loss of skilled, experienced employees, plus the loss of the company's investment in their training.

- Difficulty in recruiting high-quality employees.

- Payment of compensation and/or damages to injured or sick workers or to the dependents of workers killed. Associated legal costs.

- Payment of danger bonuses.

- Higher insurance premiums.

- Material damage to equipment and premises, due to incidents and accidents.

- Fines.

- Disputes with trade unions, public authorities and/or local residents.

- Loss of image.

- Loss of custom   particularly in the case of subcontractors to larger companies.

- In high-profile cases, complete or partial loss of the "licence to operate".

Certainly, the direct costs to business are very high...

In the European Union, every year nearly 5 million employees suffer work-related accidents involving more than three days' absence from work, and a further 5,500 are killed. According to the European Agency for Safety and Health At Work, "besides the human suffering, these accidents have a strong economic impact on business, as 150 million workdays are lost and the insurance costs to be borne by industry add up to €20 billion."

Source: Excerpts from "Safety in numbers. Pointers for a global Safety Culture at work" a document published by International Labor organization, Geneva. For more information visit www.ilo.org/public/english/protection/safework/worlddayreport_eng.pdf

Does good occupational safety and health cost too much?

This question is heard in various forms and contexts. Can developing and newly industrializing countries "afford" the best health and safety at work, or will it hold back their development efforts? Given the rapid globalization of the economy, will the industrialized countries have to lower their own health and safety standards in order to compete? Similarly, will companies have to cut corners on health and safety if they are to defend and expand their market share?

Without going into the morality of such discussions, the evidence gathered by the ILO and others suggests that it would be more pertinent to ask if any country or any company can still afford to be *without* the highest standards of workplace health and safety.

...Safety pays. The ILO is convinced that the highest occupational health and safety standards worldwide are in the best interests of every worker, every employer and every nation**.**

...Cost of work accidents and illness: over $1,250,000 million a year.

...Based on a selected compensation system, the ILO has estimated that 4 per cent of Gross Domestic Product (GDP one of the most-used measurements of national wealth) is lost due to accidents and work-related diseases.

In 2001, 4 per cent of world GDP came to more than US$ 1,251,353 million.

...The estimated percentage is a global average - a rough indicator of just how much the world as a whole pays for its work deaths, injuries and illnesses. A country or region with higher-than-average casualty rates will lose a greater part of its national wealth.

...The losses will not be entirely proportionate to the casualties. The poorer a country or region is, the more sensitive will its economy be to the impact of any one cost, including work-related accidents and disease. On the other hand, richer countries are likely to register and compensate a higher proportion of casualties, and to pay more per compensated case.

...Ultimately, even though the majority of the working population is not covered by compensation schemes, the combined burden on society and the individual is the same.

Occupational & Industrial Hygiene

OHHSNEWS

*The International Occupational Hygiene Association (IOHA) has taken the initiative to have "Occupational hygienist" included in the International Standard Classifications of Occupations (ISCO). The December 2005 issue of IOHA newsletter published the description of the title "Occupational Hygienist" and the tasks of the profession. Following are excerpts of the same written by **Ton Spee and Tai Wa Tsin**. For more information visit www. ioha.com.*

Occupational Hygiene   is the discipline of anticipating, recognising, evaluating and controlling health hazards in the working environment with the objective of protecting worker health and well-being, and safeguarding the community at large.

Such health hazards may include biological, chemical, physical and ergonomic issues in the workplace environment.   ….. Their roles involve mainly the monitoring of workplaces, research and development of methods for assessment, prevention and control of hazards.

The term "occupational hygienist" is sometimes inter-changeable with the title "industrial hygienist" but the former often covers a wider perspective in their professional practice.

Occupational hygienists conduct research, develop concepts and operational methods, and design and apply primary preventive measures at the workplace.

Tasks include:

(a)   anticipating and identifying exposure to hazardous agents at the workplace, predominantly of chemical, physical or biological origin and, subsequently developing an adequate assessment strategy to characterize exposure;

(b)   evaluating work processes and methods from the point of view of the possible generation and release/ propagation of potentially harmful agents, with a view to eliminating exposures or reducing them to acceptable levels;

(c)   evaluating common health risks associated with exposure to hazardous agents at the workplace and performing a risk assessment for these agents;

(d)   describing the health hazards that may result from work processes, operations and equipment, and advise accordingly on planning and design for control of such hazards;

(e)   giving advice on planning and design of control measures, to supervise their implementation and to evaluate their effectiveness,   alone   or   in collaboration with other specialized professionals.

(f)   advising on formulation of and compliance to the legal framework for working conditions and consequent actions necessary

(g)   providing education, information, training, and advice to persons at all levels on aspects of occupational hygiene and hazard communication;

(h)   participating in overall risk assessment and management of an agent, process or workplace, and making a contribution to the establishment of priorities for risk management of agents with occupational or environmental impact.

Examples of the occupations classified here:

Occupational hygienist in various trades (health care sector, factories, office work environment, law enforcement, army service, etc.);

Industrial hygienist in industrial environment (usually refers people working mainly in mines, construction sites, manufacturing sectors, etc.).

Industrial Hygienists: Dedicated to Protecting People in The Workplace And The Community

Industrial hygienists are scientists and engineers committed to protecting the health and safety of people in the workplace and the community. Industrial hygiene is considered a "science," but it is also an art that involves judgement, creativity and human interaction.

Typical roles of the industrial hygienist include:

Investigating and examining the workplace for hazards and potential dangers

Making recommendations on improving the safety of workers and the surrounding community

Conducting scientific research to provide data on possible harmful conditions in the workplace

Developing techniques to anticipate and control potentially dangerous situations in the workplace and the community

Training and educating the community about job-related risks

Advising government officials and participating in the development of regulations to ensure the health and safety of workers and their families

Ensuring that workers are properly following health and safety procedures

Source: American Industrial Hygiene Association. For more information visit www.aiha.org

The ultimate objective of occupational health is a healthy, safe and satisfactory work environment and a healthy, active and productive worker, free from both occupational and non-occupational diseases and capable and motivated to carry out his or her daily job by experiencing Job satisfaction and developing both as a worker and as an individual.

Source: "Global strategy on Occupational Health for all. The Way to Health at work" a World Health Organization (WHO) document : WHO/OCH/95.1

Benefits Versus Cost--A Tool for Industrial Hygiene Management

Besides protecting the health of workers, industrial hygienists can affect the Profitability of a company directly and indirectly and enhance its image as a quality business with responsiveness to and respect and responsibility for human and environmental health. Areas and activities where industrial hygienists can make a significant impact on the business include supporting marketing activities and new product development, minimizing liability through risk analysis and preventative actions, and influencing positively proposed health-related legislation and regulations. Industrial hygiene can contribute to business success by reviewing new acquisitions to assess risk factors and their control, minimizing the risk of compliance fines and penalties, supporting asset sales by defining cost-effective mitigation needs, and improving operating procedures. Additionally, industrial hygiene can aid the business by characterizing and controlling plant emissions, reviewing plant designs, selecting needed equipment to meet health standards, reducing health care costs associated with injuries, and communicating with governments, employees, and the public to meet health related regulations and company policies. When flavored with local examples, this type of analysis can show that the benefits from industrial hygiene input in either traditional (recognizing, assessing, and controlling in-plant hazards) or nontraditional (improving productivity and business effectiveness through application of industrial hygiene techniques) ways will probably exceed the costs. This information can serve as an industrial hygiene management tool to support the industrial hygiene function and obtain appropriate levels of funding, staffing, and other resources. .

Source: Abstract of article "Benefits Versus Cost–A Tool for Industrial Hygiene Management", Richard S. Brief, AIHA Journal, Vol 50(6) 1989

Industrial Hygiene Recommendations as Interventions: A Collaborative Model Within Occupational Medicine

The authors conducted a cross-sectional telephone survey of patients and employers to evaluate the effectiveness of conducting industrial hygiene work site visits as part of the medical management of clinic patients with suspected occupational disease. Industrial hygiene interventions

were intended to keep the index patient from ongoing exposure while simultaneously protecting co-workers from future disease. The demographics of the 76 work sites and patients are summarized. According to the employers, 78 percent had implemented at least one recommended intervention, and 52 percent of the employers had implemented the priority intervention. The factors associated with the employers' implementation of the recommended industrial hygiene controls are presented. Employers were 3.7 times more likely to implement the priority intervention (p = .04) if they believed a worker's illness was work-related. Employers with joint labor-management health and safety committees were 3.8 times as likely to implement the priority intervention (p = 0.04). The factors associated with changes in the patients' self-reported disease status are explored and the social and economic implications of this model are discussed.

Source: Abstract of article "Industrial Hygiene Recommendations as Interventions: A Collaborative Model Within Occupational Medicine", Anne Bracker , Applied Occupational and Environmental Hygiene , 14(2) 1999

Occupational health problems and role of ergonomics in information technology professionals in national capital region

A cross sectional study was done among 200 Information Technology (IT) professionals in the National Capital Region (NCR) to study the computer related health problems and role of ergonomic factors. The computer related morbidity was present in 93% of the study subjects. The visual problems were seen in 76% and musculoskeletal in 77.5% while 35% felt stressful symptoms. The study subjects having inadequate lighting and not using an antiglare had greater visual problem, i.e. 81.3 and 76.3%, respectively. Of the 152 subjects that had visual discomfort, 80.2% did not have the monitor at correct distance. This observation was found to be statistically significant (P<0.05). The musculoskeletal problems were also higher in the study subjects using inappropriate ergonomics. The study has brought forth a very high prevalence of computer related morbidity among IT professionals and it further concluded that all aspects of ergonomic variables appear to be acting in cohesion in relation to computer related heath.

Source: abstract of article "Occupational health problems and role of ergonomics in information technology professionals in national capital region", Suparna K, Sharma AK, Khandekar J. . Indian J Occup Environ Med 2005;9:111-114

NIOSH considers control banding a potentially useful tool for small businesses. Control banding has been evaluated in various settings, particularly in the United Kingdom. NIOSH is currently evaluating its utility for the United States.

What is Control Banding?

Control banding is a process in which a single **control** technology (such as general ventilation or containment) is applied to one range or **band** of exposures to a chemical (such as 1-10 mg/m3) that falls within a given hazard group (such as skin and eye irritants or severely irritating and corrosive). Table 1 lists four control bands identified for chemical exposures. The most developed model for control banding has been established by the Health and Safety Executive (HSE) of the United Kingdom.

The control banding approach focuses resources on exposure controls and describes how strictly a risk needs to be managed. This qualitative risk assessment and management tool is intended to help small businesses by providing an easy-to-understand, practical approach to controlling hazardous exposures at work.

The principle of control banding was first applied to dangerous chemicals, chemical mixtures, and fumes. The control banding process emphasizes the controls needed to prevent hazardous substances from causing harm to

people at work. The greater the potential for harm, the greater the degree of control needed to manage the situation and make the risk "acceptable."

Why is control banding needed?

The occupational exposure limit (OEL) is the marker that shows the level of control needed for a chemical. Repeated daily exposure by inhaling a chemical at an airborne concentration below its OEL is unlikely to lead to harm in most workers. However, many thousands of chemicals are in use, and it is not possible to have an OEL for every chemical, chemical mixture, fume, or emission. Nonetheless, it is possible to determine the broad hazard group to which a chemical belongs (Table 1) and on that basis to determine the necessary level of control, or *control band*.

What are the control bands for health risks from chemicals?

Four main control bands have been developed for exposure to chemicals by inhalation

(Table 1):

- Band 1: Use good industrial hygiene practice and general ventilation.

- Band 2: Use local exhaust ventilation.

- Band 3: Enclose the process.

- Band 4: Seek expert advice.

For some activities, processes, tasks, or jobs, experts can specify that respiratory protective equipment (in combination with other control approaches) is always necessary.

Table 1. Control bands for exposures to chemicals by inhalation

Band No.	Range of exposure concentrations	Hazard group	Control
1	>1 to 10 mg/m^{3}dust >50 to 500 ppm vapor	Skin and eye irritants	Use good industrial hygiene practice and general ventilation.
2	>0.1 to 1 mg/m^{3}dust >5 to 50 ppm vapor	Harmful on single exposure	Use local exhaust ventilation.
3	>0.01 to 0.1 mg/m^{3}dust >0.5 to 5 ppm vapor	Severely irritating and corrosive	Enclose the process.
4	<0.01 mg/ m^{3}dust <0.5 ppm vapor	Very toxic on single exposure, reproductive hazard, sensitizer*	Seek expert advice.

*Exposure to any concentration of a sensitizer requires expert advice.

Does control banding remove the need for consultants?

No. Control banding does not replace industrial hygiene expertise. Sometimes the control banding advice directly guides employers to seek such advice.

Specific operating knowledge and professional judgment are required to implement the best combination of controls that are "reasonably practicable" and to minimize risks to workers.

Where is control banding already in use?

Control banding is used worldwide for the transportation of dangerous chemicals. These chemicals are classified with United Nations (UN) codes that are used for identifying safe storage rules, permitted types of transport container, and actions to take in an emergency.

In Europe, a combination of the hazard and the amount of chemical stored are banded, leading to a range of duties to prepare formal safety assessments. In the United Kingdom, the HSE has developed a scheme for banding the control of health risks. This scheme, or control banding tool, is called *COSHH Essentials*. Other European countries are exploring similar schemes and ideas.

What is COSHH Essentials?

COSHH Essentials (http://www.coshh-essentials.org.uk) is a control banding tool that helps small and medium-sized enterprises to do risk assessments for chemicals and mixtures of chemicals. COSHH stands for *control of substances hazardous to health*. This tool requires four pieces of information:

1. The type of task
2. The hazard classification (from the material safety data sheet, or MSDS, part 15)
3. The volatility or dustiness of the chemical or product
4. The amount used in the task

The system then

- identifies the control band (control approach),
- produces advice on controlling risk from the chemical used in the specified task, and
- provides written guidance and documentation as a result of the assessment.

In British law, the duty to control risk remains with the employer.

What situations are not currently appropriate for control banding?

Control banding is not currently appropriate for many situations, including "hot" processes, open spray applications, gases, and pesticides. In addition, control banding does not yet cover safety hazards, environmental issues, or ergonomic issues. Researchers are exploring ways to integrate these additional workplace issues into the control banding concept.

Where did control banding originate?

The concept of control banding was developed in the late 1980s by occupational health experts in the pharmaceutical industry. This industry uses large numbers of new chemical compounds with few toxicity data. The experts reasoned that such compounds could be classified into bands by their toxicity and by their need for restriction of exposure. Each band was aligned with a control scheme.

Early references on the concept included a manual published by the Association of the British Pharmaceutical Industry in October 1995 and a paper by Naumann et al. [1996] (see reference list below)*.

In the early 1990s, as the European system for classification and labeling developed, occupational health experts began to examine the alignment between the classification, the exposure limit, and data on exposure and control systems [Gardner and Oldershaw 1991].

What do users of COSHH Essentials think of it?

In a telephone survey, 500 purchasers of the paper version of COSHH Essentials were interviewed, with the following results:

- 79% of the people buying the guidance had used it.
- 76% of those who had used it took action of some sort (including substitution).
- 94% would recommend it to other businesses.
- Fewer than 5% found it fairly difficult to use.

Does control banding work?

Yes—for the most part, evidence supports the effectiveness of control banding (or *COSHH Essentials*). The German authority (Bundesanstalt für Arbeitsschutz

und Arbeitsmedizin - BAuA) evaluated the system based on about 1,000 personal measurements from field studies in 18 industrial applications. They found that for solids (dusts and powders) and medium-scale use (liter quantities) of liquids, exposures were within the range predicted by *COSHH Essentials* or lower. For the use of small quantities (milliliters) of solvent-based products (such as paint or adhesive), exposures sometimes exceeded the range.

Another study of *COSHH Essentials* was conducted in the United States. The study found small safety margins for the hazard bands that included high-potency chemicals. For example, high airborne exposures were measured during vapor degreasing operations even though local exhaust ventilation had been installed. These results underscore the need to follow up new engineering controls with air monitoring to verify the effectiveness of their installation.

Will control banding for chemical health risks work in the United States?

The philosophy of control banding can work anywhere. However, to apply control banding in the United States in the form of *COSHH Essentials* or another approach, some adaptation of the materials will be required along with review of the legal and regulatory implications. *COSHH Essentials* is based on risk phrases developed by the European Union and classification rules for chemicals and chemical mixtures. A matrix of equivalencies is available to convert the typical toxicological phrases used in American MSDSs to equivalent risk phrases.

Because the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals was recently adopted by the United Nations, global consistency will be possible in the international classification of chemicals. Such consistency will enable the development and adoption of control banding schemes.

Where else is control banding being tried?

The International Labour Organization (ILO) has recently published the ILO Chemical Control Toolkit on the Web. A useful feature of the ILO Toolkit is the table showing the correspondence between European risk phrases and the GHS hazard classifications. The International Programme on Chemical Safety is planning to add GHS hazard classifications to its more than 1,300 chemical safety cards. Control banding approaches are also being developed in Belgium (REGETOX project), the

Netherlands (Stoffenmanager), and Norway (KjemiRisk). The World Health Organization is working with its Collaborating Centres to pilot control banding programs in more than a dozen countries.

Can the control banding concept be applied beyond chemicals?

Efforts are under way to develop control banding approaches for ergonomics, safety hazards, and environmental applications.

What is the status of control banding in the United States?

The 2nd International Control Banding Workshop: Validation and Effectiveness of Control Banding was held March 1-2, 2004, in Cincinnati, Ohio, with the sponsorship of the American Conference of Governmental Industrial Hygienists, the American Industrial Hygiene Association, the International Labour Organization, the International Occupational Health Association, the National Institute for Occupational Safety and Health, the National Safety Council, the Occupational Safety and Health Administration, and the World Health Organization. Platform and poster presentations highlighted the progress and future activities regarding control banding in both developed and developing countries. A national control banding workshop was held in Washington, DC, in March 2005 to discuss planning and implementation of control banding strategies in the United States.

Control Banding Practical Tools
for Controlling Exposure to Chemicals

by Heather Jackson, IOHA*

Article originally published in the Asian-Pacific Newsletter on Occupational Health and Safety 2002; 9:62-63.

Growth in the use of chemicals in small and mediums size businesses (SME's) and in emerging economies, where access to people with the experience to assess and control exposure to chemicals is limited, has led to the development of a new approach to the control of chemicals. Called Control Banding, the approach uses information that is readily available to users from the suppliers of chemicals taking the users through a series of simple steps allowing them to choose practical control solutions that should reduce exposures to levels which present no danger to health. (1)

Control Banding and COSHH Essentials

Much of the recent work on Control Banding derives from the COSHH Essentials package developed by the UK Health and Safety Executive (UK HSE). Designed to assist SME's in complying with the UK chemical safety regulations the Control of Substances Hazardous to Health (COSHH), the scheme uses the R phrases that in Europe must be assigned to potentially harmful chemicals by the manufacturer of the chemical. R phrases describe the most important harmful effects of a chemical and have been adopted in many non European countries also. These phrases have been grouped by experienced toxicologists into hazard groups. The user finds the R phrases for the chemical using the label or Material Safety Data Sheet supplied by the chemical supplier and looks for the R phrases in the list of hazard groups. The hazard group for the chemical is thus selected using toxicological expertise without the need for an expert on site.

Once a chemical has been assigned to a particular hazard group it is necessary to consider the exposure potential in the workplace being assessed. The combination of the hazard classification of the chemical and assessment of the exposure potential will allow understanding of the level of risk thus leading the person carrying out the assessment to an appropriate control method. Occupational hygienists with experience of assessing work place exposure to chemicals agreed parameters that could be used to give reasonable indications of exposure potential. One of these is quantity being used and 3 categories, small medium and large are defined. The

likelihood of the chemical becoming airborne has been addressed by defining solids according to levels of dustiness and liquids according to volatility. A simple graph that uses the boiling point of the chemical and the process operating temperature assigns the chemical a high, medium or low volatility rating.

The user now has enough information to identify the control approach required to adequately reduce exposures to the chemical. Occupational hygienists agreed on 3 broad control approaches :- General Ventilation; Engineering Control; Containment. However it is recognised that in some cases specialist advice will be needed and this is control option 4. The user takes the hazard group, quantity and level of dustiness/volatility and matches them to a control approach using a simple table. The controls are described in control guidance sheets, which comprise both general information and, for commonly performed tasks, more specific advice.

While there will always be circumstances where specialist advice should be sought and where the controls selected will not be as protective as would be ideal, this approach allows businesses without ready access to specialist advice to effectively reduce the exposures of its employees to the chemicals used. Where the control recommendation is for the business to seek specialist advice the information already gathered doing the assessment will in some instances help the employer to know what sort of assistance to look for.

A recent development of COSHH Essentials by UK HSE has been to adapt it for the internet. Electronic COSHH Essentials is free for anyone to use by logging onto www.coshh-essentials.org.uk. It is an interactive package that takes the paper based version even further. By inserting the required information into the fields provided, the package itself consults the tables and assigns the hazard ratings and suggested control options.

International Application The ILO Toolkit

Several countries are developing tools based on the control banding technique, and the International Labour Organization, (ILO), World Health Organization (WHO) International Occupational Hygiene Association (IOHA) and the United Kingdom Health and Safety Executive (UK HSE) are working together to develop a control banding toolkit which will have international application. To further the work on this, a workshop on control banding was held in London, England 4th-5th November 2002. This workshop was organised by the British Occupational Hygiene Society, British Institute of Occupational Hygienists and the UK HSE, supported by IOHA, WHO and ILO.

Further information:

IOHA website www.ioha.com

ILO will shortly be posted information on control banding, including the ILO Toolkit on its website at http://www.ilo.org/public/english/protection/safework/chemsfty/index.htm

References

1. Oldershaw PJ. Control Banding A practical approach to judging control methods for chemicals; Journal of Preventive Medicine 2001;9(4):52-58

2. UK Health and Safety Executive. COSHH Essentials Easy steps to control chemicals.

Heather Jackson*

President Elect of IOHA (International Occupational Hygiene Association), and Occupational Hygienist, Lyondell Chemical Europe Lyondell House, Bridge Avenue, Maidenhead, SL6 1YP, UK
E-mail:-heather.jackson@lyondell.com

About 100 000 chemicals, some 50 physical factors, 200 biological factors and some 20 adverse ergonomic conditions, and an identical number of physical work loads associated with incalculable numbers and types of psychological and social problems have been identified as hazardous factors or conditions of work which usually occur in combinations and have several interactions. They contribute to the risk of occupational injuries, diseases and stress reactions, job dissatisfaction and absence of well-being. Most of such problems are in principle preventable and should be prevented in view of both interest of health and well-being, but also from the economy and productivity point of view.

Source: Excerpt from "Global strategy on Occupational Health for all. The Way to Health at work" a World Health Organization (WHO) document : WHO/OCH/95.1.

OHHSNEWS

...“Safety and Profitability are Joined at the Hip”

The following are excerpts from the original article entitled :"Selling Safety- Business case or Values Case?" by Mr. Peter M. Sandman, (www.psandman.com) published in the December 2005 issue of The Synergist, a publication of American Industrial Hygiene Association (AIHA) For more information, visit www.aiha.org.

... There is a far more persuasive case to be made for safety a case that is grounded in profitability.

By definition, the relationship between safety and profitability is an inverted U-curve. A company that is insufficiently safe-that is, less safe than its various stakeholders want it to be-loses money in all sorts of ways: lawsuits and workers' compensation claims; regulatory penalties and increased regulatory vigilance; recruitment, retention and training costs; morale costs; employee dissension and possible union agitation; downtime; lost opportunities as contracts and permits go to safer competitors; lost productivity as some workers become hesitant; reputational costs that can affect customer loyalty and even share price.

But "excessively safe" also exists. A company that is safer than its stakeholders are prepared to reward also loses money, simply because it is overspending. The point of maximum profitability is the top of the curvethe highest level of safety that current societal arrangements reward.

Notice that the curve isn't symmetrical. The cost of insufficient safety is likely to be a lot higher than the cost of excessive safety.

Notice also that the shape of the curve keeps changing. As stakeholders become more preoccupied with safety,

precautions that used to be too expensive become cost-effective. Of course change sometimes happens in the other direction too; in the United States, for example, reduced regulatory pressure has temporarily weakened the business case for safety. But the overall trend is toward a safer workplace-by which I mean that the overall trend is to demand safer workplaces, reward the companies that provide them and punish the companies that don't. One of the hottest safety developments around the world is the evolution of corporate manslaughter statutes, the increasing criminalization of unsafe working conditions. Nothing could better symbolize the growing conviction that employee safety is an enforceable corporate obligation.

Most importantly, notice that very, very few companies have progressed beyond the top of this inverted U-curve. It's all too easy to come up with examples of safety improvements that will quickly pay for themselves but have nonetheless not been implemented. Some corporate safety people can list dozens.

So when a company wants to ratchet up its safety system another notch or two, it doesn't have to claim to care more about safety than profitability. Until it sails past the top of the U-curve, it can accurately and credibly tell its work force that safety and profitability are joined at the hip. "Some day," it can add, "we may achieve such a good safety program that further improvements would cost us more money than they save us. We would love to be facing that particular moral crisis. Right now our problem is much more straightforward. We are still hurting people, sometimes even killing people, in ways that aren't just bad for the people, they're bad for the company too. And we mean to stop."...

The formal workforce constitutes on average 50-60% of a country's total population. If informal work and work at home are also taken into account, the major part of the population is involved in work. This work products all economic and material values and sustains all other societal activities thus ensuring the socioeconomic development of countries.

The Constitution of the WHO, the Alma Ata Declaration on Primary Health Care, the WHO Global Strategy on Health for All, plus the ILO Conventions on Occupational Safety and Health and on Occupational Health Services stipulate among other issues the fundamental right of each worker to the highest attainable standard of health. To achieve this objective, access to occupational health services should be ensured for all workers of the world irrespective of age, sex, nationality, occupation, type of employment, or size or location of the workplace.

Souce: Excerpt from WHO Document "Declaration on Occupational Health for all" WHO/OCH/94.1

Canons of Ethical Conduct of Industrial Hygienist

Industrial Hygienists shall:

1. Practice their profession following recognized scientific principles with the realization that the lives, health and well-being of people may depend upon their professional judgment and that they are obligated to protect the health and well-being of people.

2. Counsel affected parties factually regarding potential health risks and precautions necessary to avoid adverse health effects.

3. Keep confidential personal and business information obtained during the exercise of industrial hygiene

activities, except when required by law or overriding health and safety considerations.

4. Avoid circumstances where a compromise of professional judgment or conflict of interest may arise.

5. Perform services only in the areas of their competence.

6. Act responsibly to uphold the integrity of the profession

Source: American Industrial Hygiene Association. For more information visit www.aiha.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

nayati INTERNATIONAL

Working for Better Quality of Life through Research & Education