Industrial Safety & Hygiene News

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ISHN

INSIDE this eBOOK:

Safety & health best practices

- OSHA's construction confined space rule
- Injury/illness statistics & research
- OSHA's new silica standard
- The need for fall protection

Safety in the CONSTRUCTION INDUSTRY

introduction

Construction is a dynamic, fast-moving, high-hazard industry that comprises a wide range of activities involving building, alteration, and/or repair. In the U.S. in 2016 many segments of the industry are booming: residential construction, bridge erection, roadway paving, excavations, demolitions, and large-scale painting jobs. Construction workers engage in many jobs that may expose them to serious hazards, such as falling from rooftops; unguarded machinery; being struck by heavy construction equipment; electrocutions; silica dust, and asbestos.

This exclusive *ISHN* ebook identifies the most serious construction hazards and provides protection tips and best practices. We pay particular attention to falls – the number one killer on construction sites. In 2013, there were 291 fatal falls to a lower level out of 828 total fatalities in construction. These deaths are preventable, and *ISHN's* eBook shows you how to save lives.

Other injuries common to the industry include burns, head injuries, injuries to the spinal cord, cuts and lacerations, broken bones, limb or finger amputations, loss of hearing, lifting and other repetitive motion injuries, heat stroke, and vision loss. Construction work carries with it many risks and dangerous exposures – a fact borne out in *ISHN's* exclusive research described in the eBook's first article.

OSHA has recently issued two standards that significantly impact the construction industry – confined spaces in construction and preventing exposures to respirable silica. We devote articles to both standards to help you with compliance.

Many new hires are arriving at construction sites, and need safety information – another objective of this eBook. Contractors added 290,000 hires in 2014, a nine-year high. In 2014, construction gained jobs at more than twice the rate of the overall labor market. In 2015, the industry employed 538,350 carpenters, 731,490 construction laborers, 192,000 construction managers, 449,040 electricians, and 226,210 other workers. By March 2016, the construction industry employed a total of 6,672,000 workers, according to the U.S. Bureau of Labor Statistics.

I'm sure you'll find *ISHN's* Safety in Construction eBook to be a valuable resource to address the industry's array of risks, ensure regulatory compliance, and prevent serious injuries and fatalities.

Dave Johnson
ISHN Editor

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40 Years Strong – Accuform

Founded in 1976 by Ron and Veronica Johnson, Accuform began as a small venture in Port Richey, Florida. The original three-employee (Ron Johnson, Veronica Johnson, and David Johnson) start-up has grown to a team of more than 300 people and counting.

Now located in Brooksville, Florida, the family-owned-and-operated company sells facility identification products to a network of distributors throughout North and South America, Asia, and Europe. Specializing in custom safety signs, safety tags (like our exclusive Tags by-the-Roll product), safety labels, traffic safety, and the award-winning STOPOUT® lockout/tagout device brand, Accuform provides products and sales support to tens of thousands of customers worldwide.

Those customers encompass virtually all sectors of the worldwide economy, including Oil & Gas, Petrochemical, Aerospace, Food & Beverage, Construction, Distribution, Education, Healthcare, Transportation, Government, and more.

Accuform was born when Ron and Veronica Johnson made a decision to leave behind the cold Canadian winters and move south. They had a hunch that the U.S. market needed sign products with quick turnaround times. They initially considered California, but Ron says "if my gut feeling proved wrong, it'd be a long walk over some mountains back to Canada!" Fortunately, after a visit with friends in St. Petersburg, they decided to set up shop in Florida.

David Johnson, Ron and Veronica's eldest son, followed them to Florida and younger son Wayne arrived soon after. Over the last 40 years the company has grown, thanks in no small part to its distributor network.

"Our industry-leading safety distributors have been good to Accuform, and we have worked hard to make sure that we support them in any way possible," said Wayne Johnson.

Accuform is dedicated to the local community as well, engaging in a wide range of charitable projects, including a major project involving the renovation of a nearby elementary school.

Consistent sales growth, great new products, and countless awards have Accuform excited about the next 40 years. The future looks bright, indeed.

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ISHN safety pro **survey findings**

Training, compliance, fall prevention, and safety cultures are top priorities

By DAVE JOHNSON, *ISHN* Editor

While resource allocation for construction safety in 2016 is largely expected to remain consistent with 2015, only slight increases in budgets are likely, according to *ISHN's* exclusive survey of safety professionals in the construction industry.

Staff levels for construction health and safety in '16 are likely to rise, according to the research. In terms of personal protective equipment (PPE) use in construction, eye-face-hearing protection is likely to dominate the 2016 purchase basket, while hand-head protection is also likely to see increased purchases. Safety harnesses are expected to be in high demand this year.

Training, whether electronic or offline, being high on the priority list for all construction safety-related issues, is likely to be in high demand.

So what are the most significant challenges to worker safety and health facing pros in 2016? Overall, according to the survey, they are: 1) employee-related discipline; 2) OSHA compliance; and 3) shortage of skilled labor. As for the most serious hazards, number one in 2016 is controlling slips, trips, and falls – along with maintaining good housekeeping on worksites; and the array of risk that comes with working at heights.

Every safety program has annual goals, and that's certainly no different in construction. The top goals in '16 for construction safety pros are: 1) employee training; 2) develop safety cultures;

3) increase employee and senior leadership engagement and accountability; and also reduce serious injuries and fatalities; and 4) ensure the health and safety of independent contractors coming and going on sites.

ISHN's exclusive survey finds very high PPE usage in the construction industry. Eighty-five percent of survey respondents plan to purchase eye/face and/or hearing protection PPE; 62 percent expect to buy hand and/or head protection. Safety harnesses are the PPE likely to be purchased most frequently.

Organizational health and safety challenges

What's hot and what's not for 2016? More than 50 percent of those surveyed cite these challenges: regular inspection of PPE; training workers on the proper use of equipment; a skilled-labor

ISHN safety pro survey findings continued

shortage; compliance with OSHA regulations, and disciplining employees for safety transgressions.

Increasing job stress is a challenge for 44 percent of safety pros surveyed. Integrating new technology into safety and health applications will test the know-how of 44 percent. Expanding work hours will impact only about a quarter of safety pros (28 percent). Sustainability is not high on the list of challenges. Only 13 percent of survey respondents say corporate sustainability data collection and reporting will be a test. It could be that this number is low because other departments handle sustainability, not safety and health. Or it could reflect the construction industry's lack of interest in sustainability initiatives, especially since the industry is made up of so many small players – small contractors and small builders.

Due to the fragmented nature of the industry, with many small, local, or regional players, it's not surprising that only eight percent of respondents say international safety and health management issues will pose a challenge in 2016.

Construction-specific challenges

What's hot and what's not when it comes to challenges unique to the construction field? More than three-quarters of those surveyed (77 percent) point to slips, trips, and falls, as well as a second issue – maintaining good housekeeping and a debris-free worksite. About two-thirds (64 percent) cite working at heights as a major challenge, and 59 percent are challenged by hand and arm injuries.

Between 40 and 50 percent of those surveyed will be challenged in 2016 by noise hazards; working with cranes, hoists and other material handling equipment; confined spaces; and eye and face injuries.

Between three to four out of every ten construction safety and health pros will wrestle with these challenges: electrical hazards; trench and scaffold collapse; hazardous energy control requiring lockout/tagout; employee lifestyle health issues such as smoking, drinking and overeating; and respiratory hazards due to chemical exposures.

Approximately one in four pros will be working on these challenges in '16: ergonomic and musculoskeletal injuries due to physical overexertion; motor vehicle-related crashes; issues that come from working alone; working in temperature extremes, and UV radiation exposure.

Less than 20 percent of those surveyed report being challenged in these areas: excess vibration to hands, arms, or body due to power tools; employee mental health issues; and explosions and fire hazards from combustible dust (a hazard cited by only five percent of survey respondents).

Action plans

A combination of offering downtime, training, and additional hiring were cited as some of the actions planned to address the expanding workload/work hours and job-stress situations.

Survey respondents cited these specific plans to deal with expanding workloads:

ISHN safety pro **survey findings** *continued*

- More hiring
- Behavior training/More training/OSHA ten-hour course
- Better production means better pay
- Expanding schedule, additional hours, attempt to level off schedules
- Greater use of technology
- Manage and plan growth to address the shortage of skilled-labor issue
- Trying to lessen number of tasks per man
- Work with unions

Possible solutions to the issue of expanding hours of work:

- Breaks/Limit consecutive workdays
- Starting another shift/Perform "off-shift" work rather than rotating
- Develop fatigue program to limit consecutive workdays
- Downtime in between long stretches of work
- Task rotation and breaks
- Hiring additional associates to level off workloads
- Limit to what is necessary
- Monitoring
- Specific training to address expanding work

To confront the issue of increasing job stress, safety and health pros cite these answers:

- Downtime/Breaks
- Additional time off
- Deal with and take personal time
- Downtime
- More break times, understanding timelines are important
- Training/Education: Specific training to deal with job stresses; stress education program to be developed and implemented; training and exercise
- Work with employees to help understand their needs
- Relaxation-related: Bringing humor and non-work-related events, luncheons, etc.
- Mental health day quarterly
- Better planning; we have hired additional construction engineers to help with planning and execution
- Increase awareness during safety meeting
- Insurance company helpline
- Tempering customers' unrealistic demands as for scheduling
- Try to regroup priorities

Training resonated as the action planned by most to meet PPE and EPA compliance:

EPA compliance

- Ensuring everyone is trained on all new GHS information
- Invite EPA representatives to speak
- Searching for people to train the workers
- Training
- Purchase up-to-date regulations

ISHN safety pro **survey findings** *continued*

- Understanding new regulations and changes
- Work with civil engineers to assure timely delivery of designs

PPE compliance

- Training Audits and training
- Supervisor training
- Continued employee training
- Hands-on training
- Daily enforcement
- Inspection: Daily inspections of all employees' PPE equipment; and safety professional to review existing PPE for suitability and pre-use inspection by user
- Communication enhancements
- Ensure field supervisors are made aware of changes
- Follow OSHA or company rules
- Having the proper PPE in stock for our employees

Better screening and training/education is planned to address compliance with OSHA and safety codes/goals throughout the supply chain:

Safety and health policies, codes and goals used throughout supply chain

- Pre-qualifications/Scrutiny: Better pre-qualifications; Increased scrutiny and engagement of all partners; Make sure companies subcontracting with you follow a safety program equal to or better than yours; Making subcontractors pre-qualify to work for us; Safety pre-qualification program, safety pre-construction meetings, weekly audit to assure implementation of contractor safety plans; subcontractor qualification review
- Training/Education: All the posters are up, just have to remind them over and over again; production meetings and training; retrain employees
- Continual improvement
- Maintaining a job site-specific policy for all entering job sites
- Manage subcontractors' safety policy
- Review regulations during safety meeting, hire safety consultants
- Upfront communication

OSHA compliance

- Training/Education, including continued employee training; behavior training; conferences; confirming all site employees are aware of new standards; continuing education classes for safety professionals; education of safety department personnel and employees; ensuring everyone is up to date with all new items; expanded site auditing — increased training relative to OSHA regulated topics; invite OSHA representatives to speak and train employees; monitoring and training on standards and expectations; and training and site inspections
- Continue to keep as up to date as possible with ever changing regulations
- Follow OSHA or company rules
- Increase audits and inspections

ISHN safety pro **survey findings** *continued*

- Purchase up-to-date regulations
- Recordkeeping
- Regular meetings and study of regulations
- Research
- Review and update employees
- Review regulations during safety meeting, hire safety consultant
- Stay abreast of the latest regulations and address continuously

Apps are likely to be developed and used for safety and health-related work. More emphasis on training is planned to put safety on equal footing in the organization.

Making new technology work for safety and health applications:

- Try new items and utilize most current stuff/technology — inspection apps; iPad apps; and smartphone and iPads with updated software
- Training/Education — learn how to operate new technology, make sure others are trained; training; training for management
- Daily work task meetings at the start of each workday
- Making as many safety systems online as possible, audits/forms etc.
- Reminders

Putting safety on equal footing within the organization with environmental protection, quality, productivity, customer satisfaction, etc.

- Training/Education/Communication — behavior training; better communication of the business impacts of safety to our crews; foremen training; more emphasis and training; stressing equal footing at each meeting; train to use equipment

- Bring issues up to executive management
- Building a strong culture
- Bring it to the forefront of operations
- Executive management will continue to focus on safety, quality control, and schedule as measure of success; in that order

ISHN safety pro **survey findings** *continued*

- Green shop already exists here, our customers can see this; our shop has not had a workplace injury in years, so it's working
- Petition management
- Put safety first
- Very important, discussed often before shift starts

Different methods of training as well as better screening criteria are planned to tackle the issue of shortage of skilled labor.

Shortage of skilled labor:

- Additional training
- Training for apprentices/new workers — conduct more in-house training classes and mentoring of new workers; train newbies instead of advertising for skilled craftsmen, a new hire might be better to mold into a productive employee
- Working with mentoring
- Better screening — work with unions to recruit; better employee screening and evaluation at hire point; focused training; greater partnership with local community colleges to attract skilled labor; human resources is participating in job fairs
- Advertise for help year-round
- Increased marketing toward vocational technical schools
- Discuss with subcontractors
- Pay a better minimum salary
- Try to bring on as many new apprentices as possible

Training workers on the proper use of equipment:

- Hands-on training
- Address at morning meetings
- Outsource some training
- Expanded use of technology, increased training hours
- Improved weekly safety meeting topics
- Insuring all workers are properly trained and capable before learning how to and actually operating
- Monthly safety training classes
- Pre-task planning
- Toolbox safety meetings
- Utilize suppliers to provide training on safety products
- Visual on how to use safety equipment
- Weekly job box meetings
- Working with union to provide proper training on equipment
- Working with unions and schools to have classes

Organization's top safety & health goals

Employee safety training and building/maintaining a safety culture are envisioned as being one of the focus areas by two-thirds or more respondents. Reducing injuries and fatalities emerges as the biggest construction-specific goal.

Overall safety goals:

- Safety training of employees – 77 percent
- Building and/or maintaining a safety culture – 67 percent
- Employee safety and health engagement/participation/accountability – 54 percent
- Senior leadership safety and health engagement/

ISHN safety pro survey findings *continued*

participation/accountability – 49 percent

- Ensuring safety of temp workers and independent contractors – 46 percent
- Building and/or maintain a behavior-based safety (BBS) program – 31 percent

Construction-specific safety goals:

- Reducing serious injuries and fatalities – 49 percent
- Reducing falls – 31 percent
- Preventing dropped objects from heights – 26 percent
- Protecting workers from heat stress – 21 percent
- Testing for and controlling substance abuse – 10 percent

Beyond PPE

Purchasing first-aid kits in 2016 emerges as the highest priority, followed by high-visibility clothing, as indicated by two-thirds or more respondents.

- First-aid kits – 74 percent
- High-visibility clothing – 69 percent
- Safety signage – 46 percent
- Safety lighting – 41 percent
- Heat stress prevention products – 26 percent
- Confined space monitors – 23 percent
- Ergonomic hand tools – 21 percent
- Tethers and fasteners to prevent dropped objects – 21 percent
- Emergency showers and eyewash stations – 15 percent
- Construction safety apps – 15 percent

Resource allocation plans

While resource allocation is largely expected to remain consistent with 2015, slight increases in budgets are likely. Over half of respondents expect hiring to increase in health/safety.

According to 57 percent of respondents, up to five percent of the total 2015 budget was allotted to organizational health and safety, 22 percent reported allotting more than 20 percent.

In 2016, 38 percent expect more funding to be committed to safety and health on construction sites; 59 percent expect to work with the same amount of resource they had in 2015; and only three percent predict having to work with fewer dollars in 2016.

More than half of the pros surveyed (56 percent) expect the number of safety and health personnel at their companies to increase in 2016. One-third (33 percent) say staff levels will remain the same as in ’15.

Construction safety and health professional demographics

The field is dominated by males – constituting 92 percent of all those surveyed. The field is also dominated by Baby Boomers – 41 percent of those surveyed are between the ages of 50 to 59. Twenty-three percent are 60 years or older. Another 23 percent are between 40 to 49.

Not surprisingly, years of experience parallel the age of construction safety pros. Almost one in four (24 percent) have 31-40 years of experience on the job. Twenty-one percent have

ISHN safety pro **survey findings** *continued*

21-30 years of experience and 29 percent have 11-20 years logged as a construction safety professional.

What's the income level of construction safety pros? About four in ten (41 percent) earn $50,001 to $80,000 annually. About one in five (18 percent) earn $80,001 to $100,000; and another roughly one in five (18 percent) earn $100,001 to $125,000. About one in ten (12 percent) earn more than $125,000 annually.

As mentioned earlier, the construction industry is largely populated by small businesses. It is highly fragmented. More than one-third of respondents work for companies with annual revenues between $1 million and $10 million. Eighteen percent have revenues between $10 million to $50 million. Another 18 percent have annual revenues between $50 million and $100 million. About one in ten (nine percent) have annual revenues exceeding $5 billion.

The number of employees per company is in line with the revenue breakdown. About one-quarter (27 percent) have 100-499 employees. About one in five (22 percent) have ten-49 employees. Sixteen percent have fewer than ten employees, and five percent have more than 25,000 employees.

Specialty trade contractors fined $17+million

Falls are the leading cause of death on construction sites

By MAUREEN PARAVENTI, *ISHN* Web Editor

With nearly $20 million in penalties across all industries, fall protection topped the list of OSHA's most frequently cited standards during fiscal year 2014, with hazard communication and scaffolding holding the second and third positions. Out of a total of 39,228 OSHA inspections, 6,896 produced citations specifically related to violations of OSHA standard 1926.501 – general fall protection. Those 7,120 citations resulted in $19,834,111 in fines against employers.

The construction industry was at the receiving end of most of the agency's scrutiny, and for good reason. In 2013, falls were the leading cause of worker deaths on construction sites, accounting for 294 fatalities out of 796 total fatalities in construction.

Of 5,842 inspections conducted among specialty trade contractors, 6,011 citations were issued and $17,220,055 in fines levied. The building construction industry came in for 893 fall protection-related citations and $2,086,696 in penalties. Heavy and civil engineering construction's 55 citations derived from 52 inspections and brought with them $175,941 in penalties.

Noncompliance of 1926.501 was also found in the merchant wholesalers, durable goods industry, which received $122,442 in penalties; fabricated metal product manufacturing ($29,335); waste management and remediation services ($25,631); administrative and support services ($17,203); real estate ($10,020); machinery manufacturing ($14,637); utilities ($20,223) and accommodation ($9,695).

What the standard says

OSHA's fall protection standard for the construction industry requires employers to determine "if the walking/working surfaces on which its employees are to work have the strength and structural integrity to support employees safely. Employees shall be allowed to work on those surfaces only when the surfaces have the requisite strength and structural integrity." Additionally, employees on walking/working surfaces with an unprotected side or edge

Specialty trade contractors fined $17+million *continued*

that are six feet or more above a lower level must be protected from falling by use of guardrail systems, safety net systems, or personal fall arrest systems.

> Employees on surfaces with unprotected edges that are six feet or more above a lower level must be protected by guardrail systems, safety net systems, or personal fall arrest systems.

At the core of OSHA's nationwide outreach campaign to raise awareness about the hazards of falls are three steps:

PLAN how the job will be done, what tasks will be involved, and what safety equipment may be needed to complete each task.

PROVIDE fall protection and the right equipment for the job for workers who are six feet or more above lower levels. If roof workers use personal fall arrest systems (PFAS), a harness must be provided for each worker who needs to tie off to the anchor. Additionally, the PFAS must fit and all fall protection equipment inspected regularly to ensure it's in good condition and safe to use.

TRAIN workers in hazard recognition and in the care and safe use of ladders, scaffolds, fall protection systems, and other equipment they'll be using on the job. OSHA offers numerous materials and resources[1] that employers can use during toolbox talks to train workers on safe practices to avoid falls in construction.

Additionally, a Stop Falls Web page[2] has information in English and Spanish on fall protection standards.

1. https://www.osha.gov/stopfalls/edresources.html
2. http://www.osha.gov/stopfalls

Construction work in **confined spaces**

OSHA's standard confronts constantly changing conditions

By *ISHN* Staff

On May 4, 2015, OSHA issued a new standard for construction work in confined spaces, which took effect August 3, 2015. Confined spaces can present physical and atmospheric hazards that can be avoided if they are recognized and addressed prior to entering these spaces to perform work.

"This rule will save lives of construction workers," said OSHA Assistant Secretary of Labor Dr. David Michaels. "Unlike most general industry worksites, construction sites are continually evolving, with the number and characteristics of confined spaces changing as work progresses. This rule emphasizes training, continuous worksite evaluation and communication requirements to further protect workers' safety and health."

The new standard, Subpart AA of 29 CFR 1926, will help prevent construction workers from being hurt or killed by eliminating and isolating hazards in confined spaces at construction sites similar to the way workers in other industries are already protected.

Training requirements

Employers must provide training to each employee whose work is regulated by this standard, at no cost to the employee, and ensure that employees possess the understanding, knowledge and skills necessary to safely perform the duties assigned under this standard. Training must result in an understanding of the hazards in the permit space and the methods used to isolate, control, or in other ways protect employees from these hazards. For employees not authorized to perform entry rescues, it must convey the dangers of attempting such rescues.

Affected employees must be trained:

- In both a language and vocabulary that the employee can understand;
- Before the employee is first assigned duties under this standard;
- Before there is a change in assigned duties;
- Whenever there is a change in permit space entry operations that presents a hazard about which an employee has not previously been trained; and
- Whenever there is any evidence of a deviation from the permit space entry procedures required by paragraph §1926.1204(c) of this standard or there are inadequacies in the employee's knowledge or use of these procedures.

The training must establish employee proficiency in the duties required by this standard and must introduce new or revised procedures, as necessary, for compliance.

The employer must maintain training records to show required training has taken place. Training records must contain each employee's name, the name of the trainers, and the dates of

Construction work in confined spaces *continued*

training. Documentation must be available for inspection by employees and their authorized representatives, for the period of time the worker is employed by that employer.

Common questions

To assist employers in complying with the standard, here are some frequently asked questions and answers outline on its Website at www.osha.gov:

How do I know whether to follow the general industry or construction confined space rule?

If you are doing construction work – such as building a new structure or upgrading an old one – then you must follow the construction confined space rule.

Why did OSHA believe that the former standard needed to be changed?

Previously the only requirement for confined spaces in construction was training. OSHA concluded this was inadequate as injuries and fatalities continued to occur.

How does the new final rule differ from the rules that previously applied to construction work performed in confined spaces?

The rule requires employers to determine what kinds of spaces their workers are in, what hazards could be there, how those hazards should be made safe, what training workers should receive, and how to rescue those workers if anything goes wrong.

Where can I find the final rule for Confined Spaces in Construction?

Information on the confined spaces standard can be found on the Confined Spaces page at www.osha.gov/confinedspaces/index.html.

How can I contact OSHA if I have questions about the final rule?

For compliance assistance regarding application of the final rule contact: Directorate of Construction, Room N3468, OSHA, U.S. Department of Labor, 200 Constitution Avenue NW, Washington, DC 20210; telephone (202)-693-2020 or fax (202)-693-1689.

Who is affected by Subpart AA?

All construction employers whose workers may be exposed to confined space hazards.

Do I need to do anything if there are permit spaces at the worksite, but my employees will not need to enter the permit space?

Yes, you must take effective steps to prevent your employees from entering the space.

If I hire a contractor (or subcontractor) to do work in a confined space do I have any

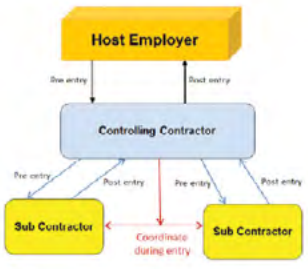
Construction work in confined spaces *continued*

responsibilities?

Yes, controlling contractors and host employers must discuss spaces on the site and their hazards with entry employers and each other before and after entry (see question below).

Tell me more about the conversations between host employers, controlling contractors and entry employers.

The rule makes the controlling contractor, rather than the host employer, the primary point of contact for information about permit spaces at the worksite. The host employer must provide information it has about permit spaces at the worksite to the controlling contractor, who then passes it on to the employers whose employees will enter the spaces (entry employers). Likewise, entry employers must give the controlling contractor information about their entry program and hazards they encounter in the space, and the controlling contractor passes that information on to other entry employers and back to the host. As mentioned above, the controlling contractor is also responsible for making sure employers outside a space know not to create hazards in the space, and that entry employers working in a space at the same time do not create hazards for one another's workers.



The diagram shows the information flow and coordination between these employers

What standard should I follow if my workers are doing construction AND general industry work in confined spaces?

An employer whose workers are engaged in both construction and general industry work in confined spaces will meet OSHA requirements if that employer meets the requirements of 29 CFR 1926 Subpart AA - Confined Spaces in Construction.

Twenty-seven states and territories have their own OSHA-approved safety and health plans; will those states be required to adopt the new standard?

Yes. Twenty-two states or territories currently operate their own OSHA-approved State Plans (covering private sector and state and local government employees), and five additional states and one territory (Connecticut, Illinois, New Jersey, New York, and the Virgin Islands) operate plans that cover state and local government employees only. State Plans have and enforce their own occupational safety and health standards that are required to be at least as effective as OSHA's. Many State Plans adopt OSHA's standards identically, but some State Plans may have different or more stringent requirements.

Construction boom:
Bust for worker safety in some cities

By KATHY JACKSON

Construction is undoubtedly booming across the United States. It has been estimated that the industry will grow by 6 percent this year, and that rate is even faster in a number of cities. However, this construction boom has not necessarily been all good news for workers. While the growing number of construction sites has created plenty of jobs, it has also led to accidents and even deaths.

Construction can be a risky job. Employees often work at great heights, in trenches, with heavy machinery, and near open electrical wiring. In fact, the Bureau of Labor Statistics considers construction to be one of the most dangerous industries in the country. However, on-the-job safety can be improved when management and employees adhere to the Occupational Safety and Health Administration's standards, as well as when OSHA effectively enforces those rules. Unfortunately, budget cuts in recent years have diminished OSHA's capacity to encourage employer compliance with safety standards through impromptu inspections.

Where is the construction boom?

The construction industry has been doing particularly well in Houston, Dallas, New York, Chicago, and Denver. Houston and Dallas construction workers are busy in the residential construction industry, as population surges have fueled demand for housing in both cities. In Houston, the healthcare industry is expanding, leading to the construction of a $1.5 billion research campus for Texas Medical Center.

Office and residential construction are thriving in New York, as is hotel construction. In fact, far more hotel rooms are being built in this city this year than anywhere else in the United States. Hotel construction is also partly responsible for fueling Chicago's construction boom; however, the city is also set to be home to some exciting projects in the near future, including the Barack Obama Presidential Center.

Construction boom *continued*

Denver, which is one of the fastest growing areas in the U.S., has a chronic shortage of housing that is fueling residential construction. Energy projects, such as rail facilities for the storage and transport of locally produced crude oil, are also calling for construction workers.

In Washington D.C., a wide variety of projects are keeping construction companies and their workers extremely busy. The city is seeing an exponential rise in new and remodeled houses, retail spaces, offices, museums, and other edifices.

Where are the construction accidents?

New York stands out as the place where a large number of construction accidents have occurred. Construction injuries in the city have risen by an astounding 53 percent and average deaths per year have gone from 5.5 to ten, an over 100 percent increase. The spike in accidents and deaths is outpacing the increase in construction projects in the city. Manhattan has been identified as the place where the overwhelming majority of construction-related fatalities have occurred; however, construction workers have also had fatal accidents in the Bronx, Brooklyn, and Staten Island.

New York construction accidents are making news, but Texas has the highest rate of worker deaths. On-the-job injuries are also common in the state: One out of every thirteen people in Texas works in construction, and 20 percent of them have had to seek medical attention at least once for a serious work-related injury.

Notable construction accidents

Jeffrey Thaemert was killed in a gruesome construction accident in Texas in 2014. An elevator crushed him while he was working in the shaft at a new business school. OSHA inspectors later faulted the contractors for failing to follow safety procedures, and Thaemert's family is now suing both the contractor and subcontractor responsible for allowing the elevators to continue operating while someone was working in the shaft.

In 2015, Carlos Moncayo was crushed while working at a construction site that had been previously inspected and deemed treacherous. Mr. Moncayo's death, which was completely avoidable, has led the New York district attorney to take the unusual step of filing manslaughter charges against two construction managers and the managers' employers. Furthermore, the Buildings Department issued a warning to inspectors, asking them to call 911 or the Building Department's hotline regarding hazardous construction site conditions.

Causes of construction accidents

There are several reasons why there is a surge in fatal and injury accidents in the construction sector. In a number of instances, the victims were not legally living in the U.S. Many companies that hire undocumented workers fail to ensure that they have the proper training and experience to do their jobs safely. The workers themselves are often afraid to speak out about unsafe working conditions for fear of being deported. In Texas, where a large number of construction workers are Latinos, 60 percent

Construction boom *continued*

have not received health or safety training of any kind.

Tight deadlines are also responsible for a growing number of accidents and fatalities in the construction industry. As construction companies and contractors rush to complete building projects on time, important safety measures are ignored and workers endangered.

The organization tasked with protecting worker health and safety, OSHA, is seriously understaffed: less than 3,000 inspectors are responsible for monitoring 8 million worksites across the country. As the recent spate of fatal and injury construction accidents has proven, safety regulations can be ineffective when left unenforced.

Construction accident prevention

There are some things that can be done to reduce the growing number of construction accidents and fatalities. Workers are encouraged to receive formal training, especially for skilled jobs like electrical wiring or welding. Trade schools not only provide instruction on how to use equipment properly but also offer safety training that can prevent construction workers from hurting themselves and/or colleagues on the job. OSHA training is also extremely beneficial; courses include confined space entry, fall arrest systems and machinery safety standards.

Construction workers may also want to consider union membership when choosing an employer. As the New York Committee for Occupational Health and Safety points out, the vast majority of construction deaths occur at non-union sites.

While the construction boom has been accompanied by a string of accidents, the industry does not have to be as unsafe as it presently is. Proper education, following safety procedures, and reporting hazardous construction areas can prevent accidents and deaths. However, all involved in the industry must work together for construction to become safer—especially since OSHA lacks the manpower to enforce safety standards. Inspectors must report hazardous sites, construction contractors and managers must put worker safety first, and construction workers should obtain safety training so that they are aware of potential hazards and know how to avoid them.

Kathy Jackson is a recent journalism school graduate seeking to build her online and print writing portfolio. She has a diverse skillset, ranging from long-form investigative articles to brief blogs to engaging infographics. Subjects she has covered in-depth include career discovery, skilled trades, and public safety.

Where to locate Emergency Safety Showers and Face/Eyewash stations in the constantly changing environment of a construction site

Construction sites by their nature are transient environments. As buildings and infrastructure progress, often across large land sites, so the workforce moves too and their exposure to hazards in the workplace move with them.

Sites may also not have ready access to a clean potable water supply, so the provision of Emergency Safety Showers and Eye/Face Wash stations can be challenging.

ANSI recommended standards are clear about the parameters for the provision of showers in these environments, but in the absence of plumbed water or power supply to manage heating of water to the tempered levels required, the Emergency Shower manufacturers have developed portable solutions to help meet the immediate needs and guarantee worker safety in the modern construction environment.

These portable shower units provide proximity response within ten seconds of a hazard and will drench water at 20 gallons per minute (76 liters) meeting some of the ANSI compliance guidelines. However, sites should still provide access to additional fully compliant showers offering 15 minutes of continuous water flow. These portable units are a first line of defence, offering rapid access for casualties that are proven to help reduce serious injury or damage to sight.

The benefit of portable units, such as those available in the Hughes STD-40K range, is that emergency response equipment can be quickly sited close to where operatives are working and moved as the job progresses.

The Standard STD-40K Mobile Self-Contained Emergency Safety Shower with eye/face wash has a capacity of 30 gallons (114 liters) and gives a constant flow of water for approximately 1½ minutes. The specially designed plastic-lined cylinder is constantly charged with pressure and only requires the connection of a hose from a water main to fill it ready for use.

Its compact design enables it to be easily stored when not in use. By incorporating a stainless steel frame and large-diameter pneumatic tyres, this cylinder can be freely moved and manoeuvred by one person.

Designed for use where indoor or outdoor sites have acceptable ambient temperatures not requiring frost protection or heated water, the Standard STD-40K unit was first launched in 1997 in Europe and is the world's biggest selling portable solution outside of the USA. It has proven a popular choice for construction sites across much of America since its introduction in 2006. In 2011 Hughes introduced the STD-H-40K, a trace tape heated and pre-insulated model for when ambient temperatures demand a heated solution, and the STD-J-40K offering a jacketed version for frost protection. The 30-gallon mild steel cylinder is lined to avoid internal corrosion,

Where to locate Emergency Safety Showers and Face/Eyewash stations *continued*

while the exterior is painted with acid-resistant white enamel paint. Heated and jacketed versions benefit from a heavy-duty polyethylene outer jacket and CFC-FREE polyurethane insulation.

Should it be necessary to move the units long distances or over uneven surfaces, an 'A' frame with towing hitch (optional) can be fitted, enabling them to be towed by any vehicle with a standard tow ball. The wheel spacing can also be altered, which allows the unit to fit through standard door openings. This is particularly important for indoor use, for example, in a laboratory or acid store.

The unit can be fitted with the optional Hughes STD-45G Eye/Face Wash and the Hughes Optiflex handheld eye, face and body shower with flexible hose, which all draw pressurized water from the specially designed cylinder, providing the features of a full-size shower in a small compact portable unit.

When full ANSI compliance is needed in a portable format – consider the Hughes Bowser 2000L.

For sites where no supplementary showers are available to support the tactical use of the ultra-portable STD-40K, construction site managers are turning to the larger 530-gallon (2000 liter) Bowser designs, which combine portability with full ANSI compliance.

The Hughes STD-MH-P-2000L Mobile Self-Contained Emergency Safety Shower has a capacity of 530 gallons and gives a constant flow of water for over 15 minutes. The green polyethylene tank incorporates an electric submersible pump, which requires either a main or generator-fed electricity supply to drive the water flow of 20 gallons per minute. An integral immersion heater, controlled by a dual safety thermostat, maintains the water in the tank at a constant temperature between 60-100 F. These combined features, plus the ability to site the Bowser within ten seconds of a potential hazard, confirm ANSI compliance in a portable solution.

The tank can be filled with potable water by hose and then transported to a location behind a suitable motor vehicle using the standard ball-type towing hitch provided. It is designed to enable it to be easily stored when not in use. The tank is mounted on a heavy-duty galvanised mild steel frame and has four braked wheels fitted with standard trailer-type pneumatic tyres.

The Bowser range also includes a two-braked wheel trailer version offering a smaller 317-gallon (1200 liter) capacity tank. Both Bowser models can be fitted with optional eye/face wash units.

The construction industry in the USA has proven itself to be a guardian of good health and safety practice, from the challenges of working at height to the handling and storage of potentially harmful materials. The industry and its leaders continue to promote and adopt best practice solutions.

Hughes Safety Showers are now a firmly established choice for Emergency Decontamination across the USA with manufacture, assembly, and sales offices, supported by a network of distribution partners and presence in the latest 2016 Grainger catalog.

For further information about portable shower solutions for the construction industry, our wider range of products, or Hughes Emergency Decontamination solutions, please visit www.hughes-safety-showers.com or call Hughes North America on (1) 866 312 1652.

By Steve Willock, Marketing Director – Hughes Safety Showers

It's all about response speed

10 seconds from hazard

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Hughes Safety Showers offer an extensive range of Emergency Safety Showers and Eye/Facewash stations providing the first line of defence in the event of a chemical spillage. Delays in washing off dangerous substances can result in more serious injury. Our temperature controlled indoor and outdoor showers, tank showers, mobile and portable units provide accessible, easy to operate solutions for your industry. They are designed to meet immediate emergency need and where required exceed ANSI Z358.1 2014 standards.

EXP-MH-14K-2000
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STD-40K

STD-MH-P-2000L

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High-risk culture

Many construction hazards & safety issues are also yours

By DAVE JOHNSON, *ISHN* Editor

Construction is among the most dangerous industries in the country, and construction inspections comprise 60 percent of OSHA's total inspections. Nearly one out of every five work-related deaths in the U.S. occur on construction projects. Among the most vulnerable workers in America are those who work in high-risk industries, particularly construction. Because of language barriers, literacy, and other limitations, these workers are often hard to reach through traditional communications methods.

U.S. Bureau of Labor Statistics Injury, Illness & Fatality Statistics

- Total recordable injury and illness cases per 100 workers: 4.0 (2010) 3.9 (2011) 3.7 (2012) 3.8 (2013)
- Total recordable rate all industries: (2013) 3.3 cases per 100 full-timers (2013)
- Fatalities: 802 (2010) 781 (2011) 849 (2012) 824 (2013)
- Total private industry fatalities: (2013) 4,405 / 3,929
- Construction fatalities: 18 percent of total fatalities / 20 percent of total – 796 in 2012
- 37 percent (294) falls, slips and trips: 12 percent roadway 10 percent (82) struck by object or equipment 8.9 percent (71) electrocutions (2012)

High-risk culture *continued*

OSHA Construction Industry Enforcement Data

33,001 total citations, 13,160 inspections, $61,010,839 total proposed penalties Oct 2014- Sept. 2014

Frequently cited OSHA standards for the utility industry Oct 2013 – Sept 2014

- Fall protection
- General requirements
- Ladders
- Training requirements
- Eye and face protection
- Head protection
- Hazard communication
- General safety and health provisions
- Aerial lifts
- Special excavation requirements
- Fall protection systems criteria and practices
- Wiring methods, components and equipment for general use
- Respiratory protection

Construction Industry Safety and Health Major Issues

- Construction inspections comprise 60 percent of OSHA's total inspections.
- In 2009, preliminary data from the Bureau of Labor Statistics indicate that there were 816 fatal on-the-job injuries to construction workers — more than in any other single industry sector and nearly one out of every five work-related deaths in the U.S. that year.
- In 2009, construction also had two of the ten occupations with the highest fatal injury rates: roofers at 34.7 fatal work injuries per 100,000 full-time equivalent workers and structural iron and steel workers at 30.3.
- Language barriers
- Illiteracy
- Vulnerability of Latino workers (lack of training, lack of PPE, high fatal and nonfatal injuries)
- Contractor safety oversight
- Temporary worker, contract worker, day laborer safety
- Transitory workforce (one study: approximately 50 percent of individuals on-site at the beginning of a given month will remain on-site at the beginning of the next month, 25 percent will remain at the end of the following month)
- Lone worker safety/prevalence of autonomous working conditions; little interaction with upper management
- Apprentice workers reluctant to "make waves"
- Suspected significant numbers of construction workers conceal, do not report, work injuries
- Importance of daily toolbox talks led by foremen
- Importance of worksite cultures of safety allowing workers to speak up about hazards, injuries
- Aging workforce (Center for the Protection of Workers Rights — CPRW): The average age of construction workers jumped to

High-risk culture *continued*

41.5 years in 2010, two years older than in 2007, and 5.5 years older than 25 years ago. The age group suffering the largest proportion of both fatal and nonfatal work injuries has shifted from those aged 25-34 years in 1992 to those aged 45-54 years in 2010. The injury types and patterns differ significantly among age groups. While older workers had a lower rate of nonfatal injuries than younger workers, they spent more days away from work after an injury, which significantly increased their workers' compensation costs.

- Chronic diseases and functional limitations among older construction workers
- Chronic back pain among older construction workers

Construction Disasters in American History

• The Hoover Dam

One estimate puts the total death toll at 112. The first death was in 1922, when surveyor J.G. Tierny drowned in the Colorado River while scouting the best location for the dam. Tierny's son Patrick was the last person to die during the dam's construction, falling to his death exactly 13 years to the day of J.G. Tierny's death.

• Willow Island

During the construction of a cooling tower at Willow Island, West Virginia in 1978, the scaffolding collapsed, causing 51 workers to fall to their deaths. OSHA determined there was a lack of ladders for escape, bolts were loose or missing on certain parts of the structure, and concrete was not given enough time to properly settle.

• Hawk's Nest Tunnel

Construction began in 1927 to create a 3-mile tunnel beneath a mountain in West Virginia to help generate power for a local plant. During the construction, silica was discovered. Workers were asked to start mining the silica; almost none received proper respiratory protection. Workers became ill with silicosis. Death toll estimates ranged from 476 to more than 1,000.

• East 51st Street

In 2008 a fatal incident occurred in New York City during the construction of a 40-story apartment building on East 51st Street. Workers were attaching a steel collar in order to raise a tower crane higher when it snapped and fell, killing seven people.

High-risk culture *continued*

CONSTRUCTION INDUSTRY MAJOR SAFETY & HEALTH HAZARDS

- The "Fatal Four" –

1-Falls
2-Struck by object (contact)
3-Caught-in/between (contact)
4-Electrocution

- Transportation crashes
- Exposure to harmful substances and environments
- Trench cave-ins
- Lead poisoning
- Lung disease
- Cancer from asbestos exposure
- Cancer from silica exposure
- Hearing loss
- Musculoskeletal disorders
- Heat stress
- Dehydration
- Cold stress
- Frostbite
- Weather extremes
- Scaffolding safety
- Ladder safety
- Welding hazards
- Burns

- Confined spaces
- Heavy equipment
- Work at height
- Dropped objects from heights
- Wiring, electrical safety
- Demolition / explosions/fire
- Exposure to dusts and fumes

Up on the roof

The biggest risk: failing to use a fall protection system

By HARRY DIETZ

Installing and repairing roof systems is difficult work that requires skill and craftsmanship to protect a building from the elements. What makes it even more challenging is that the work must be performed at elevation, where workers are exposed to unprotected roof edges, unguarded skylights, and hatches and roof decks that may not have the structural integrity to hold workers, material, and equipment.

The latest numbers on workplace fatalities from the U.S. Bureau of Labor Statistics (BLS) show that 66 roofing company employees died from falls in 2013, up from 65 in 2012 and 61 in 2011.

Know your regs

Fall protection in the roofing industry is determined in those states under federal OSHA jurisdiction by the provisions found in Subpart M, Fall Protection, 29 CFR 1926.500-503. Most state plan states, that is, states that administer their own occupational safety and health program, have incorporated those same federal fall protection regulations and specific fall protection control systems into their rules for worker protection. State plan states such as California, Kentucky, Oregon and Washington have unique fall protection requirements that differ significantly from the federal rules. In some states, broader fall protection

system options for workers are available for a contractor to select based on the nature of the work and the hazards faced.

OSHA construction regulations apply to work done under a contract for construction, alteration, or repair. Construction workers generally are required to have fall protection when they are exposed to falls of six feet or greater. OSHA general industry rules cover most other workers in manufacturing, warehousing, and other business classifications and mandate fall protection when workers are exposed to fall hazards of four feet or greater.

Conventional fall protection

Generally, roofing workers on low-sloped roofs (4:12 or less)

Up on the roof *continued*

must be protected from falls at heights of six feet or greater by guardrail, safety net, or personal fall arrest systems (PFAs), often called "conventional" fall protection. Conventional fall protection systems also are required to protect other workers covered under the construction regulations. However, OSHA rules applicable to roofing work on low-slope roofs also allow a warning line system in combination with one of the conventional fall protection systems, or a warning line and safety monitoring system to be used to protect workers from falls. On roofs 50 feet wide or less, a safety monitoring system alone may be used.

Defining "roofing work"

A critical factor in the use of those fall protection systems not considered conventional under OSHA rules is that the work being done must fall within the definition of "roofing work." OSHA defines that as:

"…the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck."

If work taking place on a low-slope roof does not fall within the definition of roofing work, only conventional fall protection may be used to protect workers at heights of six feet or greater. On steep-slope roofs (greater than 4:12 pitch), only conventional fall protection may be used to protect workers without regard to the whether the work being performed meets the definition of roofing work. For steep-slope roofing, PFAs tend to be the fall protection system of choice for most roofing contractors with workers required to use rope grabs and lifelines or self-retracting lifelines (SRLs). Some innovative equipment manufacturers have designed guardrail systems that can be installed relatively easily at the eave and rake edges of steep-slope roofs with brackets that may be adjusted so that guardrail posts are most effective in stopping a falling worker.

However, on some residential steep-slope buildings, other fall protection measures may be employed under the auspices of a written fall protection plan if a contractor shows that conventional fall protection is infeasible or creates a greater hazard. There is a presumption that conventional fall protection is feasible and will not create a greater hazard and the contractor accordingly has the burden of establishing that the controls provided under a fall protection plan are appropriate.

Sad reality

The quality of fall protection equipment and systems available today in roofing and construction has never been better. Manufacturers of such specialized equipment have made it safe, effective, and affordable.

Unfortunately, a recent review of OSHA inspection data from job sites where a roofing worker fatality has occurred shows that in the majority of instances, NO fall protection system at all was being used to protect the worker who subsequently died.

Up on the roof *continued*

In 138 of 153 incidents during the 2004-2008 period that inspection reports were studied, OSHA makes no mention in the report of a specific fall protection system in place or states directly that no fall protection was being used at the time of the incident. Equally disheartening, in 11 of the remaining 15 fatalities, workers were using PFAs but had disconnected from the anchor point or lifeline, rendering the system ineffective and ultimately causing the death.

Going forward

The release of BLS workplace fatality numbers is always a sobering event and it reflects the vast amount of work that we all must do to try to make the roofing workplace safer.

Roofing contractors must commit to developing a culture of safety at their company to ensure that workers are protected during all phases and aspects of a roofing project. This starts with performing job hazard analyses of projects so that each particular dangerous situation is identified and proper controls are applied. Often, proper controls may mean that unique or new fall protection systems are purchased and implemented or that established systems are reviewed for effectiveness.

An essential part of that process is comprehensive worker training in the fall hazards that they will encounter and the fall protection equipment they will be using. Deficiencies in worker training and failing to audit workplaces to ensure compliance are often precursors to a fatal or serious injury event—a sad example being workers who died while using PFAs that were unhooked from anchor points.

With the support of OSHA, the National Roofing Contractors Association (NRCA) delivers free fall protection training for workers throughout the U.S., focusing on fall hazards and controls workers must employ to minimize or eliminate the risk of injury or death.

Resources

In addition, NRCA has recently updated two of its safety publications, NRCA Toolbox Talks and NRCA Pocket Guide to Safety to include the most current safe workplace practices for roofing professionals. To learn more go to www.nrca.net.

Everyone in the roofing industry looks forward to the day when contractor and worker compliance with fall protection requirements is reflected in a downward trend of BLS fatality statistics with regard to falls from roofs.

Harry Dietz is the director of enterprise risk management, National Roofing Contractors Association.

What you should know while working outdoors!

Providing a safe and healthy work environment for employees should be at the top of the list for you as an employer. Did you know that a common denominator of the top ten most dangerous jobs in the U.S. is working outdoors? In some types of work, danger is a part of the job description, but being outdoors on a daily basis lends itself to less obvious risks that still can have potentially deadly threats. The outdoor workplace exposes employees to increased sun exposure, infectious insects, and poisonous plants. Education about these concerns and protection against them are simple safeguards that are mandated by OSHA. So how are you protecting your outdoor workers?

The O.S.H.A standard states "Protect the Employee From All Known and Recognized Hazards" 1926.28(a). That includes skin care.

Sun

Reduce your employees' risk by incorporating the best skin protection program. Sun exposure is the primary cause of skin cancer today, and with one million individuals in the U.S. being diagnosed each year, it is imperative that outdoor workers be properly protected. Melanoma, the most serious skin cancer, accounts for more than 75 percent of skin cancer deaths. Outdoor workers receive five to ten times more UV radiation exposure than indoor workers, significantly increasing their risk of developing skin cancer. All skin types may be damaged by exposure to UV radiation and this damage is permanent, irreversible, and increases with each exposure.

Sun X SPF 30 Broad Spectrum Sunscreen is FDA compliant with the new FDA sunscreen monograph. The formulation offers equal UVA and UVB protection from the sun's harmful rays and is rated water resistant with a maximum duration time allowed by FDA of 80 minutes. Sun X SPF 30 Broad Spectrum Multi-Pack w/Dry Towelette is a new, innovative, and FDA compliant single-dose foil package design. This packaging offers a convenient way to apply sunscreen while absorbing sweat, dirt, sunscreen, and/or other substances.

Infectious Insects

Arm your employees with the proper defense, such as BugX. Zika virus, West Nile virus, and Lyme disease are all spreading quickly and becoming a serious concern. Infectious insects such as mosquitoes and ticks have the potential to be carriers of these devastating diseases. One simple bite may transfer a disease-causing agent, such as a parasite, bacterium, or virus. The infected individual may experience general malaise with non-specific symptoms ranging from mild to severe. Not only does this result in the loss of work but if not treated properly, it can have a detrimental effect on the body. Unlike the typical bullseye mark associated with Lyme disease, both Zika and West Nile viruses may go undetected. Those infected could potentially be carriers of the disease without even knowing it.

What you should know while working outdoors!

The BugX line of products effectively repels mosquitoes and other insects carrying Zika virus, West Nile virus, Lyme disease, HGE, Encephalitis, Malaria, Dengue Fever, and Spotted Fever. The BugX30 and BugX25 Aerosol have newly approved EPA formulas that allow the DEET to be released in a more controlled and measured manner, permitting longer-lasting performance, once attained only by high concentrations of DEET. This unique formulation provides up to eight hours of protection from mosquitoes, ticks, chiggers, fleas, gnats, and biting flies while being non-greasy and low odor.

Poisonous Plants

Guard your workers with IvyX. Poison ivy is the name commonly used when speaking of several different species of the sumac family that include poison ivy, poison oak, and poison sumac. Each year, these plants cause almost two million cases of dermatitis. They release an oil, urushiol, when the leaf or other plant parts are bruised, damaged, or burned. When the oil gets on the skin, an allergic reaction occurs and causes itchy red rash with bumps or blisters. Even a minute amount of urushiol, less than a gram of table salt, will cause a reaction in 80-90 percent of individuals.

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Construction's **number one killer**

OSHA raises awareness to reduce fatal falls

By *ISHN* Staff

Falls are the leading cause of fatalities in construction, accounting for about one-third of all fatalities in the industry. There were 291 fatal falls to a lower level in construction in 2013, out of 828 total fatalities, according to the Bureau of Labor Statistics.

OSHA has worked hard to raise awareness of fall hazards in construction and help prevent fatalities. In addition to its National Safety Stand-Down, which took place in May, OSHA offers a range of educational and training materials and resources on the topic.

OSHA recognizes that incidents involving falls are generally complex events, frequently involving a variety of factors. The agency recently released a publication intended to help workers and employers better understand the Fall Protection in Construction standard's requirements and the reasons behind them.

Subpart M lays out the requirements and criteria for fall protection in construction workplaces. For example, it applies when workers are working at heights of six feet or more above a lower level. It also covers protection from falling objects, falls from tripping over or falling through holes, and protection when walking and working around dangerous equipment without regard to height. Subpart M provisions do not apply, however, to workers inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all construction work has been completed. The provisions of Subpart M can be found in Title 29 Code of Federal Regulations (CFR) Subpart M - Fall Protection, 29 CFR 1926.500, 29 CFR 1926.501, 29 CFR 1926.502, and 29 CFR 1926.503.

Below are examples of fall protection requirements for certain construction activities as outlined in OSHA's new publication. For additional information, view the complete publication at www.osha.gov/Publications/OSHA3146.pdf.

Leading Edges – 29 CFR 1926.501(b)(2)

Each worker constructing a leading edge six feet or more above a lower level must be protected by guardrail systems, safety net systems, or personal fall arrest systems. 29 CFR 1926.501(b)(2)(i).

Exception: When the employer can demonstrate that it is

Construction's number one killer *continued*

infeasible or creates a greater hazard to use these systems, the employer must develop and implement a fall protection plan which meets the requirements of 29 CFR 1926.502(k). See the section below on Fall Protection Plans.

Workers must be protected by guardrail systems, safety net systems, or personal fall arrest systems, even if they are not engaged in leading edge work, if they are on a walking or working surface that is six feet or more above a level where leading edges are under construction. 29 CFR 1926.501(b)(2)(ii).

Overhand Bricklaying and Related Work – 29 CFR 1926.501(b)(9)

When workers perform overhand bricklaying and related work six feet or more above a lower level:

- They must be protected by guardrail systems, safety net systems, or personal fall arrest systems, or
- They must work in a controlled access zone (CAZ)

All workers reaching more than ten inches below the level of the walking or working surface on which they are working must be protected by a guardrail system, safety net system, or personal fall arrest system.

Roofing Work on Low-Slope Roofs – 29 CFR 1926.501(b)(10)

A low-slope roof has a slope less than or equal to 4 in 12 (vertical to horizontal). When engaged in roofing work on a low-slope roof that has one or more unprotected side or edge six feet or more above lower levels, workers must be protected from falling by:

- Guardrail systems,
- Safety net systems,
- Personal fall arrest systems,
- A combination of conventional fall protection systems and warning line systems, or
- A warning line system and a safety monitoring system.

When engaged in roofing work on low-slope roofs 50 feet or less in width, the use of a safety monitoring system without a warning line system is permitted.

Working on Steep Roofs – 29 CFR 1926.501(b)(11)

A steep roof has a slope greater than 4 in 12 (vertical to horizontal). When working on a steep roof that has one or more unprotected side or edge six feet or more above lower levels, each worker must be protected by:

- Guardrail systems with toeboards,
- Safety net systems, or
- Personal fall arrest systems.

Residential Construction – 29 CFR 1926.501(b)(13)

Workers engaged in residential construction six feet or

Construction's number one killer *continued*

more above lower levels must be protected by conventional fall protection (i.e., guardrail systems, safety net systems, or personal fall arrest systems) unless another provision in 29 CFR 1926.501(b) provides for an alternative fall protection measure.

Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer must develop and implement a site-specific fall protection plan which meets the requirements of 29 CFR 1926.502(k). See the section on Fall Protection Plans, below.

Note: For purposes of determining the applicability of section 1926.501(b)(13), the term "residential construction" is interpreted as covering construction work that satisfies the following two elements: (1) the end-use of the structure being built must be as a home, i.e., a dwelling; and (2) the structure being built must be constructed using traditional wood-frame construction materials and methods. The limited use of structural steel in a predominantly wood-framed home, such as a steel I-beam to help support wood framing, does not disqualify a structure from being considered residential construction. For more information see OSHA's Compliance Guidance for Residential Construction, STD 03-11-002.

Other Walking or Working Surfaces – 29 CFR 1926.501(b)(15)

As a general matter, each worker on a walking or working surface six feet or more above a lower level must be protected from falling by a guardrail system, a safety net system, or a personal fall arrest system.

Exceptions: For exceptions to this rule that specify different requirements, see 29 CFR 1926.500(a)(2) and 29 CFR 1926.501(b)(1) through (b)(14).

For other resources regarding fall prevention in the construction industry, visit www.osha.gov/StopFallsStandDown/resources.html and www.osha.gov/stopfalls/.

Protect your (eye)balls

Despite the fact that many job sites require eye protection, about 2,000 workers a day suffer a job-related eye injury that requires medical attention.[1] A key element in reducing that number is ensuring worker compliance. Meaning: wearing their safety glasses at all times (when required and, perhaps, then some).

Workers often forgo their safety glasses at every opportunity. Whatever the reason – lack of comfort, lenses and frames not suited to the conditions, the "uncool" factor, etc. – workers would rather risk an eye injury than wear underperforming, low-quality specs.

Three primary reason glasses find their way off the nose and eyes they are protecting are size, style, and performance.

1. **Size:** If glasses don't fit (and everyone knows one size does not fit all), workers will look to remove them every chance they get.
2. **Style:** No one likes to look silly, yet that's exactly how many traditional safety glasses look.
3. **Performance:** Then there is that dreaded "F word" – fog. Everyone's had that moment when they are focusing on the task at hand and before you know it, your lenses are fogged up like the backseat of a Chevy at a drive-in. Unlike the drive-in, however, you're actually trying to see the scene!

Leaving safety glasses off exposes workers to a variety of potential job site hazards including (but not limited to):

- **Flying Objects:** If a task requires cutting, chipping, or grinding, eyes will be exposed to potentially harmful airborne objects.
- **Dust:** Whether kicked up by wind or work, dust on job sites can be a real nuisance. Wear snug-fitting glasses and employ engineering controls like guards or wet-cutting methods for extra eye protection.
- **Ultraviolet (UV) Light:** Prolonged exposure to bright ultraviolet (UV) light can inflame the cornea and cause burns similar to a skin sunburn.

When selecting eye protection, look for safety glasses compliant with and marked to ANSI Z87.1 standard for Eye and Face Protection. Many industrial jobs require protection from high-velocity impact. Glasses that provide that ANSI-compliant impact protection must be marked with a "+" on the frame and lenses. Some glasses are also tested to a much more rigid U.S. military impact test, though there is no specific marking required for this. MIL impact glasses are often called out specifically on packaging or in marketing materials. All models in Ergodyne's Skullerz® Eye Protection Line provide compliance not only to the ANSI Z87.1+ High-Velocity Impact standard but to the MIL-PRF Ballistic Impact test – over 4X the impact protection required by ANSI Z87.1+.

All Skullerz® Safety Glasses feature polycarbonate lenses with a scratch-resistant coating and filter 99.9 percent of harmful UV rays (even clear lenses). Lenses are available in a variety

Protect your (eye)balls *continued*

of tints and options, from lighter tinted indoor/outdoor lenses to dark smoke or copper, to glare-busting mirrored coatings. Premium polarized lenses are also available, as are lenses with permanent, proprietary Fog-Off™ anti-fog technology.

Look for safety glasses with removable temples or a special system designed to accommodate accessories like elastic bands that keep them snug to your head. This is an especially important feature when used in tandem with a removable foam gasket, a debris entry-reducing option available on many of Ergodyne's Skullerz® Safety Glasses.

At Ergodyne, we're firm believers that cool drives compliance, and eyewear is not the place to cut corners on cost. When you look at the average cost of an eye injury ($1,463)[2] – not including missed work days! – and weigh that against the price of a quality safety spectacle ($20-$50), it's a no-brainer.

And if workers want to wear them on the weekend – all the better.

By Andy Olson. Andy is responsible for Ergodyne's Protection product pillar. He serves as the company's ISEA representative on the eye protection, hand protection, and hi-vis apparel standards committees. For more information on the full line of Skullerz® Safety Glasses, please visit https://www.ergodyne.com/eye-protection.html.

1. The National Institute of Occupational Safety and Health. Eye Safety. http://www.cdc.gov/niosh/topics/eye/

2. Occupational Safety & Health Administration. https://www.osha.gov/SLTC/etools/safetyhealth/mod1_costs.html

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Digital audits come of age

Improve construction site safety with smartphones

By TANIA CLARKE

Working on a construction site has inherent dangers that a desk job will simply never have. However, with the integration of technology on these construction sites, it can certainly improve. A health and safety professional's job is a tough one. You're managing risk across a diverse workforce with multiple pieces of equipment meant to perform a whole slew of different functions. The good news is that there are a number of safety practices that companies can implement to improve safety standards, and empower front line workers to be responsible for their own safety and of their colleagues. Here are five ways you can ensure improved site safety using technology:

Perform regular digital audits

Best practices come from understanding where you could improve. This knowledge can't be attained when you have no insight into how areas of your projects are performing. Regular audits provide safety professionals with real-time visibility, instant updates, and the ability to collaborate with other workers. They can also quickly and effectively determine patterns of workers, projects, regions, or companies. Using these patterns, health and safety professionals can analyze that data to understand where their future faults may lie. Having this visibility is crucial to prevent future injuries or incidents.

Although we're excited about technology, we can't ignore the elephant in the room: the pen and paper checklist. People are still spending hours of their day auditing by paper and battling with fax machines and spreadsheets. Not only is it time-consuming, but hard copies can be

Digital audits come of age *continued*

lost or stored in files to never be seen again. There are a multitude of affordable inspection apps on the market offering professionals real-time hazard recognition and data collection, image annotation, minimal reporting time, and the ability to collect data across multiple projects in one central location.

Quality safety inspections can be conducted using the appropriate type of construction safety checklists:

1. Toolbox Meeting Checklists - A toolbox checklist is an essential tool for your construction project. Regular, short, sharp toolbox meetings are an excellent way to get safety messages to your employees at the start of each day. After the toolbox meeting is done, using a smartphone inspection app, you can email a copy to all your workers directly from your mobile phone.

2. Site Induction Checklists - Site inductions are essential to the success of a project but are often poorly executed. Any new contractor, visitor, or employee to the site should be inducted. A good site induction will inform people about the hazards and risks they may face at that particular job site, how the risks are controlled, and what to do in an emergency.

3. ISO 9001 Standard Checklists - A digital ISO 9001 checklist will ensure you are prepared and have a good understanding of what is required for certification.

Give employees tools that work

It's obvious that inefficient tools produce inefficient work. The same goes for the tools you give your workers to perform audits. We've all been handed a tool that is supposed to make our lives easier, only to find it makes our job a lot more complicated and time-consuming. A study conducted by the Center for Construction Research and Training about technology and safety management found that there is agreement among the construction industry that using mobile devices has a positive impact on job site safety. Before mobile devices, workers carried around paper checklists, which would later be manually entered into a database. This process caused them to double handle information, doubling the potential to make an error in the recording process. Equipped with a mobile device, safety professionals can be highly effective because they can host a range of different tools. Inspection apps are particularly useful as they provide employees the freedom to perform audits in a matter of minutes.

Site inspections, cost estimations, and project management can now all be done in real time through a paperless process using smartphones, tablets, and other mobile devices. Using this method also requires minimal training for your employees as most apps are painless and quick to implement. Document sharing can also save workers a lot of time and possibly help increase safety too, by making it less likely for documents to be out of date. Updating paper checklists and

Digital audits come of age *continued*

documents with one small change and getting employees to adopt it is a huge feat.

Empower front-line workers by involving them in safety processes

The best part about empowering front-line workers to use technology is that they're responsible for their own actions and ready to handle onsite issues that come their way. Too often, safety procedures are adopted by management and then pushed onto the worker out in the field, who finds them difficult to implement. If your workers don't agree with the tools you're giving them, they'll be less likely to use them. Assess whether your workers are comfortable using technology. Your workers are the eyeballs you need on your job sites. For example, if you want everyone to inspect their worksite on a daily basis, the tool they use needs to be something they're already familiar with. This is why smartphones are so useful on job sites as they're already integrated into everyday life.

A safety-centric project in Washington State created a worker-to-worker observation program that focused on improving job site culture from "that of compliance" to "that of choice." During the construction of the Central Washington Hospital Patient Tower, a worker identified an unsafe work area, resulting in its immediate relocation. With safety a priority throughout the project, workers constructed the 176-room, six-story, 190,000-square-foot patient tower, ten weeks ahead of schedule and $7 million under budget. It goes to show that fostering a safety culture within projects can improve project efficiency.

Track contractor's progress with a standardized system

Construction projects are complicated and generally have a number of specialty trades all working together on the one site, and chaos can ensue when everyone is not on the same page. Nowadays you can use technology to track contractor performance and ensure there is a standardized process in place. Travis, a maintenance department lead in the U.S., says that prior to using a standardized digital auditing system, audits were left up to individual discernment.

"They [contractors] would go through and state everything was fine and stable. Checklists were left up to them and they would say everything was up to their standard and you would find out that wasn't the case."

By collecting data in a uniform way, management can use it to drive accountability and understand where the risks lie.

Share collected data

The biggest issue for safety professionals is gaining transparency and visibility across multiple, diverse projects. The larger the company and number of employees, the

Digital audits come of age *continued*

harder this process becomes. Using a system to collect this data across the duration of projects allows safety professionals to summarize and share information with stakeholders, front-line workers, and subcontractors, and is crucial to enhancing worker safety. Imagine if a terrible incident could have been prevented if only workers knew of the issues collected through regular audits. Technology also allows for timely communication. If you're having to take three days to write a report, you're not going to be preventing many incidents. Using the data collected, safety professionals can set benchmarks and improve performance.

Shoddy construction safety methods in 2016 are unacceptable when we have the technology to prevent them. Ask yourself this: Isn't it better to prevent incidents, rather than investigate them? Modern technology carries the potential to save lives each and every day.

Tania Clarke is the communications coordinator for SafetyCulture, a company that develops the checklist inspection app iAuditor, which is used 35,000 times a day in over 80 countries for safety and quality audits.

Newly Revised ISO 9001 and ISO 9000 Quality Management Systems Standards

ANSI is the U.S. member body to ISO; standards are available on webstore.ansi.org/sitelicense.

The American National Standards Institute (ANSI) is offering site license subscriptions for ISO 9001 and ISO 9000 quality management standards.

The ISO 9001:2015 standard — which underwent three years of revision work by experts around the globe — replaces previous versions of the standard and sets out the requirements for a quality management system. Originally published in 1987 with over 1.1 million certificates issued worldwide, the standard provides a framework for all businesses of every size — from banks and hospitals to universities and aerospace — to streamline processes and improve efficiency.

Developed by ISO Technical Committee (TC) 176, Subcommittee (SC) 2, the standard was revised to ensure market relevance at a time when increased globalization has changed business operations and the supply chain. The ANSI-accredited U.S. Technical Advisory Group (TAG) to TC 176/SC 2 is the American Society for Quality (ASQ).

Based on the idea of continual improvement, ISO 9001:2015 builds on seven quality management principles, and incorporates elements such as a stronger focus on stakeholders and the wider context of an organization to fit the evolving needs of modern business. The biggest difference in the new standard versus previous versions is the "High-Level Structure," which follows other ISO management system standards and makes it easier for anyone using multiple management systems.

ISO has announced that certification bodies will have up to three years to migrate certificates to the new version. At the end of September 2018, a certificate to ISO 9001:2008 will no longer be valid.

"ISO 9001 allows organizations to adapt to a changing world," said acting ISO Secretary-General Kevin McKinley. "It enhances an organization's ability to satisfy its customers and provides a coherent foundation for growth and sustained success."

ISO 9000:2015 contains detailed explanations of the seven quality management principles. It also contains many of the terms and definitions used in ISO 9001 and constitutes a useful companion document to help any organization build a successful quality management system.

ANSI offers subscriptions by selecting a listing of over 100 standards-developing organizations or selecting from a listing of pre-defined industry collections currently available for site license subscription. A site license provides convenient and cost-effective, multi-user access to specific standards, and subscribers can create a customized site license collection by selecting standards from a wide range of different standards developers.

Newly Revised ISO 9001 and ISO 9000 Quality Management Systems Standards *continued*

Licensed collections can be referenced from anywhere in the world, with multi-year agreements for additional cost savings. Revisions of licensed standards are automatically provided as they are updated.

Interested organizations should request a site license proposal online to see how much time and money they can save with an ANSI site license.

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The Institute is the official U.S. representative to the International Organization for Standardization (ISO) and, via the U.S. National Committee, the International Electrotechnical Commission (IEC), and is a U.S. representative to the International Accreditation Forum (IAF). ANSI currently has offices in New York City and Washington, DC. For more information, visit www.ansi.org.


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Enhancing construction safety through leadership

Training could significantly impact safety culture on construction sites

By JOHN ROSECRANCE, PHD and KRISTA HOFFMEISTER

Advances in engineering controls like improved fall protection systems, mechanical assists for lifting heavy materials, and safer tool designs have helped reduce occupational injuries and deaths in construction significantly over the decades. However, construction workers, who are just one-tenth of the American labor force, still account for an alarming 17 percent of all job-related deaths in 2012. This project seeks to go beyond the visible elements of occupational health like lifting techniques and tool design to investigate the critical role of psychology – the human factor – in injury prevention.

Safe and unsafe behavior factors

This Colorado research team brought together psychologists and human factor specialists to focus on the determinants of safe and unsafe behavior. The team concluded that construction employers serious about safety must work actively to develop and sustain a high level of safety culture. Their findings also presented more questions: Owners and managers create an organization's overarching safety culture, but construction is a field in which workers frequently work autonomously on tasks, having little interaction with upper management. In this context, the day-to-day interactions of the foremen with the production workers

– and even the tradesmen and tradeswomen with one another – play an essential role in fostering a safety culture on a worksite. Are workers rewarded or penalized when they point out unsafe conditions? Are they respected for speaking up – or for working while hurt? Does the onsite supervision send a message that production is paramount, or that safety is their top priority?

Apprentice training

The team sponsored two major training programs to develop safety leadership on the job site, one aimed at construction apprentices and one at onsite supervision. The first, designed to build future leaders in construction, is an apprentice training curriculum administered to 180 apprentices in the mechanical trades from three regions around the country in the past year. These apprentices have been taught safe practices during their training but are often reluctant to "make waves" on the job, even

Enhancing construction safety through leadership

when they witness dangerous conditions. The program seeks to instill the leadership qualities that encourage workers to speak up about unsafe practices before an accident occurs. The curriculum is undergoing repeated rounds of testing and revision.

Site supervision training

The second training program is aimed at site supervision, which has both the responsibility for creating and fostering a safety culture on the construction site and the authority to do so. A total of 120 project managers, superintendents, and foremen participated in the four-hour workshop in an experimental design comparing outcomes for two groups, one that receives two monthly review sessions and another that receives no follow-up training. Post-training testing of participants' (site supervisors and their crews) safety knowledge, behaviors, and perceptions of safety is currently underway.

Injuries not reported

One of the team's related projects drew an extraordinary amount of attention from the industry in 2013. It is widely suspected that significant numbers of construction workers who suffer work-related injuries conceal rather than report them. The team surveyed 614 construction workers in the Northwest United States in an exploratory study about the phenomenon. More than one-quarter of them acknowledged a work-related injury they had not reported; these workers seemed to consider injuries a part of their job, and many feared employer retaliation if they filed a compensation claim.

Results

- The leadership development program created in previous years has been refined into a five-week program that includes an expanded library of video clips of safety scenarios, testimony from safety leaders, core skill development, and hands-on practice of leadership skills.
- Apprentices in Denver and Chicago participated in the leadership program and submitted feedback.
- The research team has partnered with contractors in other areas of the United States to administer the program to their workers in the coming year.
- Researchers presented findings at three academic conferences, including the 2013 American Public Health Association annual conference, and published papers in Epidemiologic Reviews and the American Journal of Industrial Medicine.
- The team's study exploring why construction workers fail to report injuries generated seven different trade magazine stories, including a treatment in industry giant ENR.

John Rosecrance, PhD, wrote this article with the assistance of Krista Hoffmeister, Colorado State University, Fort Collins, CO. Email: john.rosecrance@colostate.edu

OSHA issues **final silica rule**

Industry questions feasibility of reaching lower exposure limits

Think about the PPE sales potential here: about 2.3 million workers are exposed to respirable crystalline silica in their workplaces, including two million construction workers who drill, cut, crush, or grind silica-containing materials such as concrete and stone, and 300,000 workers in general industry operations such as brick manufacturing, foundries, and hydraulic fracturing, also known as fracking. OSHA in March issued a final rule to curb lung cancer, silicosis, chronic obstructive pulmonary disease, and kidney disease in America's workers by limiting their exposure to respirable crystalline silica.

The rule comprises two standards, one for Construction and one for General Industry and Maritime.

Key provisions

- Reduces the permissible exposure limit (PEL) for respirable crystalline silica to 50 micrograms per cubic meter of air, averaged over an eight-hour shift.
- Requires employers to: use engineering controls (such as water or ventilation) to limit worker exposure to the PEL; provide respirators when engineering controls cannot adequately limit exposure; limit worker access to high-exposure areas; develop a written exposure control plan; offer medical exams to highly exposed workers; and train workers on silica risks and how to limit exposures.
- Provides medical exams to monitor highly exposed workers and gives them information about their lung health.
- Provides flexibility to help employers — especially small businesses — protect workers from silica exposure.

Compliance schedule

Both standards contained in the final rule take effect on June 23, 2016, after which industries have one to five years to comply with most requirements, based on the following schedule:

Construction - June 23, 2017, one year after the effective date.

General Industry and Maritime - June 23, 2018, two years after the effective date.

Hydraulic Fracturing - June 23, 2018, two years after the effective date for all provisions except engineering controls, which have a compliance date of June 23, 2021.

OSHA issues final silica rule

Background

The U.S. Department of Labor first highlighted the hazards of respirable crystalline silica in the 1930s, after a wave of worker deaths. The department set standards to limit worker exposure in 1971, when OSHA was created. But the standards are far outdated and do not adequately protect workers from silica-related diseases. Plus, workers are being exposed to silica in new industries such as stone or artificial stone countertop fabrication and hydraulic fracturing.

The final rule was proposed in September 2013. The rule-making process allowed OSHA to solicit input in various forms for nearly a full year. The agency held 14 days of public hearings, during which more than 200 stakeholders presented testimony, and OSHA accepted over 2,000 comments, amounting to about 34,000 pages of material.

Is this the end of the debate on silica?

"Far from it," says Aaron Trippler, government affairs director for the American Industrial Hygiene Association, writing in his Happenings on the Hill newsletter. "Industry has already stated it will challenge the final rule in court. Congress has two different approaches to get involved, albeit only one is really a viable approach.

"The first is the use of the Congressional Review Act to override the final rule. Problem with this is that even if Congress overrides the final rule the president is likely to veto the effort.

"The more likely approach is that Congress will attempt to incorporate a budget rider on the OSHA budget that will ban OSHA from spending any dollars on the silica final rule, including enforcement. In the last budget cycle the House placed such a rider on OSHA, but the rider was removed when the final omnibus bill was introduced and enacted. I expect Congress to try this approach again."

Industry opposition

The final silica rule will be expensive and difficult for employers to meet and ignores the benefits of respiratory devices in reducing silica dust exposure, argue employer representatives.

The Occupational Exposure to Respirable Crystalline Silica rule will reduce the permissible exposure for crystalline silica to 50 micrograms per cubic meter of air, averaged over an eight-hour shift, from the current 100 micrograms per cubic meter of air standard for general industry, despite industry contention that the lower limit is unattainable.

It's a major economic impact on employers in a broad range of industries and particularly on a handful of industries like the oil and gas well industry for fracking, and the construction industry, according to industry critics.

OSHA estimated the rule would provide average net benefits of about $2.8 billion to $4.7 billion annually over the next 60 years, and would cost $1,242 a year for the average workplace. However, a study last year by the Construction Industry

OSHA issues final silica rule

Safety Coalition pegged the cost of the silica rule on the U.S. construction industry at $5 billion per year, compared to the agency's $511 million estimate.

DC analysis

The Washington DC law firm of Keller & Heckman posted a recent article stating, "OSHA's silica rule has been a source of contention between employers, labor representatives, and the agency since its inception, due in large part to the fact that silica exposures can occur naturally as a result of ambient environmental conditions, there are severe limitations in silica testing technologies, and ambient environmental conditions cause inherent errors in any in-field testing applications. Further, OSHA's requirement in the rule that employers adopt engineering controls to limit exposures over other available technology, such as respiratory protection, has led to significant concerns over whether employers can actually comply with the new rule due to technology limitations and fiscal feasibility.

"Some of the comments and testimony the agency received in response to its proposed rule noted the following:

- "Industry believes the cost to comply is substantially higher than estimated, particularly given that some workplaces will need customized ventilation systems to achieve compliance.
- "OSHA's rule continues to require that employers use engineering controls over respiratory controls, ignoring the substantial improvement in the design and performance of a wide variety of respirators since the so-called hierarchy of controls was first adopted. Industry submitted evidence that such devices would be more effective for exposures from cutting, grinding, crushing, or drilling silica-containing materials such as concrete, masonry, tile, and rock.

"As the new rule imposes a significant reduction in the PEL and requires extensive engineering and administrative controls, compliance with the new rule will likely require substantial investment from employers. In addition to employer concerns over potential compliance costs, the contention surrounding technological feasibility of the rule's sampling requirements and exposure controls has not dissipated. Many expect there will be a judicial challenge to the rule shortly involving a number of industries and proponents of the standard."

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