CoPS SH&E Report

Council on Practices & Standards (CoPS) **Volume 2, Number 3**

IEEE IAS Electrical Safety Workshop Scheduled for 2008

The 15th Annual IEEE IAS Electrical Safety Workshop will be held from March 18-21, 2008 at the Hyatt Regency Dallas in Dallas, TX.

This event will include a products and services exposition, expert presentations and in-depth tutorials.

For more information, visit:
http://www.ewh.ieee.org/cmte/ias-esw

ANSI / ASSE Z359 Fall Protection Code a Success

Thanks to the release of the new ANSI/ASSE Z359 Fall Protection Code, employers nationwide have been better able to protect workers at height from falls, one of the leading causes of occupational injuries and fatalities.

The Code includes the following standards:

ANSI / ASSE Z359.0-2007:
Definitions & Nomenclature Used for Fall Protection & Fall Arrest
Establishes the definitions and nomenclature used for the Z359 Fall Protection Code.

ANSI / ASSE Z359.1-2007:
Safety Requirements for Personal Fall Arrest Systems, Subsystems & Components
Establishes requirements for the performance, design, marking, qualification, instruction, training, inspection, use, maintenance and removal from service of personal fall arrest systems.

ANSI / ASSE Z359.2-2007:
Minimum Requirements for a Comprehensive Managed Fall Protection Program
Establishes guidelines and requirements for an employer's managed fall protection program, including policies, duties and training, fall protection procedures, hazard survey, eliminating and controlling fall hazards including requirements for fall protection systems, design considerations for new buildings and facilities, rescue procedures, incident investigations and evaluating program effectiveness.

ANSI / ASSE Z359.3-2007:
Safety Requirements for Positioning & Travel Restraint Systems
Establishes requirements for the performance, design, marking, qualification, test methods and instructions of lanyards and harnesses comprising personal positioning and travel restraint systems.

ANSI / ASSE Z359.4-2007:
Safety Requirements for Assisted-Rescue & Self-Rescue Systems, Subsystems & Components
Establishes requirements for the performance, design, marking, qualification, instruction, training, use, maintenance and removal from service of connectors, harnesses, lanyards, anchorage connectors, winches/hoists, descent control devices, rope tackle blocks and self-retracting lanyards with integral rescue capability comprising rescue systems used in preplanned self-rescue and assisted-rescue applications.

CoPS SH&E Report is published triannually by the American Society of Safety Engineers' (ASSE) Council on Practices & Standards (CoPS).

Tim Fisher ..... Director, Practices & Standards
Rennie Heath ..... Manager, Practice Specialties
Jolinda Cappello ..... Editor, CoPS SH&E Report

For information on submitting content to *CoPS SH&E Report*, e-mail jcappello@asse.org.

Council on Practices & Standards (CoPS)
American Society of Safety Engineers (ASSE)
1800 E. Oakton St.
Des Plaines, IL 60018
http://www.asse.org

In This Issue:

ANSI / ASSE Z359.1-1992 (R1999): Safety Requirements for Personal Fall Arrest Systems, Subsystems & Components
Included as a historical document.

For more information on the ANSI/ASSE Z359 Fall Protection Code, visit:

https://www.asse.org/shoponline/products/Z359-PKG.php

Implementing NFPA 1600: National Preparedness Standard

By Donald L. Schmidt, ARM

Members of the NFPA 1600 technical committee and other experts have collaborated to write a new National Fire Protection Association (NFPA) book, *Implementing NFPA 1600*, which explains how to develop an emergency management and business continuity program in compliance with the NFPA 1600 standard.

The U.S. Department of Homeland Security has adopted NFPA 1600, and the Canadian Standards Association is using it to develop the Z1600 standard.

This book will become a resource for emergency managers, business continuity managers, SH&E professionals, facility managers, risk managers and others. It references the 2007 text of NFPA 1600 and provides hands-on guidance for incorporating elements of the standard into new or existing programs.

Chapters include:

- Introduction to Emergency Management and Business Continuity
- Program Management
- Risk Assessment
- Prevention and Mitigation
- Resource Management
- Planning for Emergency Operations
- Planning for Business Continuity and Disaster Recovery
- Crisis Communications
- Emergency Response Operations
- Managing the Incident
- Training, Drills and Exercises
- Program Evaluation

Appendices include the full text of NFPA 1600-2007, a chapter on crisis management and a 200-plus-question checklist that will enable users to evaluate compliance with NFPA 1600. Forms, worksheets, checklists and surveys are provided in the text, and a CD is also included with the manual.

For more information, visit http://www.nfpa.org or contact Donald L. Schmidt, editor and a contributing author of *Implementing NFPA 1600*, at DSchmidt@Preparednessllc.com. ■

Visit ASSE's Online Forums!

- Find the answers you need
- Add new contacts to your professional network
- Stay connected with your fellow ASSE members

Log in to the Members Only section of the www.asse.org and click on "Forums" under "Networking."

Take advantage of this valuable membership benefit today!

The Cost of Uncertainty: Nanotechnology Could Be Risky Business

By George W. Pearson, CSP, ARM

The shortage of health, safety and risk control information related to nanotechnology could negatively impact business. This impact could be gauged by how the insurance industry reacts and how it will ultimately respond to this emerging technology. The insurance industry's concern is underscored by the knowledge gaps surrounding the health and safety hazards of nano-engineered materials. Among the risk categories are worker injury, third-party liability, personal injury and product recall risks. Further, consumer concerns could also drive a backlash reaction that could raise concerns among insurers in products liability.

In its 2004 report, "Nanotechnology Small Matter, Many Unknowns," Swiss Re believes that so much uncertainty exists in nanotechnology risks that it does not have a precise way of calculating the probability and extent of loss that could occur. In addition to how the causal relationship between the agents to the illness can be established, Swiss Re is concerned about accumulated losses from a flood of late claims. The report suggests that insurers limit their commitment to the nanotechnology market to avoid unknown liability risk. Studies needed for risk assessments have failed to emerge because of shortfalls with research funding. They predict that insurers can expect to face these uncertainties for some time. (Swiss Re, Hett)

Swiss Re also cites concern over the chronic nature of ill effects from exposure to nanomaterials. They draw an analogy to asbestos, admittedly causing a controversy, but make their case because of several similarities between asbestos and nanotubes.

> "The danger is most probably not of an acute nature but of a chronic nature, and it could be some time before it manifests itself. That is the real risk for insurers, and the comparison with asbestos should be seen in this light." (Swiss Re, Hett)

Nanotubes, a type of nano-engineered material, in particular could compare readily with asbestos. Swiss Re asserts that they are similar in shape and size, structure and form. They both cause or could cause chronic disease, and although the risks with nanotubes are unknown, it is clear that asbestos causes fibrosis of the lung (asbestosis) and lung cancer (mesothelioma). Similarities are striking; they are both in or will be in worldwide distribution and have a wide range of uses or applications. This means a large population was or can be exposed in the future. Where asbestos is persistent in nature, nanotubes are possibly so. Asbestos has had a storied past with large employee claims and class-action suits. These claims were costly to asbestos producers and insurers alike and were responsible for large losses. With nanotubes, such a trend is really not predicted, but with that comparison, it underscores the risk because of the unknown consequences of exposure and the uncertainty surrounding delayed reporting of large claims.

Alliance AG, the German-based insurance conglomerate, believes causal relationship will be difficult to establish between the actions of an insured and a resulting injury or illness (Alliance). Negligence requires that an injury have proximal cause that is a breach of a duty to protect. If proximal cause cannot be established, an indemnity claim based on negligence would not be possible. Workers' compensation conversely is a no-fault system, but it also relies on a principle of causal relationship. To be compensable, an injury or illness must arise out of and in the course of employment. These relationships expect to be difficult to prove according to some. They say a more affirmative view of nanotechnology will be evolutionary (Alliance).

The insurance industry seems to be resigned to the fact that it will need to cope with the uncertainties of nanotechnology-related risks. Accordingly, they are now unable to quantify the probability and possible extent of related losses. Lines of affected insurance business will include:

- **Workers' compensation**
  Workers developing, synthesizing and processing engineered nanomaterials
- **General and products liability**
  The general public and users of consumer products containing or releasing nanomaterials
- **Product recall**
  The cost of recalling a product with unacceptable claim experience or safety defects covered in some insurance policies

- **Environmental liability**
  Damage to the environment from engineered nanomaterials disposed of or released into the environment intentionally or accidentally.

- **Property losses from dust explosions**
  The fine particle size of engineered nanomaterials could cause ignitable dust to form. The property damage as a result would be payable under many property insurance policies. (Alliance)

From this, it is expected that many domestic insurers will wait to take an approach. One insurance executive says that he would like to see how the claim trends track before assessing the further impact of nanotechnology on the industry. It is possible that some insurance companies will be more aggressive in seeking market segments or niches to find a comfort zone in which they can live. By carving out the pieces they technically understand and in which they have confidence, they will be able to operate in the daylight, so to speak. Unfortunately, these niches will probably be very small, likely resulting in too little property and casualty insurance available for purchase, thus creating capacity issues for the market. Based on the Alliance and Swiss Re reports, it does not seem likely that insurers will take the drastic step of expressly excluding coverage for nanotechnology risks. They remain ambivalent and seem reluctant to enter into a debate over whether they should or should not.

On the consumer front, Consumer Union recently reported on nanotechnology and revealed some startling issues (Consumer Reports July 2007). They state that "consumers have been left in the dark," probably because no one is telling them about nanotechnology. Based on a Yale University study, 80% of Americans have never heard of nanotechnology. Businesses in the consumer market do not advertise if their products contain nano-engineered materials because they do not want to be exposed to bad publicity. The concern is in informing the public and a fear of a consumer backlash.

The International Council on Nanotechnology (ICON), of which Consumer Union is a member, released a report in 2006 that surveyed 64 manufactures and laboratories. Only one in three conducted monitoring for exposure to substances, about 38% believed nanotechnology posed no special risk and 22% said they did not know. The remaining group said they had risk concerns. This head-in-the-sand approach is likely to cause product liability insurers to cringe and businesses to suffer in the long run. Here emerges an element to add to the uncertainty where some businesses are unwilling to admit to the current predicament.

A common interest among insurers is the preservation of their book of business in all lines of coverage, including general liability, workers' compensation and products liability. This could cause domestic carriers to shy away from insuring nanotechnology risks. If insurers are unwilling to assume risk, how will organizations and businesses manage their risks where risk financing through insurance is not an option? This situation will likely limit the availability of insurance coverage for emerging businesses engaged in nanotechnology.

If insurers do as Swiss Re and Alliance predict, the wait-and-see approach could turn into an economic debacle. Not unlike the pollution issues of the 1970s and 1980s, insurers found that because of the uncertainties related to environmental risk—too much risk and not enough premium—they began to write policies by excluding environmental risks. When they wrote environmental coverage, they did it claims-made.

We can also see debates over causal relationships and the expectation of clusters of claims and late claims. This could force the industry to exclude coverage, be selective with exposures and seek other methods to limit their exposure like offering claims-made coverage. The latter may be impossible with workers' compensation, particularly here in the U.S. and probably in Canada because of the state and provincial workers' compensation statutes.

Limits will be placed on availability of insurance coverage for businesses and organizations, which could severely limit risk transfer protection against claims. Insurers should think of funding research or collaborating with health and science organizations to advance the body of knowledge concerning nanotechnology risks.

For a responsible business, a pound of prevention is worth a pound of cure. It makes business sense to control losses and to invest in controlling and mitigating loss-producing exposures, particularly with nano-engineered materials. In fact, a 2001 Liberty Mutual survey of business executives "…shows 61% of executives say $3 or more saved for each $1 invested in workplace safety" (Liberty Mutual, 2001).

It makes sense for businesses to be prudent upon entry into the fledgling nanotechnology arena. It also means a business should be conservative in its approach to processes and handling of nanomaterials and invest in precautions. Implementing the appropriate risk controls and precautionary methods outlined in the NIOSH Interim safety and health guidelines is a start. Formulate and implement a risk management program to control the risk. As NIOSH

suggests, the following are the key program elements for a nanotechnology risk management program:

- Evaluate the hazards
- Assess worker exposures
- Educate and train employees
- Establish methods to evaluate the effectiveness of engineering controls
- Develop procedures for the use of personal protective equipment (PPE), including the use of clothing, gloves and respiratory protection
- Follow up with a systemic evaluation of exposures and control measures to be sure risk control interventions are effective

According to NIOSH, current knowledge indicates a well-designed exhaust ventilation system with high-efficiency air (HEPA) filters should be effective in removing nanoparticles in use today.

Good work practices are also essential in achieving risk controls that mitigate exposure. This includes cleaning work areas with HEPA vacuums, using wet methods, preventing employees from eating food in work areas and providing adequate hand-washing facilities (NIOSH).

Without economical access to insurance or with insurance limited as a feasible risk transfer option, ventures into nanotechnology may be put off or decided against completely and become an economic constraint that holds back the fullest exploitation of nanotechnology. Consumer confidence can also play a key role in the general acceptance of nano-engineered materials in products. These can be seen as a risk management gap but also as an opportunity that can be exploited by astute business interests and insurers alike. The curiosity of business and the insurance industry can be marshaled to solve this problem and result in productive investigations in how nanotechnology hazards can be adequately controlled and mitigated. This conundrum could end up having a bright side and be a stimulus for private and public funds for research to learn more about nanotechnology risks.

A bottom line factor for business is the control of costs. A risk management adage says, "By controlling losses, you are controlling your costs." Better understanding nanotechnology risks is a significant step to the better understanding of hazard controls and mitigations that are key to controlling losses and countering negative business impact.

References

1. Consumer Reports, Nanotechnology, Untold Promise, Unknown Risk, July 2007
2. Hett, S.W., Nanotechnology, Small Matter, Many Unknowns, Swiss Re, 2004, Zurich
3. Lauterwasser, C. Ed. "Opportunities and Risks of Nanotechnologies," Allianz AG, and OECD, 2005
4. Rich Angevine, A Majority of U.S. Businesses Report Workplace Safety Delivers a Return on Investment, Liberty Mutual, August 2001
5. NIOSH, "Approaches to a Safe Nanotechnology: Draft for Public Comment," July 2006
6. NIOSH 2007–123, "Progress toward Safe Nanotechnology in the Workplace," February 2007

George W. Pearson is the immediate past Administrator of the Risk Management/Insurance Practice Specialty and the Assistant Regional Vice President, Practices and Standards, for Region VI. He is the Corporate Health and Safety Manager for SunCom Wireless in Richmond, VA. He can be reached at gpearson@suncom.com.

■

Keep Informed by Keeping Us Informed!

Make sure you let ASSE know if you change your e-mail address.

Visit ASSE's homepage at www.asse.org to update your information or contact Customer Service at (847) 699-2929.

News You Can Use

MSHA Demonstrates New System for Escape During Mine Emergencies

The **U.S. Mine Safety and Health Administration (MSHA)** has introduced its new "Great Escape" rescue system to assist miners in evacuating an underground mine quickly and safely during a mine emergency.

MSHA's Office of Technical Support conceived and developed the rescue approach. The prototype demonstration system consists of concrete pipe measuring approximately 42 inches in diameter and is accessible at various points along the pipe. Doors and vents are installed in the unit's access points/end caps. Actual escape system installations may be able to use smaller diameter pipe and may be installed between the mine's working sections and an escape shaft, or depending on the mine layout, run completely to the surface.

The escape system would be fitted with a communication and tracking infrastructure and battery-powered personnel carriers to transport miners to the surface. A fan situated at the surface would pump in breathable air through a borehole connected directly to the escape pipe, thus potentially satisfying the breathable air requirements as an alternative to refuge alternatives. Such a system could also minimize the time miners would need to wear their self-contained self-rescuers.

The durability of the concrete pipe would ensure an uncompromised communication and tracking system, and reinforced steel in the escapeway could conceivably serve as a medium-frequency communications system antenna.

MSHA will evaluate feedback from industry stakeholders and continue to test the prototype system and make overall system improvements.

—Adapted from MSHA news release, "MSHA Demonstrates Innovative System for Escape During Mine Emergencies," November 8, 2007.

NIOSH Recommends Interventions to Prevent Electrocutions & Shocks

The **National Institute for Occupational Safety and Health's (NIOSH)** new document, *Workplace Solutions: Preventing Worker Deaths and Injuries from Contacting Overhead Power Lines with Metal Ladders*, offers recommendations for preventing job-related electrocution or electrical shock from unintended contact of metal ladders with power lines in outdoor work.

The document provides employers with recommendations for controlling hazards when they set up worksites and when work is performed at worksites. It also gives steps for workers to take to help reduce their risk of electrocution when performing their job. In addition to these recommendations, the document outlines suggestions for general contractors and ladder manufacturers.

From 1992-2005, at least 154 workers died of work-related electrocution that occurred while working around overhead power lines and while using metal ladders. Available data showed that Hispanic workers appeared to be at higher risk of a fatal injury than other worker populations. While Hispanic workers comprised only 11% of the workforce during this period, they accounted for 36 deaths, 23% of the overall total.

The document highlights the need for additional steps to protect Hispanic workers, who appear to be at greater risk of fatal injury according to the data. This includes performing worksite surveys, implementing hazard controls and identifying additional safety measures for workers whose primary language is not English.

To view and download the document, visit http://www.cdc.gov/niosh/docs/wp-solutions/2007-155/.

—Adapted from NIOSH news release, "NIOSH Recommends Interventions to Prevent Electrocutions, Electric Shocks Involving Meal Ladders and Power Lines," October 17, 2007.

New NIOSH Guide Describes Ways to Prevent Musculoskeletal Injuries in Construction

NIOSH's new publication, *Simple Solutions: Ergonomics for Construction Workers*, describes ways to prevent musculoskeletal injuries in the construction industry.

This guide suggests a range of interventions to prevent common occupational injuries from handling heavy or awkward loads, making repetitive movements and other physical demands of construction work. All of the interventions have been used on actual construction worksites.

Solutions in the guide are organized according to the types of construction work in which physical demands can pose risks for musculoskeletal injuries: 1) floor and ground-level work, 2) overhead work, 3) lifting, holding and handling materials and 4) hand-intensive work. In each category, individual tip sheets describe interventions for specific work activities or equipment, such as power-assisted rebar tiers, spring- and power-assisted drywall finishing systems, vacuum lifters and powered caulking guns.

The tip sheet format is designed to make it easy for employers and workers to use the guide onsite and to fit the interventions to everyday work activities. Workers and supervisors can adopt many of the solutions, while others may need the involvement of the building owner or general contractor.

In 2005, construction employers reported 35,900 work-related musculoskeletal disorders that resulted in one or more days away from work for injured employees. Available data indicate that such injuries are disproportionately high in construction, compared with the average for all industries.

To view and download the guide, visit http://www.cdc.gov/niosh/docs/2007-122/.

—Adapted from NIOSH news release, "Simple Ways to Prevent Musculoskeletal Injuries in Construction are Described in New NIOSH Guide," November 5, 2007.

OSHA Announces Employer-Paid PPE Final Rule

The **U.S. Occupational Safety and Health Administration (OSHA)** announced a final rule on employer-paid personal protective equipment (PPE). Under the rule, all PPE, with a few exceptions, will be provided at no cost to the employee. OSHA anticipates that this rule will have substantial safety benefits that will result in more than 21,000 fewer occupational injuries per year.

The final rule contains a few exceptions for ordinary safety-toed footwear, ordinary prescription safety eyewear, logging boots and ordinary clothing and weather-related gear. The final rule also clarifies OSHA's requirements regarding payment for employee-owned PPE and replacement PPE. While these clarifications have added several paragraphs to the regulatory text, the final rule provides employees no less protection than they would have received under the 1999 proposed standard.

The rule also provides an enforcement deadline of six months from the date of publication to allow employers time to change their existing PPE payment policies to accommodate the final rule.

—Adapted from OSHA news release, "OSHA Announces Employer-Paid Personal Protective Equipment Final Rule," November 14, 2007. ■

Links:

MSHA Demonstrates New System for Escape During Mine Emergencies
http://www.msha.gov/MEDIA/PRESS/2007/NR071108.asp

NIOSH Recommends Interventions to Prevent Electrocutions & Shocks
http://www.cdc.gov/niosh/updates/upd-10-17-07.html

New NIOSH Guide Describes Ways to Prevent Musculoskeletal Injuries in Construction
http://www.cdc.gov/niosh/updates/upd-11-05-07.html

OSHA Announces Employer-Paid PPE Final Rule
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=14739

Workplace Substance Abuse Management: A Collaborative Effort

By Peter N. Cholakis, M.B.A.

With substance abuse in the U.S. workplace worse than ever, it is important for all of us in the safety community to drive change.

Corporate drug-free workplace programs came to the forefront during the late 1980s and early 1990s in response to several catastrophic incidents involving drugs. Federal regulations, including mandated drug testing programs for specified occupations, were put into place to address this pervasive issue.

Nonetheless, some 20 years later, drug abuse remains largely unmanaged, and its negative impacts continue unabated—$180B+ annual costs to U.S. businesses, 20,000+ deaths yearly, hundreds of thousands of injuries and workplace accidents, workplace crime and violence.

Approximately 10% of all persons employed in the U.S. abuse drugs regularly within the 18-to-49-year-old age bracket, not including alcohol. Drug abuse in these figures includes illicit drugs (for example, heroine, cocaine, methamphetamine) and the non-medical use of prescription drugs.

The following includes an outline of the basic components of a comprehensive and effective workplace substance abuse management program as well as associated best practices compiled from working with over 350 corporations nationwide and associated research.

Workplace Substance Abuse Management Program Components

1. Corporate drug and alcohol policy.
2. Education and awareness building programs.
3. Drug testing.
4. Employee assistance and counseling.
5. Objectives, metrics, benchmarks and reporting.

Corporate Drug & Alcohol Policy

A clear, well-communicated and continuously improved corporate drug and alcohol policy is the foundation of any workplace substance abuse management program.

Seeking input and involvement with all constituencies is an important first step as is establishing clearly defined objectives and goals for the drug and alcohol policy. In construction, for example, an AEC firm or an owner may ultimately be responsible for employee safety, productivity and financial risk. However, based on specific circumstances, many if not all of the following may also be directly involved in any substance abuse management program's success:

- Insurers
- Unions
- Contractors/subcontractors
- Site management

Buy-in and direct support from "C-level" executives is a requirement as is support from all employees.

A corporate drug and alcohol policy clearly communicates:

- A mission statement, objectives and goals that define the purpose and relevance of the drug and alcohol policy
- The importance and need for ongoing substance abuse education, awareness building and training
- Drug testing methods and associated administrative procedures
- Available resources offered for counseling and other employee assistance programs
- Administrative alternatives/procedures associated with the overall program

Education & Awareness Building Programs

Education and awareness building programs are critical. Despite the fact that 77% of drug abusers are employed and 10% of employed individuals aged 18 to 49 years old abuse drugs not including alcohol on a regular basis, most people in the workplace remain unaware of the extent of substance abuse in the workplace and the existence of effective management techniques.

C-level lack of knowledge relative to substance abuse is startling. Most CEOs know little about their programs if they have them. And when asked why their firm does not have a comprehensive substance abuse management program in place, most will respond with one or both of the following:

"Our company does not have a significant drug problem."

"Implementing a drug and alcohol management program would be too hard, too costly and a violation of the trust we have established with our employees."

Both of these comments speak volumes about the need for education at the C-level, and the only professional group with the access and capability to do this is safety and risk management executives.

Additionally, organizations such as the ACLU, "pro-drug" groups attempting to legalize marijuana and other organizations cloud the issue by miscommunicating/lobbying that drug testing is illegal and/or an invasion of privacy in the workplace. Check with your counsel and/or attorneys who are experts in this area. All will likely note that drug testing is legal and is not an invasion of privacy. The U.S. Supreme Court as well as several federal and state courts addressed these issues years ago.

Education/awareness programs must be current, objective, relevant and ongoing. Outreach and availability to the families of employees are also important. Programs can span topics such as current trends in substance abuse, recognizing symptoms of substance abuse and available support services, including counseling.

Drug Testing: Who, What, When & How

Random Drug Testing

If your organization does not conduct random drug testing, statistics are against your workplace being drug-free. Random testing is the most effective method, as it delivers both deterrence and detection. In short, the old axiom applies: "You cannot manage what you do not measure." If you do not test, how do you know the extent of your problem and address them? You do not.

Pre-employment drug testing is little more than an intelligence test for drug abusers, as demonstrated in Figure 1. Drug abusers can lay off drugs for a few days before the interview or drug test or "study" for the test by drinking water or purchasing adulterants, drug-free urine or synthetic urine from any of the hundreds of vendors on the Internet.

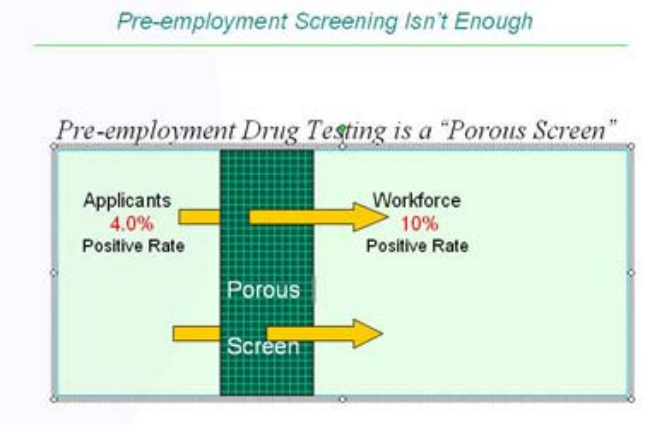

Figure 1. Pre-employment drug testing is a "Porous Screen."

All modes of drug testing—pre-employment, random, post-incident/accident, reasonable suspicion and return-to-duty—must be defined, evaluated and deployed per your specific organizational circumstances, goals and objectives.

Considerations include the application of an equally diverse range of specimen types (for example, hair, oral fluid, urine and blood) and also test methodologies/technologies such as onsite devices, laboratory screens and laboratory quantitative testing. Each method or mode of testing, specimen type and venue (onsite/laboratory) offers specific benefits and challenges and should be considered and used whenever applicable and beneficial.

While specific drugs classes and/or types need not be mentioned in the drug policy, the policy should note that testing will span illicit drugs (heroin, cocaine, meth) and should address the non-medical use of prescription drugs as well as post-hire alcohol testing.

Most companies use SAMHSA-approved, laboratory-based urine testing. This is the wrong type of testing for most companies.

The standard five-panel or SAMHSA/NIDA-5 method is likely the wrong method for most corporations, except for specific positions that fall under the federally mandated drug testing regulations. While these urine-based programs have been around for years and are therefore perceived to be the easiest and "safest" model to follow, they are outdated and at best questionable relative to their effectiveness. For example, the Government Accounting Office (GAO), a watchdog for all federal agencies, recently issued a report on the vulnerability of U.S. Department of Transportation (DOT) urine-based testing to drug abusers who "beat the test."

Investigators visited 24 sites throughout the U.S. and were able to defeat the DOT testing structure in all cases.

GAO Report (GAO-08-225T, November 2007) Key Findings

1. The DOT urine-based drug testing program is "vulnerable to manipulation by drug abusers, especially given the wide availability of products designed to defeat drug tests."

2. In all cases, the SAMHSA-approved urine laboratories were unable to detect adulterated or substituted specimens.

3. GAO officials briefed DOT, which agreed with GAO's findings.

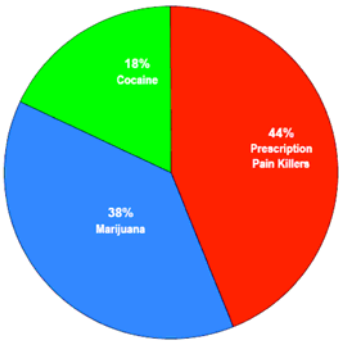

Figure 2. The New Drugs of Choice: Non-Medical Use of Prescription Painkillers SAMHSA, NSDUH Report 2006

Over the last eight to ten years, the abuse/non-medical use of prescription medications, especially pain relievers, has risen dramatically. In the U.S., abuse of prescription drugs has exceeded marijuana and other "illicit" drugs in many areas and industries. This trend is expected to continue and to expand worldwide. Testing for opiates (including oxycodone, oxymorphone, hydrocodone, hydromorphone) in addition to the opiates covered by a standard five-panel (morphine, heroin, codeine), is important as is testing for cocaine, methamphetamine and marijuana. Testing for PCP is not a significant factor as the positivity rate is approximately 0.35%.

Employee Assistance & Counseling

Employee assistance and counseling programs (EAPs) are designed to help employers and employees address productivity issues and identify and resolve personal issues that may affect job performance. Elements include diagnosis, treatment/assistance, case monitoring and follow-up. These programs are typically long-term and sometimes ongoing. Direct support is also required; employers should be wary of "1-800-EAP"-type services.

EAPs have developed from alcoholism/drug abuse assessment and referral centers to specialized behavioral health programs. Comprehensive employee assistance programs are defined by six major components: identification of problems based on job performance, consultation with supervisors, constructive confrontation, evaluation and referral, liaison with treatment providers and substance abuse expertise.

Other services have been added as enhancements to the basic model and include managed behavioral health activities and professional assistance committees, which provide services for impaired professionals and executives.

Based on the specifics of a corporate policy and program, employees may be referred to an EAP to address workplace conflict, unacceptable conduct or deficient performance in addition to or in parallel with substance abuse issues

Objectives, Metrics, Benchmarks & Reporting

What are the goals for your organization and how do you measure success? While specifics vary, the overall benefit of a comprehensive substance abuse management program is a safer, more productive workplace despite the common myth that the ultimate goal is limited to "catching and firing." "Catching and firing" are not primary goals, and they also may not be the most cost-effective.

Deterrence, prevention and detection are primary goals, and they can be achieved via random drug testing, education programs and employee assistance/counseling. Several studies have demonstrated that comprehensives substance abuse management programs benefit employers, employees and their families.

There are multiple lead and lagging indicators and metrics that can be monitored on an ongoing basis relative to a corporate substance abuse management program in addition to those below:

- Educational programs completed
- Training programs completed
- Positive rate
- Negative rate
- Random sample rate/Positive rate
- Cost/test
- Accident rate (reportables)
- Inventory shrinkage
- Employee turnover
- Health benefit utilization rates

- Workers compensation costs
- EAP programs participation rate
- EAP success rate
- EAP costs/employee
- Program cost/employee
- Program savings/employee

Comprehensive programs have demonstrated return on investment rates of 50 times to 100 times and other significant benefits such as reductions in reportable accidents by 50% or more.

Conclusion

An entirely new approach is needed to address workplace safety relative to substance abuse management. While a relatively few number of "thought-leaders" across multiple industries have recognized and implemented change, most of the U.S. workplace continues with the status quo. Companies that have scanned the market to locate the best developers and manufactures of newer technologies, such as onsite oral fluid (saliva) and/or laboratory-based testing as well as laboratory-based, hair-based testing and best-in-class complementary service providers, have crafted successful programs that mesh with existing procedures and requirements.

Pre-employment urine-based drug testing has unfortunately become synonymous with a drug-free workplace program, and human resource departments across the U.S. have been chartered with management. The result is that substance abuse is worse than ever in the U.S. workplace.

Safety and risk management professionals must become catalysts for change. After all, safety is the primary benefit provided by a corporate substance abuse management program in addition to mitigation of significant financial risk.

Developing a comprehensive drug and alcohol management program for the workplace is not complex, illegal or an invasion of privacy. It is an important benefit to employers and employees alike. Furthermore, it is the legal responsibility of any employer to provide a safe work environment—a responsibility that cannot be fulfilled in our society without a proactively managed corporate drug and alcohol program.

Peter N. Cholakis, M.B.A., is Vice President of Avitar. He is a noted speaker and author in the field of workplace drug testing, and his articles have been published in Manufacturing Week, Risk Management, Construction Executive and Loss Prevention.

Cholakis regularly speaks to audiences associated with ASSE, the Drug and Alcohol Testing Industry Association, the National Safety Council, the National Retail Federation and The Society for Human Resource Management.

He can be reached at pcholakis@comcast.net. ■

- Would you like to see your name in print?
- Do you have fresh and exciting news items or technical articles that you want to submit to the Practice Specialty/Branch newsletters or to *CoPS SH&E Report*?
- Do you know someone who would make a compelling interview candidate? Is that someone ***you***?

CoPS Wants Your Content!

For information on submitting editorial content to any of the CoPS publications, e-mail Jolinda Cappello at **jcappello@asse.org**.

Standards Update

American Ladder Institute (ALI)

ALI to Revise Standard

ALI (ASC A14) plans to revise its standard, "Safety Requirements for Job-Made Wood Ladders" (BSR A14.4-200x). This standard prescribes minimum requirements for construction, design, installation and use of job-made ladders in order to minimize personal injuries. It does not cover portable manufactured ladders, permanent fixed ladders or mobile-equipment ladders.

American Society of Mechanical Engineers (ASME)

New ASME Standard Available

The American Society of Mechanical Engineers' (ASME) new standard, "Container Cranes" (BSR/ASME B30.24-200x), is available. This standard includes provisions that apply to the construction, installation, operation, inspection, testing and maintenance of container cranes used for lifting purposes in conjunction with equipment described in other volumes of the B30 standard. This volume includes:

- Power-operated cranes of the above type whose power source is either self-contained or provided externally
- Single, double or box girder construction using a trolley and a container handling spreader or other applicable lifting apparatus (cargo hook, cargo beam, magnet, etc.)
- Rail- or rubber-tire-mounted with through-the-legs or between-the-legs operation

American Society of Safety Engineers (ASSE)

ASSE Approved as ANSI/U.S. TAG to New ISO/TMB/RM

The accreditation of the U.S. Technical Advisory Group to a new ISO Technical Management Board Working Group (ISO/TMB/RM) on Risk Management, with ASSE serving as TAG Administrator, has been approved, effective November 16, 2007.

For more information, contact Tim Fisher at tfisher@asse.org.

American Society for Quality (ASQ)

New ANSI U.S. TAG Appointed

The ANSI U.S. Technical Advisory Group (TAG) to ISO TC 207, Environmental Management, has been appointed to serve as the ANSI U.S. TAG to ISO TC 207/SC 7, greenhouse gas management and related activities, with the American Society for Quality (ASQ) serving as TAG Administrator. For more information or to request participation on the TAG, contact:

Allyson Extence Baue
ASQ Standards Team
American Society for Quality
600 N. Plankinton Ave.
Milwaukee, WI 53203
Phone: (414) 298-8789
Fax: (414) 298-8787
E-mail: standards@asq.org

International Safety Equipment Association (ISEA)

New ISEA Standard Available

ISEA's new standard, "Flammability of Garments for Use Over Thermally Protective/Flame-Resistant Clothing" (BSR/ISEA 203-200x), is available. This standard provides requirements for testing, categorizing and labeling of clothing designed for use over thermally and/or electric arc flash protective clothing. Such clothing may be constructed in disposable, limited-use or reusable configurations. Garments covered by this standard may include coveralls, lab coats, aprons and high-visibility clothing.

Underwriters' Laboratories, Inc. (UL)

UL Standard Under Revision

UL's "Standard for Safety for Steel Aboveground Tanks for Flammable and Combustible Liquids" (BSR/UL 142-200x) is under revision. Revisions to the standard include changes to the requirements regarding normal and emergency venting.

—All adapted from ANSI Standards Action, Volume 38, Numbers 38, 40, 44.

Report on October 2007 A14 ASC Meeting

ALI ASC A14 on ladder safety met on October 18, 2007. Earnest F. Harper, ASSE's representative on the committee, provides a brief summary of the meeting.

- The A14.3 standard (Fixed Ladders) is finding its way into fire codes, as it is a critical issue among firefighters.
- ASSE still holds the copyright to A14 standards dated 1999 and older and carries a supply at its headquarters. ALI stores and sells A14 standards dated 2000 and later.
- The A14.1 (Wood Ladders), A14.2 (Metal Ladders) and A14.5 (Reinforced Plastic Ladders) standards have been revised and are available. The effective date is October 2008 to provide time for compliance.
- The A14.3 (Fixed Ladders) standard is up for review this year.
- The A14.4 (Job-Made Ladders) standard will likely have many revisions following the subcommittee's September 2007 meeting. The last revision was published in April 2002.
- The A14.7 (Mobile Ladder Stands and Platforms) subcommittee anticipates revision of the A14.7 standard to begin in 2008. The standard was last published in February 2000.
- The A14.8 (Ladder Accessories) standard should be available for public review in 2008.
- The A14.10 (Special Duty Ladders) standard was last published in February 2000. This standard will be obsolete in August 2008 when the A14.2 and A14.5 standards take effect. Those two standards will replace and update material now covered by A14.10.
- The A14.11 (Stepstools) standard is in preparation for full committee review along with a rationale document for this new standard.
- The Ladder Safety Website is in development and will cover such topics as ladder types, basic ladder safety and ANSI. The website will be targeted to consumers.

The next A14 ASC meeting will be held on April 22, 2008.

Outcome of NFPA-101 Mercantile & Business Committee Meeting

On October 22, 2007, the National Fire Protection Association (NFPA) Life Safety Code Committee on Mercantile and Business Occupancies met to discuss and vote on public comments to the committee's approved changes to the Code made in January 2007.

David A. Dodge, CSP, PE, attended the meeting as ASSE's representative. Below is his report of the meeting.

- Public comments and committee discussion addressed "areas of refuge" in new high-rise buildings. The committee decided that it would support a proposal requiring communication devices at elevator landings. Several other committees are working on the "areas of refuge" issue.
- It was reaffirmed that a two-hour fire separation is required between parking garages and tenant spaces.
- Public comments and committee discussion focused on the use of a public address system as a fire notification method. One public comment placed too many restrictions on the system. The committee maintained that a public address system can be used as a notification system as the Code allows.
- A public comment sought to require that mall tenant space separation walls extend to the roof instead of to the lower ceiling, as is now required. The committee will leave the present requirement in place because the added space above the ceiling allows for smoke dissipation in the area so that it takes longer to flow into the mall pedestrian way.
- At the January 2007 meeting, the committee decided to add to the Code the requirement that in a mall, no more than 50% of the required means of egress shall be through the main entrance. This regulation was reaffirmed.
- The committee reaffirmed the allowance of additional travel distance to exits within a mall pedestrian way under certain circumstances.
- Other NFPA-101 committees have attempted to increase the minimum stairway width in new structures from 44 in to 56 in. The Mercantile and Business Committee finds no justification for this.

This concludes the committee meeting schedule for the 2009 edition of the Life Safety Code. The next meeting is scheduled for November 2009 in preparation for the 2012 edition.

Outcome of Z136 ASC Meeting

Thomas V. Fleming, ASSE's primary representative on the Z136 Accredited Standards Committee (ASC) for the Safe Use of Lasers, recently submitted his annual activity report for 2007. Below is his report of the committee's activity for the year.

Key Issues & Summary of Actions

a. Accreditation of Z136 ASC
No action necessary in 2007.

b. Revision of Procedures for the Development of Z136 American National Standards
No action necessary in 2007.

c. Approval of Committee Chairs, Subcommittee Chairs and Members to Z136 ASC Consensus Body
Electronic (letter) ballot of ANSI Z136 ASC, Approval of Membership Applications, August 3, 2007, voted to approve LTC Krista Wenzel (primary), MAJ Robert Rodgers and MAJ Scott Braley (alternates) as representatives for the U.S. Air Force Surgeon General's Office.

Thomas Tierney was approved as an individual member, David Sliney was approved as primary representative for the American Society for Laser Medicine and Surgery, and Jerome Garden was approved as alternate (replacing Roy Geronemus). Prem Batra was approved as an individual member vice representative for Cincinnati State Community College.

d. ANSI Z136.1
American National Standard for the Safe Use of Lasers
Recirculation default ballot, electronic ballot of ANSI Z136 ASC, Approval of Z136.1 (with resolutions incorporated), February 13, 2007, Committee Balloting Group voted to approve CDV.

Recirculation default ballot, electronic ballot of ANSI Z136 ASC, Approval of Z136.1 (with resolutions incorporated), January 10, 2007, Committee Balloting Group voted to approve CDV.

e. ANSI Z136.2
American National Standard for Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources
No action necessary in 2007.

f. ANSI Z136.3
American National Standard for the Safe Use of Lasers in Healthcare Facilities
No action necessary in 2007.

g. ANSI Z136.4
American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation
No action necessary in 2007.

h. ANSI Z136.5
American National Standard for Safe Use of Lasers in Educational Institutions
Agreed to ballot on the revised Z136.5 standard, American National Standard for the Safe Use of Lasers in Educational Institutions, Invitation to Ballot, Committee Draft for Vote, October 12, 2007.

i. ANSI Z136.6
American National Standard for Safe Use of Lasers Outdoors
No action necessary in 2007.

j. ANSI Z136.7
American National Standard for Laser Eyewear and Protective Barriers
No action necessary in 2007.

k. ANSI Z136.8
American National Standard for Safe Use of Lasers in Research, Development and Testing
No action necessary in 2007.

l. ANSI Z136.9
American National Standard for Safe Use of Lasers in the Manufacturing Environment
No action necessary in 2007.

m. ANSI Z136.10
American National Standard for Safe Use of Lasers in Entertainment, Displays and Exhibitions
No action necessary in 2007.

Status of Standards

a. ANSI Z 136.1-2007
American National Standard for the Safe Use of Lasers
The 2007 revision of this standard was published this year.

b. ANSI Z136.2-1997
American National Standard for Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources
Nothing to report on this standard.

c. ANSI Z136.3-2005
American National Standard for the Safe Use of Lasers in Healthcare Facilities
On June 1, 2007, the ballot to change the title and scope of this standard was approved.

Lasers as medical devices have safety concerns that include "anyone who might be exposed." This means the patient (human or otherwise), laser assistant, laser operator and anyone else who uses a medical laser device. This proposal broadens the current standard to include spas, salons, home use, veterinary medicine, etc. (to protect those who might be exposed) by expanding the scope to use of medical laser devices beyond healthcare facilities.

d. ANSI Z136.4-2005
American National Standard Recommended Practice for Laser Safety Measurements for Hazard Evaluation
Nothing to report on this standard.

e. ANSI Z136.5
American National Standard for the Safe Use of Lasers in Educational Facilities
Revision is complete. Committee Draft for Vote will be issued to balloting group in the near future.

f. ANSI Z136.6-2000
American National Standard for Safe Use of Lasers Outdoors
Nothing to report on this standard.

g. ANSI Z136.7-Draft
American National Standard for Manufacture of Laser Eye Protection
On January 12, 2007, a ballot was sent to establish a balloting group for the Committee Draft for Vote. To date, no other action has been taken on this standard due to committee review of the new ANSI Z136.1-2007 standard.

h. ANSI Z136.8
American National Standard for Safe Use of Lasers in Research, Development and Testing
The inaugural subcommittee meeting was held in March 2007.

i. ANSI Z136.9
American National Standard for Safe Use of Lasers in the Manufacturing Environment
Nothing to report on this standard.

j. ANSI Z136.10
American National Standard for Safe Use of Lasers in Entertainment, Displays and Exhibitions
Nothing to report on this standard.

Outcome of NFPA 101 Report on Proposals Meeting

The NFPA 101 Means of Egress Technical Committee met in October 2007. Below is committee member Steven Di Pilla's account of the meeting.

Report on Proposals

The Report on Proposals meeting covered proposed changes to NFPA 101, Means of Egress and corresponding changes in the same section of NFPA 5000, Building Construction and Safety Code.

Part I: Key Proposals Voted Accept

The following is a brief listing of key proposals that were voted as affirmative and will be proceeding to final ballot. It is likely that all (except the 56" minimum stair width as noted) will pass on the pending final ballot. **Note:** In most cases, identical proposals to revise NFPA 5000 were also accepted.

- **Supplemental Escape Device/System**—ASSE has successfully opposed these provisions because there was no consensus standard against which to evaluate them. Since then, the ASTM standards have been completed and are pending publication. NFPA specifies compliance with these ASTM standards. The vote was in favor of placing this section in a non-mandatory appendix outside of the Means of Egress Chapter to provide some guidance for Authorities Having Jurisdiction who encounter these systems without specifying requirements that need to be met.
- **Exit Stair Path Markings (7.2.2.5.5)**—Where permitted by the occupancy chapter, provides specifics on how to apply photoluminescent exit stair path markings.
- **Marking of tread nosings (7.2.2.3.6.3)**—Required for stairways where there are irregular stair treads.
- **Inspection of Door Openings (7.2.1.15)**—Where required by the occupancy chapter (currently in Assembly, Educational and Day Care chapters). Requires documented, annual inspection of fire doors requiring a leaf (larger doors).

- **Handrails for New Stairs (7.2.2.4.1.2)**—New stairs require handrails within 30 in of all portions of the required egress width. Previously, this was required only for stairs wider than 6’ 3”.
- **Requirements for signage on stair doors (7.2.1.5.7):**

1. Doors allowing re-entry shall be identified as such on the stair side of the door.
2. Doors not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door, in each direction of travel, that allows re-entry or exit.

- **Minimum Stair Width of 56 in for New Buildings (7.2.2.2.1.2)**—New buildings require a minimum stair width of 56 in where serving an occupant load of more than 2,000. Note: This did not pass by two-thirds of the committee, so it may be overridden.
- **Basement/Attic/Stories**—Extensive list of changes to clarify the definitions and use of these terms and to sort out inconsistencies of these and related terms in the code.

  When stories relate to the height of the building, basements do not count. When stories are used inside the building to determine stair and other requirements, basements do count.

Part II: Key Definition Changes

Old Definition
Attic. The space between the ceiling of the top habitable story and the roof that may be used for storage.

New Definition
Attic. The space located between the ceiling of a story and the roof directly above that story. The attic space may be used for storage. The concealed rafter space between the ceiling membrane and the roof sheathing that are attached to the rafters is not considered an attic.

Old Definition
Basement. Story of a building wholly or partly below grade plane.

New Definition
Basement. Any story of a building wholly or partly below grade plane that is not considered the First Story Above Grade Plane.

New Definition
First Story Above Grade Plane. Any story having its finished floor surface entirely above grade plane, except that a basement shall be considered as a first story above grade plane where the finished surface of the floor above the basement is (1) more than 6 ft (1830 mm) above grade plane or (2) more than 12 ft (3,660 mm) above the finished ground level at any point.

Old Definition
Level of Exit Discharge. (1) The lowest story form, which not less than 50% of the required number of exits and not less than 50% of the required egress capacity for such a story discharge directly outside at the finished ground level; (2) the story with the smallest elevation change needed to reach grade where no story has 50% or more of the required number of exits and 50% or more of the required egress capacity from such a story discharge directly outside at the finished ground level.

New Definition
Level of Exit Discharge. The story that is either (1) the lowest story from which not less than 50% of the required number of exits and not less than 50% of the required egress capacity from such a story discharge directly outside at the finished ground level or (2) where no story meets the conditions of (1), the story that is provided with one or more exits that discharge directly to the outside to the finished ground level via the smallest elevation. Low-occupancy, ancillary spaces with exit doors discharging directly to the outside, such as mechanical equipment rooms or storage areas, and located on levels other than main occupiable floors should not be considered in the determination of level of exit discharge.

Part III: Successful Proposals Submitted on Behalf of ASSE

Section/Paragraph: 7.2.2.4.5. Add “See 7.1.8 for Guard requirements.”

Section 7.1.8 is easily overlooked, as most users of the document are referred to (and usually access) 7.2.2.4.5 on Guard Details. By placing a reference in this section, the base requirement for guards is less likely to be missed.

Section/Paragraph 7.9.3.1.1(1). “Functional testing shall be conducted at 30-day intervals monthly for not less than 30 seconds.”

Section/Paragraph 7.3.3. New: A7.3.3 In determining the most restrictive components, use standard rounding techniques.

Appendix 7.10.8.5 (amended): Add reference E2238—Standard Guide for Evacuation Route Diagrams to the appendix of 7.10.8.5 Evacuation Diagram (NFPA 101 and 5000). ■

Rules & Regulations

Occupational Safety & Health Administration (OSHA)

29 CFR Parts 1926
[Docket ID-OSHA-2007-0026]
RIN 1218-AB47

OSHA Proposes Rule for Confined Spaces in Construction

OSHA has proposed a rule to protect employees from the hazards resulting from exposure to confined spaces in the construction industry. Under the proposed rule, employers would first determine whether a confined space exists at a jobsite. If there were a confined space, the employer would determine if existing or potential hazards were present in the space. If such hazards were present, the employer would then classify the space according to the physical and atmospheric hazards found in it. The four classifications are Isolated-Hazard Confined Space, Controlled-Atmosphere Confined Space, Permit-Required Confined Space and Continuous System-Permit-Required Confined Space.

The proposed requirements for each type of confined space are tailored to control the different types of hazards. ■

Link:
http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/E7-21893.htm

CoPS Wants to Know...

Does your company have a **"green"** initiative?

If so, what are your company's **"green"** plans for 2008?

E-mail your responses to jcappello@asse.org by **March 17, 2008**.

Responses will be published in the next issue of *CoPS SH&E Report*.

Research Plans for American & Chinese Sustainable Development

Rice University's China-U.S. Center for Environmental Remediation and Sustainable Development aims to develop innovative and practical environmental solutions for sustainable development in China and the United States.

In this interview, the Center's Co-Directors, Drs. Mason Tomson, Amy T. Kan and Wei Chen, outline the Center's mission, goals and current projects and discuss the Center's research plans for 2008.

Please provide a brief description of your professional backgrounds and of your positions as Co-Directors of the China-U.S. Center for Environmental Remediation and Sustainable Development.

Mason Tomson obtained his Ph.D. in chemistry (aquatic thermodynamics) from Oklahoma State University in 1972. He serves as Co-Director of the China-U.S. Center along with Professor Amy T. Kan.

Amy T. Kan obtained her Ph.D. in food chemistry and chemical engineering from Cornell University in 1982. She serves as Co-Director of the China-U.S. Center along with Professor Tomson.

Wei Chen obtained his Ph.D. in environmental science and engineering from Rice University in 1999. As Co-Director of the China-U.S. Center, he serves as the overall coordinator for the China side of the collaboration.

The Center is a grassroots collaboration among environmental scientists at Nankai and Tianjin Universities in Tianjin, the Chinese Research Academy of Environmental Science in Beijing and Rice University in Houston, TX. What issues or events led to the Center's development, and what is the Center's mission?

When Wei Chen first returned to China, he was stunned not only by the rapid development of his country, but also by the serious environmental problems that can accompany rapid economic growth. In early 2005, he invited all of the environmental engineering professors at Rice University to visit Tianjin to meet with representatives from government agencies and research institutions and to discuss environmental issues, challenges and opportunities in both countries.

Mason Tomson

Mason Tomson obtained his Ph.D. in chemistry (aquatic thermodynamics) from Oklahoma State University in 1972. He then worked as Assistant to the Provost of Natural Sciences and Mathematics until 1977, when he was appointed as an Assistant Professor at Rice University. He currently is a professor in the Civil and Environmental Engineering Department and a Distinguished Guest Professor of Nankai University.

Tomson's research has focused on all aspects of applied aquatic chemistry. He holds four patents, has published two books and over 200 papers and has supervised over $15 million dollars of externally funded research. He serves as Co-Director of the China-U.S. Center for Environmental Remediation and Sustainable Development at Rice University along with Professor Amy T. Kan.

Amy T. Kan

Amy T. Kan obtained her Ph.D. in food chemistry and chemical engineering from Cornell University in 1982. She then worked for International Flavors and Fragrances, Inc. in New Jersey for three years.

In 1985, she joined Rice University as a Research Associate. She is currently a professor in the Civil and Environmental Engineering Department. In this capacity, she has contributed to environmental research and to the Brine Chemistry Consortium with 85 papers, two patents, conference proceedings and technical reports. She has served on the Steering Committee for the Society of Petroleum Engineers' Oilfield Scale Control, and she is also a guest research professor of Nankai University.

She serves as Co-Director of the China-U.S. Center for Environmental Remediation and Sustainable Development at Rice University along with Professor Tomson.

Wei Chen

Wei Chen obtained his Ph.D. from Rice University in 1999 under Professor Tomson. He then worked for the Houston office of Brown and Caldwell, a national environmental engineering consulting company.

In February 2004, he accepted a position as Distinguished Professor at Nankai University in his hometown of Tianjin. He is currently Director of Tianjin Key Laboratory of Environmental Remediation and Pollution Control and an adjunct professor of Rice University.

As Co-Director of the China-U.S. Center for Environmental Remediation and Sustainable Development at Rice University, he serves as the overall coordinator for the China side of the collaboration.

In the past few decades, Americans have faced many of the environmental challenges that China faces today. We thought that these similarities and differences are great opportunities for scholars and companies in both China and the U.S. to develop the most effective solutions that require new science and engineering, and we thought that a collaborative research center would facilitate this effort. At about the same time, Rice University, under the new leadership of the Dean of Engineering, Sallie Keller-McNulty, and the President of Rice University, David Leebron, established international collaboration, especially with Asian countries, as a priority goal for the university in a global economy. Therefore, it was fitting that the China-U.S. Center be established between Nankai and Rice Universities.

The Center's overall missions are to:

- Develop innovative and cost-effective solutions for timely and important energy and environmental problems and for sustainable urban development in China and the U.S.

- Provide international educational opportunities to prepare students in both countries for an increasingly global workplace.

The Center's research focus includes:

- ***Environmental remediation***
- ***Drinking water treatment***
- ***Groundwater preservation***
- ***Cleanup and modeling***
- ***Air pollution control***
- ***Prevention and modeling***
- ***Environmental policy, law and regulation***

What research activities are currently underway with respect to these areas, and what research projects does the Center have planned for 2008?

Environmental remediation and water treatment through nanotechnologies are the current focus of the Center's activities. Besides four funded joint research projects in fundamental research in these two areas, a major effort is underway to remediate petroleum-contaminated soil in oil fields in China.

Additionally, collaborators from both sides have identified 18 research topics, written white papers and prepared several proposals. In 2008, soil remediation and nanotechnologies for water treatment will remain key research areas for the Center.

However, other research projects, including evaluation of the environmental impact of antibiotic-resistant genes and investigation of ecological diversities in the Bohai Coastal Area in China, will also be initiated. Weichun Yang, a senior graduate student from Nankai University, is on a one-year visiting scholarship to study arsenic treatment in drinking water at Rice University. A biodiversity text is planned for the same Bohai Coastal Area to document the extent of diversity as industrialization proceeds. In addition, a text on groundwater contamination by Professor Bedient is being translated into Chinese and should be available by Fall 2008.

In an effort to protect the region of Tianjin and Bohai Gulf, six Rice University professors visited Nankai University and developed eighteen white paper proposals on the following topics:

1. ***Bioremediation and nanotechnology.***
2. ***Fate and transport of organic chemicals and heavy metals.***
3. ***Hydrology, surface and groundwater modeling.***
4. ***Drinking water purification.***
5. ***Atmospheric pollution control and remediation.***
6. ***Environmental policy and regulatory structure.***

What is the status of these proposals, and how will they be implemented to protect Tianjin and Bohai Gulf specifically?

The Natural Science Foundation of China (NSFC) has funded four of these proposals, and the Ministry of Science and Technology of China has recently funded one of the proposals. All of these proposals are closely related to environmental protection in these areas, and they will greatly enhance the knowledge needed for that effort. The remaining will be the subject of additional proposals and hopefully Center funding.

What is the Tianjin Economic-Technological Development Area (TEDA), and what is the Center's relationship with TEDA?

Established in 1984, Tianjin Economic and Technological Development Area (TEDA) is one of the country's first state-class development areas. Over the years, TEDA has developed into one of the country's most influential hotbeds for high-tech and new industries, with a more ambitious goal for the new century—to build "Asia's biggest and China's best modern industrial area in the 21st century."

TEDA currently runs four pillar industries:

- The electronics communications industry represented by Motorola, GS, Samsung, Hyundai and LG
- The biomedicine industry represented by Novo Nordisk and SmithKline Beecham
- The machinery manufacturing industry represented by Toyota and Volkswagen
- The food and beverage industry represented by Tinghsin Group, Coca-Cola and Pepsi-Cola

The Center has a close relationship with TEDA. The TEDA government hopes that the Center will serve as a venue for companies, regulators and universities at TEDA to facilitate the exchange of technologies and to ensure better communication regarding regulations, environmental needs and other issues.

How can safety professionals with environmental responsibilities make the most of the Center's resources?

This Center will be established as the leading U.S. organization in the Tianjin/Bohai area to provide solutions to environmental and sustainable development problems and to facilitate U.S. companies' environmental compliance in China. Safety professionals with environmental responsibilities can benefit from the Center for the following reasons:

1. The Center provides a platform for U.S. and Chinese corporations to communicate and to build understanding and collaborations between company personnel, government regulators and university researchers.

2. The Center provides a platform to communicate and to address regulatory issues with central and local government agencies.

3. The Center provides a platform to collaborate with the top national key laboratories and personnel in research and development.

4. The Center provides a platform to solve many common environmental challenges in Tianjin and Houston.

5. Tianjin coastal areas form an important case study for the development of new environmental technologies.

6. Rice and Nankai Universities each have strong complimen tary faculties and students well-matched to cooperate on solving 21st-century energy and environmental problems.

Additionally, the Center can serve companies with environmental responsibilities by helping them solve environmental-related technical issues and by helping them open new business in the area. The Center will provide an opportunity for environmental companies/analytical labs to provide services in the area, a platform for companies to showcase their work in environmental preservation and access to qualified young professionals in national key laboratories.

The Center represents a partnership between academia, industry and government. How does the Center meet the needs of each group?

The Center provides a great platform for U.S. and Chinese corporations to communicate and to build understanding and collaborations, to communicate and address regulatory issues with central and local government agencies, to collaborate with top national key laboratories and personnel in research and development and to solve many common environmental challenges in Tianjin and Houston. Many areas are of mutual interest to the different parties. Annual meetings will be a primary method for people from each group to communicate on a one-on-one basis and in formal presentations. Scholarly publications and selected books on issues of common interest will be the permanent record of the Center.

Has the Center encountered any challenges in working with U.S. or Chinese government regulations?

The Center's activities thus far have focused on the development of innovative technologies to deal with environmental problems in both countries. These activities benefit both countries and are in line with their related regulations. We have received no challenges from Chinese or American regulations.

Have other universities begun to create their own programs using the Center's success as a model?

In March 2007, presidents of 13 Chinese universities attended a workshop at Rice University. All of the universities expressed strong interests in the Center, and six universities signed formal agreements with President Leebron of Rice University after the workshop. Many universities have considered creating their own program following the Center's model.

What are the Center's goals for 2008? Does it plan to pursue any new areas of research and development?

While the Center's major goal is to strengthen our existing

areas of collaboration and research, we also hope to identify new areas of research and development and to expand the Center's current activities, particularly in issues related to the atmosphere.

The Center's first annual meeting will be held from March 20-21, 2008 in TEDA. The forum's theme will be "Achieving Sustainable Development in BNAT: Challenges and Opportunities." Speakers will include officials from Tianjin, BNAT, TEDA governments, the Ministry of Science and Technology and the Ministry of Education, university leaders and industry and faculty representatives. On the first day, we plan to discuss new business opportunities in BNAT, environmental, energy and resource issues and opportunities for international collaboration. A tour of TEDA and BNAT will take place on the second day. ■

2008 Webinar Schedule

January 16, 2008
Title: Working With NFPA 101: The Life Safety Code®
Speakers: Craig Schroll & Frank Baker

January 30 & February 6, 2008
Title: The Coming Workplace Shortage Crisis: Exploring the Future of Workers' Compensation
Session 1: Workers' Compensation—Where the Industry is Heading
Session 2: Risk Management—Working With a Changing Workforce
Speakers: Matt Sather & Shari Falkenburg

February 27, 2008
Title: Lean Six Sigma—Innovative Safety Management
Speaker: Peter Furst

March 5, 2008
Title: Excavation Safety
Speaker: Mike Hayslip

March 19, 2008
Title: Beyond Compliance: Breaking Through to the Next Level of SH&E Excellence
Speaker: Michael Topf

For more information or to register, contact ASSE's Customer Service Department at (847) 699-2929.