

# Nanomaterials: The Future of Personal Protective Equipment

By Joe Walker

Editor, Protection Update

**P**ersonal protective equipment (PPE) of the future will be built on a foundation of nanomaterials that will yield a range of new properties to save more lives and prevent more injuries, as well as affording workers enhanced communication, increased comfort and greater durability.

That is the bold new world of PPE envisioned by one of the leading U.S. authorities on nanotechnology science. Richard W. Siegel, Ph.D., founding director of the Rensselaer Nanotechnology Center at Rensselaer Polytechnic Institute, Troy, N.Y., shared his perspectives at "Protection 2033," a symposium on worker health and safety over the next 25 years. Dr. Siegel is a pioneer in the field of nanotechnology, and his research has been recognized around the world. The International Safety Equipment Association (ISEA) sponsored the event in November 2008 to commemorate its 75th anniversary and as a look ahead to its centennial year.

What new technologies did Siegel's crystal ball reveal and how will they translate into better PPE? Workers and those responsible for protecting them will have numerous options from which to choose.

In the area of eye and face protection, the professor predicts tougher, more scratch-resistant plastic face masks and spectacles with transparency and reflectivity that workers can tune to their needs or that will respond automatically to their environment. And this eye/face protection will have built-in, embedded electronic communications devices and instrumentation, along with interactive displays powered by lightweight batteries. They will be equipped with sensors for thermal, chemical and biological monitoring.

Head protection is likely to be transparent to enhance all-around visibility, and made from lighter weight, tougher

ceramic/polymer-nanocomposite armor. It also will come equipped with embedded communications devices, as well as sensors to detect and warn of hazardous environments, and to provide thermal management (heating, cooling). Similar advances will provide hearing protection that is more active and responsive, adjusting to fluctuations in workplace noise level.

Hand and foot protection also will benefit from nanomaterials. Expect lighter weight, ceramic-nanocomposite armor embedded in flexible polymer composites to yield more robust footwear and gloves that heal themselves. And these protective devices also will have embedded, responsive thermal management systems for greater comfort, and embedded sensors to detect and warn of environments carrying thermal, chemical or biological threats. Siegel even envisions foot and hand protection having built-in first-aid with therapeutic delivery in the event of an injury, and more work-efficient materials to enhance performance and reduce fatigue.

Siegel predicts that some of the most profound advances will be made in protective and high-visibility apparel. These enhancements will be derived from instrumented, lightweight, responsive textiles that use tougher, wear-resistant polymers that also benefit from embedded, ceramic-composite armor. Like future hand and foot protection, these garments will have embedded warning, thermal-management and first-aid systems.

High- or modulated-visibility (tunable) textiles powered by lightweight, flexible batteries embedded in the fabric will enable manufacturers to produce garments that are visible day or night — at any level of light. And when the need arises, these items will be equipped with electronic communications systems with interactive displays and remote monitoring of worker conditions. ▶24

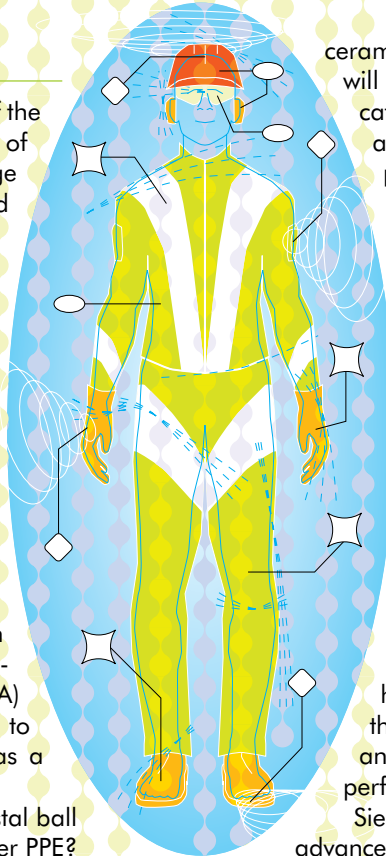


ILLUSTRATION BY SAM FERRO

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## MSA's Ryan Receives ISEA Service Award



MSA Board Chairman John T. Ryan III is the recipient of the International Safety Equipment Association's (ISEA's) Robert B. Hurley Distinguished Service Award for 2008.

He was honored at ISEA's Fall Meeting, Nov. 10, in Arlington, Va. The annual award recognizes individuals who have dedicated their professional lives to worker safety and health. Hurley was a long-time safety product manufacturing executive who died in 2002.

Safety is the Ryan family legacy. Founded by his grandfather, John Ryan, Sr., and George Dieke in 1914, publicly-traded MSA is now a world leader in the design, manufacture and supply of occupational health and safety equipment for industrial workers, emergency responders, military personnel and weekend do-it-yourselfers. With assistance from Thomas Edison, MSA developed the first flameless electric miner's cap lamp.

John Ryan III began his work at Pittsburgh-based MSA in 1969. From 1974 to 1986, he served in MSA's International Division, covering operations in South America, Asia and the Middle East. An MSA director since 1981, he was executive vice president from 1986 to 1990, overseeing the company's U.S. operations. In 1990, he was elected company president, and the following year assumed the additional responsibilities of chairman and CEO. He retired in May 2008, but continues as board chairman.

His safety leadership extends beyond the confines of his company. He served on the ISEA Board of Trustees from 1993–2000 and was chairman for the final two years of his tenure. As chairman, he characteristically gave broad support to the ISEA mission, culminating in the association's transformation to the International Safety Equipment Association at the turn of the millennium.

Ryan and his company also have participated broadly in other associations that protect the nation's workforce, including the National Fire Protection Association and American Industrial Hygiene Association. Ryan, himself, participates actively in many civic organizations in Pittsburgh and nationally, and is a staunch supporter of his alma mater, the University of Notre Dame. Ryan also has an M.B.A. from Harvard University and served as a U.S. Army intelligence officer. ●

### NANOMATERIALS

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In a real sense, the future of worker protection looks very bright. But how far away are these PPE advances? While some may not be available until ISEA's 100th anniversary, others could be just around the corner. A show of hands at the "Protection 2033" symposium indicated that a number of ISEA member companies already are working to apply some of these miraculous new technologies to their products. Stay tuned.

#### With Nanotechnology's Promise Also Comes Challenges

While carrying great promise for products that protect workers better, nanotechnology also presents new challenges in protecting workers. That was one conclusion of John Howard, M.D., former director of the National Institute for Occupational Safety and Health (NIOSH), who examined the future of occupational safety and health at "Protection 2033."

"Nanomaterials present new challenges to understanding, predicting and managing potential health risks to workers," Howard said. "Following our staid 20th century histori-

cal practices, by the time a material is in commerce, scientific data on the health effects in exposed workers or the public — especially long-term health effects — are largely still unavailable and a government risk management that is specific is still decades away.

"In the case of nanomaterials, the uncertainties are magnified because the characteristics of nanomaterials may be different from those of the larger particles with the same chemical composition... As we forge ahead with these 21st century technologies, we must simultaneously take a hard look at our current risk characterization, risk control and risk communications methods ... and ask ourselves: 'Are they the ones that will best serve as effective tools to help us achieve out global occupational safety and health goals in a changing 21st century world?'"

(Editor's note: The U.S. Occupational Safety and Health Administration (OSHA) recently posted on its Web site a new Safety and Health Topics Page on nanotechnology; find out more in the "Making Workers Safer Around the Nation" column in this *Protection Update*.)

Howard cited other profound challenges to protecting workers over the next 25 years, including (1) changing demo- ▶28

## Protection UPDATE

News from the International Safety Equipment Association

### Protection Update

is the newsletter for the ISEA Partnership for Worker Protection program. It is intended for anyone who specifies, purchases or uses personal protective equipment, and those who regulate it.

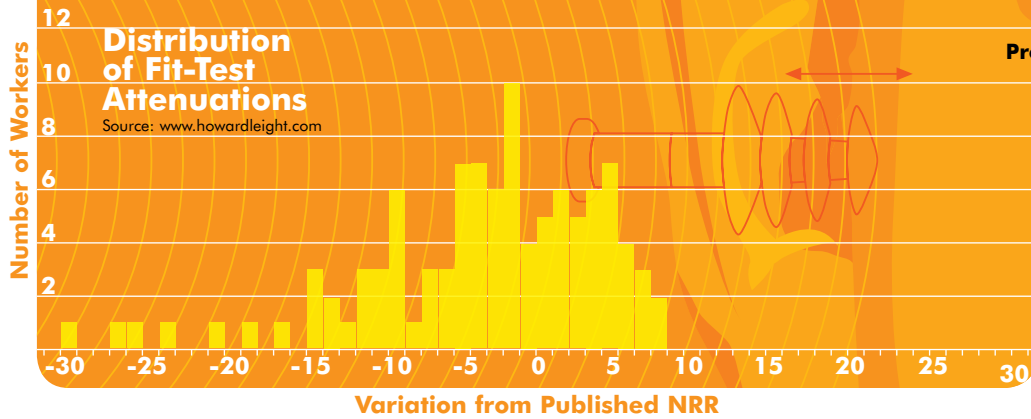
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## Hearing Protection Findings Stand Conventional Wisdom on Ear

By Brad Witt

Sperian Hearing Protection, LLC

Conventional wisdom has always held that properly inserting an earplug — while requiring some technique — was essentially a no-brainer. As a result, safety managers typically have offered hearing protection devices with the assumption that fitting them is intuitive and fairly self-explanatory, and have provided only generalized group instruction, at best.

But this group-training approach may be one of the reasons why rates of noise-induced hearing loss and corresponding compensation claims continue to climb worldwide.

The message simply does not get through. Yet the difference between a good earplug fit and a bad one can be as much as 30 decibels (dB) of attenuation.

For decades, studies in the workplace have shown real-world attenuation (noise blocking) of hearing protectors to be less than the published Noise Reduction Rating (NRR) for many workers. These studies have spawned a variety of de-rating schemes for hearing protectors, which are often misunderstood or misapplied.

While well intentioned, these efforts do not touch the core of the problem. More recent studies show that a significant core of workers does achieve good attenuation. What's the difference? The answer: Individual, one-on-one training. In addition, new subjective fit-testing systems make it easy to incorporate individual training into an ongoing Hearing Conservation Program (HCP).

Field research conducted by the Howard Leight Acoustic Lab on 100 workers using earplugs from a variety of manufacturers showed that one-third of the workers achieved attenuation slightly higher than the

published NRR, another one-third showed attenuation within 5 dB below the published NRR, and the remaining one-third showed significantly lower attenuation.

Moreover, the more often a worker had received individual training in the proper use of hearing protectors, the more likely he or she was to achieve a good fit. The same cannot be said for group training. When measuring good attenuation in the field, it appeared to make no difference whether a worker had attended zero, five or 10 group training sessions in hearing protection.

Unfortunately, individual training has always been time consuming, and it has not always been possible to make workers understand their vulnerability. Now, newer fit-testing systems are available that can help on both counts. We have always known that one of the best ways to get a worker's attention is to show him/her a "spike" of frequency loss on the annual audiogram. With these new systems, a similar impact can be achieved by showing workers exactly how much attenuation they are getting from their earplugs, and how much they can improve attenuation with proper fit.

Some fit-testing systems, such as VeriPRO™ from Howard Leight, can use the worker's own unmodified earplugs, and fit testing can be performed in virtually any setting. The system uses a three-part process to determine the effectiveness of an employee's earplug fit over a range of frequencies. The result, known as a Personal Attenuation Rating (PAR), identifies the actual protection an employee receives from his or her earplug in each ear. This procedure allows safety managers to determine if their employees are receiving optimal protection, require additional training on how to fit their earplugs, or need to try a different model. ●

### Look for Hearing Protection from ISEA Members

Protection Update readers are encouraged to specify hearing protection from the following ISEA Members:

- 3M Company (AO Safety, E-A-R, Peltor brands)
- Bose Corp.
- ERB Industries
- Gateway Safety
- Gentex Corp.
- Honeywell (Fibre-Metal, North Safety brands)
- Jackson Safety
- Magid Glove and Safety
- MCR Safety
- Moldex-Metric
- MSA
- Sellstrom Manufacturing
- Sperian Protection (Howard Leight, Bilsom brands)
- Transportation Safety Apparel
- U.S. Safety



**ABOUT THE AUTHOR**  
Brad Witt is director, hearing conservation, for Sperian Hearing Protection, LLC, San Diego, Calif. In addition to hearing protection, the ISEA member company also makes eye, fall, hand, foot, head and respiratory protection, eyewash and shower equipment, instruments and respiratory protective escape devices. Reach Witt at 800-430-5490 or [bwitt@sperian-protection.com](mailto:bwitt@sperian-protection.com).

## WASHINGTON WATCH

# ISEA Advocates Safety, Health Management System and Foresees Vigorous OSHA Activity in 2009

By Daniel I. Glucksman

International Safety Equipment Association

We begin 2009 expecting the U.S. Occupational Safety and Health Administration (OSHA) to publish more proposed and final rules than it has in the recent past. ISEA understands OSHA staff members have been working on regulatory text for various projects, as discussed below. In addition, the health and safety community could also see, in the coming years, larger changes in workplace safety.

The International Safety Equipment Association (ISEA) spoke with staff from the Obama transition team in mid-December. We recommended the agency consider an approach that would favor a safety and health management system. As many readers of *Protection Update* and *EHS Today* know, the basic concept behind this type of risk-based system is that employers and employees assess risks, develop and implement a plan to reduce the risks, and determine if the plan worked; if not, the plan is revised until its intended goals are met.

ISEA recommended that senior-level officials from the White House and the Labor Department convene a national conference to gather thoughts from stakeholders on how OSHA can be overhauled and revived to become more relevant to workers and workplaces of the 21st century. Many agree the current system of technical standards for specific activities in specific industries is not sustainable in today's economy.

While these larger discussions might be taking place, there are a number of regulatory projects at OSHA that could begin to move soon, such as the following:

● **Final Rule Stage:** The low-hanging fruit.

1. **Updating OSHA Standards Based on National Consensus Standards.** ISEA and others argued against this proposed rule that would have reduced the relevance of ANSI and ASTM standards. Under this proposed rule, the only test for OSHA's approval of a new standard would have

been whether the standard met the so-called "Good Design Criteria." There would have been no consideration about whether a new standard is as protective as other standards already recognized by OSHA. At press time, this issue was still pending.

2. **Abbreviated Bitrix Qualitative Fit-Testing Protocol.** ISEA supported this new fit-test protocol because a shorter qualitative fit test might encourage more employers to conduct fit testing. In addition, ISEA recommended a validating study. OSHA says a final rule could be published in November or any time after that. At press time, it has not been published.

● **Proposed Rule Stage:** Comment periods have closed on these rules; the next step is a final rule.

1. **Confined Spaces in Construction.**

OSHA may write a new standard to protect construction workers who enter confined spaces. A general industry confined space rule was published in 1993 and some construction employers used that standard. However, stakeholders say a standard for the construction industry is required, too. ISEA submitted comments and testified at the hearing on this issue, advocating the use of fall protection, personnel retrieval systems and continuous monitoring in all confined spaces. OSHA did not propose a date for next action.

2. **Electric Power Transmission and Distribution; Electrical Protective Equipment.**

This proposed rule would update safety and health practices in the electric power industry, notably the use of fall-arrest equipment. The rule would harmonize general industry and construction work so that safety measures are the same for similar work in any industry. ISEA supported this proposed rule and submitted comments. OSHA will take action on this rule in 2009.

3. **General Working Conditions for Shipyard Employment.**

The current proposal addressing general working conditions in shipyards is the last part of an OSHA project on shipyards. This rule-



#### ABOUT THE AUTHOR

Dan Glucksman is director of public affairs for the International Safety Equipment Association, where he directs the legislative and regulatory program for the association and its product groups. His "Washington Watch" column is a regular feature of *Protection Update*. Reach him at [dglucksman@safetysystem.org](mailto:dglucksman@safetysystem.org) or 703-525-1695.

## WASHINGTON WATCH

CONTINUED

## Order Complete Set of ANSI/ISEA Standards at Deep Discount

ISEA is offering a complete set of its American National Standards and the use and selection guide for eye and face protection at 30 percent off the price of purchasing the publications individually. For \$290 plus \$10 handling and shipping, safety officers can get all the following publications in a convenient three-ring binder:

- *American National Standard for Limited-Use and Disposable Coveralls - Size and Labeling Requirements*, ANSI/ISEA 101-1996 (R2008)
- *American National Standard for Gas Detector Tube Units - Short Term Type for Toxic Gases and Vapors in Working Environments*, ANSI/ISEA 102-1990 (R2003)
- *American National Standard for Air Sampling Devices - Diffusive Type for Gases and Vapors in Working Environments*, ANSI/ISEA 104-1998 (R2003)
- *American National Standard for Hand Protection Selection Criteria*, ANSI/ISEA 105-2005
- *American National Standard for High Visibility Safety Apparel and Headwear*, ANSI/ISEA 107-2004
- *American National Standard for Air-Purifying Respiratory Protective Smoke Escape Devices*, ANSI/ISEA 110-2003
- *American National Standard for Fixed and Portable Decontamination Shower Units*, ANSI/ISEA 113-2008
- *American National Standard for High Visibility Public Safety Vests*, ANSI/ISEA 207-2006
- *American National Standard for Occupational and Educational Personal Eye and Face Protection Devices*, ANSI/ISEA Z87.1-2003
- *American National Standard for Industrial Head Protection*, ANSI/ISEA Z89.1-2003
- *American National Standard - Minimum Requirements for Workplace First Aid Kits*, ANSI/ISEA Z308.1-2003
- *American National Standard for Emergency Eyewash and Shower Equipment*, ANSI/ISEA Z358.1-2004
- *Eye and Face Protection Use and Selection Guide* ●

Download an order form at [www.safetysystem.org](http://www.safetysystem.org).

making relates to first aid, eyewash and shower, high-visibility apparel, sanitation, housekeeping and other workplace practices at shipyards. ISEA supported this rule and submitted comments. Hearings were held in October and September. Final action could take place in 2009.

**4. Walking/Working Hazards.** In 1990, OSHA proposed a rule addressing slip, trip, and fall hazards and establishing requirements for personal fall-protection systems. ISEA members have asked members of Congress to write to OSHA in support of this rule. OSHA suggests another proposed rule could be issued by March, 2009. ISEA will advocate for

action by this date.

**5. Cranes and Derricks.** The rule addresses work practices regarding cranes and derricks, including the use of fall arrest equipment when hoisting personnel, when personnel are working over water, and in other situations. The comment period closed on Jan. 22.

**6. Globally Harmonized System of Classification and Labeling of Chemicals (GHS)/Hazard Communication System.**

There is an international goal to have as many countries as possible implement the GHS by 2008. OSHA is considering modifying its hazard communication system to make it consistent with the GHS. This would change the criteria for classifying health and physical hazards, adopting standardized labeling requirements, and requiring a standardized order of information for safety data sheets.

Please contact me at [dglucksman@safetysystem.org](mailto:dglucksman@safetysystem.org) or 703-525-1695 if you would like additional information on any of these subjects. ●

## NANOMATERIALS

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graphics of the workforce, and a (2) changing structure of employment, with rapid growth in temporary or contingent employment. And he called for a paradigm shift from emphasizing "work-related safety and health" to "worker safety and health."

"It is not enough to say that our job is to ensure that workers go home from work as healthy as they came to work," Howard said. "We need to assist workers in returning to work the next day as healthy as we sent them home the day before."

Specific steps Howard suggested to address worker safety challenges include: (1) better collaboration between OSHA and NIOSH to achieve a unified approach to worker safety and health,

and (2) enhanced injury and illness record-keeping and reporting at the federal level.

Also at "Protection 2033," futurist John Mahaffie described the changing nature of work over the next 25 years where (1) knowledge work is blended with physical work; (2) everything is monitored from anywhere; (3) there is direct design-to-production, and the joystick is the worker's prime tool; (4) prefab exceeds on-site work, and (5) there is "green" everything.

Mahaffie suggested that the definition of PPE itself may be a constraint, and that "work enhancement technology" might be a better term for the protective products of the future. (Editor's note: "Protection 2033" presentations are available from ISEA's homepage, [www.safetysystem.org](http://www.safetysystem.org); click on "Protection2033" under the "Fall Meeting Wrap-up.") ●

## ABOUT THE AUTHOR

Joe Walker is marketing communications advisor to the International Safety Equipment Association. In addition to serving as editor of several ISEA publications, he manages the ISEA marketing program. Reach him at 703-525-1695 or [jwalker@safetysystem.org](mailto:jwalker@safetysystem.org).

## MAKING WORKERS SAFER AROUND THE NATION

The following new services and innovations have been introduced by International Safety Equipment Association member companies to help make workers safer:

- From **Ansell** is the Eighth Edition of the *Chemical Resistance Guide*, containing updated hand protection permeation and degradation data. The comprehensive document is available as a downloadable PDF, or chemical workers can request a free hard copy by regular mail at [www.ansellpro.com](http://www.ansellpro.com).
- From **Gateway Safety** is the 2009 edition of its full-line product catalog, a sourcing guide for more than 60 styles of safety eyewear, hearing, respiratory, head and face protection products. Visit [www.gatewayafety.com](http://www.gatewayafety.com) or call 800-822-5347.
- From **DSM Dyneema and Kimberly-Clark Professional** comes word that Kimberly Clark has joined Dyneema's licensing program for protective gloves made with Dyneema® fiber. Kimberly Clark plans to expand its offerings with additional cut-resistant gloves featuring Dyneema fiber.
- From **Avon-ISI** is an improved Web site, [www.avon-isi.com](http://www.avon-isi.com), which has a user-friendly layout with information organized into categories, including "market solutions" and "product solutions." Each product is organized into tabbed information, such as descriptions, approvals, user focus, features and options that viewers can select.
- From **Jackson Safety** are changes to promote its "Lean and Green" program, which is intended to keep the environment safe. For example, the company's catalog now is available in an interactive format online at [www.jacksonsafety.com/catalog](http://www.jacksonsafety.com/catalog).
- From **MCR Safety** is an improved Web site offering easier navigation and faster document access at [www.mcrcsafety.com](http://www.mcrcsafety.com). The company also has introduced "Professional Grade" as its market identity to provide consumers with the highest level of innovation in safety products.
- From **Moldex** comes word that it received the 2008 Frost & Sullivan Award for Green Excellence in Product Innovation in the North American Hearing and Respiratory Protection market. The award is presented to acknowledge a company's commitment to environmental sustainability in its product lines. Visit [www.moldex.com](http://www.moldex.com).

- From **Sperian Protection** is a Howard Leight poster detailing the care and maintenance of earplugs and earmuffs. Designed for placement on worksite bulletin boards or in other high-traffic areas, the poster is downloadable free through [www.howardleight.com](http://www.howardleight.com).

The **U.S. Occupational Safety and Health Administration (OSHA)** – [www.osha.gov](http://www.osha.gov) – issued a **final rule on clarifying employers' duty to provide personal protective equipment (PPE)** and train each employee. The rule revises OSHA standards to clarify that, for employers to be in compliance, they must provide PPE and hazards training for each employee covered by the standards.

Each employee not protected may be considered a separate violation and penalties assessed accordingly, OSHA said, adding that this revised language is consistent with language in other standards for which per-employee citations have been upheld.

OSHA also issued **clarifications on the use of self-contained breathing apparatus (SCBA) when entering a silo, and on the classification of hard hats, and posted on its Web site a letter of interpretation concerning corrosive materials and concentrations requiring use of emergency eyewashes and showers.**

When entering a silo during the first 4 to 6 weeks after filling stops, or any time the silo is full or partially full, SCBA should be worn, OSHA said.

Concerning hard hats, OSHA said it is in the process of updating its incorporated reference to the ANSI/ISEA Z89.1 standard for head protection to recognize the 1997 and 2003 editions of the standard, which use a new classification system for the various types of head protection. In the newer editions, head-protective helmets are classified differently by both Type and Class than in the current OSHA-incorporated 1986 edition. ISEA publishes the ANSI head-protection standard.

OSHA issued the letter of interpretation concerning eyewashes and showers in response to a request from the Dormitory Authority of the State of New York. Access it at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=27181](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=27181).



Hearing protection maintenance poster from Howard Leight



Gateway Safety's new product catalog.

Updated Web sites from MCR Safety and Moldex.



# MAKING WORKERS SAFER AROUND THE NATION

continued

OSHA also announced that in conjunction with a proposed rule on cranes and derricks in construction, it has initiated a **National Crane Safety Initiative** to address safety hazards during construction crane operation.

In other construction-related news, OSHA unveiled a web page at <http://www.osha.gov/doc/falls/preventingfalls.html> as the central repository of **resources targeting ways employers and employees can prevent construction-related falls.**

The agency also announced that it had published a final rule on **improving the safety of longshoring employees who work with vertical tandem lifts (VTLs).** The rule may be found in the Dec. 10, 2008, *Federal Register*.

New communications products from OSHA include:

- **OutreachTrainers.org, a free Web site dedicated to the Outreach Training Program community.** Developed in cooperation with the Directorate of Training and Education, the site provides easy access to scheduling information for 10- and 30-hour Construction and General Industry training classes. Employees interested in training can search from more than 700 registered outreach trainers to find course locations and schedules based on the type of training and proximity.
- **A Safety and Health Topics Web page for employers and employees involved in the use or manufacture of engineered nanoscale materials;** it highlights related OSHA standards, current and potential applications of nanotechnology, potential health effects and workplace hazard controls, and health and safety research priorities.
- **An eTool for the operation of powered industrial trucks,** focusing on forklifts commonly used in general industry.
- **New sonography and MRSA (Methicillin-resistant Staphylococcus aureus) modules and updated surgical modules added to the eTool to help healthcare industry workers avoid injuries and illness.**
- **Safety and Health Information Bulletins posted on OSHA's Web site on *Compactor Rollover Hazards; Hazards of Transporting, Unloading, Storing and Handling Granite, Marble and Stone Slabs, and on Hazards of Using Flammable Liquids in Cutting Laminated Glass.***
- **Protecting Worker Safety and Health**

**Under the National Response Framework QuickCard,** which describes OSHA resources and services available to protect worker safety and health following a disaster.

● **Safety and Health Injury Prevention Sheet on Shipfitting,** which addresses the hazards of shipfitting in vessel construction and repair, and ways to avoid those hazards.

New from the **National Institute for Occupational Safety and Health (NIOSH)** – [www.cdc.gov/niosh](http://www.cdc.gov/niosh) – are **five new publications to enhance mining safety,** as follows:

- **Collapsible Drill Steel Enclosure for Reducing Roof Bolting Machine Drilling Noise** (Pub. 2008-146).
- **Engineering Controls for Reducing Continuous Mining Machine Noise** (Pub. 2008-145).
- **Age Awareness Training for Miners** (Pub. 2008-133).
- **Guidelines for Permitting, Construction, and Monitoring of Retention Bulkheads in Underground Coal Mines** (Pub. 2008-134).
- **Keeping Knees Healthy in Restricted Work Spaces: Applications in Low-Seam Mining** (Pub. 2008-130).

NIOSH also has posted on its Web site **new Health and Safety Topics pages** on:

- **Blind areas around construction equipment** to raise awareness on the hazards of working around construction vehicles and equipment; *Highway Work Zone Safety, Construction Equipment Visibility* features downloadable, printable blind-area diagrams of 38 types of construction equipment.
- **Protecting outdoor workers against exposure to poisonous plants.**
- **Educating workers about the risk of exposure to insects, scorpions, spiders and snakes; how to protect themselves from stings and bites, and what to do if stung or bitten.**
- **Dampness and mold in buildings.**
- **Building ventilation.**
- **Maintaining indoor environmental quality during construction and renovation.**

**Other new NIOSH communications products** include:

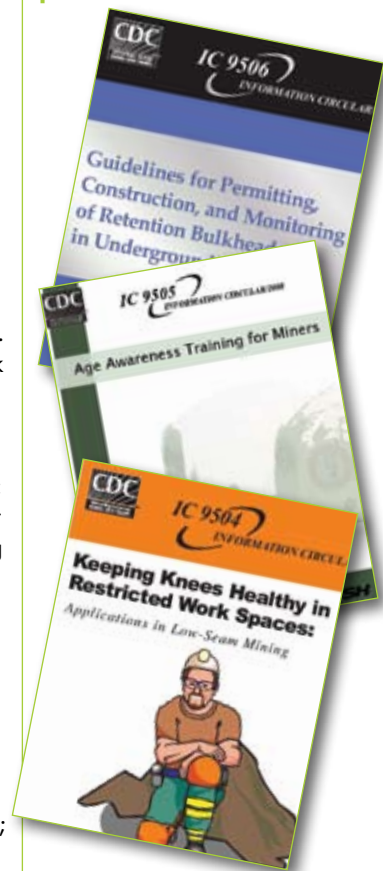
- **Fatal Injuries among Landscape Services Workers Fact Sheet** (Pub. 2008-144).
- **Workplace Solutions: Personal Protective Equipment for Health Care Workers Who Work with Hazardous Drugs** (Pub. 2009-106).

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**OutreachTrainers.org Web site by OSHA.**

**New safety and health publications from NIOSH.**



**Forklift operation eTool at [osha.gov](http://osha.gov).**



## MAKING WORKERS SAFER AROUND THE NATION

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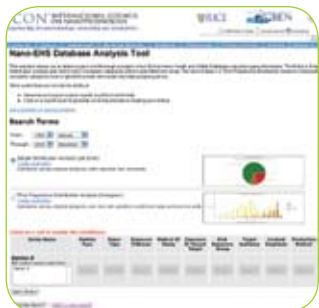
Symbol for MSHA's safety initiative.



CSB's "Half Hour to Tragedy" video on YouTube.



Latest edition of ACOEM Occupational Medicine Practice Guidelines.



ICON EHS Database Analysis Tool

- Control of Hazardous Dust during Tuckpointing (Pub. 2008-126).

The U.S. Department of Labor's **Mine Safety and Health Administration (MSHA)** – [www.msha.gov](http://www.msha.gov) – has unveiled a new safety initiative designed to highlight the leading causes of mine fatalities in the 21st century. The Safety Targets Training Program will focus on addressing and eliminating the most common causes of repeat fatal accidents that occurred from 2000 to 2008. Ten training modules are in development for coal and metal/nonmetal mines.

Additionally, MSHA has published final rules for underground coal mines on requiring (1) refuge alternatives and on (2) flame-resistant conveyor belts and other fire-protection measures. The refuge rule requires operators to provide alternatives to protect miners when a life-threatening event occurs that makes escape impossible. The rule concerning conveyor belts implements recommendations of a technical study panel.

New from the **U.S. Chemical Safety Board (CSB)** – [www.csb.gov](http://www.csb.gov) – is a new 23-minute safety video, "Half an Hour to Tragedy," based on the propane gas explosion that killed two emergency responders and two technicians at the Little General convenience store in Ghent, W.Va., in January 2007. The video's title refers to the nearly 30 minutes that elapsed between the beginning of the propane release and the moment of the explosion.

From the **American College of Occupational and Environmental Medicine (ACOEM)** – [www.acoem.com](http://www.acoem.com) – are:

- An updated guideline that addresses the use of contact lenses and PPE by the industrial worker, as well as informs the occupational and environmental physician of specific contact lens use standards under OSHA guidelines.

- An updated print edition of its comprehensive publication *Occupational Medicine Practice Guidelines Second Edition*, featuring hundreds of new treatment recommendations for workplace injuries and diseases.

New from the **American Conference of Governmental Industrial Hygienists (ACGIH)** – [www.acgih.org](http://www.acgih.org) – are webinars on a variety of urgent topics in occupational

and environmental health and safety today. Topics include heat stress and strain, biological hazards in the workplace, biomonitoring, industrial ventilation systems, nanotechnology, pandemic influenza, and Threshold Limit Values®.

The **American Society of Safety Engineers (ASSE)** – [www.asse.org](http://www.asse.org) – announced that the American National Standards Institute (ANSI) approved the reaffirmation of the ANSI Z244.1.2003 (R2008) standard, *Control of Hazardous Energy – Lockout/Tagout and Alternative Methods*, which aims to protect workers from energized equipment that could cause injury.

ASSE also announced the availability of the "ASSE/ANSI A10 Crane Safety Standards Package," which contains five standards to help safety professionals conduct safe crane operations in construction and demolition operations.

From the **Associated General Contractors (AGC) of America** – [www.agc.org](http://www.agc.org) – are five new safety videos on DVD. Titles include "Electrical Safety for the Construction Worker," "Safety during Renovation & Demolition Operations," "Personal Protective Equipment," "Power and Hand Tool Safety" and "Housekeeping on the Jobsite: A Plan for Success." Visit [www.agc.org/bookstore](http://www.agc.org/bookstore), keyword "Safety."

New from the **International Council on Nanotechnology (ICON)** – <http://icon.rice.edu> – is an online tool that enables researchers to do their own analysis of research on the risks of nanomaterials. The ICON EHS Database Analysis Tool offers a way for researchers to analyze ICON's database of citations to peer-reviewed publications addressing nanomaterials' environmental, health and safety impacts. Find the database at <http://icon.rice.edu/report.cfm>.

New from the **Skylight Council of the American Architectural Manufacturers Association (AAMA)** – [www.aamanet.org](http://www.aamanet.org) – is a "Fall Protection Position Paper," which establishes safety procedures for minimizing risk and mitigating occurrences of falls through skylights. ●

## OSHA \$100,000 CLUB OF SAFETY CITATIONS

The U.S. Occupational Safety and Health Administration (OSHA) has proposed penalties of \$100,000 or more for the following recent alleged failures to protect workers from potential hazards, including many that could have been avoided or mitigated by personal protective equipment (PPE). Companies have 15 business days from receipt of citations and fines to request and participate in informal conferences with OSHA or to contest the citations before the independent Occupational Safety and Health Review Commission:

- Imperial Sugar Co. and two affiliates, \$8,777,500 for violations at their plants in Port Wentworth, Ga., and Gramercy, La., for violations uncovered following an explosion and fire on Feb. 7, 2008, at the Port Wentworth refinery that claimed the lives of 13 employees and hospitalized 40 others. The proposed penalties represent the third largest fine in OSHA history. Citations include 108 instances of willful violations related to combustible dust hazard.
- Broadway Concrete, New York, \$877,000 for violations found during an inspection at a 50-story condominium tower in Jersey City, N.J., including failure to provide employees with adequate fall protection.
- Cortec Corp., Spooner, \$424,000 for violations (including lack of PPE) at its aerosol and liquid container filling plant in Spooner, Wis.
- Hunt Refining Co., \$357,000, for 61 violations at facilities in Sandersville, Miss., and Tuscaloosa, Ala.
- Rapetti Rigging Services Inc., Reliance Construction Group, and Joy Contractors Inc., a total of \$313,500 for violations found after the catastrophic March 15, 2008, collapse of a tower crane killed seven people in New York.
- Sunoco Inc., Philadelphia, \$305,000 for violations uncovered during an inspection at the company's Westville, N.J., oil refinery.
- John Rocchio Corp., Smithfield, R.I., \$216,000 for violations of excavation safety standards following an inspection at a North Kingstown, R.I., worksite.
- Homeland Builders Inc., Fall River, Mass., \$214,800 for violations chiefly related to fall hazards at a Milford, Conn., construction site.
- Ansonia Copper and Brass Inc., \$212,000 for 70 violations at its Waterbury, Conn., tube mill.
- Pepsi-Cola and National Brand Beverage Ltd., \$195,000 for violations at its Pennsauken, N.J., operation.
- Howard Industries, \$193,000 for 54 violations at the company's two electrical power products manufacturing locations in Laurel, Miss.
- Southern Pan Services (SPS) and Choate Construction, a total of \$189,200 for violations found after an employee was crushed fatally when a parking garage under construction in Jacksonville, Fla., collapsed.
- Sloss Industries Fiber Division, \$182,500 for violations found at its Birmingham, Ala., slag wool manufacturing plant.
- Orłowski Co. Inc., a Chicago-based masonry company, \$176,500 for multiple violations found during a February 2008 inspection.
- Sante Bararducci Inc., Allison Park, Pa., \$174,000 for violations found at a Coraopolis, Pa., trenching operation.
- Wendt Corp., \$169,500 for failing to fully correct hazards cited during a prior inspection at its automobile recycling equipment manufacturing operation in Tonawanda, N.Y.
- M&B Metal Products co. and a subcontractor, Oak Mountain Construction Co., \$166,950 for 46 violations found after a roof collapse at the M&B hanger manufacturing plant in Leeds, Ala.
- Family Video Movie Club Inc., Springfield, Ill., \$161,500 for violations found after the company failed to respond to an inquiry about safety conditions at its Springfield woodshop.
- International Truck and Engine Corp., Melrose Park, Ill., \$159,500 for violations found during a February 2008 inspection.
- MJ Associates, \$159,000 for violations found during an inspection at its rebar manufacturing facility in Philadelphia.
- Shelby Stephens Construction Inc., Fort Worth, Texas, \$157,600 for failing to protect employees from falls and falling objects at two worksites in Garland, Texas.
- Waukegan Steel Sales Inc., \$152,500 for violations at its Waukegan steel support manufacturing facility.
- Maine Contract Farming LLC, the successor to DeCoster Egg Farms, \$150,000 for requiring employees of the Turner, Maine, egg farm to work in and atop a building after its roof collapsed.
- Texas Linen Co. Ltd., \$149,100 for 43 violations at the company's worksite in Austin.
- Painting and Decorating Inc., Ronkonkoma, N.Y., \$147,200 for 20 violations, mainly failing to protect employees against falls and other construction hazards at a King's Point, N.Y., jobsite.
- New Process Gear, a division of Magna Powertrain, \$143,350 for violations following an inspection conducted at the Syracuse, N.Y., auto parts manufacturer under a program that targets workplaces with higher-than-average injury and illness rates.
- Sand Cut Properties LLC, Danbury, Conn., \$144,800 for violations found after an employee was directed to work in a collapsing excavation at a Brookfield, Conn., worksite.
- BMA General Contractors LLC, New Britain, Conn., \$140,000 for 15 violations following inspections at worksites in Danielson and Newington, Conn.
- AAR Summa Technology, \$138,500 for 26 violations found during an inspection at the company's Cullman, Ala., metal fabricating operation.
- Overhead Doors Corp., \$137,000 for 32 violations uncovered during an inspection of the company's Athens, Ga., manufacturing facility.
- New England Wood Pallet LLC, \$135,200 for 12 violations found during an inspection after an employee was caught in an unguarded conveyor at the company's Jaffrey, N.H., manufacturing plant.
- C&S Wholesale Grocers Inc., \$133,000 for violations uncovered during an inspection of the company's Windsor Locks, Conn., warehouse.
- Cast-Fab Technologies Inc., Cincinnati, \$128,700 for 44 violations found during an inspection that was part of a local emphasis program focusing on the primary metal industry.
- CRT Processing LLC, \$127,400 following an inspection prompted the receipt of information alleging exposures to toxic metals at the company's Janesville, Wis., electronics recycling facility.
- Shawnlee Construction, Plainville, Mass., and James T. Lynch Contractors Inc., Reading, Mass., a total of \$120,000 for fall and cave-in hazards at a McDonald's restaurant con-

## SAFETY EQUIPMENT

Works  
for  
You

## Shield Saves Face...and Possibly Life

On Sept. 30, 2008, Todd Adams of Toronto, Ontario, Canada, wrote to Sellstrom Manufacturing Co.:

I would just like to say thank you to your company for your face shield. Four weeks ago, I had an accident in my shop in which a piece I was working on exploded and hit me in the face. The piece had enough force to penetrate the ½-inch drywall above my head. I also was wearing eye protection and a dust mask. Although I did have to get several stitches inside and out of my mouth, the injury was relatively minor compared to what could have happened... Again, I would like to thank your company for building a good quality product.

Thanks and have a great day!

On the same day, Sellstrom President David Peters replied:

Wow! I'm glad you are OK. I appreciate the kind words and suggestions... I am forwarding your story to our customer service manager Jason Suarez to help you pick out a new face shield with our compliments. We would also like to reinforce the importance of wearing a pair of ANSI-compliant safety glasses, as you were doing, whenever you use a face shield. Jason will send you a variety of our newest styles for your use, as well. Thanks again for your story. We at Sellstrom are glad that we were able to help during your accident.

Find Sellstrom face shields, eyewear and other products at [www.sellstrom.com](http://www.sellstrom.com) or call 800-323-7402. ●

**Protection Update** welcomes contributions from readers for our regular "Safety Equipment Works for You" feature. Email examples of where PPE has saved workers' lives or prevented injuries to Editor Joe Walker, [jwalker@safetysafetyequipment.org](mailto:jwalker@safetysafetyequipment.org), or mail them to the Editor, *Protection Update*, International Safety Equipment Association, 1901 N. Moore Street, Suite 808, Arlington, VA 22209. Photos are welcome.

## MSHA \$100,000 Club of Safety Citations

The U.S. Mine Safety and Health Administration (MSHA) – [www.msha.gov](http://www.msha.gov) – has proposed penalties in excess of \$100,000 for the following recent alleged failures to protect workers from potential hazards. Companies have 30 business days from receipt of their citations and fines to appeal:

- American Coal Company's Galatia Mine, Saline County, Ill., \$1.46 million for nine flagrant violations; the mine is a subsidiary of Murray Energy Corp., which is controlled by Robert E. Murray. Murray Energy also controls the Crandall Canyon mine in Utah, where six miners and three rescuers died during an August 2007 disaster.
- Kingwood Mining Company's Whitetail Kittanning Mine, Preston County, W.Va., \$736,300 for repeated violations over a year.
- Big River Mining LLC, owner of the Broad Run Mine, Mason County, W.Va., \$291,600 for violations based on coal dust accumulations and the company's failure to follow an approved ventilation plan for the mine.
- Bresee Trucking and Guest Mountain Mining Corp., Wise County, Va., \$210,000 in penalties related to a vehicular accident that left a contract truck driver permanently disabled.
- River Hill Coal Co. Inc., \$177,300 for significant accumulations of coal float dust, and unsafe operating conditions at the River Hill Tipple, Clearfield County, Pa.
- Triad Electric & Control Inc., a contractor at the Cemex Balconies cement plant, Comal County, Texas, \$135,000 after an investigation uncovered violations by the contractor. ●

## OSHA \$100,000 CLUB from page 33

struction site in Concord, N.H.

● KMA Manufacturing LLC, Vanport, Pa., \$119,400 for violations uncovered following a fatal accident in December 2007 at the company's Beaver County facility.

● Atlantic Pipe Corp., Plainville, Conn., \$117,250 for 57 violations found at the company's precast concrete manufacturing plant.

● ConocoPhillips Co., Trainer, Pa., \$116,500 for violations found during an inspection that was part of a national emphasis program focusing on refinery process safety management.

● Brownsville Specialty Paper Products Inc., Brownsville, N.Y., \$116,250 for 35 violations found after an employee was fatally crushed in December 2007 by two rolls of paper weighing some 2,500 pounds each.

● O.S. Kelly Co., Springfield, Ohio, \$114,600 for violations found during a follow-up inspection that found employees being exposed to silica; the company manufactures and refurbishes piano plates for Steinway & Sons.

● Cast Metals Inc., Deshler, Ohio, \$114,000 for 39 violations found during an inspection that was part of a local emphasis program focusing on the primary metal industry.

● Precision Plaster Paint & Contracting LLC, Utica, N.Y.,

\$111,000 for violations, mainly involving fall protection, at a Utica commercial building worksite.

● CITGO Asphalt Refining Co., \$110,000 for 25 violations uncovered at its Savannah, Ga., plant.

● Niagara Falls (N.Y.) Memorial Medical Center, \$110,000 for lack of employee safeguards and improper removal and disposal of asbestos-containing material in a closed section of the hospital that was under renovation.

● Samscreen Inc., \$109,100 for violations at its Conklin, N.Y., industrial screening manufacturing operation.

● FleetPride Inc., \$108,000 for violations following an inspection at its North Haven, Conn., distribution facility.

● Thames Shipyard and Repair Co., \$108,000 after being cited for 43 violations at its New London, Conn., shipyard and repair facility.

● Monro Muffler Brake Inc., \$107,000 for locked fire exits, exposure to eight-foot falls and other hazards at its store in Glastonbury, Conn.

● Interstate Brands Corp., \$104,000 for violations found during an inspection made after OSHA received information alleging potential amputation hazards at the Columbus, Ohio, bakery. ●