



Welcoming Our New 2006 NSMS Members

On behalf NSMS President Roosevelt, the NSMS Executive Committee and the NSMS Board of Directors, we like to thank all members who have renewed their 2006 membership to the National Safety Management Society. We would also like to acknowledge and welcome the following new members to our Society:

- Christine Albin-Garza, City and County of San Francisco – (San Francisco, CA)
- James W. Evans, Tetra Technologies, Inc. – (Houma, LA)
- Raymond Hanneman, Safety and Environmental Support Service – (New Berlin, WI)
- Ronald E. Love, North Carolina Air National Guard – (Charlotte, NC)
- Arnold L. Weiss, McClone Construction Company – (Sterling, VA)

We appreciate your interest in furthering your skills, knowledge and abilities in the management of safety and risks, as well as your interest to networking and professional development. Welcome again to NSMS!

Calling All NSMS Members: Volunteers Are Needed for Our National Conference Planning Committee

NSMS is still seeking volunteers to form a working committee for planning our **2007 National Conference**. We need the efforts and support of all members to keep the information exchange and networking possible. Without a working group, our goal of a conference may not be met this calendar year. If you are interested in participating, please email us at nsmsinc@yahoo.com or call and leave a message at (800) 321-2910. Please spread the word and get involved! Thank you.

The NSMS “Blog” is Here

Steve Geigle has created and launched the “NSMS Blog” on the NSMS website. It will allow members and others to post comments, remarks and initiate discussions about a variety of safety management topics and issues. You can participate in the Blog by going to the NSMS website (<http://nsms.us>) and look for the link on the home page along the left-hand column of navigation areas.

FREE ACCESS: Online Certified Safety and Health Manager (CSHM) Educational and Exam Preparation Reference Materials

As a benefit for our current and future dues-paying members, NSMS is **permanently** offering free access to the Certified Safety and Health Manager (CSHM) preparation and educational materials. The online resources, created by NSMS member Steve Geigle, can be found at www.cshmprep.com and the only action an NSMS member needs to take is to email Steve requesting access from that website. You will need to include your current NSMS member number (found on your membership card and certificate). Once the number is verified, you will be granted a username and password to access the online reference materials. This is a great opportunity to brush up on your safety management and technical knowledge and prepare for a successful passing of the CSHM certification examination.

OSHA Incorporates APFs into Its Respiratory Protection Standard

Three years after the agency unveiled the proposed rule in the *Federal Register*, OSHA announced on Aug. 23 that new assigned protection factors (APFs) for respiratory protection programs are being incorporated into the agency's respiratory protection standard. According to OSHA estimates, private-sector employers will spend about \$4.6 million each year complying with the rule.

This APF final rule completes the revision of the reserve sections of OSHA's Respiratory Protection Standard as published in 1998. The Respiratory Protection Standard will now contain provisions necessary for a comprehensive respiratory protection program, including selection and use of respirators, training, medical evaluation, and fit testing.

"This standard helps employers and employees select the right respirator for the job," said Assistant Secretary of Labor for OSHA, Edwin G. Foulke Jr. "And with the right respirator employees will have adequate protection to be safe and healthy at work."

APFs are numbers that indicate the level of workplace respiratory protection that a respirator or class of respirators is expected to provide to employees when used as part of an effective respiratory protection program. An APF table is being included in the final standard to guide employers in the selection of air-purifying, powered air-purifying, supplied-air (or airline respirator), and self-contained breathing apparatus (SCBA) respirators.

Employers must follow these new requirements and use APFs to select the appropriate type of respirator based upon the exposure limit of a contaminant and the level of the contaminant in the workplace. Employers select respirators by comparing the exposure level found in the workplace and the maximum concentration of the contaminant in

which a particular type of respirator can be used (the Maximum Use Concentration, or MUC). Employers generally determine the MUC by multiplying the respirator's APF by the contaminant's exposure limit. If the workplace level of the contaminant is expected to exceed the respirator's MUC, the employer must choose a respirator with a higher APF.

According to OSHA, an estimated 291,085 establishments reported respirator use in industries covered by OSHA's regulation. Most of these establishments (208,528 or 71.6 percent) reported use of filtering face pieces. Substantial percentages of establishments also reported the use of half-mask and full face piece non-powered air-purifying respirators (49.0 and 21.4 percent, respectively). A smaller number of establishments reported use of powered air-purifying respirators (PAPRs) and supplied-air respirators (SARs). Fifteen percent of establishments with respirators (43,154) reported using PAPRs and 19 percent (56,022) reported using SARs.

OSHA's final respiratory standard on APFs was published in the Aug. 24 *Federal Register* -- http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGIS TER&p_id=18846. The final rule becomes effective Nov. 22.

OSHA Seeks To Adopt Globally Harmonized System of Classification and Labeling of Chemicals

On Sept. 7, OSHA announced it is seeking public comment on the implementation of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Adoption of the GHS by OSHA will require officials to propose changes to the agency's Hazard Communication Standard (HCS).

The GHS is a system for standardizing and harmonizing the classification and labeling of chemicals by providing a comprehensive approach to defining the health and physical hazards of chemicals, creating classification processes, and communicating hazard information through uniform labels and safety data sheets, officials said.

"GHS is expected to bring more consistency and clarity, both from a national and international perspective, to hazardous chemical regulations in the workplace," said OSHA Administrator Edwin G. Foulke Jr. "The diverse and sometimes conflicting national and international requirements can create confusion among employers who seek to use hazard information to effectively protect their employees. One of the many benefits of adopting GHS is that it would provide a consistent format for labels and safety data sheets, making the information easier to comprehend and access when making hazard assessments."

To help those who are not familiar with the approach in the GHS, OSHA has prepared a guidance document that summarizes the GHS requirements at <http://www.osha.gov/dsg/hazcom/ghs.html>.

The GHS has been adopted by the United Nations with a goal of broad international adoption of the GHS by 2008. The adoption of the GHS will facilitate international trade by increasing the consistency between the laws in different countries that currently require different information be provided to employers and employees about chemicals during their production, transportation, use and disposal based on jurisdiction.

The agency stated it will publish an Advance Notice of Proposed Rulemaking in the *Federal Register* on Sept. 12. Written comments (in triplicate) must be submitted not later than Nov. 13 to the OSHA Docket Office, Docket No. H-022K, Room N2625, U.S. Department of Labor, 200 Constitution Avenue, NW, Washington, D.C. Electronic comments may be submitted to <http://ecomments.osha.gov>.

NIOSH Issues Health Hazard Evaluation Reports

NIOSH announced on Sept. 19 it has released the following Health Hazard Evaluation Reports: "Evaluation of physical and psychological symptoms following Hurricane Katrina," "Evaluation of exposure at a newspaper printing facility," "Evaluation of exposures in a university research laboratory" and "Evaluation of dermatitis and exposure to metalworking fluids exposure."

"Evaluation of physical and psychological symptoms following Hurricane Katrina" is the result of NIOSH response to requests from union and management representatives to evaluate physical and psychological symptoms among employees of the New Orleans Fire Department (NOFD) and the New Orleans Police Department (NOPD) in the immediate aftermath of Hurricane Katrina.

NIOSH conducted a questionnaire survey to NOFD personnel at all fire houses and staging areas, looking at the prevalence of mental and physical health symptoms. NIOSH also analyzed relationships between health symptoms and factors related to Hurricane Katrina. NIOSH found that:

- Fire fighters whose skin and mouth/nose were in contact with floodwater reported more upper respiratory symptoms and skin rash compared to those not exposed to the floodwater.
- Fire fighters with lower respiratory symptoms and skin rash reported more depressive symptoms than those without lower respiratory symptoms and skin rash.
- Fire fighters involved in gunshot incidents and body recovery reported more posttraumatic stress disorder (PTSD) symptoms than those not involved in these activities.

NIOSH investigators conducted a health hazard evaluation of the NOPD to assess the impact of the Hurricane Katrina disaster on employee mental and physical health. NIOSH gave a questionnaire to NOPD personnel at all district offices, supporting units, and at a Police Association of New Orleans (PANO) Meeting. NIOSH analyzed questionnaire

data to evaluate relationships between health symptoms and exposures related to Hurricane Katrina.

NIOSH found that:

- Twenty-eight percent of participants reported daily Katrina-related upper respiratory symptoms and the risk of these symptoms are related to floodwater contact with eyes, nose, or mouth and exposure to floodwater sediment.
- Those who reported skin contact with floodwater sediment and floodwater in their eyes, nose or mouth were twice as likely to report gastrointestinal symptoms.
- Fifty-four percent of personnel reported skin rash symptoms and the risk of these symptoms were related to skin as well as eyes, nose or mouth contact with floodwater and floodwater sediment.
- Nineteen percent reported symptoms consistent with PTSD. Factors associated with PTSD were assault, family member injury, involvement in crowd control and recovery of bodies.
- Twenty-six percent reported symptoms of major depression two months after the hurricane. NOPD personnel who had rare family contact, injury to a family member, an uninhabitable home, or who were assaulted or isolated from their regular NOPD assignment were more likely to report symptoms of depression.

The findings can be accessed at <http://www.cdc.gov/niosh/hhe/reports/pdfs/2006-0023-3003.pdf> (NOFD) and <http://www.cdc.gov/niosh/hhe/reports/pdfs/2006-0027-3001.pdf> (NOPD).

"Evaluation of exposure at a newspaper printing facility" involves NIOSH investigators responding to an employee request to evaluate exposures to ethylene glycol, propylene glycol, volatile organic compounds, respirable particulate matter and carbon monoxide (CO). NIOSH found:

- No personal breathing zone air samples exceeded occupational exposure limits.
- CO concentrations were elevated in the press room.
- About 25 percent of workers interviewed reported headaches at least twice a week.
- Hand/arm skin rashes were seen on 12 of 41 interviewed workers.
- The correct personal protective equipment (such as gauntlet-type nitrile gloves and barrier creams) was not readily available.

The full report is available at <http://www.cdc.gov/niosh/hhe/reports/pdfs/2005-0361-3005.pdf>.

"Evaluation of exposures in a university research laboratory" is the result of a NIOSH response to management request to evaluate potential employee exposure to aerosolized *Mycobacterium tuberculosis* (*M. tuberculosis*) in an animal bio-safety level 3 (ABSL3) laboratory.

NIOSH found that:

- No evidence was collected suggesting *M. tuberculosis* was being aerosolized outside of contained, controlled chambers during lab procedures.
- Work practices and procedures observed during the site visit provided a high level of protection against potential occupational exposure to *M. tuberculosis*.
- Air flow patterns in the laboratory were appropriate.
- The medical surveillance programs in place were appropriate.

The report can be accessed at <http://www.cdc.gov/niosh/hhe/reports/pdfs/2004-0081-3002.pdf>.

"Evaluation of dermatitis and exposure to metalworking fluids exposure" is the result of a NIOSH response to a union local's request at a facility that manufactures tapered steel roller bearings for use in industrial and agricultural equipment. NIOSH found that:

- Of 46 employees interviewed, four had skin conditions that may be work related.
- Workers have the opportunity to wash hands when necessary.
- Workers were exposed to metalworking fluid (MWF) air concentrations over the NIOSH recommended exposure limit (REL).
- Workers are at risk for developing respiratory problems due to MWF exposures.
- Ventilation systems used to control MWFs mists are ineffective and need maintenance.
- Levels of CO in the heat treating area may be hazardous.

The report can be accessed at <http://www.cdc.gov/niosh/hhe/reports/pdfs/2004-0399-3007.pdf>.

Fact Sheet: Costs of Developing a Disaster Protection, Business Continuity Plan

This list, from Ready.gov, will give you an idea of what it may cost to develop a disaster protection and business continuity plan. Some of what is recommended can be done at little or no cost. Use this list to get started and then consider what else can be done to protect your people and prepare your business.

No Cost

- Meet with your insurance provider to review current coverage.
- Create procedures to quickly evacuate and shelter-in-place. Practice the plans.
- Talk to your people about the company's disaster plans. Two-way communication is central before, during and after a disaster.
- Create an emergency contact list including employee emergency contact information.

- Create a list of critical business contractors and others whom you will use in an emergency.
- Know what kinds of emergencies might affect your company both internally and externally.
- Decide in advance what you will do if your building is unusable.
- Create a list of inventory and equipment, including computer hardware, software and peripherals, for insurance purposes.
- Talk to utility service providers about potential alternatives and identify back-up options.
- Promote family and individual preparedness among your co-workers. Include emergency preparedness information during staff meetings, in newsletters, on company intranet, periodic employee e-mails and other internal communications tools.

Under \$500

- Buy a fire extinguisher and smoke alarm.
- Decide which emergency supplies the company can feasibly provide, if any, and talk to your co-workers about what supplies individuals might want to consider keeping in a personal and portable supply kit.
- Set up a telephone call tree, password-protected page on the company Web site, e-mail alert or call-in voice recording to communicate with employees in an emergency.
- Provide first aid and CPR training to key co-workers.
- Use and keep up-to-date computer anti-virus software and firewalls.
- Attach equipment and cabinets to walls or other stable equipment. Place heavy or breakable objects on low shelves.
- Elevate valuable inventory and electric machinery off the floor in case of flooding.
- If applicable, make sure your building's HVAC system is working properly and well-maintained.
- Back up your records and critical data. Keep a copy offsite.

More than \$500

- Consider additional insurance such as business interruption, flood or earthquake.
- Purchase, install and pre-wire a generator to the building's essential electrical circuits. Provide for other utility alternatives and back-up options.
- Install automatic sprinkler systems, fire hoses and fire-resistant doors and walls.
- Make sure your building meets standards and codes. Consider a professional engineer to evaluate the wind, fire or seismic resistance of your building.
- Consider a security professional to evaluate and/or create your disaster preparedness and business continuity plan.
- Upgrade your building's HVAC system to secure outdoor air intakes and increase filter efficiency.
- Send safety and key emergency response employees to trainings or conferences.

- Provide a large group of employees with first aid and CPR training.

Fact Sheet: Hand & Portable Power Tools

Tools are such a common part of our lives that sometimes we forget they can pose hazards to us. All tools are manufactured with safety in mind, but accidents can occur if we fail to take the time to find and eliminate any hazards associated with the tools. We must learn to recognize the hazards and how to correct them before any accidents occur.

Hazards of Hand Tools

The greatest hazards posed by hand tools result from misuse and improper maintenance. Some examples of this include the following.

- Using a screwdriver as a chisel may cause the blade tip to break off and injure a coworker or yourself. Using a knife blade as a screwdriver can have the same bad result.
- If a wooden handle is cracked, loose or splintered, the head may separate from the handle and injure anyone nearby. Don't tape the handle and think it's fixed. Replace the handle completely or discard the tool.
- A sprung jaw on a wrench can cause slippage and should never be used.
- Using impact tools with mushroomed heads can release flying fragments that cause eye damage or sight loss.
- Never operate hand tools while fatigued or under the influence of medication or alcohol.

General Rules for Portable Power Tools

Handheld power tools can be hazardous when improperly used. Operators need to be properly trained in the use and care of tools before operating them. Recommended training includes understanding the potential hazards associated with power tools and observing the following precautions during use:

- Never carry a power tool by the cord or hose and never yank the cord or hose to disconnect the tool from a power source. This can damage the cord or hose and cause the tool to malfunction. Make sure the grounding prongs are present on tool power cords and extension cords before plugging them in.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- Keep observers at a safe distance from the work area. Only the operators should be in the area in which power tools are being used.
- Secure the work with clamps or a vise to keep your hands free. If the material being worked on breaks loose, it could cause a serious injury to the operator.

- To avoid accidental starting, keep your finger off the switch button when carrying a tool that's plugged in.
- Maintain all tools in accordance with manufacturer's recommendations. Keep the tool's instruction manual, which covers maintenance and safety precaution recommendations.
- Wear manufacturer-recommended protective equipment (e.g. goggles, safety glasses or hard hats) when using the tool.
- Maintain good footing and proper balance when operating tools and wear appropriate clothing (no loose clothing, ties, jewelry, etc.) to avoid becoming entangled in moving parts.
- Remove damaged power tools from service and don't use them again until they've been properly repaired.
- Do not remove guards from a power tool. The manufacturer should provide the necessary guards, which will protect the operator and nearby coworkers from the following:
 - Point of operation -- this is the point at which material comes into contact with the machine.
 - Rotating parts -- to protect the operator from becoming entangled in the parts.
 - Chips and sparks -- most commonly used on bench grinders to protect the operator's eyes.
- Never remove a safety guard when a tool is in use.

Remember to practice safety. Don't learn it by accident.

Fact sheet courtesy of the Texas Department of Insurance, Division of Workers' Compensation: E-mail resourcecenter@tdi.state.tx.us or call (512) 804-4620 for more information.

Tips for Developing an Emergency Communications Plan

Whether family members are at work or school, in the same home or geographically separated, AT&T reminds consumers to be AWARE -- Always Watchful, Alert and Ready in an Emergency -- with tips for developing an emergency communications plan, such as:

- Create a Plan. Develop an emergency communications plan, including communications methods and individuals to call. Post it on the refrigerator, keep a copy with emergency supplies and provide copies to each family member.
- Prepare for the Worst-Case Scenario. During natural disasters, such as hurricanes or flooding, wire line services can be interrupted for extended periods of time because of damage caused by high winds or flooding. Wireless phones may serve as alternative means of communication.

- Conduct an Inventory. Review existing communications devices and determine whether family members would benefit by adding any services or phones that enable everyone to stay connected.
- Have a Backup Phone. Be sure that you have at least one corded telephone that is not dependent on electricity in case of an electrical power outage. Cordless telephones usually have receivers that are electrically charged, and thus will not work if there is a power outage. Consider keeping a basic hard-wired phone and a wireless phone on hand for emergencies to enable communication with safety officials and loved ones, even when the power is out.
- Compile Vital Information and Equip Family Members. Create a communications safety tool box, which includes a prioritized list (both electronic and hard copy) of phone numbers and e-mail addresses for family members, copies of business cards and personal documents such as passports and copies of birth certificates. Also, make sure that you have easy access to emergency phone numbers such as local hospitals, your personal doctor and your home insurance agent, by programming numbers into your wireless phone.
- Create IDs. Create photo IDs for every family member using the template available on <http://www.att.com/vitalconnections>.
- Know Where to Meet. Agree on a physical and virtual meeting place such as a voice mailbox or online chat site.
- Practical Wireless Phone Tips:
 - Familiarize yourself with the text-messaging capabilities of your phone. Text messages will often go through quicker than voice calls during an emergency situation.
 - Program all of your emergency contact numbers into your wireless phone, including the police department, fire station and hospital, as well as your family members.
 - Keep your wireless phone batteries charged at all times. Have an alternate plan to recharge your battery in case of power outages (e.g., charging via your car charger, extra wireless phone batteries, use of a disposable wireless phone battery).
 - Keep your wireless phone dry. The biggest threat to your device during a hurricane is water, so keep your equipment safe from the elements.
 - Forward your home number to your wireless number in the event of an evacuation. Since call forwarding is based out of the telephone central office, you will get incoming calls from your landline phone, even if your local telephone service is disrupted at your home. In the unlikely event that the central office is offline, call forwarding may not work.
 - Keep non-emergency calls to a minimum.
 - When using a wireless phone, wait 10 seconds before redialing a call. This should alleviate some stress to the network. If calls do not immediately connect or if you hear a fast busy signal, try again in a few minutes.
 - Use your wireless phone to access weather and news updates.
 - Use your camera phone to snap, store and send photos of damaged property to your insurance company.

- **Be Radio-Ready.** Make sure that you have a working, battery-operated radio. The radio can keep you up to date on the latest weather reports, public safety issues and evacuation notices.

Study: Sunscreen Can Damage Skin

The effects of sunlight are well known -- overexposure can cause immediate damage, such as sunburn, and long-term problems, such as skin cancer and cataracts. However, a research team led by University of California - Riverside (UC Riverside) chemists reports that unless people out in the sun apply sunscreen often, the sunscreen itself can become harmful to the skin.

When skin is exposed to sunlight, ultraviolet radiation (UV) is absorbed by skin molecules that then can generate harmful compounds, called reactive oxygen species or ROS, which are highly reactive molecules that can cause "oxidative damage." For example, ROS can react with cellular components like cell walls, lipid membranes, mitochondria and DNA, leading to skin damage and increasing the visible signs of aging.

When sunscreen is applied on the skin, however, special molecules -- called UV filters -- contained in the sunscreen, cut down the amount of UV radiation that can penetrate the skin. Over time, though, these filters penetrate into the skin below the surface of the epidermis, the outermost layer of skin, leaving the body vulnerable to UV radiation.

Led by Kerry M. Hanson, a senior research scientist in the Department of Chemistry at UC Riverside, the researchers report that three UV filters (octylmethoxycinnamate, benzophenone-3 and octocrylene), which are approved by the Food and Drug Administration and widely used in sunscreens, generate ROS in skin themselves when exposed to ultraviolet radiation, thus augmenting the ROS that is naturally produced. The researchers note that the additional ROS are generated only when the UV filters have penetrated into the skin and, at the same time, sunscreen has not been reapplied to prevent ultraviolet radiation from reaching these filters.

"Sunscreens do an excellent job protecting against sunburn when used correctly," said Hanson, who works in the laboratory of Christopher Bardeen, an assistant professor of chemistry at UC Riverside. "This means using a sunscreen with a high sun protection factor and applying it uniformly on the skin. Our data show, however, that if coverage at the skin surface is low, the UV filters in sunscreens that have penetrated into the epidermis can potentially do more harm than good. More advanced sunscreens that ensure that the UV-filters stay on the skin surface are needed; such filters would reduce the level of UV-induced ROS. Another solution may be to mix the UV-filters with antioxidants since antioxidants have been shown to reduce UV-induced ROS levels in the skin."

In their research, Hanson and colleagues used epidermal model tissue and applied sunscreen to the surface to test the effect of sunscreen penetration on ROS levels in the

deep epidermis. A two-photon fluorescence microscope allowed them to visualize ROS generation occurring below the skin surface. The ROS activity was detected using a probe molecule whose fluorescent properties change upon exposure to ROS. On comparing images taken before and after the skin was exposed to UV radiation, they found that ROS generation in the skin increased after sunscreen penetration.

About 95 percent of the visible signs of aging are associated with UV exposure. About 90 percent of a person's total life-time UV exposure is obtained before the person is 18 years of age. Only a few UV-filters are available that block "UV-A," the wavelengths that penetrate more deeply into the skin, all the way into the dermis where collagen exists.

"For now, the best advice is to use sunscreens and re-apply them often -- the Skin Cancer Foundation recommends every two hours, and especially after sweating or swimming, which can wash away sunscreen -- to reduce the amount of UV radiation from getting through to filters that have penetrated the skin," Bardeen said. "This, in turn, would reduce ROS generation."

Study: Bipolar Disorder Exacts Twice Depression's Toll in Workplace Productivity

Bipolar disorder carries twice as much in lost productivity costs as major depressive disorder, even though major depression is more than six times as prevalent, according to a study funded by the National Institutes of Health's (NIH) National Institute of Mental Health (NIMH). Bipolar disorder costs the U.S. workplace \$14.1 billion annually, NIMH reported on Sept. 1.

According to the study, U.S. worker with bipolar disorder averaged 65.5 lost workdays in a year, compared to 27.2 for major depression. Researchers traced the higher toll mostly to bipolar disorder's more severe depressive episodes rather than to its agitated manic periods. The study by Drs. Ronald Kessler, Philip Wang, Harvard University, and colleagues, is among two on mood disorders in the workplace published in the September 2006 issue of the *American Journal of Psychiatry*.

Their study is the first to distinguish the impact of depressive episodes due to bipolar disorder from those due to major depressive disorder on the workplace. It is based on one-year data from 3,378 employed respondents to the National Co-morbidity Survey Replication, a nationally representative household survey of 9,282 U.S. adults, conducted in 2001 to 2003.

The researchers measured the persistence of the disorders by asking respondents how many days during the past year they experienced an episode of mood disorder. They judged the severity based on symptoms during a worst month. Lost work days due to absence or poor functioning on the job, combined with salary data, yielded an estimate of lost productivity due to the disorders.

Poor functioning while at work accounted for more lost days than absenteeism. Although only about 1 percent of workers have bipolar disorder in a year, compared to 6.4 percent with major depression, the researchers projected that bipolar disorder accounts for 96.2 million lost workdays and \$14.1 billion in lost salary-equivalent productivity, compared to 225 million workdays and \$36.6 billion for major depression annually in the United States.

About three-fourths of bipolar respondents had experienced depressive episodes over the past year, with about 63 percent also having agitated manic or hypomanic episodes. The bipolar-associated depressive episodes were much more persistent -- affecting 134 to 164 days -- compared to only 98 days for major depression. The bipolar-associated depressive episodes were also more severe. All measures of lost work performance were consistently higher among workers with bipolar disorder who had major depressive episodes than those who reported only manic or hypomanic episodes. The latter workers' lost performance was on a par with workers who had major depressive disorder.

"Major depressive episodes due to bipolar disorder are sometimes incorrectly treated as major depressive disorder," Wang said. "Since antidepressants can trigger the onset of mania, workplace programs should first rule out the possibility that a depressive episode may be due to bipolar disorder."

Future effectiveness trials could gauge the return on investment for employers offering coordinated evaluations and treatment for both mood disorders, he said.

Research Reveals How Jet Lag Disrupts Internal Clock; Findings Have Implications for Shift Workers

Symptoms of extreme jet lag may result from the body overshooting as it tries to adjust to particularly large leaps forward in time, according to research from the University of Massachusetts Amherst (UMass Amherst) that models circadian rhythms in rats.

To transition smoothly to a different time zone, the researchers recommend advancing in chunks of not more than four hours, thus allowing the body's clocks to remain coordinated. The researchers said that their work also has implications for rotational shift workers, such as nurses and airline attendants, as some shifts will be much harder for the body to adjust to than others.

The analytical model, by UMass Amherst's Hava Siegelmann, appears in the current issue of the *Journal of Biological Rhythms*. Tanya Leise of Amherst College co-authored the work.

The body's sleep and wakefulness patterns are just two of the physiological processes that run on a roughly 24-hour-cycle, or circadian clock, Siegelmann said. These and other processes are coordinated by the master pacemaker, or clock, an area of the brain with a

natural cycle that is approximately 24 hours long. In mammals, the master clock is a group of cells called the suprachiasmatic nucleus (SCN), which lies at the base of the hypothalamus. The SCN receives information on daylight sent from the eyes' optic nerve and can be reset by environmental cues such as light.

Recent research suggests that every cell in the body actually has its own clock -- liver cells prepare for digestion at particular times of day; patterns of hormone production and brain activity exhibit cyclic peaks and valleys, Siegelmann said.

"The circadian system is really fundamental, it affects our behavior, our physiology and emotions," she said. "The clock organizes the whole body into a very nice dance, and it organizes people together into a larger social orchestra."

The so-called "local clocks" have natural circadian cycles that range from 21 to 26 hours, Siegelmann said. They are synchronized by the SCN, but the pathways and mechanisms by which this coordination happens aren't fully understood. Evidence has recently emerged that the SCN itself is compartmentalized. One clump of cells responds to and processes information about light; they then alert an intermediate group of cells that transmit the information to more peripheral components.

This hierarchy within the circadian system introduces a time-delay in getting the entire body adjusted to a new environment, Siegelmann suggested. The delay is based, in part, on the strength of the connections between the different parts of the SCN, between the SCN and the peripheral clocks, and on the differing rhythms of the local clocks, she said.

To explore the dynamics of the system and how it responds to disruption, Siegelmann and Leise designed a model with parameters reflecting this hierarchical nature. The model accounts for the SCN's light-responsive component, its intermediate component, and the various peripheral components. It incorporates behavioral data, physiological data and what's known about differences in natural circadian rhythms in the peripheral tissues. In rats, for example, internal organs such as the liver and lungs take a relatively long time to become synchronized with the SCN.

Simulations of the model revealed certain properties about both the stability and adaptability of the system, Siegelmann said. The light sensitive compartment of the master clock responds quickly, providing flexibility, whereas the intermediate compartment of the SCN seems to act as a buffer against small perturbations in the cycle.

The simulations suggest that the system gets most out of whack when the master clock is shifted forward between five and eight hours. After such a large leap, it appears that the master clock actually overshoots the desired time. Then, following a slight delay, the intermediate component and some of the peripheral components overshoot as well, depending on their inherent circadian time and their connectivity with the master clock. For example, the peripheral components that already tend to lag actually try to catch up by backtracking, achieving a leap forward of six hours by delaying themselves 18 hours.

So what is the best strategy for reducing jet lag? Consider the system dynamics, Siegelmann said, and aim for the largest shift of the master clock that still leads to coordinated shifting. Their analysis suggests that a four-hour advance pushes the entire system in the right direction, causing all components to advance smoothly and quickly. And while their model addressed the system in on rats, a nocturnal animal, the researchers note the general principle is likely to be widely applicable.

"Jet lag isn't a horrible thing that we have to conquer -- and our clock is a very important regulator at a basic level -- medications to target the clock may be counter-productive if they affect future oscillatory behavior," she said. "Instead, take a stopover if you are traveling for more than six hours -- relax for a day and then continue. Understand and go with your body's natural oscillations."

The work also has implications for rotational shift workers, such as nurses and airline attendants, Siegelmann said. There are shifts that are much harder for the body than others, and if employers are expected be alert and functional; a 9 p.m. to 3 a.m. shift might bode better than a midnight to 6 a.m. shift.

"I think people will pay more attention to this as we learn more," she said. "If you are flying to a meeting where you need to be alert and able to concentrate, you can prepare your body for those particular goals by making the shift gradually."

Study: Long Trips Associated With Greater Risk of Venous Thrombosis

Traveling for more than four hours by air, car, bus or train is associated with an increased risk of venous thrombosis, according to a study. In research involving nearly 2,000 people with a first thrombosis in the Netherlands, Dr. Suzanne Cannegieter and colleagues from the Leiden University Medical Center looked at the risk factors for thrombosis compared with their partners, who did not have thrombosis. The results, published in the international open-access medical journal *PLoS (Public Library of Science) Medicine*, showed that 233 of the people with thrombosis had traveled for more than four hours in the eight weeks preceding the event. Although the overall risk of developing thrombosis is still low, traveling in general was found to increase the risk of venous thrombosis two-fold, the researchers said. The risk was highest in the first week after traveling, and the overall risk of flying was largely similar to the risks of traveling by car, bus, or train.

The researchers found that the risk was increased for certain groups. For example, the risk was up to eight-fold in people who also had a specific mutation in one of the genes involved in clotting; almost 10-fold in those who had a body mass index of more than 30 kg/m²; four-fold in those who were more than 6 foot, 3 inches tall; and more than 20-fold in those who used oral contraceptives. For air travel these findings of risk in particular groups were more apparent than for other modes of travel, and in addition, people shorter

than 5 feet, 3 inches had an almost five-fold risk of thrombosis after air travel. However, the numbers of people in each of these groups was small and hence the estimates of risk must be interpreted carefully.

The authors concluded that the risk of venous thrombosis is moderately increased for all these modes of travel, and that in particular groups of people the risk is highly increased. The study could not show the mechanism of the increased risk, although the association of thrombosis with all types of travel, not just air travel, suggests that immobility is a key factor. Other mechanisms, such as reduced oxygen levels triggering clotting, may be involved in the particularly increased risk seen in air travel in some groups.

For those who have an increased risk, the authors say that preventative measure such as exercises may be warranted. However, the study's results apply only to people younger than 70 years of age, and it is likely that other characteristics exist that also increase the risk. These characteristics are being investigated in an ongoing study.

Study Links Brain Cancer to Workplace Lead Exposure

People who are routinely exposed to lead on the job are 50 percent more likely to die from brain cancer than people who are not exposed to the toxic metal, according to a University of Rochester Medical Center study announced on Aug. 28. Little is known about what causes brain cancer; the only established risk factor is radiation, according to the American Cancer Society. Results of other studies attempting to show a clear link between lead and cancer have been inconclusive, the researchers said. The new data, based on information from the U.S. Census Bureau and the National Death Index, may be the largest study ever to find a lead-cancer link. In doing so, it provides further evidence that widespread environmental risk factors such as lead must be explored, said study author Edwin van Wijngaarden, Ph.D. "If we are able to help explain the cause of even 1 or 2 percent of the total number of cases, that's important," said van Wijngaarden, an assistant professor and epidemiologist in the Department of Community and Preventive Medicine at the University of Rochester.

The study computed the risk estimates for lead exposure and brain cancer from a census sample of 317,968 people who reported their occupations between 1979 and 1981. Van Wijngaarden was looking for evidence of an exposure-response trend, or a rise in cancer incidence or mortality associated with an exposure to a toxic substance. The goal among researchers who do this type of investigation is to identify preventable, environmental risk factors that might cause the gene mutations that lead to cancer. Each occupation was classified into categories established by the National Cancer Institute (NCI). The NCI job matrix for lead is designed to estimate the likelihood of exposure and the intensity of exposure. It rates each occupation on a scale from zero (no exposure) to three (high exposure).

Gas station attendants from the 1970s and early 1980s, for example, were estimated to have a high probability of exposure, but only medium intensity of exposure because their direct contact with leaded gasoline was not as great as the potential for contact. The jobs with the highest probability and intensity of lead exposure were painters and automobile mechanics. However, firefighters, engineers, automobile assemblers, truck drivers, plumbers, welders, and printers or typesetters were all among those individuals with some likelihood of lead exposure, according to the NCI matrix. When Van Wijngaarden applied the matrix to nearly 318,000 people and followed their cancer rates for nine years, he found 119 brain cancer deaths. The death rate among people with jobs that potentially exposed them to lead was 50 percent higher than unexposed people, and the number of deaths was larger than in many previous studies, van Wijngaarden said. Other trends that emerged were slightly higher death rates among less educated and married individuals.

Scientists have suspected for years that lead is a carcinogen, which passes through the blood-brain barrier, making the brain especially sensitive to the toxic effects of lead. Van Wijngaarden is continuing his research with a pilot study to measure the actual bone-lead levels in people who have been diagnosed with brain tumors. "My interest is in exploring the long-term implications of lead exposure," van Wijngaarden said. "Lately, a lot of the information about lead and its toxicity has focused on children. We do know that in young people it can cause acute illness and behavioral problems. But what is under appreciated, I believe, are the chronic health effects."

One study, published in the May 23, 2006, issue of *Neurology*, found that people who worked with lead have significant loss of brain cells and damage to brain tissue. The study examined 532 former employees of a chemical manufacturing plant (see *Study: Lead Exposure Results in Brain Cell Loss, Damage Years Later* at <http://www.ohsonline.com>).

Karaoke Victims

Barroom researchers have confirmed what many already suspect: karaoke singing can cause pain. Strenuous singing can injure the voice and increase the risk of deafness, according to two studies.

Researchers in Korea measured sound pressure levels during ballads and rock. They also measured each singer's hearing threshold levels before and after one hundred minutes of karaoke. Results showed that noise levels frequently exceeded the U.S. Occupational Safety and Health Administration's limit of 115 decibels, roughly equivalent to having a pneumatic drill going a meter away from your head.

"Up to eight decibels of significant hearing loss was found at the most important human hearing frequency band, after about two hours of karaoke. It may pose a serious threat," warns the study, in the *International Journal of Industrial Ergonomics* (2003, 31: 375-85).

In a second study, Hong Kong University researchers warn in the *Journal of Voice* (2003; 17:216- 27) that karaoke singers risk committing vocal kamikaze. "As most of the karaoke singers have no formal training in singing, these amateur singers are more vulnerable to developing voice problems under these intensive singing activities," they discovered.

If you really want to trash your voice, hit the booze, avoid water, and go crazy. "Subjects who sang continuously without drinking and taking rests showed significant changes in the jitter measure (i.e., warbling) and the highest pitch they could produce during singing," the researchers conclude.

Safety Training Strategies – "M&M Investigation"

Supervisors sometimes do not comprehend the importance of a thorough investigation of a claim. To help them understand this, pass out small packages of M&M's while telling them that they have to answer two questions before opening their package.

The first question is to write down the number of M&M's in the package. While they are doing this, ask them for reasons why they might not get the number right. (They can feel the M&Ms through the plastic bag). In a little while they have all written out the number of M&Ms in their package.

Next, ask them to write down the number of M&M's by color that is in their package while again, not opening the package. At this point everyone drops their package, or shakes their head knowing they cannot accomplish the task.

This is when you can start the lesson on thorough investigations of claims. Tell them that they have the same chance of determining the causes and corrective action to prevent reoccurrence of a claim as they had in counting the number of each color M&M in the package without opening the package. After the lesson, claim reporting should get a lot better.

IT'S COOL TO BE SAFE (*Don't Be A Dum-Dum*)

Here is a safety idea from a chemical plant that had concerns about moving violations at their plant. The Employee Health and Safety Committee got together and did a Traffic Safety Blitz. The committee members wore orange vests and were armed with handouts, and positioned themselves at strategic traffic intersections in the plant.

They had Ice Cream Coupons for the good drivers (wearing seat belts, proper speed, no cell phone use while driving, stopping at stop signs, etc). They thanked them for driving

safely and handed them a coupon saying, "Thanks for driving safely, Here is a cool treat, Remember, It's cool to be safe". Their goal was to raise awareness and encourage right behaviors.

The drivers out of compliance got the following "Dum-Dum business card:

Don't be a Dum-Dum...Stop Buckle Up
No cell phone use while driving
Obey Speed Limits.....For Safety!

They also included a Dum-Dum Sucker treat for them. This seemed to be well received.

Safety Tidbits (from "Safety Stuff" by Richard Hawk Inc.
<http://www.richardhawkinc.com>)

- Your odds of drowning in the bath are the same as suffocating in bed: 1 in 10,948.
- According to a two-year emergency-room study in Norway men are at greater risk of being bitten by dogs, adult women by cats, and young girls by horses.
- The world's worst rail disaster occurred in 1917 outside Modane, France.
Fatalities: 543
- An affliction rarely seen by physicians practicing outside of easy driving distance of gambling casinos: slot-machine tendonitis.
- Annual risk of dying by allergy to prescribed drugs: 1 in a million.
- A twenty-year study by Bristol University indicates that men who do not shave every day are more than three times as likely to suffer a stroke as daily shavers.
- The "Great Influenza" during 1918-19 killed more people in 24 weeks than AIDS has killed in 24 years.
- The odds that a *pedestrian* killed by a motor vehicle was drunk: 1 in 3.
- At least 10 countries have the nuclear capacity to "destroy the world."
- The risk that a rear-end collision will be fatal: 1 in 2,000.
- In the last century, the average life span has increased by over 30 years.
- The U.S. averages 708 tornadoes a year.
- The riskiest time for *nonfatal* accidents is Fridays between 4 and 6 p.m.