

PHOTO: BIGSTOCKPHOTO.COM



Infrared radiation hazards are common in steelmaking

Infrared Radiation: Defending Against the Invisible Workplace Hazard

By J. P. Sankpill
U.S. Safety

It may be there, but you can't see it. Infrared radiation (IR) exists wherever there are sources of heat, such as cutting, brazing, welding, laser or furnace operations. It can cause long-term, permanent damage to your eyes that can lead to impaired vision or blindness.

You may not see it, but you can feel it. Infrared radiation or "IR" is electromagnetic radiation in the range between visible light and microwaves and is perceptible in the form of heat. Sit by the fireplace and the warmth you feel is infrared radiation. As with most hazards, though, small doses don't pose a real threat. A chat by the fire won't affect your health.

However, IR exposure in the workplace is typically much more intense and presents a risk for high level exposures in daily work-related tasks.

The infrared range on the electromagnetic spectrum falls just beyond visible light and just short of microwaves, and is categorized as non-ionizing radiation (which also includes ultraviolet, microwaves and radio frequency). Near infrared is the closest to visible light, while far infrared is closest to microwaves. Both are invisible, but can cause irreversible damage to the eye. Near IR (IR-A; 700-1400 nanometers) has the most energy, due to its shorter wavelengths, and is therefore the most hazardous. It passes through the lens of the eye to the retina, or is refracted from other tissue.

Where do IR hazards exist?

The workplace is host to a variety of IR hazards, including both short- and long-term exposures that represent real health risks. Examples of operations that produce infrared radiation include welding, cutting, brazing, furnace operations, pouring, casting, hot dipping, glassblowing, lasers and high-intensity light sources. Other less common industrial sources of IR include curing of coatings, forming of plastics, annealing, plastic welding and print drying. Each of these represents a different level of exposure and should be evaluated to determine the proper personal protective equipment (PPE) required.

Occupations that require workers to spend several hours a day in the sun should also be considered for potential IR hazards. Although there is some debate regarding the connection between sun exposure and damage to vision from infrared, precautions should be taken nonetheless.

How does IR exposure damage your vision?

The eye disease most commonly associated with IR exposure is cataracts. Many people are familiar with the term "glass blower's cataracts" or "furnace men's cataracts," since there is a long-term correlation with those particular occupations and the development of cataracts. The prolonged exposure to infrared radiation emanating from heated glass or molten steel causes a gradual but irreversible opacity of the lens.

Thermal injury from laser or other intense light sources occurs when infrared radiation elevates the temperature of the eye excessively. A phenomenon called photocoagulation produces damage in the form of retinal scarring.¹ *The American National Standard for Safe Use of Lasers, ANSI Z136.1*, can be referenced when those hazards may exist. ▶74

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InfraSpec™ safety eyewear by U.S. Safety provides infrared radiation and impact protection in a flip-up design that accepts a prescription

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. **Protection Update** is distributed without charge, and also is available via ISEA's website www.safetyequipment.org.

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Other forms of damage to the eye from IR exposure include scotoma, which is a loss of vision in a portion of the visual field resulting from damage to the retina where radiation is absorbed. Even low-level IR absorption can cause symptoms such as simple redness of the eye, but higher levels can lead to swelling, hemorrhaging and lesions.²

How do you measure IR exposure in the workplace?

The American Conference of Governmental Industrial Hygienists (ACGIH) guideline for IR-A exposure of the anterior of the eye is a time-weighted total irradiance of 100 watts per square meter for exposure durations exceeding 1,000 seconds (ACGIH 1992 and 1995).

Measuring IR in various workplace settings can be a complex process involving costly equipment. However, a variety of industrial sources have been measured and guidelines issued for protection against many of these hazards. OSHA requirements regarding filter lenses for various occupations are provided under OSHA Standards 29 CFR 1910.133(a)(5) for general industry, 1910.153(a)(4) for maritime, and 1926.102(b)(1) for construction. In addition, many manufacturers of known IR-emitting equipment, such as high-intensity light sources, provide data that will help determine hazard evaluation.

How do you prevent damage to vision from IR exposure?

If the hazard cannot be engineered out of the operation or effectively shielded from the individual, then a variety of protective equipment can be used to reduce exposure. Protective eyewear, goggles and/or faceshields are available with IR-absorbing (or reflective) lenses that have shade designations according to the level of protection the lens provides.

Be careful not to mistake a "tint" for a "shade." While tinted lenses and shaded lenses have very similar physical appearance, they do not provide the same level of protection. The key difference is that a shade lens (or filter lens) will attenuate up to a certain level of infrared radiation, reducing

Look for Eye and Face Protection from ISEA Members

Protection Update readers are encouraged to specify eye and face protection from the following ISEA members:

- 3M Company, www.mmm.com/occsafety
- H.L. Bouton, www.hlbouton.com
- Bullard, www.bullard.com
- Encon Safety Products, Inc., www.enconsafety.com
- ERB Industries, www.e-erb.com
- Ergodyne, www.ergodyne.com
- Fibre Metal by Honeywell, www.fibre-metal.com
- Gateway Safety, www.gatewaysafety.com
- Gentex Corporation, www.gentexcorp.com
- Jackson Safety, www.jacksonsafety.com
- Kimberly-Clark Professional, www.kc-safety.com
- Klein Tools, Inc., www.kleintools.com
- Magid Glove and Safety Mfg. Co., LLC, www.magidglove.com
- MCR Safety, www.mcrcsafety.com
- MSA, www.msanet.com
- North by Honeywell, www.northsafety.com
- Optrel Expert by Uvex, www.optrel.com
- Safety Optical Service, www.sideshield.com
- Sellstrom Manufacturing Co., www.sellstrom.com
- Sperian Laser (Glendale), www.glendale-laser.com
- Titmus, a Sperian Protection Company, www.titmus.com
- Transportation Safety Apparel, www.tsasafety.com
- U.S. Safety, www.ussafety.com
- Uvex Safety, www.uvex.com

the level of IR exposure to the wearer, while a tinted lens will not. Non-glass lenses that have simply been tinted green provide no IR protection at all.

The fact that green tinted lenses look the same as green glass lenses creates a false sense of security, which may lead to an even more hazardous situation. In the case of a green tinted lens, the reduced light transmission will cause the wearer's pupil to dilate, allowing more light into the eye. If the wearer is then exposed to IR radiation, the level of exposure to IR has actually been increased as a result.

The American National Standard for Occupational and Educational Personal Eye and Face Protection Devices, ANSI/ISEA Z87.1-2003, from the International Safety Equipment Association, requires PPE manufacturers to mark lenses intended for infrared protection with a shade number (such as "3.0" for shade 3), according to Table 1 ▶77

WASHINGTON WATCH

OSHA Letter Clarifies Need for High-visibility Apparel in Work Zones

By Daniel I. Glucksman

International Safety Equipment Association

The U.S. Occupational Safety and Health Administration's (OSHA's) construction directorate has issued an interpretation letter to clarify the Obama administration's position that high-visibility apparel is required for all workers in highway and road construction work zones, not just flaggers. This clarification comes after 5 years of legal and regulatory maneuvers.

OSHA initially responded to a query on this topic in 2004. In that letter, OSHA stated the *Manual of Uniform Traffic Control Devices (MUTCD)* reflects current practices about the need to protect workers with high-visibility safety apparel. However, the *MUTCD* versions OSHA references are the 1988 Edition (Revision 3) and the Millennium Edition. Each of these requires only that the flagger wear high-visibility safety apparel.

In Nov. 2006, the U.S. Occupational Health and Safety Review Commission ruled on a case involving the Ruhlin Company that compelled OSHA to enforce only the wearing of high-visibility apparel by flaggers and not other employees in work zones. The Review Commission is the administrative court for contested OSHA violations.

OSHA cited Ruhlin after a passing compliance officer observed nine company employees working inside a highway work zone without wearing reflective vests, and Ruhlin contested the \$2,000 fine. The Review Commission decided the case in favor of Ruhlin because the 1998 (Revision 3) and Millennium editions of the *MUTCD* only require flaggers to wear high-visibility safety apparel.

Things changed when the U.S. Federal Highway Administration (FHWA) published its final rule on worker visibility on Nov. 24, 2006. That rule requires workers to wear high-visibility apparel when working in the right-of-way on federal-aid highways to avoid being struck by construction equipment or vehicles. The rule established "struck-by" exposure as a "recognized hazard" for any-

one working in a transportation work zone.

When OSHA does not have a specific standard for a particular hazard, the agency can use the General Duty clause to enforce protection from a "recognized hazard."

In the new letter, OSHA states "... high-visibility safety apparel is required under the General Duty Clause to protect employees exposed to the danger of being struck by public and construction traffic while working in highway/road construction work zones. Typically, workers in a highway/road work zone are exposed to that [recognized] hazard most of the time."



PHOTO: ISTOCKPHOTO.COM

The timing is key. As I write this column, 7,124 transportation projects have been funded by stimulus dollars made available to FHWA, according to its homepage. The agency also notes that \$18 billion of an available \$26 billion in stimulus dollars have been obligated. "Obligated" means that FHWA has authorized funds for the project, which is a commitment to reimburse a state for eligible project-related costs. Moreover, a state may not yet have signed contracts, and funds may not have actually been expended. In addition, in 2010 the Senate will begin work on its version of the highway trust fund reauthorization, which will make additional billions of dollars available to the states for transportation construction projects. ●



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CONSTRUCTION CORNER

AGC Launches Training Program to Cut Highway Construction Project Fatalities

A new worker safety training program will help reduce the number of construction workers who lose their lives each year while performing maintenance or construction on America's highways.

"There isn't an infrastructure project in this country that's worth the life of a single construction worker," said Stephen E. Sandherr, chief executive officer of the AGC, which helped develop the new program.

Some 100 construction workers are killed

each year working on America's highways. Sandherr noted that the program focuses on teaching ways to control traffic, operate heavy equipment and staff worksites in a way that reduces risk to construction workers.

The "Highway Worker Safety Training" program was co-developed with Zurich North America, an insurance-based financial services provider.

To order, call 800-242-1767 or visit www.agc.org and click on the "Bookstore" button. ●

Work Zone Safety Clearinghouse Launches International Section

The National Work Zone Safety Information Clearinghouse (NWZSIC) has launched a section of its Web site — www.workzonesafety.org — to provide safety resources in Arabic, Chinese, French, Japanese, Spanish and Russian to supplement its extensive English-language materials.

"We are enthusiastic about this opportunity to provide international, multilingual resources in an effort to facilitate communication and learning with the 'borderless' Internet community, especially information that can save lives and promote work zone safety for users around the world," said Brad Sant, American Road and Transportation Builders Association Transportation Development Foundation

(ARTBA-TDF) executive director for safety. ARTBA-TDF manages the Clearinghouse facility, and the Texas Transportation Institute handles day-to-day operations. ●

NRMCA Adds Four New Safety Training Resources

The National Ready Mixed Concrete Association (NRMCA) — www.nrmca.org — has added four new resources to its series of safety-related learning tools for the ready mix industry.

The "3 Points of Contact" program discusses the three points of the mixer driver's body (one foot and two hands or one hand and two feet) that must be in contact with the vehicle at all times.

A "Safety Metrics Webinar" has been added to help companies proactively monitor safety performance. It focuses on ▶84



DVD on highway worker safety from AGC

Chinese screen from international section of workzonesafety.org



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found in the standard. Look for this marking and only buy from reputable sources to help ensure that your PPE offers the proper level of protection.

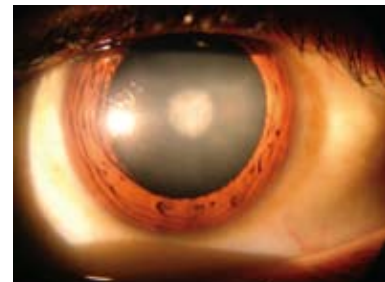
What about green glass lenses?

Green glass lenses do provide some IR protection due to their inherent IR-absorbing properties. Green glass, however, has its limitations. Glass lenses do not meet the ANSI Z87.1 standard for high impact and are much heavier than plastic and polycarbonate lenses. Prescription lenses made with

green glass also vary in thickness, resulting in inconsistent levels of IR protection provided to the wearer. This is especially true of green glass bifocal lenses.

Are there other IR protection options?

Fortunately, green glass lenses are not the only solution. New technologies have been developed that allow the use of plastic and polycarbonate lenses for IR protection through a specialized process that imbues IR-absorbing dyes into the front of the lens. The result is a consistent level of IR absorption across the entire lens, combined with the superior impact protection and lighter weight of plastic and polycarbonate ▶84



Cataract in the human eye can result from overexposure to infrared radiation

PHOTO COURTESY OF RAKESH AHUJA, MD

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 almost 30 percent off the price of purchasing the publications individually. For \$315 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 (R2009)
- *American National Standard for Air Sampling Devices - Diffusive Type for Gases and Vapors in Working Environments*, ANSI/ISEA 104-1998 (R2009)
- *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 110-2009
- *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 Z89.1-2009
- *American National Standard - Minimum Requirements for Workplace First Aid Kits and Supplies*, ANSI/ISEA Z308.1-2009
- *American National Standard for Emergency Eyewash and Shower Equipment*, ANSI/ISEA Z358.1-2009
- *Eye and Face Protection Use and Selection Guide*

Download an order form at www.safetyequipment.org.

Revised Smoke Hood Standard Improves Testing Criteria, Product Technology To Meet User Needs

By **Cristine Z. Fargo**

International Safety Equipment Association



The International Safety Equipment Association (ISEA) has received American National Standards Institute (ANSI) approval for a revised standard to help ensure better performance by hooded devices used by persons escaping from fire-generated products of combustion.

Devices covered by ANSI/ISEA 110-2009, *American National Standard for Air-Purifying Respiratory Protective Smoke Escape Devices*, provide head, eye and respiratory protection from particulate matter, eye irritants, and toxic gases and vapors commonly produced by structural fire. These personal protective equipment types frequently are referred to as "smoke hoods" or "RPEDs" (respiratory protective escape devices). The standard initially was published in 2003.

Noteworthy updates incorporated into this version reflect end-user needs, including the addition of ocular leakage to evaluate the presence of smoke in the eye area and changes in sizing parameters based on current studies to accommodate a greater variety of facial shapes.

"Given that these devices are used by the general public in a fire-evacuation situation, the standard developers found it particularly important to focus on areas that best benefit the wearer," said ISEA President Dan Shipp.

Additionally, the revision updates test methodologies and procedures to provide criteria that will allow testing laboratories to generate reproducible results, while at the same time removing restrictive language that could impede the testing process.

"Products meeting the ANSI/ISEA 110 standard are third-party certified," Shipp said. "To validate that they are capable of providing consistent protection when laboratory tested, it is important that the testing criteria to which they

Look for Respiratory Protective Escape Devices from ISEA Members

Protection Update readers are encouraged to specify respiratory protective escape devices (RPEDs) that are rated in conformance with ANSI/ISEA 110-2009 – *American National Standard for Air-Purifying Respiratory Protective Smoke Escape Devices* from the following ISEA members:

- Avon-ISI, www.avon-isi.com
- H.L. Bouton Co. Inc., www.hlbouton.com
- Draeger Safety Inc., www.draeger-safety.com
- Magid Glove and Safety Mfg. Co., LLC, www.magidglove.com
- MSA, www.msanet.com
- North by Honeywell, www.northsafety.com
- Safety Tech International, Inc., www.safetytechint.com
- Scott Health & Safety, www.scotthealthsafety.com
- Survivair, www.survivair.com

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 Limited** – www.ansellpro.com – is the *Ansell North America Protection Solutions Guide*, designed to simplify the glove and apparel selection process by coupling vital information with comparison charts and application images. An electronic version can be downloaded from the Web site.

- From **Capital Safety** – www.capitalsafety.com – home of the DBI-SALA and Protecta brands of fall protection, comes word that the company has formed a partnership with Tri-Arc Manufacturing to market a line of custom access products named FlexiGuard™ Access Solutions. The line will feature solutions that support both active and passive fall protection equipment.

- From **Ergodyne** – www.ergodyne.com – are:

- > A new Web site section entitled “Tenacious Testers,” which invites workers to share their experiences with Ergodyne’s range of PPE products. Workers upload their stories and pictures and then are profiled on the site.

- > White papers on occupational risks addressed by the company’s personal protective equipment (PPE) products. The papers cover “Taking Care of Your Knees at Work,” “The Case for Tool Tethering,” “Insect-borne Disease Overview,” and “Maintaining Healthy Temps at Work.”

- > An online video detailing the use of Squids™ tie hooks; similar to very large, reusable cable ties, the patented Squids tie hooks offer workers a versatile organization solution that hooks anywhere to store cords, cables, hoses and wires.

- From **Kimberly-Clark Professional** is a free program with tools to help customers reduce costs by selecting products that perform better and last longer, according to the company. The “Cost Savings Tune Up” program is available as a brochure or CD or online at www.kcprofessional.com/us/tuneup.

- From **Magid Glove & Safety Manufacturing Co. LLC** is a new e-commerce Web site at www.magidglove.com. The site features thousands of products from 150-plus leading safety product manufacturers orga-

nized in easy-to-navigate, well-defined product categories, Magid says.

- From **Sperian Protection’s** Miller Fall Protection Division –

www.millerfallprotection.com – are:

- > *The Smart Policy MillerGuide*, which is packed with tips to assist in preparing and implementing an effective and safe fall protection program, according to the company.

Designed as a quick reference, the 44-page, full-color pocket guide addresses general fall protection considerations.

- > Online fall prevention and protection training courses that can be accessed easily from the Web site. The courses introduce proper fall protection procedures for anyone working at height, the company says.

- From the Howard Leight Division of **Sperian Protection** – www.sperianprotection.com – is a case study showing how a steel company improved its hearing protection. The free case study, “Nucor Provides Measurable Worker Hearing Protection with Howard Leight Technology,” may be downloaded at <http://www.hearforever.org/nucor>.

The **U.S. Occupational Safety and Health Administration (OSHA)** – www.osha.gov – has implemented a **national emphasis program (NEP) that targets workplaces that have the potential to release highly hazardous chemicals** resulting in toxic fire or explosion hazards.

The Chemical NEP’s inspection process includes asking detailed questions designed to gather facts related to process safety management (PSM) requirements and verifying that employers’ written and implemented PSM programs are consistent.

This one-year program establishes policies and procedures for inspecting workplaces that are covered by OSHA’s PSM standard.

In a related move, OSHA has issued letters to oil refineries nationwide emphasizing the need to comply with all applicable OSHA standards, particularly the PSM of Highly Hazardous Chemicals. Letters were sent to the management of more than 100 oil refineries providing them with data on compliance issues found under OSHA’s Refinery NEP and urging the refiners to comply with their obligations under the PSM standard.

New publications available from OSHA cover:

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Ansell Protection Solutions Guide



New Web resources from (top to bottom): Ergodyne, Kimberly Clark Professional, Magid Glove & Safety, Sperian Protection

MAKING WORKERS SAFER AROUND THE NATION

continued

- *Hazard Communication Guidance for Combustible Dust* to assist chemical manufacturers and importers in recognizing the potential for dust explosions.
- *Small Business Guide for Ethylene Oxide*, which helps employers understand the ethylene oxide (EtO) standard and explains how to monitor the air quality in workplaces where EtO is processed, used or handled.
- Safety and health information bulletin addressing a crushing hazard to standup forklift operators associated with "under-ride;" this situation occurs in a warehouse when an operator backs up too far beneath a storage rack's horizontal cross bar or other obstruction, which may protrude into the operator's compartment.

The **National Institute for Occupational Safety and Health (NIOSH)** – www.cdc.gov/niosh – **has launched a program to incorporate workplace health and safety into "green jobs"** and environmental sustainability. The initiative also will develop guidance for preventing occupational injuries and illnesses in these growing sectors.

As a first step, NIOSH introduced a new Web page – "Going Green: Safe and Healthy Jobs," www.cdc.gov/niosh/topics/greenjobs/ – to serve as an evolving portal to information and resources being developed or identified by the agency and its partners.

NIOSH also will conduct a workshop Dec. 14-16, 2009, to bring together stakeholders, including International Safety Equipment Association representatives, to help frame issues of incorporating occupational safety and health considerations into green and sustainability efforts.

New NIOSH communications products include:

- A Web page that provides resources for protecting healthcare workers from occupational hazards in the prison work setting. Although all healthcare workers potentially could be exposed to hepatitis B or C viruses and HIV, those in correctional facilities are particularly at risk due to security issues, an unpredictable work setting and the potential for higher rates of disease among inmates.
- Four new Web topics pages on controlling dust from power tools; they cover jack-hammers, cut-off saws, tuck pointing, and concrete grinders.

- Software to make record keeping and analysis easier for controlling noise exposures associated with daily mining work tasks.
- Fire fighter fatality investigation reports covering fire falls, a collision between two fire trucks, cardiac arrest, collapse at an incident scene, becoming lost in a residential structural fire, and being struck in the head by an aerial platform boom.

The **U.S. Mine Safety and Health Administration (MSHA)** – www.msha.gov – has issued a program information bulletin (PIB) on "**Operator Respirable Dust Sampling Requirements**" (P09-31) and has reissued a number of other PIBs on topics that include mine rescue stations, explosion-proof motors, roof bolting machine operators, diesel fuel sulfur content, fan assemblies, underground scoop accidents, diesel engines and portable methane detectors.

The **U.S. Chemical Safety Board (CSB)** – www.csb.gov – has released **two safety videos**. "Emergency Preparedness: Findings from CSB Accident Investigations" shows the need for emergency response agencies, companies and communities to work closely together to prepare for the kinds of tragic chemical accidents that the CSB has investigated over the past decade. "Combustible Dust" depicts how accumulations of combustible dust at worksites can provide the fuel for devastating explosions that kill and maim workers, shut down plants, and harm local economies. Both may be downloaded from the Web site; click on "Video Room."

The **American College of Occupational and Environmental Medicine (ACOEM)** – www.acoem.org – reports that different types of **worksites exercise programs have multiple benefits**, including reduced neck and shoulder pain for employees who do all-around exercise and lowered heart diseases and stroke risk factors for those who do strength training. These findings come from a study published in ACOEM's official publication, the *Journal of Occupational and Environmental Medicine*. Cardiovascular risk factors – including high blood pressure and body fat – decreased not only in workers assigned to aerobic exercise, but also in those who did strength training. Both types of exercise also brought



OSHA Hazard Communication Guidance for Combustible Dusts



NIOSH Web resource for Correctional Health Care Workers; "Going Green" Workshop Flyer; DOSES noise exposure software



CSB online emergency preparedness video

MAKING WORKERS SAFER AROUND THE NATION

continued



"APIC Anywhere" online education center



Screens from "Don't be a Zombie at Work" online safety game by ASSE



WorkSafeBC Bulletin on silica dust risks

reductions in back and shoulder pain. New from the **Association for Professionals in Infection Control (APIC)** – www.apic.org – are:

- "APIC Anywhere," an **online education center** that features interactive content developed by clinical experts to educate healthcare personnel on preventing health-care-associated infections (HAIs).
- The 3rd Edition of the **APIC Text of Infection Control and Epidemiology**, reflecting the input of more than 300 infection prevention experts. The document is the premier resource for infection preventionists, containing more than 120 expanded and enhanced chapters.

New from the **American Society of Safety Engineers (ASSE)** – www.asse.org – are:

- **Three standards aimed at preventing falls in the workplace.** They are ANSI/ASSE Z359.6-2009, Specification and Design Requirements for Active Fall Protection Systems; ANSI/ASSE Z359.12-2009, Connecting Components for Personal Fall Arrest Systems, and ANSI/ASSE Z359.13, Personal Energy Absorbers and Energy Absorbing Lanyards. The ANSI/ASSE committee for fall arrest/protection also is working on 10 additional Z359 standards projects, ASSE said.
- A newly revised **confined space safety standard.** ANSI/ASSE Z117.1-2009 establishes minimum safety requirements to follow while entering, exiting and working in confined spaces at normal atmospheric pressure.
- An online **interactive workplace safety game** for teenage workers. "Don't be a Zombie at Work" is free and features the imaginary evil "BodgeDab" industries. Players find themselves helping their co-workers avoid becoming a "zombie" by finding tools

and information from embedded safety professionals to stay safe on the job. Check it out at www.dontbeazombieatwork.org.

The **Chlorine Institute, Inc. (CI)** – www.chlorineinstitute.org – has made available **free of charge 10 additional technical pamphlets** to help operations that handle chlorine, hydrogen chloride and sodium and potassium hydroxides keep their facilities more safe and secure. All are downloadable in PDF format from CI's Web site. The publications are being made available as part of a major CI drive to provide a vast majority of its technical publications free to key chlor-alkali stakeholders.

The July 2009 issue of the *Cochrane Review* from the **Cochrane Collaboration** – www.cochrane.org – reviews the scientific evidence on **intervention to prevent occupational noise-induced hearing loss.** The review looks at different occupational areas and what mechanisms (legislation, proper hearing protector usage, etc.) work best to reduce noise levels in workplaces and/or reduce noise exposure of workers. Access a podcast on the subject from the Web site.

WorkSafeBC – www.worksafebc.com – has released a bulletin warning about the **risks involved in breathing crystalline silica dust.** Breathing in crystalline silica dust over a prolonged period can cause silicosis — a disease in which fine particles deposited in the lungs scar the lung tissue. The bulletin includes a list of activities that put workers at risk for crystalline silica dust exposure, steps employers can take to protect workers, and what workers can do to protect themselves. ●

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are subjected be written and applied uniformly to eliminate any questionable results."

ANSI/ISEA 110-2009 was prepared by members of the ISEA RPED Group, in consultation with testing laboratories, the Consumer Product Safety Commission and the National Institute for Occupational Safety and Health, and was reviewed by a

consensus panel representing users, health and safety professionals and government representatives. ●

ABOUT THE AUTHOR

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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:

- Milk Specialties Co., \$1,071,000, after the agency investigated a complaint alleging a variety of safety hazards at the company's whey processing plant in Whitehall, Wis. Numerous citations included combustible dust and electrical hazards; lack of confined space evaluations; guarding of floor and wall openings, and respiratory protection deficiencies.
- Sims Bark Co. and Sims Stone Co., \$576,000 for 142 safety and health violations at plants in Brent and Tuscumbia, Ala.; Woodbury, Ga., and Olive Branch, Miss. Citations included allowing workers to service machinery without procedures to ensure that they would not be caught in or struck or burned by equipment; lack of fall protection; exposure to noise hazards, and accumulations of combustible dust.
- Globe Composite Solutions Ltd. and ADP TotalSource II Inc., \$442,150 for violations at the companies' Rockland, Mass. composite materials facility. An inspection "identified inadequate or absent safeguards against employees' exposure to lead and its attendant health hazards," OSHA said.
- Mar-Jac Poultry Inc., \$379,800 for safety and health violations at its Gainesville, Ga., facility. Major violations included failing to update its hazard analysis in 5-year intervals as required, to establish specific procedures to maintain the integrity of process equipment and to institute equipment and procedural changes for the ammonia refrigeration system.
- Dana Container Inc., \$314,000 for violations at its tank washing facility in Summit, Ill. Citations mainly involved workers in confined spaces without permits.
- Heberle Disposal Service, Inc., Rochester, N.Y., \$304,200 for failing to correct hazards cited during a 2008 inspection and for new and recurring safety hazards; uncorrected conditions uncovered included not determining an employee's medical fitness to wear a respirator.
- Crucible Specialty Metals, \$249,200 for 71 violations of safety and health standards following the Jan. 15, 2009, death of a worker at the company's manufacturing plant in Syracuse, N.Y.
- Sinclair Tulsa Refining Co., \$240,750 for violations following an inspection at the company's crude oil refinery in Tulsa. Citations included deficiencies in fall protection and exposure to toxic materials.
- Sunoco, \$202,000 for violations at its Marcus Hook, Pa., refinery. Citations included failure to provide employees with protective equipment.
- Kopac International Corp., doing business as Southeast Pallet and Box, \$189,000 for 30 violations at its manufacturing plant in Montgomery, Ala. Citations included failure to implement a monitoring program for excessive noise exposure.
- M.S. Walker Inc., \$147,600 for fire, explosion and other hazards at its alcoholic beverage blending and distribution facility in Somerville, Mass.; the most serious hazard was lack of adequate ventilation for a room where large quantities of flammable ethyl alcohol were blended.
- SKAPS Industries, \$145,800 for 32 violations that exposed workers to possible injury or death at the company's three locations in Athens, Commerce and Pendergrass, Ga.
- Rubio Construction Inc., \$144,900 for 17 violations at three worksites in Houston and League City, Texas; the company did not ensure that the scaffolding at each worksite was properly erected and inspected, OSHA said.
- BAE Systems Inc., \$138,000 for 16 violations following an inspection at the company's facility in Sealy, Texas. Rockville, Md.-based BAE is an aerospace defense contractor.
- Tritt Contracting Inc., Jasper, Ga., \$136,000 for seven violations following an inspection at Power Springs, Ga., construction site where employees were found working inside a deep trench.
- Thedford Construction Co. Inc., Tyler, Texas, \$133,000 for 10 violations following the electrocution death of a worker at a worksite in Tyler.
- Miller-Coors, \$128,500 for 10 safety and health violations stemming from two investigations following the death of one worker and injuries to two at the company's brewery in Golden, Colo.
- Fluid Management Systems Inc., \$125,000 for 29 violations at its plant in Watertown, Mass., that makes analytical instruments for chemical compounds; citations included respiratory hazards, OSHA said.
- International Paper, \$123,000 for 37 violations following a fatality that occurred at the company's Augusta, Ga., plant in February 2009, when a worker was struck by a timber loading crane. Citations included lack of safety equipment.
- Painting & Decorating Inc., Ronkonkoma, N.Y., \$120,750 for repeat violations of safety standards at a Forest Hills, N.Y., worksite; an OSHA inspector observed employees performing stucco work on a 13-foot-high scaffold without fall protection or protective helmets.
- East Central Machine & Tool Co., St. Clair, Mo., \$117,900 for 12 violations following an investigation into an accident where an employee lost two fingers in a mechanical power press.
- Louisiana Health Care Consultants LLC, Dean Building Holdings and Bob Dean Enterprises Inc., jointly \$112,000 for 13 violations involving asbestos; the citations stemmed from work being performed for the nursing home management and maintenance company on a building owned by Dean in Baton Rouge, La.
- Calcasieu Refining Co., \$110,600 for 32 violations following an inspection at the company's Lake Charles, La., facility.
- Multina USA Inc., \$109,400 for seven serious violations and for failing to correct a previously cited violation at its plant that makes train seats in Plattsburgh, N.Y.
- Valero Energy Corp., \$107,500 for four repeat and nine serious violations at its oil refinery in Delaware City, Del.
- Domtar Maine Corp., \$107,000 for 29 violations at its Baileyville, Maine, pulp mill; citations included fall hazards. ▶ 84

SAFETY EQUIPMENT

Works
for
You**Specs Save Sight When Chainsaw Blade Breaks**

John Burnham recently received MCR Safety's "Quality of Life" award after he was involved in an accident that resulted in him being struck in the face by a chainsaw blade.

"On Saturday, June 6, 2009, I was getting ready to cut wood," Burnham wrote to the company. "I had my chainsaw warming up for about 30 to 45 seconds when I squeezed the throttle trigger to bring the idle down. The chain snapped and struck me in the face.

"Thank the Lord I didn't need stitches and I'm thankful I was wearing the (MCR Safety) glasses.... While I did receive abrasions on my face and had a slight concussion, I still have my eyesight and will be OK."

Find safety eyewear by ISEA member company MCR Safety at www.mcrcsafety.com. ●

**Safety Glasses Defend Against Hydraulic Fluid**

Waste Management roll-off driver Tommy Adams was attempting to swap out a compactor box at the Glenwood Regional Medical Center in West Monroe, La., when a fitting broke loose and shot hydraulic fluid into his face.

"[H]e was wearing a new pair of safety glasses he had just received," reported Randy Kimbrell, district operations manager for Waste Management of Monroe, to Jackson Safety. "I have to admit, I thought at first they were a little pricey... But if our workers will wear them, it's money well spent."

Find safety eyewear by ISEA member company Jackson Safety, a division of Kimberly-Clark Professional, at www.jacksonsafety.com. ●

INFRARED RADIATION from page 77

lens materials. This holds true for prescription and non-prescription wearers alike when using IR-absorbing dyes, since the level of IR protection is not affected by lens thickness.

An even greater advantage of the new IR-absorbing dyes is that you are no longer limited to a green lens. A variety of lens colors are available. U.S. Safety even offers a "neutral gray" IR polycarbonate lens that meets both the high-impact requirements of ANSI Z87.1 and the stringent requirements for color recognition specified by the ANSI Z80.3 standard, *Ophthalmics – Nonprescription Sunglass and Fashion Eyewear Requirements*. These lenses are ideal for transportation and utility workers who are exposed to IR from the sun and require the ability to distinguish between certain colors on the job.

Some occupations only expose workers to IR for brief periods. At the same time, their occupation requires protection from impact. Polycarbonate IR lenses provide impact protection, but they also reduce light transmission, so workers typically switch between clear and IR protective eyewear while on the job.

While switching glasses, they are potentially exposed to impact hazards with no protection. U.S. Safety solved this problem by developing the InfraSpec™ with clear polycarbonate lenses and a flip-up IR-absorptive lens, so workers have IR protection available when and where they need it. The InfraSpec™ also accepts a prescription.

What next?

Consider the potential IR hazards in your operation, including short- and long- term exposures. Refer to OSHA guidelines for specific operations as well as data provided by makers of IR-emitting equipment, and perform a professional evaluation if necessary. If the hazard can't be eliminated, a variety of PPE is available to reduce exposure to workers. ●

¹ D. Virgil Alfaro III, Peter E. Liggett, William F. Mieler, Hugo Quiroz-Mercado, Rama D. Jager, and Yasuo Tano, *Age-Related Macular Degeneration: A Comprehensive Textbook*, (Philadelphia, Lippincott Williams & Wilkins, 2006).

² Roger L. Brauer, *Safety and Health for Engineers: Second Edition*, (John Wiley & Sons, Inc., 2006).

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, or mail them to the Editor, *Protection Update*, International Safety Equipment Association, 1901 N. Moore Street, Suite 808, Arlington, VA 22209. Photos are welcome.

NRMCA RESOURCES

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establishing leading and trailing indicators of safety performance to help companies prioritize their efforts in reducing workplace accidents.

"Lifting and Chute Handling Safety" and "Safety Around Concrete Pumps" are CD-based PowerPoint presentations with instructor notes. ●

OSHA \$100,000 CLUB

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- Trussway Ltd., \$105,000 for 19 violations at its manufacturing plant in Orlando, Fla.
- Concord Steam Corp., \$104,200 for 73 violations after a worker at its Concord, N.H., steam generating plant was burned in a fire.
- Branco Enterprises Inc., Neosha, Mo., \$102,600 for 10 violations following an inspection at a worksite in Fort Smith, Ark. ●