CONSTRUCTION SAFETY

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Filling a Gap in the Construction Industry

According to OSHA, 1 in 5 workplace fatalities is a construction worker and according to The Associated General Contractors of America, "Construction is a major contributor to the U.S. economy. The industry has more than 733,000 employers with over 7 million employees and creates nearly $1.4 trillion worth of structures each year. Construction is one of the largest customers for manufacturing, mining, and a variety of services." There are plenty of magazines that cover "construction" in different ways but not one that I have seen that speaks to keeping those seven million workers safe each and every day. Welcome to that magazine!

For those who don't know, I live in the metro Detroit area with my family. My five-year-old son cannot get enough of construction videos on YouTube. We watch videos on forklifts, excavators, road rollers, skid steers, jackhammers - pretty much anything construction related quite regularly. He loves driving down I-75 with me (which has been undergoing miles and miles of a complete rebuild for years now) so he can see all those pieces of equipment in action that he sees in the videos. He also likes pointing out the workers wearing their hard hats, their high-visibility apparel, their cool eyewear and sometimes even their fall protection equipment. I love hearing him get so excited pointing out all of the construction gear.

This issue has sixteen important articles that every general contractor, foreman, VP safety, or whomever is in charge of worksite safety should read, share, and implement. In this inaugural issue, you will read stories on using and choosing the right PPE, worksite safety, fall protection (it's the #1 OSHA violation), a list of construction and demolition standards for your easy reference, partnering with emergency responders, and implementing updated COVID-19 guidelines for getting back to work safely.

I hope you enjoy this inaugural issue and find the information educational. Maybe you will learn something you didn't know ten minutes ago, things you can share in your safety meetings, or just some high-level thought leadership perspectives. Please feel free to pass this print or digital issue to colleagues and sign up for your own complimentary subscription. Email, call, or text me with any comments, suggestions, where to send your free subscription, or if you would like to contribute an article next year.

Last, I want to thank our advertisers who supported this launch issue. Without them, I would still just be watching construction videos with my son.

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CONSTRUCTION SAFETY

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In updating the standard, the A10.34 subcommittee places greater emphasis on preparing an emergency action plan. *Image courtesy of ASSP*

Protecting the Public from Construction Hazards

BY SCOTT FOWLER, CONTRIBUTOR

Construction safety goes beyond protecting workers. You also have to protect the public. Construction projects happen in different environments, and you have to consider the people and property in those environments and how the work may impact them.

The recently updated ANSI/ASSP A10.34-2021 standard provides best practices for protecting the public on or adjacent to construction sites, and identifies different construction hazards that can endanger the people, property, and environment surrounding the job site.

Each project has a set of challenges that vary in terms of the type of public space, occupants, and potential impacts to property. A hazard assessment is an effective tool for protecting the public from activity on the job site, and workers on the job site from intrusion by the public.

This edition of A10.34 includes key updates that provide greater detail and clarity on how to protect the public on construction sites.

Greater Focus on Hazards

In updating the standard, the A10.34 subcommittee placed greater focus on certain construction hazards and provided additional guidance on how to properly address them to keep the public safe.

Sections on falls/falling objects and run-over/back-over were improved to include not only additional fall protection options for people and property below work activities, but also new requirements for tool tethering and greater detail on effec-

Each construction project has a set of challenges that vary in terms of the type of public space, occupants, and potential impacts to property. *Image courtesy of ASSP*

tive run-over/back-over practices.

Other new sections address hazards and environments, including:

- Scaffolding
- Excavations
- Explosives
- Fire prevention
- Severe weather
- Utility avoidance
- Marine operations

Planning for Emergencies

The updated version also places greater emphasis on preparing an emergency action plan. A10.34 requires that measures be established to restrict public access to the job site.

An emergency action plan consists of four key elements:

Security: Site management should enact measures to restrict public access to the job site. If this is not practical, site management should take steps to lock, barricade, or remove equipment, supplies, or materials that pose a hazard.

Injuries/Damage: Any observed injuries or damage to the public must be immediately assessed for severity and investigated, and immediate action to minimize further injury or damage and to secure medical help for those injured.

An emergency action plan consists of four key elements: security, injuries/damage, public protest, & threats.

Public Protest: The plan should define how the site will respond when members of the public purposely place themselves or others at risk by failing to observe or heed warnings, directives, or safety precautions.

Threats: The plan should also describe how to communicate bomb threats or other violence to the job site and include immediate notification to and interfacing with authorities.

A10.34-2021 provides a public hazard control plan template to help you identify hazards, describe the actions taken and assign responsibilities for reducing and eliminating the hazards identified.

The template includes examples of common hazards encountered over the course of a construction project, including noise, vibration, radiation, and falling objects. You can also use this tool to identify those responsible for different aspects of the construction project, provide contact information for local utilities and emergency response authorities, and list those authorized to access the job site after hours.

Download a free copy (https://asse.realmagnet.land/lp-construction-public-hazard-control-template) of the public hazard control plan template to use at your work sites. CS

Scott Fowler is the Content Specialist at the American Society of Safety Professionals (ASSP; www.assp.org).

Managing Safety on Multiemployer Work Sites

BY SCOTT FOWLER, CONTRIBUTOR

Construction sites are busy places. On any given day, you'll find laborers, carpenters, electricians, plumbers, pipefitters, iron workers, and others performing tasks across a potentially vast work site. With so many workers, often from different employers, performing potentially hazardous tasks, how can you ensure everyone is operating safely and understands their responsibilities to identify and mitigate those hazards?

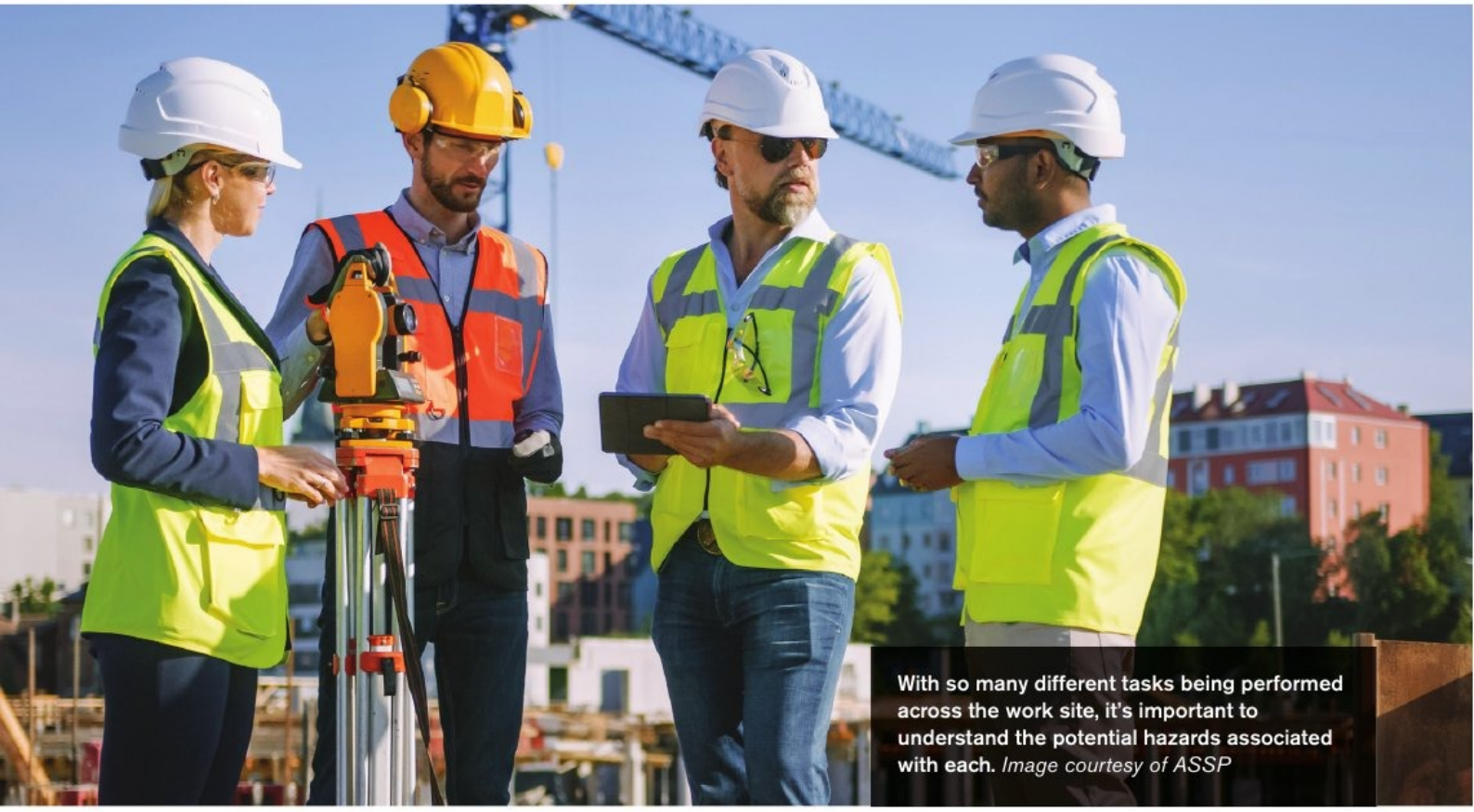
The recently updated ANSI/ASSP A10.33-2020 voluntary consensus standard sets safety and health program requirements for multiemployer projects, including establishing roles and responsibilities for all involved, and confirming that each team member knows how to address hazards they may encounter.

ANSI/ASSP A10.33-2020 is based on stated philosophy — new to this revision of the standard — about the challenges faced on multiemployer projects and how they can be addressed. Building on the foundation of previous versions of the standard, A10.33-2020 identifies key elements of safety success on multiemployer projects.

Project Organization

ANSI/ASSP A10.33-2020 provides greater clarity on the organizational structure required for a safely executed multiemployer project by clearly identifying the project entities, as well as their specific roles and responsibilities regarding workplace safety and health, in accordance with OSHA regulations. These include:

- **Owner/Client:** Must clearly establish its commitment to safety throughout the entire project.
- **Construction Manager** – Agent: Responsible for implementing processes to ensure the owner's requirements for safety are incorporated into design, specifications, planning, and construction.
- **Project Designer:** Ensures the project, as designed, can be constructed, operated, and maintained safely.



With so many different tasks being performed across the work site, it's important to understand the potential hazards associated with each. *Image courtesy of ASSP*

- **Project Constructor:** Responsible for managing contracted work and establishing a project-specific safety and health plan that will provide a safe work environment for all involved and ensure that it is implemented effectively.
- **Contractors/Sub-Tier Contractors:** Must plan work with full awareness of hazards inherent in the chosen means and the work environment to ensure work is performed in a safe manner in accordance with the project-specific safety and health plan.
- **Suppliers:** Responsible for coordinating with the project constructor to ensure materials are delivered to the site in a manner consistent with the project constructor's site laydown plan.

Job Hazard Management

With so many different tasks being performed across the work site, it's important to understand the potential hazards associated with each. A10.33 includes a job hazard management process you can use to assess both the tasks being performed and the measures being used to mitigate hazards workers may face.

The main component of this process is a job hazard analysis, where contractors and sub-tier contractors identify the means that will be used to perform work, the associated hazards and the controls that will be implemented to protect workers.

Furthermore, at the start of each day or before a shift change, contractors should conduct a physical survey of work areas to identify hazards. They should also review any drawings, documents, the project hazard analysis, and project-specific safety and health plan, and confer with other team members to understand any potential hazards. Contractors should also identify any hazards within the scope of work that could impact other project personnel and the public over the course of the project.

Daily Work Planning

New tasks are performed every day on construction sites, which introduces new hazards. Conducting daily work planning meetings allows the different entities involved to discuss the jobs being performed that day, the hazards and risks anticipated and mitigation measures.

Along with contractors and supervisors meeting on a daily basis, contractors and sub-tier contractors should meet with their crews at the start of the day and at shift changes to confirm that each worker's assignments and overall project activities are understood.

Effective training is essential to the success of any construction project. *Image courtesy of ASSP*

Training

Effective training is essential to the success of any construction project. For everyone involved to properly carry out their roles and responsibilities, they must know how to operate safely, identify hazards and apply control measures.

A10.33 identifies four types of training, each geared to a different group:

- **Supervisor Safety Orientation:** Supervisors are required to receive a safety and health orientation before the project begins to learn how to train workers on hazards, the procedures for selecting appropriate control measures and PPE, responsibility and procedures for enacting corrective measures, work authority, and incident reporting and investigation requirements.
- **Project Safety Orientation:** Before work begins, workers and supervisors must receive a project-specific safety and health orientation so they understand the project-specific safety and health plan.
- **Job-Specific Training:** Project oversight personnel must ensure subcontractors have the appropriate training for the tasks they will be performing.
- **Toolbox Meetings:** Held on at least a weekly basis for all employees on the work site, these meetings focus on topics determined by the senior project supervisor and site safety and health supervisor, and directly relate to safety challenges and requirements for current or upcoming work activities.

The hierarchical framework established by A10.33 is key to developing a construction working environment where everyone is aware of the work being performed and the steps needed to make sure work is done safely.

Download the ANSI/ASSP A10.33 overview document (https://www.assp.org/docs/default-source/standards-documents/a10-33-2020-tech-brief.pdf) to learn how this new standard can be your guide to creating a safer shared work site. CS

Scott Fowler is the Content Specialist at the American Society of Safety Professionals (ASSP; www.assp.org).

Padded palm gloves cushion hands, providing a barrier of insulation between power tools, repetitive tasks, and your hands. *Image courtesy of Radians*

Choosing Hand Protection for Construction Jobsites Is No Small Task

5 Key Questions and Tips for Making The Glove Selection Process Easier.

BY MARY PADRON, CONTRIBUTOR

Hand protection solutions for the construction industry are continuously advancing through the blending of high-performance fiber technologies with synthetic coating configurations. The innovations often produce improved task-specific gloves, such as cut-resistant gloves with higher ratings that also demonstrate upgraded touch sensitivity, greater dexterity, and flexible, durable grip coatings.

The evolution and innovations in hand protection can be compared to superhero costumes—think Superman, Batman, and Ironman. Their armor is always changing to become stronger, better, and more clever than ever—just like today's innovations in hand protection.

Unfortunately, the innovations in hand protection and the variety of glove types can complicate the decision-making process, so it's important for construction pros to learn the key factors in glove selection and the right questions to ask.

What are the Key Considerations in Glove Selection?

With American workers suffering from an estimated 300,000 hand injuries at an estimated cost-to-business of $740 million annually, hand protection is not to be taken lightly,

Common hand protection risks in the construction trades and possible PPE solutions

COMMON CONSTRUCTION HAZARD	POSSIBLE HAND PROTECTION SOLUTION
CUTS AND PUNCTURES from sharp tools, nails, machinery, sheet metal and glass handling, laying tile and marble *Tasks associated with the hazard:* Installing windows, framing, flooring, roofing, carpentry, and drywall work	Work gloves and sleeves made with Kevlar®, Dyneema®, or HPPE. These high-tensile strength gloves are not easily pierced and are lightweight, durable, and dexterous. Gloves engineered with Kevlar also offers some heat resistance. Gloves made with Dyneema technology float on water and are resistant to moisture, UV light, and some chemicals.
ABRASION, CRUSHING AND BRUISING from impacts and blows to the palm and the back of the hand *Tasks associated with the hazard:* Hammering nails, a dropped tool that falls on the hand, getting a hand caught in a small space or between objects	Gloves engineered with Thermoplastic Rubber (TPR) on the back of the hand, the thumb, and fingertips reduce impact injuries. Make sure there are flex points to enhance comfort. Other features to increase abrasion resistance include padded palms and fingers, knuckle guards, and leather nail guards.
CHEMICAL HAZARDS from acids, solvents, the chromate in cement, paints, pesticides, asbestos, acetone, etc. *Tasks associated with the hazard:* Painting a house or business, laying concrete, restoration of an old building	Rubber gloves, PVC (polyvinyl chloride) gloves, Neoprene, and Butyl gloves are useful to protect against some chemicals. Nitrile gloves provide protection from lubricating oils but not acetone. Make sure to select gloves with good permeation ratings and always keep replacement gloves in stock when glove degradation is an issue.
COLD STRESS from working outdoors in winter and other extreme conditions *Tasks associated with the hazard:* Roadway construction, building and roof repair, storm repair, and operating heavy equipment outdoors.	Winter work gloves with a water-repellant outer coating or material that provides water resistance and wind repellence. Choose winter gloves that feature an insulating liner that traps air for warmth and offers moisture-wicking capabilities. Gloves with 3M™ Thinsulate™ or acrylic provide insulation without the bulk, which improves dexterity, an important feature of a good winter work glove.

especially by construction pros and workers, who tend to suffer more from cuts, punctures, and abrasion wounds than other industrial sectors.

To guide the glove selection process, safety professionals will need to consider, at the minimum, the following five questions:

1. What type of hand protection does the construction worker need?
2. What is the appropriate cut level needed for construction tasks with cut and puncture risks?
3. What shells and coatings are available to offer greater protection and comfort?
4. What other glove features make construction tasks easier and the worker more compliant?
5. Is this glove comfortable?

1. What Type of Hand Protection Does the Construction Worker Need?

Hand protection is dependent upon the types of hazards present, so the key factor is to identify all known hazards the worker faces during the workday by conducting a risk assessment. Is the construction worker exposed to one hazard or several hazards? Can the hazards be eliminated or prevented? Once the risks are understood, engineering, administrative controls, and PPE can be used to mitigate the risk.

Glove selection can be daunting because there are several glove types, including cut and chemical-resistant gloves, leather gloves, anti-vibration/impact gloves, temperature-resistant gloves, nitrile, and natural rubber coated gloves, general-purpose gloves, disposable gloves; the list goes on.

2. What is The Appropriate Cut Level Needed for Construction Tasks With Cut and Puncture Risks?

Fifty percent of hand injuries are from cuts and punctures, according to the American Society of Safety Professionals (ASSP).

When administrative and engineering controls are not sufficient to eliminate the risk of hand injury, cut-resistant gloves can help save the day.

Alan Shepherd, a construction safety specialist, said that glove selection is more confusing than ever, even to seasoned safety pros, because of the number of gloves

available in the market today.

To accommodate the needs of workers who wear gloves all day long, safety pros must balance the right level of protection with the overall comfort and fit of the glove.

"I often find that cut-ratings are overstated by safety managers as a response to repeated hand injuries, when other factors may be at play," said Shepherd. "Glove technologies have come a long way from the old brown jerseys and stiff, cut-rated gloves. Hybrid shells now provide more breathability and dexterity, more cut level ratings—there are 9 levels now—and more palm coatings to choose from."

What Shells and Palm Coatings are Available to Address Specific Tasks?

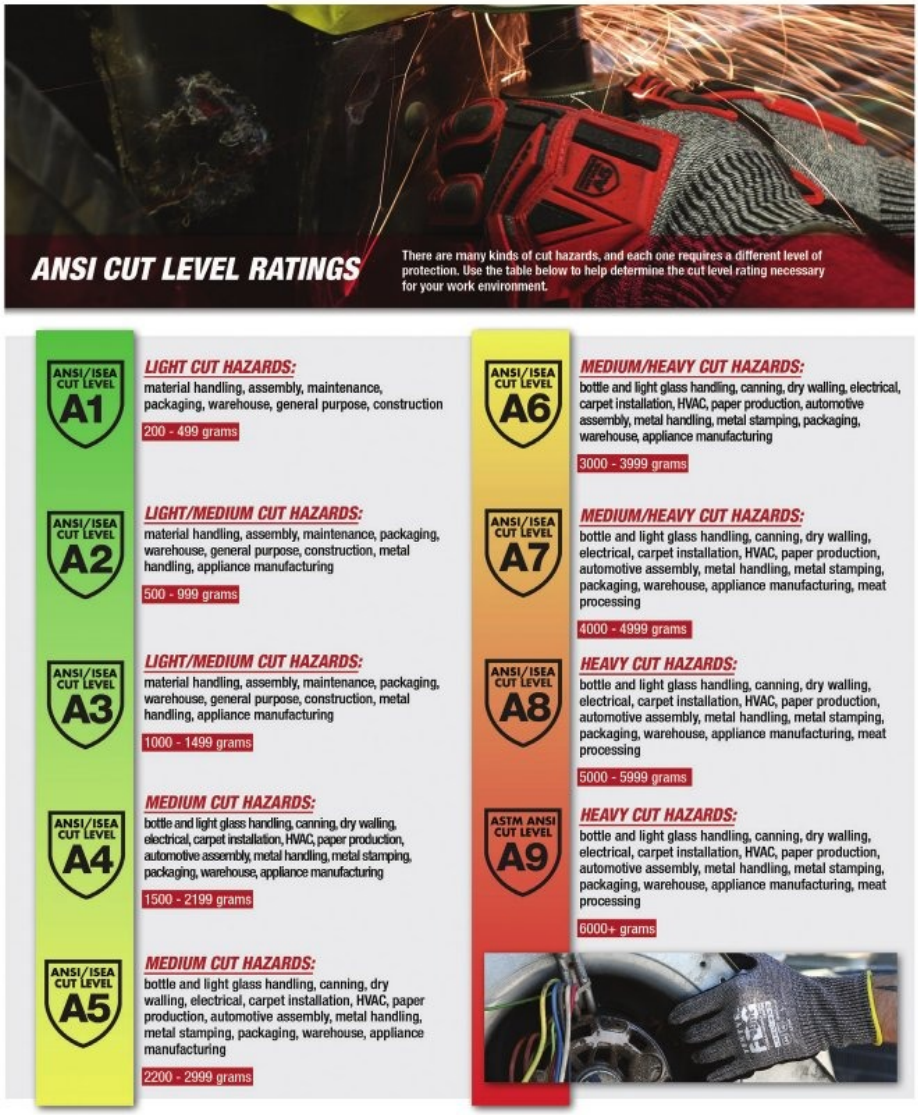
A variety of shells and palm coatings exist to address specific hand protection issues and many of them provide additional protection, dexterity, and comfort for the construction worker.

Shell Materials for Work Gloves

The shell material of work gloves determines how protective the gloves will be and influences the glove's dexterity and comfort. Different shells also provide different levels of durability and breathability. Many gloves also feature combinations of different shell materials, providing more versatility for a variety of functions.

Many fibers and materials exist to make glove shells, including the natural fibers of cotton, bamboo, and leather and synthetic high-performance fibers, such as DuPont Kevlar, Dyneema Diamond, and TekTye™ shells without fiberglass and stainless steel. Other glove materials include polyester monofilament yarn, nylon, and HPPE with fiberglass and/or stainless steel.

Fabric glove shells are knitted on a flat head knitting machine and are measured by the gauge (ga) of the shell: the smaller the gauge, the thicker the shell. Seven-gauge is the thickest shell and 18-gauge is the thinnest and lightest weight shell. If dexterity and the ability to pick up small parts, drill bits, washers, nails, etc., is needed, then a glove with a higher gauge would be beneficial.



ANSI cut level and application examples. *Image courtesy of Radians*

Palm Coatings for Work Gloves

Gloves come in a variety of palm coatings. Some popular palm coatings include smooth nitrile, foam nitrile, sandy foam nitrile, foam latex, sandy foam latex, crinkle latex, and PU polyurethane. Palm coatings allow for better gripping capabilities and tactile sensation without losing dexterity.

Nitrile gloves, an industry favorite, hold up well to turpentine, acids, bases, oils, gasoline, and diesel fuel. They are generally stronger and more puncture resistant than latex gloves.

Latex gloves, one of the most well-known glove materials in the world, resist many chemicals that construction workers are exposed to, including acetone, thinners, and ketones. The semi-smooth texture is extremely flexible and provides superior dexterity and sensitivity. Latex gloves perform well in water too.

PU gloves are not as abrasion resistant as nitrile or latex gloves and are often used for inside light duty, detailed assembly, inspection, light fabrication, and box/small parts handling. They're very economical and provide

Construction workers often need (and want) gloves with touchscreen capability, so choosing a glove with this feature is always a solid choice. *Image courtesy of Radians*

good touch sensitivity for picking up small parts and other items.

3. What Other Glove Features Make Construction Jobs Easier and Workers More Compliant?

Touchscreen Work Gloves are Gaining Momentum

Construction workers often need (and want) gloves with touchscreen capability, so choosing a glove with this feature is always a solid choice and very much appreciated. Most importantly, adding touchscreen work gloves to your safety program is a real compliance booster because this feature often prevents workers from removing their gloves to access their smart phones, laptops, etc. Work gloves without touchscreen capability often result in loss of productivity, increased hand injuries, worker frustration, and the use of expletives at the construction site!

Savvy manufacturers realize the importance of touchscreen-friendly work gloves too. Now you can find cut-resistant gloves in a variety of cut levels, such as A2, A3, A4, A5, with high gauges of 13 and 18 for enhanced dexterity to aid in computer usage.

Padded Palms are Becoming a Popular Feature

Workers at construction sites use lots of vibrating power tools and are frequently engaged in repetitive impact tasks that cause hand fatigue, such as hammering, digging, or woodworking. Padded palms cushion hands, providing a barrier of insulation between power tools, repetitive tasks, and your hands. This feature provides abrasion resistance and impact absorption.

4. Is this Work Glove Comfortable?

Last but not least, comfort and fit play a superhuman role in any hand protection safety program. No one likes to wear clothing or shoes that are uncomfortable. The same goes for work gloves. If the glove doesn't fit right, is not flexible, or gets in the way of doing the job, workers won't wear it, which is probably why 70% of hand injuries occur from workers not wearing their gloves.

Thankfully, gloves are becoming more comfortable every day because manufacturers understand that comfort is a key contributing factor in worker adoption and compliance. It is the feature that helps stop worker complaints and excuses.

Because comfort and fit are so important, ask your crew to engage in a test drive of the gloves under consideration and to provide input on the gloves they would willingly wear. This activity really helps with glove buy-in and morale. Often, suppliers will supply you with complimentary ANSI-certified gloves for your test drive to help you determine the glove(s) that are just right for your crew and the task.

Need More Help Choosing a Work Glove or Sleeve?

Choosing the right work glove or sleeve for the construction jobsite can be a complex decision dependent upon ANSI standards, the hazards present, which fibers, glove shells and coatings are best suited to the task, the lifespan of the glove or sleeve, and of course, your budget.

If you feel baffled by the numerous marketplace choices, reach out to a leading glove manufacturer who has experienced safety specialists and glove product managers who will help you choose the perfect work glove for your construction safety program.

In addition to providing complimentary samples, many glove suppliers offer hand protection assessments and surveys, Fast Facts, white papers, training, and webinars to help you navigate the hand protection standards and marketplace. And always, keep in mind that a glove that costs $5 a pair and lasts two weeks is much more valuable than a glove that costs $3.50 a pair and lasts a week. CS

Mary Padron is a Sr. Marketing Communications and Event Specialist at Radians (www.radians.com), a top-tier manufacturer of high-performance PPE for the industrial, construction, and safety markets. Radians carries a comprehensive line of hand protection that includes cut-resistant gloves, coated gloves, winter gloves, touchscreen gloves, general-purpose work gloves, 14" and 18" sleeves, and premium gloves made with Dyneema, Kevlar, and TekTye fibers.

There Is No One-Size-Fits All Glove

Proper coating & grip is essential in choosing the right polymer-coated glove.

BY TANNER BREHMER, CONTRIBUTOR

Familiarizing yourself with the different features and benefits of each polymer helps allow for a more desirable work experience for yourself or your employees. *Image courtesy of Global Glove and Safety Manufacturing*

Our hands are important tools that provide invaluable functions to work through many tasks each day. On construction sites, the job-at-hand can vary immensely from one worker to another. If you were to walk through a construction site and view the hands of workers performing a job, you would notice that there is not a 'one-size-fits-all' glove that is used universally from one person to another. Providing the proper coating and grip is highly important when you are using a polymer-coated glove. There are a wide variety of different polymers utilized on hand protection products; choosing the right one may seem daunting and may raise many questions. Familiarizing yourself with the different features and benefits of each polymer helps allow for a more desirable work experience for yourself or your employees.

When chemical exposure or dealing with a fair amount of liquids is not a concern, it is nice to be able to pick a palm-coated glove for breathability and dexterity benefits. The three common polymers you see on a seamless knit palm-coated glove include Natural Rubber Latex, Nitrile, and Polyurethane. When dealing with chemicals or fair amounts of liquids, you will traditionally choose a fully coated glove made from Natural Rubber Latex, Nitrile, PVC, or Neoprene, leaving Polyurethane out of the equation. The following information will help provide a general overview of different polymer options available for the different tasks being managed.

Different Materials & Their Applications

Natural rubber latex gloves provide an inherently strong grip, especially in dry applications, and are offered in a variety of finishes. Rubber-coated gloves provide great flexibility and puncture resistance due to their highly elastic properties. Rubber also performs well in a wide variety of temperature ranges, which makes it a good choice for low-temperature applications down to -20° Fahrenheit, to higher temperatures around 300° Fahrenheit. Traditionally you will not find a glove coated with rubber in a smooth finish, as it becomes slippery in wet conditions. Commonly you will find embossed or debossed finishes such as diamond, waffle, or fish scale patterns, otherwise you will find rubber in a foam or wrinkle finish. The different finishes create pockets, or channels, for liquids to go into, which allows for a much better grip to be achieved. The main disadvantages of rubber gloves are that they do not always hold up well to petroleum-based organic solvents and they can also cause skin allergies to users.

Nitrile is a synthetic rubber polymer that provides superior strength along with resistance to abrasions, punctures, tears, many chemicals, oils, and fats, which makes

it a highly versatile glove coating. Typically, nitrile coatings are thinner than a rubber coating which allows for increased dexterity and sensitivity which is beneficial while handling small parts, components, fasteners, etc. Nitrile gloves come in many different finish types as well, such as a variety of foam finishes or Mach Finish/sandy finishes. The multiple finish options provide different levels of wet/oily grip performance with the return of varying abrasion resistance. You could also choose a smooth finish nitrile glove for great abrasion resistance when you do not need wet/oily grip enhancements. A disadvantage of nitrile is that it does not perform well in cold temperatures as it loses its flexibility.

When it comes to chemical resistance, it is always best to consult a glove or chemical expert to ensure you are choosing the proper polymer for the chemical you are dealing with. *Image courtesy of Global Glove and Safety Manufacturing*

The main disadvantages of rubber gloves are that they do not always hold up well to petroleum-based organic solvents and they can also cause skin allergies to users.

Polyurethane is a synthetic rubber polymer that provides users with an extremely lightweight and dexterous coating due to the polymer embedding itself into the product's shell, resulting in a thinner coating with a fair level of abrasion resistance. Users receive a high level of dexterity with this coating, allowing them to manage very small parts, components, fasteners, etc. Polyurethane also offers a cost advantage benefit. The disadvantage to polyurethane is that it does not fare well in wet/oily conditions as it is usually produced in a smooth finish, although it will hold up well to oils, solvents, greases, and gasoline.

The above information passes through from palm-coated gloves to fully-coated gloves made with natural rubber latex and nitrile, however, polyurethane is not usually a good option, nor is it widely available as a fully coated glove. In addition to those two polymers, you will also find PVC and neoprene gloves in fully coated glove options due to their superior chemical and liquid resistance properties.

PVC is an economical synthetic rubber option, due to its low cost, which provides resistance to abrasions, salt solutions, liquids, acids, and petrochemicals. PVC is typically found in a sandpaper finish to provide a good grip in wet/oily conditions. It is common to find these gloves in low-temperature versions due to them retaining great flexibility down to around -10° Fahrenheit for intermittent exposure and -50° Fahrenheit for short-term exposure. PVC does not hold up well in long-term temperatures above 170° Fahrenheit and does not provide the tactile dexterity of rubber or nitrile choices.

Neoprene is a synthetic rubber polymer that provides resistance to a variety of chemicals, petrochemicals, oils, acids, caustics, and UV exposure. Neoprene also holds up well to solvents. Neoprene was first invented as a replacement for natural rubber latex, it was developed to provide better resistance to water, oils, heat, and solvents. Neoprene can be found in multiple different finishes such as a smooth finish for great dry grip or even embossed and wrinkle finishes to provide better grip in wet/oily conditions. This polymer also can handle well in applications with higher temperatures to around 350° Fahrenheit. Neoprene disadvantages are that the abrasion, puncture, and snag resistance are not as well in contrast to other polymer choices.

The above information provides a general overview of the different polymers and what they have to offer. When it comes to chemical resistance, it is always best to consult a glove or chemical expert to ensure you are choosing the proper polymer for the chemical you are dealing with. CS

Tanner Brehmer is the Contributor Product Development Manager at Global Glove and Safety Manufacturing, Inc. (globalglove.com). GGS offers a full lineup of personal protective equipment ranging from hand and eye protection to safety wear, head protection, ice traction, accessories, and more.

Looking into the Future of Helmet Safety

BY RYAN BARNES, CONTRIBUTOR

The construction industry has the highest number of both fatal and nonfatal traumatic brain injuries among U.S. workplaces—this is a fact. *The National Institute for Occupational Safety and Health* (NIOSH) tracks these statistics and it's report from 2016 states over 2,200 lives were lost from traumatic brain injuries between 2003 and 2010 alone.

2,200 deaths. This is a staggering number. A number that only accounts for 25% of all construction industry deaths... a number only reflecting fatal traumatic brain injuries.

Yet, the equipment to prevent these accidents—the hard hat—hasn't changed in over 100 years. The impact? Thousands of lives lost from preventable head injuries.

The landscape of the construction site has changed dramatically. To navigate the construction site terrain and conditions, construction workers are more than employees, they are industrial athletes. Whether you're talking residential or commercial general contractors, oil & gas workers, mining, forestry, utilities, wind & solar energy, and

The construction industry has the highest number of both fatal and nonfatal traumatic brain injuries among U.S. workplaces. *Image courtesy of STUDSON*

many other trades, these workers are often performing under extreme conditions. Not only do they have the obstacles and challenges of a complex construction site to navigate, they have the natural elements to compete against. Yet, we expect them to do all of this safely and efficiently while wearing a hard hat designed in 1919.

The Next Generation of Head Protection

Most traumatic brain injuries are a result of falling six feet or less. Falls are the leading cause of construction-worker fatalities, accounting for one-third of on-the-job deaths in the industry. The *Bureau of Labor Statistics* said brain injuries led to the deaths of at least 992 construction workers from 2011 through 2015. In most of these accidents, the unsecured hard hat falls off, leaving the head unprotected. A helmet that can't stay on isn't worth wearing—and it certainly won't save your life.

For me, this is more than business. At 16, I suffered a traumatic head injury. I endured reconstructive surgery to the left side of my cheek. Though I made a full recovery, my face will always have titanium plates. My accident happened in the early 90's before helmets were a requirement in ski racing. But since then, skiing, cycling, football, hockey, equestrian, and countless other sports have progressed into requiring equipment that prevents injuries and saves lives. So, why not the industrial trades?

Many of us can remember the days without seatbelts or laws that enforced wearing them. Now, it's hard to imagine riding in a car without buckling-up. Shouldn't the same be true on a job site? Especially if we know the horrific statistics of deaths related to brain injuries?

Despite current OSHA regulations, if we want to protect our people, the industry has to shift. We can do so much more than incorporating a chinstrap. Plus, the harness system is archaic and should be a thing of the past, like the hard hat. Many of the largest general contractors realize this and have begun testing new helmets.

If you want to protect the brain during an impact you need shock-absorbing technology.
Image courtesy of STUDSON

A helmet that can't stay on isn't worth wearing–and it certainly won't save your life.

The science is clear: if you want to protect the brain during an impact you need shock-absorbing technology, and these innovations exist; tubular structures like Koroyd® are super lightweight and are proven to absorb energy more efficiently than your standard EPS or EPP polymers. Technology that actually protects during oblique and rotational impacts. The question is, why hasn't this become the benchmark for industrial head protection?

We also have digital technology integrations that help keep workers safe in extreme circumstances. The science is available and speaks for itself. The construction industry is full of innovation; we should be wearing it as well. Football, hockey, snow sports, cycling, and other contact sports are pushing the limits on how we protect the brain. I dare the industrial trades to do the same. The right thing to do as an industry is to provide our people with head protection from this century. CS

Ryan Barnes is the Founder/CEO of STUDSON, one of the latest brands to launch a new blend of technology in the industrial safety market (https://studson.com).

Vibration-Reducing Gloves, What Can They Do?

BY MARKUS BERGER, CONTRIBUTOR

Hand Arm Vibration (HAV) is a hidden danger that slowly degrades the health of the workforce. Fortunately, there are many countermeasures that can be implemented to secure the health and productivity of the workforce.

Hand Arm Vibration Syndrome (HAVS) is caused by an over-exposure to vibrations, such as when using handheld power tools. Symptoms include nerve damage that reduces sensitivity and finger dexterity, bouts of vibration white finger (where fingers lose all feeling and turn white in cold temperatures), and muscle fatigue, potentially resulting in disability. Unlike many injuries like cuts, there is no well-defined time of injury, but rather gradual, accumulating, and irreversible damage.

Symptoms can take time to become apparent, but once evident there is no treatment to reverse the harm and quality of life impact for sufferers can be significant. The indirect and sneaky nature of how injuries are sustained is a major concern and contributes to the low awareness in the industry.

Vibration basics

The strength of vibrations is measured by acceleration. The "rate" or frequency is measured by Hertz (Hz), where 100 Hz corresponds to a motor frequency of 6,000 rpm.

Vibration exposure and risk assessments

Slow tools with an rpm of 1,800 RPM (30hz) will cause a resonance and hence land most of the energy in the wrist, lower palm, and forearm while faster tools of 12,000 RPM (200hz) cause more resonance and injures to the fingers. Despite that, different tools cause resonances in different parts of the hand-arm system and they must be compared to each other. This simplification of putting one relevant value of vibration strength is the ISO 5349 frequency weighted average acceleration. The ISO-weighted vibration acceleration value, despite its shortcomings, is a convenient tool for estimating risk to the workforce. An 8-hour day with exposure to 10m/s^2 is expected to cause blood circulation injures to 10% of the workforce after three years of working. To compensate for the simplifications of the ISO 5349 weighted acceleration, it is wise to expect a significantly faster injury rate for fast (15,000 RPM) or high-impact tools.

Who is at risk?

Employees are at risk if they regularly use hand-held or hand-guided power tools and machines such as:

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Gloves are very important to keep hands warm, protect from bruises, but also must be flexible enough not to increase strain. Vibration-reducing gloves introduce a whole new layer of complexity. *Image courtesy of Eureka Safety*

- Concrete breakers, concrete pokers
- Sanders, grinders, disc cutters
- Hammer drills
- Chipping hammers
- Chainsaws, brush cutters, hedge trimmers
- Powered mowers
- Scabblers or needle guns
- Powered lawn mowers and brush cutters

Workers are also at risk if they hold workpieces, which vibrate while being processed by powered machinery such as pedestal grinders.

Also, workers who regularly operate:

- Hammer-action tools for more than about 15 minutes per day; or
- Some rotary and other action tools for more than roughly one hour per day, as they are likely to be well above safe exposure.

What are the early signs and symptoms to look out for?

- Tingling and numbness in the fingers (which can cause sleep disturbance)
- Not being able to feel things with the fingers
- Loss of strength in hands (may be less able to pick up or hold heavy objects)
- In the cold and wet, the tips of fingers going white, then red and being painful on recovery (vibration white finger)

What can be done?

There is not one quick fix answer, but rather a full range of countermeasures that combined can significantly reduce the risk.

Assess the risk

It is important to identify the most exposed work tasks and the tools used (try to put an acceleration number to each task).

Reduce exposure time

Use work rotation to avoid prolonged exposure time to the most exposed job tasks.

Training of operators

The damage sustained can be reduced by a number of means, such as using a modest grip force, keeping fingertips firm on the handle, and applying a comfortable work posture.

Good tools & gloves

Well-serviced tools and preferably tools that are "low vibration" due to built-in balancing rings or counterweights help, too. Keep in mind that cutting tools should be kept sharp. Fast, high-frequency tools might have a lower stated ISO-weighted acceleration number but can be just as bad as slower tools with a higher ISO 5349 acceleration value. In the search for better machines, be sure to move to balanced tools, not just to shift to faster, higher frequency tools.

Gloves and vibration-reducing gloves

Gloves are very important to keep hands warm and protect from bruises, but also must be flexible enough not to increase strain. Vibration-reducing gloves introduce a whole new layer of complexity. The gloves themselves introduce new resonance frequencies to the hand-glove-tool system. Simply said, vibration-reducing gloves can be dangerous in certain situations.

Yet, vibration-reducing gloves

are very effective to remove transient and high frequency vibrations from impacting tools. However, for rotating tools, it gets difficult as you have to know what you are exposed to and what the gloves can protect from.

Luckily, there is a system of vibration-reducing gloves that is tailored to specific tools to avoid the dangers of misuse. The matching of task, tool, and glove can be done with different accuracy; the simplest way is to separate the impact vibration family of gloves for impacting and very fast tools above 15-20,000 RPM. Tools slower than this will require a different solution to avoid dangerous resonance to the fingers. It's very important for the glove manufacturer to secure a uniform and consistent quality of the foam padding in order to deliver the promised protection at each frequency.

It is possible to improve dexterity and fingertip feeling while still being protected if you are working with impacting tools, such as rock drills or impact wrenches. During prolonged work with polishing or finishing with grinders where requirement for protection is high but dexterity is low, there are still solutions.

Multi-norm

It's very important to keep hands warm, hence the necessity of winter vibration gloves for both fast and slow tools. Multi-norm vibration-reducing gloves are required when multiple risks are involved, such as cut hazards, high temperature, or fire.

Are vibration-reducing gloves worth a try?

Vibration-reducing gloves are expensive, and some types may also reduce finger dexterity and increase the required grip force, so you may ask yourself, "why bother?"

The simple answer is that in the medium term, improved health means higher productivity and less staff turnover. The use of vibration-reducing gloves is likely to increase the number of years that employees can work without getting vibration injuries. Plus, the cost of gloves is still very small to the cost of losing skilled operators, not to mention the human side of it too. CS

Markus Berger is the CEO of Eureka Safety, a division of Y.Berger & Co., a family-owned textile company based in Sweden. Eureka's focus is on high-performance gloves for demanding work situations, primarily in the industrial sector (eurekasafety.se).

In certain industries, workers may be exposed to crush and pinch impacts, making it crucial to have high-performance hand protection. *Image courtesy of Protective Industrial Products.*

The NEW ANSI/ISEA 138-2019 Impact Resistant Glove Standard

What Construction Workers Need to Know

BY TANIYA DUDANI, CONTRIBUTOR

Among other hazards, the risk of impact injury is exceedingly high in extreme work environments including oil and gas, demolition, and heavy-duty construction. Workers may be exposed to crush and pinch impacts daily, making it crucial to have high-performance hand protection, especially for the knuckles, fingers, and thumbs.

The NEW ANSI/ISEA 138-2019 Impact Resistant Glove Standard was developed to better classify the impact resistance of gloves, making it easier than ever to choose the right impact glove for any application. The new standard considers the minimum performance, classification, and labeling requirements for material protecting the fingers and knuckles from impact.

Understanding ANSI/ISEA 138-2019 Testing

ANSI/ISEA 138-2019 outlines three levels of impact protection. Each level is determined by how effectively each glove can disperse impactful force applied during testing. This impactful force is created by dropping a 2.5-kilogram mass onto each glove with an impact energy of 5 joules. This

process is repeated ten times on the fingers and eight times on the knuckles. The glove's impact level will then be determined based on the Mean Transmitted Force (MTF) recorded.

It is important to note that the MTF of the finger region is treated separately from that of the knuckle region, so the lower mean transmitted force of the two regions will be used to classify the glove's impact resistance as a whole.

Performance Level Classification

The MTF is measured in kilonewtons which means the lower the kilonewton measurement, the better the glove is at dispersing the impact energy along the surface of the protective material. This helps to prevent the impact energy from transmitting directly to the hand and results in a higher level of impact protection.

Level 1 recordings provide a higher kilonewton measurement which results in lower impact protection. Conversely, a Level 3 performance rating results in a lower kilonewton of transmitted force to the hand, which results in better impact protection.

EN 388 vs ANSI/ISEA 138

Previous to ANSI/ISEA 138-2019, the EN 388 Standard was the only measurement of impact protection that could be referenced. The European standard impact test is based on the EN13594:2015 Standard for protective gloves for motorcycle riders. The test method is similar, but only tests the knuckle impact (excluding the fingers). The EN 388 Standard classifies impact protection with a letter representation: P represents Pass, F represents Fail, and X represents Not Tested. If the average transmitted force is less than or equal to 7kN, then the gloves will receive a Level 1 P Pass rating. If the average transmitted force is higher than 9kN, then the gloves will receive a Level 0 F Fail rating.

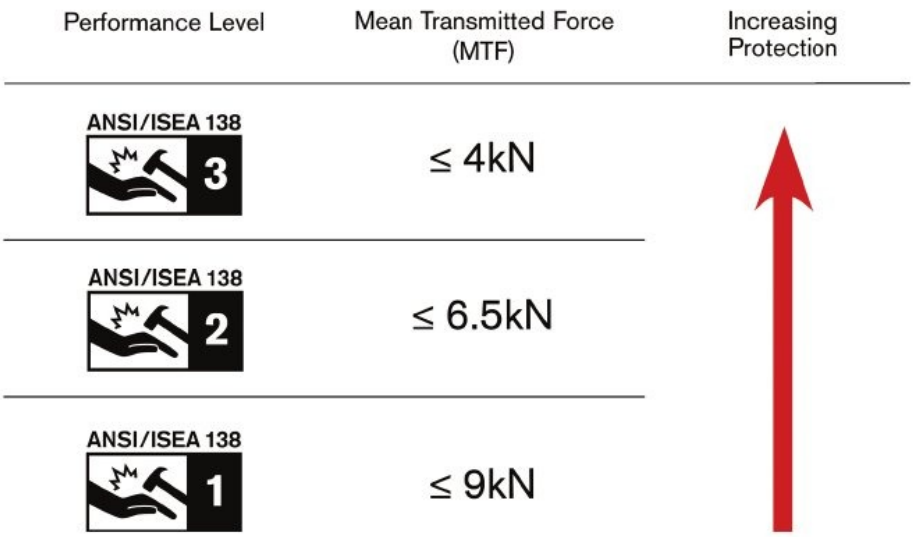

Image courtesy of Protective Industrial Products.

The new standard considers the minimum performance, classification, & labeling requirements for material protecting the hands from impact.

The new ANSI/ISEA 138-2019 standard breaks down this letter representation into a numerical range of mean transmitted forces. This allows different impact-resistant applications to precisely match up to the correct numerical value or level needed for the job.

Third-Party Testing

The ANSI/ISEA 138- 2019 standard shall be tested by independent IOS/IEC 17025 testing and calibration laboratories. This ensures all information is accurate and standardized. Before this, manufacturers had free reign on impact-resistant claims, leading to unjust injury.

The Need for Impact Protection

In high-risk environments such as transportation, oil and gas, demolition and heavy-duty construction, there is a greater need and desire for higher impact protection such as ANSI level 3. The current market has limited options of gloves that meet these requirements. The need for impact protection should never lead to a sacrifice of other required benefits such as dexterity, comfort, and longevity. The new ANSI/ISEA 138 testing standard makes it easier to trust and understand the protection workers are getting with available PPE. CS

Taniya Dudani is the Marketing Channel Manager, Industrial at Protective Industrial Products (PIP®). PIP® is a global PPE leader in worker safety with a diversified product line of 10,000+ products including head-to-toe protection for the Industrial, Construction, Welding, and Electrical Safety markets. PIP®, along with its recognized industry-leading brands: G-Tek®, Bouton®, Ironcat®, Assurance®, Kut-Gard®, CleanTeam®, QRP®, Ambi-Dex®, Dynamic®, NOVAX®, Caiman,® and Boss®, are relied upon for personal protection by workers every day. Learn more at www.pipusa.com.

Partnering with Emergency Responders Offers Unique Opportunities to Enhance Site Safety

BY RYAN MONAHAN, CONTRIBUTOR

Ocean City, Maryland is a bustling vacation destination full of out-of-town tourists, local day-trippers, and conference attendees. During the summer months, that is.

For the rest of the year, it's a sleepy beach town with "closed for the season" signs on many storefronts. And with fewer people in town and less activity taking place, this means that there's also fewer emergencies for first responders, giving the local fire and police departments somewhat of an "off-season."

Barton Malow's Ocean City Convention Center project team took advantage of this off-season throughout the addition and renovation to the oceanside events facility, which is expected to be completed in December of this year. Specifically, Superintendent Gary Ey recognized this as a key opportunity to build a relationship with the Ocean City Fire Department and host a series of on-site safety drills with Barton Malow team members and its subcontractors.

Ocean City Assistant Fire Chief Eric Peterson brought his team to the Convention Center project site in fall 2020, and then again in winter and spring of 2021 for a series of drills. These drills included a mock impalement, an overdose, and a fall from height with no access. Just as the project team needs to be ready and know what to do in the event of an emergency, so too do first responders. Because of this, the series of drills was mutually beneficial.

Barton Malow's Ocean City Convention Center project team has regularly partnered with the Ocean City Fire Department to conduct a variety of drills throughout the duration of the project. *Image courtesy of Barton Malow*

Would Your Team Know What to Do?

"You're walking to the truck for tools and hear a scream and see someone impaled on rebar, what do you do?"

That's the kind of in-depth, site-specific training that the team held in conjunction with the Ocean City Fire Department. To encourage participation and engagement with not just Barton Malow's team members, but subcontractors, names were pulled out of a hat and then an emergency was detailed that workers would then have to react to. It's the type of training that you can't exactly get from reviewing the Crisis Incident Management policy that it is expected that teams know and regularly review.

This training was much more hands-on and immersive. Afterwards, each drill was reviewed, and team members were able to assess how they reacted and how they could improve if such a situation were to unfold on their jobsite – whether it's the Ocean City Convention Center or their next project.

Creating a Culture of Care

Safety training is about a lot more than just checking a box. It's about preparing your team for someone else's worst day. To train effectively, it's important to develop and nurture partnerships with local fire and EMS departments to complete a successful, safe project. When you show your fellow team members, subcontractors, partners, and clients that you care, and provide them with the training and education that's necessary to keep them safe, it makes for a better, safer overall site.

Without a culture of care and concern for others, the safety manual is nothing more than just another dusty book on the shelf.

In addition to Toolbox Talks, daily safety huddles, and comprehensive orientation and continuous improvement training, partnering with local emergency responders can help provide a unique perspective on how to best handle certain types of situations. CS

Ryan Monahan is a Senior Project Safety Professional with Barton Malow Builders, the commercial and institutional division of the Barton Malow Family of Companies (www.bartonmalow.com).

Implementing Updated COVID-19 Guidelines for Getting Back to Work Safely

BY KEVIN J. MCMAHON, MS, CIH, CONTRIBUTOR

As construction companies navigate reopening safely amid the second COVID Delta variant wave, employers should continue to follow and implement guidelines for preventing the spread and risk of COVID-19 in construction environments, to themselves, their employees, and visitors to their worksites.

AIHA, the association for scientists and professionals committed to preserving and ensuring occupational and environmental health and safety (OEHS) in the workplace and community, recently published an updated series of Back to Work Safely™ Guidance Documents (2nd ed) for small to mid-size businesses in 27 industry sectors including the construction industry. The free guidance documents provide clear and actionable steps towards the safe operations of a variety of workplaces, including construction, through prevention, early detection, and control of COVID-19.

Since conditions are changing rapidly, and to varying degrees at different locations, it is critical for all companies to continue to monitor the spread of the virus and to apply the measures that are most effective in preventing the spread at their worksites. According to the guidelines, employers can start by taking updated measures to address employee wellness in the workplace, such as:

- Communicate to employees the importance of being vigilant when monitoring personal health symptoms and contacting their employers or managers if or when they start to feel sick.
- Revisit sick leave programs to allow for time off and follow all HR policies and HIPAA or other regulatory requirements.
- Employers can consider incorporating a wellness questionnaire similar to CDC's general screening.
- Survey and check their regional health department websites. For example, there is a personnel screening form available on the San Francisco Department of Health's website.
- Refer to CDC's guidance for businesses and employers regarding employees who have symptoms or signs of COVID-19 (i.e., fever, cough, or shortness of breath) or who have had close contact with someone who has COVID-19.

The Back to Work Safely™ Guidance Documents (2nd ed.) also offers practical guidance for employers to implement multiple layers of risk mitigation strategies through use of engineering controls (e.g., increased ventilation and air filtration), administrative controls (e.g., staggered shifts), and personal protective equipment (e.g., respirators and gloves).

As workplace restrictions continue to change, many questions still remain for construction employers and companies as they reopen or resume normal operations. Back to Work Safely™ Guidance Documents (2nd ed.) answer these questions for construction employers.

- How can we best protect the health and safety of our employees, third parties, project sites, and visitors to the worksite?
- What communication is needed to keep everyone informed of the preventive steps being taken?
- What steps can we take to minimize the risk of disease transmission?
- What training is needed for our employees?
- What health and safety measures do we need to take regarding new virus variants?
- What do we do if an employee or visitor to the worksite has tested positive for or is suspected to have COVID-19?
- What do we do if an employee or visitor to the worksite is sick or not following guidelines?
- How do we handle high-traffic crowd management through the workplace, including during peak times?

While the scope of these guidance documents does not cover workplace testing or vaccination guidance, AIHA experts advise employers to refer to state, local, and federal guidance on these topics, such as the Centers for Disease Control and Prevention (CDC)'s COVID-19 testing and vaccine. CS

Kevin J. McMahon, MS, CIH, is Director of Technical Services for HazTek, Inc. (haztekinc.com), a safety management consulting firm that specializes in services to the construction industry. He has contributed to the Focus on Health: COVID-19 document published by AIHA and is a current member of the TAG WG5 Committee for the forthcoming ISO 45006 standard for Occupational health and safety management — preventing and managing infectious diseases – General guidelines for organizations.

Crane Operator Employer's Responsibilities

BY RON OVERTON, CONTRIBUTOR

One of the most frequent questions posed by employers is a clarification of exactly what their responsibilities are to be in compliance with the revisions of the Federal Crane Rule 29CFR1926.1427, specifically the training, qualification, evaluation, and National Certification of their crane operators. Let us review the requirements and changes of this regulation.

Keep in mind that this regulation applies to all crane types and craning work as stated in the "Scope" provided in the Construction Crane Rule 29CFR1926.1400 subpart CC and some specific state regulations may be more restrictive than this Federal Rule. Below is clarification for employers so they know exactly what they need to stay compliant.

Effective Compliance Dates:

1. National Certification (if applicable) December 10, 2018
2. Employers Training and Evaluation April 7, 2019

Clarification of Employer Responsibility:

1. The employer must ensure that each operator:

a. Is trained on the operation and use of the specific crane and tasks to be performed.
b. Passes an employer practical evaluation/attestation using the specific crane and performing all the tasks required.
c. Is Nationally Certified and licensed, (as applicable) before operating.

Employer Crane Operator Training Requirements:

1. Employer must provide each operator with sufficient training before operating the equipment.
2. Level of employer training may vary according to the operator prior experience/training.
3. Training is to include a combination of formal operational instruction and practical hands-on instruction.
4. Ensure they can recognize and avert risk associated with that crane.
5. Ensure skills and knowledge to perform the assigned work safely are taught and demonstrated.
6. Examples of required training covered may include:
   a. Equipment, working area and ground inspection, setting up, leveling, accounting for hazards, making judgements for wind or other factors, using outriggers/stabilizers and cribbing,
   b. Assessing unstable loads, rigging, determine load weight.
   c. Barge operation, hoisting/handling irregular sized loads, personnel hoisting, tight spaces, performing multiple crane lifts and traveling loaded/unloaded.
   d. Engaging, hoisting, moving, and placing loads (as applicable) at height, blind picks, using ancillary attachments and jib extensions.
7. The operator-in-training shall not operate in any of the following circumstances:
   a. Inside the energized powerline clearance requirements.
   b. Hoisting personnel.
   c. Lifting over a shaft, cofferdam or in a tank farm.
   d. Multiple lift rigging operations (unless sufficiently skilled).
8. Retraining:
   a. When an evaluation, observation, or testing indicate it is necessary.
   b. On relevant topics or skills, not necessarily retrained on entire program.
   c. Retain proof of retraining.
9. Trainer:
   a. Training can be provided by an employee or agent of the operator-in-training's employer.
   b. Trainer must have the knowledge, training, and experience necessary to direct the operator in-training on the equipment in use.
   c. Trainer does NOT have to be a Nationally Certified Operator.
   d. The employer's trainer may only assign task within the ability of the operator-in-training
   e. While training, the operator must be continually monitored by the trainer. There are few exceptions.
   f. Trainer and operator must remain in direct line of sight and be able to communicate verbally or via hand signals. Tower cranes are slightly different.

Employer Operator Evaluation (Attestation) Requirements

1. Done after sufficient training has been accomplished.
2. Evaluations can be done at the worksite during the regular craning work if mentored by a Certified Crane Operator.
3. Ensure operator is qualified by knowledge and/or a demonstration of: (as applicable)
   a. Knowledge and ability to recognize and avert risk.
   b. Crane inspection, skills to safely operate the equipment, including setup, outrigger/stabilizers/cribbing, hazards, ground requirements, clearances.
   c. Operate in applicable crane configurations.
   d. Competently and safely perform hoisting activities required for assigned work such as: load handling, load movement, load placement, blind lifts, personnel hoisting multi load lifting, and multi-crane lifts.
   e. Use of safety devices, operational aids, setting up software/computers utilized, emergency procedures.

Employer crane operator training requires that each operator be able to recognize and avert risk associated with that crane. *Image courtesy of OVERTON.*

The employer must ensure that each operator is trained on the operation and use of the specific crane and tasks to be performed.

f. Knowledge of lifting capacity, boom lengths, use of extensions, lifting at height, attachments, or alternate counterweight set-up.

4. Evaluation Documentation:
   a. A single successful evaluation may cover other equipment models that do not require substantially different skills, knowledge, or ability to recognize and avert risk to operate.
   b. Successful evaluation must be documented, proof of evaluations must be available at the worksite.
   c. Evaluation does not have to be in any specific format but must include:
   i. Operator name, evaluator name and signature, date, make, models, and configuration of equipment used in the evaluation, types of lifts evaluated on and qualified to make.

5. Trainees:
   a. Can be in-training operating on the worksite if mentored/instructed and constantly observed by an employer's designated mentor who is a Certified Crane Operator.
   b. Must complete training and be pass employer evaluation demonstrating the required skill and knowledge.
   c. May require additional training and/or multiple evaluations on different models or tasks.
   d. Must have both employer training/evaluation completed and National Certification prior to operating unsupervised.

6. Evaluator:
   a. Can be an employee or agent of the employer.
   b. Has the knowledge, training, and experience necessary to assess crane operators.
   c. Does NOT have to be Nationally Certified.

7. Re-evaluation when deemed necessary:
   a. Observation of declining skill, utilizing a different crane type/configuration, new skill is required.
   b. Documented and includes required information.

Requirement for National Certification:

1. National Certification is in addition to the requirement for employer training, evaluation, and qualification.
2. Certification issued by an accredited and recognized source such as CCO.
3. Second language written certification exams can be issued by the accredited testing/certification agency but note:
   a. Certification must identify the second language in which the written certification exams were provided and passed.
   b. Operators may only operate equipment with load ratings, operator's manual and safety decals printed in the second language designated on the national certification.
   c. Currently CCO does offer written examinations in Spanish on selected crane classifications. CS

Ron Overton is the President of OVERTON Safety Training Inc., which provides employers and hoisting and lifting professionals with safety training options and CCO National Certification services for hoisting and lifting professionals since 2005. For more information, visit overtonsafety.com

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ASSP: Your Construction & Demolition Resource

BY SCOTT FOWLER, ASSP CONTENT SPECIALIST

What Are Construction and Demolition Operations Standards?

Construction and demolition worksites pose serious hazards and risks that can cause worker injuries, illnesses, and fatalities. Industry standards provide best practices for identifying, assessing, and controlling these risks. As such, there are over forty ANSI/ASSP A10 standards that cover safety requirements for a wide range of activities related to construction and demolition operations — from erecting scaffolding, to handling explosives, to pouring concrete.

Why Use Construction and Demolition Operations Standards?

Safety professionals can use the A10 standards to help prevent worker injuries, illnesses and fatalities. These incidents harm workers and their families, carry high costs, and damage a company's reputation. A10 standards apply directly to field operations to help all involved recognize and prevent hazards related to construction and demolition operations. Visit www.assp.org/standards/standards-topics/construction-and-demolition-operations-a10 to see a full list of all the available A10 standards.

Listen to our Podcast, www.assp.org/resources/the-case-for-safety-podcast/episode-11-ansi-assp-a10-standards, with John Johnson, ANSI/ASSP A10 Committee chair, as he discusses how the ANSI/ASSP A10 series of standards offers guidance on how to improve safety and health on construction and demolition sites.

A10 Construction and Demolition Standards:

ASSP A10.0-2021 The Construction and Demolition Operations Compendium of Standards
The ASSP A10.0 document provides an overview of each standard in the full series and explains how the standards can help your organization create safe worksites. This document is offered as a free download.

ANSI/ASSP A10.1-2011 (R2017) Pre-Project and Pre-Task Safety and Health Planning for Construction and Demolition Operations
The primary purpose of this standard is to assist construction owners, project constructors, and contractors in making pre-project and pre-task safety and health planning a standard part of their planning processes. This standard is also intended to assist owners in establishing a process for evaluating project constructor candidate safety and health performance and planning practices.

ANSI/ASSP A10.3-2020 Safety Requirements for Powder-Actuated Fastening Systems
This standard provides safety requirements for low-velocity powder-actuated fastening tools that propel studs, pins, fasteners, or other objects for the purpose of affixing them, by penetration, to hard structural materials (such as concrete, masonry, or steel).

ANSI/ASSP A10.4-2016 Safety Requirements for Personnel Hoists and Employee Elevators on Construction and Demolition Sites
This standard sets forth the minimum requirements intended to provide for the safety of life, limb and property of those engaged in occupations requiring the use of personnel hoists or employee elevators.

ANSI/ASSP A10.5-2020 Safety Requirements for Material Hoists
This standard applies to material hoists used to raise or lower materials during construction, alteration, maintenance, or demolition. It is not applicable to the temporary use of permanently installed personnel elevators as material hoists.

ANSI/ASSP A10.6-2006 (R2016) Safety and Health Program Requirements for Demolition Operations
The purpose of this standard is to provide minimum requirements to protect and safeguard the public and employees and to prevent damage to property resulting from demolition operations.

ANSI/ASSP A10.8-2019 Scaffolding Safety Requirements
This standard is designed to provide minimum guidelines for the safe erection, use, and dismantling of scaffolding.

ANSI/ASSP A10.9 – 2013 (R2018), Safety Requirements for Concrete and Masonry Work
The purpose of this standard is to establish reasonable and practical safety requirements and practices for concrete construction and masonry work.

ANSI/ASSP A10.13-2011 (R2017) Safety Requirements for Steel Erection

This standard establishes safety requirements for erecting, handling, fitting, fastening, reinforcing, and dismantling of structural steel, plate steel, steel joist, and metal deck at a final in-place field site during construction, maintenance, and dismantling operations.

ANSI/ASSP A10.16-2009 (R2016) Safety Requirements for Tunnels, Shafts and Caissons
The purpose of this standard is to establish reasonable and practical safety requirements and practices for the construction of tunnels, shafts, and caissons.

This standard establishes safety requirements for the installation and extraction of piles during construction and demolition operations.

ANSI/ASSP A10.25-2017 Sanitation in Construction
The minimum purpose of this standard is to assure that employees are provided with adequate potable water, general hand washing, and sanitary toilet facilities on a job site.

ANSI/ASSP A10.26-2011 (R2016) Emergency Procedures for Construction and Demolition Sites
This standard sets guidelines for emergency procedures and applies to fires, collapses, hazardous spills, and other emergencies that could endanger workers and emergency rescue of injured or ill workers or other persons, or of uninjured workers unable to rescue themselves.

ANSI/ASSP A10.32-2012 Personal Fall Protection Used in Construction and Demolition Operations
This standard establishes performance criteria for personal fall protection equipment and systems in construction and demolition and provides guidelines, recommendations for their use, and inspection.

ANSI/ASSP A10.38-2013 Basic Elements of an Employer's Program to Provide a Safe and Healthful Work Environment
The purpose of this standard is to assist employers in their efforts to provide a safe and healthful work environment. This standard establishes the minimum elements of a program for protecting the safety and health of employees involved in construction activities.

ANSI/ASSP A10.39-1996 (R2017) Construction Safety and Health Audit Program
The purpose of this standard is to establish an internal method of measuring compliance with an organization's written safety and health program requirements.

ANSI/ASSP A10.40-2007 (R2018) Reduction of Musculoskeletal Problems in Construction
This standard applies to construction work where there may be risk factors, which could lead to musculoskeletal problems for construction workers. This standard does not apply to office or administrative work performed by construction companies.

ANSI/ASSP A10.43-2016 Confined Spaces in Construction and Demolition Operations
The purpose of this standard is to establish minimum requirements and procedures for the safety and health of employees who work in, in connection with, and around (in such proximity that would affect employees) confined spaces on construction and demolition projects.

ANSI/ASSP A10.46-2020 Hearing Loss Prevention for Construction and Demolition Workers
This standard establishes the minimum requirements for the control of energy sources to prevent release of harmful energy that could cause death, injury, or illness to personnel performing construction and demolition work.

ANSI/ASSP A10.46-2020 Hearing Loss Prevention for Construction and Demolition Workers
This standard applies to all construction and demolition workers with potential noise exposures (continuous, intermittent, and impulse) of 85 dBA and above.

There are over forty ANSI/ASSP A10 standards that cover safety requirements for a wide range of activities related to construction and demolition operations – from erecting scaffolding, to handling explosives, to pouring concrete.

ANSI/ASSP A10.47-2015 Work Zone Safety for Highway Construction
This standard establishes the minimum requirements for the construction and maintenance of public and private highways and roads to achieve the following objectives: prevent employee injuries and illnesses resulting from working in work zones; establish safe work practices in highway work zones; and prevent vehicular crashes in highway work zones. CS

Learn more at the American Society of Safety Professionals (ASSP; www.assp.org).

GOOD, BETTER, BEST

PROTECTION FOR SILICA DUST

CONTRIBUTED BY DENTEC SAFETY

It's common knowledge that there are many workplace hazards in industries like construction, mining, and oil and gas engineering, but did you know that one of the most common and deadly risks is the exposure to silica dust?

What is silica dust?

Crystalline silica is a mineral that is found in natural materials like clay, sand, gravel, rock, and stone. Quartz is the most common form of crystalline silica and in fact it is the second most common surface material accounting for almost 12% by volume of the earth's crust. Quartz is present in many materials in the construction and landscaping industry such as brick and mortar, concrete, slate, dimensional stone (granite, sandstone) stone aggregate, tile, and sand used for blasting. So, the most common materials used in building and landscaping all contain silica, putting those who work with these materials at risk. Silica dust is released from these materials during high-energy operations like sawing, cutting, drilling, chipping, sanding, and grinding. These fine particles of crystalline silica release into the air and become a hazardous respirable dust.

Exposure to silica dust

Silica dust exposure can occur during common construction tasks such as:

- Masonry saws
- Grinders
- Drills
- Jackhammers and handheld power tools
- Operating vehicle-mounted chipping tools
- Operating crushing machines
- Using heavy equipment for demolition or certain tasks

Industries where employees are commonly exposed to silica dust include:

- Mining where large amounts of silica dust is generated during cutting and extracting of stone and become trapped in the ventilating air
- Cement production and handling (emptying or disposing of bags) and concrete cutting
- Oil & gas engineering
- Construction
- Masonry
- Asphalt manufacturing
- Demolition
- Foundry
- Abrasive blasting
- Quarries

The risks:

Exposure to fine particle of silica has been shown to cause silicosis, a serious and sometimes fatal lung disease, lung cancer, other respiratory diseases, and kidney disease. Review studies in 2020 even showed damage to genetic material in crystalline silica works with adverse health effects because of DNA instability. In 2021, the dangers of silica dust are clear and proper respiratory protection for workers is a non-negotiable thanks to regulations put in place for Canada by the Canadian Centre for Occupational Health and Safety (CCOHS) and for the U.S. by the Occupational Safety and Health Administration (OSHA).

In Canada, the CCOHS is a great place to start for information regarding silica dust exposure limits. There are 14 jurisdictions that have their own Occupational Health and Safety legislation.

In the U.S., OSHA issued two new standards to protect workers from exposure to respirable crystalline silica- one for construction and the other for general industry and maritime. According to OSHA, the construction industry has approximately 2,000,000 workers exposed to respirable crystal-

JURISDICTION	REGULATION	8-HOUR EXPOSURE
Federal	Federal Canada Occupational Health and Safety Regulations	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
British Columbia	Occupational Health and Safety Regulation Part 5 Chemical Agents and Biological Agents	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
Alberta	Occupational Health and Safety Code 2009 Part 4 Chemical Hazards, Biological Hazards and Harmful Substances	Cristabolite (respirable): 0.025 mg/m3 Quartz (respirable): 0.025 mg/m3
Saskatchewan	The Occupational Health and Safety Regulations, 1996	Cristobalite (respirable): 0.05 mg/m3 Quartz (respirable fraction): 0.05 mg/m3 Tripoli, as quartz (respirable): 0.1 mg/m3
Manitoba	Occupational Health and Safety Regulation	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
Ontario	Regulation 833: Control of Exposure to Biological or Chemical Agents	Quartz/Tripoli (respirable): 0.10 mg/m3 Cristobalite (respirable): 0.05 mg/m3
Quebec	Regulation respecting occupational health and safety	Cristobalite: 0.05 mg/m3 Quartz: 0.1 mg/m3 Tridymite: 0.05 mg/m3 Tripoli: 0.1 mg/m3
New Brunswick	General Regulation	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
Nova Scotia	Workplace Health and Safety Regulations	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
Newfoundland and Labrador	Occupational Health and Safety Regulations, 2012	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
P.E.I	General Regulations	Use ACGIH TLVs Quartz and Cristobalite (respirable): 0.025 mg/m3
Northwest Territories	Occupational Health and Safety Regulations	Cristobalite (respirable): 0.05 mg/m3 Quartz (respirable): 0.05 mg/m3 Tripoli, as quartz: 0.1 mg/m3
Nunavut	Consolidation of Occupational Health and Safety Regulations	Cristobalite (respirable) : 0.05 mg/m3 Quartz (respirable): 0.05 mg/m3 Tripoli, as quartz: 0.1 mg/m3
Yukon	Occupational Health Regulation	Quartz: 300 particles/mL Cristobalite: 150 particles/mL Tridymite: 150 particles/mL

line silica in over 600,000 workplaces in the United States.

In the OSHA guidance document, OSHA uses a benchmark 8-hour time weighted average exposure of 0.05mg/m3 of respirable silica dust as a point of reference in describing control measures utilized by the construction trades. (Short-term exposure can be higher.)

If your exposure is over 0.05 mg/m3 for an 8-hour TWA, you MUST take appropriate measure to protect the worker and surroundings.

OSHA notes that some organizations like NIOSH and ACHIG recommend even lower levels (0.025 as an 8-hour time weighted average).

Generally, Canadian regulations are comparable to the U.S regulations, but in the States, violations are expensive and heavy fines are given to breach of Silica Regulation. Stricter enforcement in Canada is likely in the future.

The Employer's Legal Responsibilities

In any workplace where respirators are necessary to protect the health of the employee, or whenever respirators are required by the employer, the employer must establish and implement a written respiratory protection program with worksite specific procedures and elements, including the selection of respirators, medical evaluations of employees, fit testing, proper usage, maintenance and care, cleaning and disinfecting, proper air quality/ quantity, and training.

According to OSHA there are two ways to determine silica exposure levels:

A) Air monitoring or
B) Through identifying certain activities on the Table 1 of the Standard and complying with the dust control methods lists.

Luckily OSHA has already done some of the legwork for employers and identified procedures you need to put into place to ensure any silica dust levels remain with the PEL (permissible exposure limit).

How can you protect against silica dust?

Implementing a respiratory program according to OSHA's PEL is a non-negotiable to properly protect employees from silica dust exposure. So, what are the good, better, and best respiratory solutions according to respiratory protection requirements?

GOOD: Disposable respirators

BETTER: Reusable N95 half masks with respirators

GOOD: Disposable respirators

From 0.05 mg/m^3 to .5 mg/m^3 TWA 8 hours requires a NIOSH approved half-facepiece or disposable respirator equipped with an N, R, or P95 filter or higher with an Assigned Protection Factor (APF) 10.

Pros:

- Thought to be economical
- Lightweight
- Universal fitting, some models available in multiple sizes
- Exhalation valve model exhausts hot, moist air reducing heat build up and improving user comfort
- Crush resistant shell design increases product life and improves comfort
- Elastic straps sonically welded to the mask and no staples

Cons:

- Due to the possibility of working in high heat (ambient temperatures) and moisture due to wet tool usage, daily consumption may be high
- Difficult to fit check when entering hazardous application
- Will cause fogging on safety or prescription eyewear
- Will cause nose bridge irritation.
- Will not fit well with ponytails or hair up in a bun.
- More expensive in the long run as you need to constantly replace
- BIG environmental impact—create more waste

BETTER: Reusable N95 half masks with respirators

From 0.05 mg/m^3 to .5 mg/m^3 TWA 8 hours requires a NIOSH approved half-facepiece or disposable respirator equipped with an N, R, or P95 filter or higher with an Assigned Protection Factor (APF) 10.

Pros:

- N95 filters protect against non-oil-based particulate aerosols and is the recommended choice of OSHA.
- Replaces disposable respirators
- Variety of mask materials; Silicone is most comfortable, Thermoplastic (TPR) or Elastomeric rubber not as soft but less expensive
- No hotter than wearing a disposable style respirator
- Provides and airtight seal
- Multiple sizes allow for better fit

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BEST: Reusable half mask with filters/cartridges

ULTIMATE PROTECTION: if you require protection above apf25: Reusable full face mask respirators

and protection
- We offer protective assembly to attach filter to half & full-face mask, protects from dirt, misuse and extends filter life
- Easy to fit check before entering hazard work area
- Replacement parts
- More sustainable, less waste
- Economical due to reduced filter consumption

Cons:
- Requires cleaning and maintenance

BEST: Reusable half mask with filters/cartridges

From 0.05 mg/m^3 to 0.5 mg/m^3 TWA 8 hours requires a NIOSH approved half-facepiece or disposable respirator equipped with an N, R, or P-95 filter or higher.

Pros:
- P100 cartridge eliminates 99.97% of dust particle vs 95% for 95 rated filter
- Offers greater protection versus N, R, P-95 rated filters
- Replaces disposable respirators
- No hotter than wearing a disposable style respirator
- Provides an airtight seal
- Multiple sizes allow for better fit and protection
- Replace when breathing resistance occurs
- Due to greater filter material area reduces loading, resulting in reduced breathing resistance, extending filter life, and reducing consumption costs
- Cartridge case protects filter and extends filter life
- Easy to fit check before entering hazard work area
- Optional Prefilter protects P100 cartridge, extends life reduces breathing resistance and consumption costs
- More sustainable, less waste
- Cost effective in the long run when compared to disposables

Cons:
- Requires cleaning and maintenance

ULTIMATE PROTECTION: if you require protection above apf25: Reusable full face mask respirators

From .5 mg/m^3 to 2.5 mg/m^3 TWA for 8 hours, requires a NIOSH approved full-facepiece respirator equipped with an N-, R-, or P-95 filter or higher with an Assigned Protection Factor (APF) of 25. (FULL FACE RESPIRATORS PROVIDE AN APF OF 50).

Pros:
- New Special composite silicone offers superior comfort and value
- Certified by NIOSH as a universal size, reduces inventory of multiple sizes.

- Optional filters:
  - The N95 filters has protective assembly to attach filter to full-face mask, protects from dirt, misuse and extends filter life
  - P100 cartridge eliminates 99.97% of dust particle vs 95% for 95 rated filter
  - P100 Cartridge with optional prefilter extends life reduces breathing resistance and consumption costs
- Easy to fit check before entering hazard work area
- Replacement parts
- Polycarbonate fog resistant lens protects workers eye/face area
- Protective lens cover prevents scratching
- Economical due to reduced filter consumption
- Less expensive than powered air purifying respirators

Exposure to fine particle of silica has been shown to cause silicosis, a serious and sometimes fatal lung disease, lung cancer, other respiratory diseases, and kidney disease. Implementing a respiratory program according to OSHA's PEL is a non-negotiable to properly protect employees from silica dust exposure.

- Option prescription lens frame
- Less Environmental impact, less waste

Cons:

- Requires cleaning and maintenance

There you have the good, better, and best solutions as you implement a respiratory program to properly protect workers from silica dust. CS

Dentec Safety (www.dentecsafety.com) is a leading manufacturer and distributor of safety products in the North America since 2004. Dentec Safety is dedicated to providing the highest quality safety products and solutions delivering enhanced value and comfort. Our expertise from decades of experience in industrial safety and our innovative design technologies have solidified us as thought leaders in the field.

Construction Site Safety

Improving Safety on Stairs During Construction and After Completion.

CONTRIBUTED BY WOOSTER PRODUCTS

There are many ways that people might be injured on a construction site. Slipping while walking up or down the stairs shouldn't be one of them. Thankfully, many construction sites include non-slip surfaces on the steps — while they are intended for the benefit of the end-user or occupants of the building once completed, they also afford some protection for those building the structure. There are numerous types of anti-slip surfaces that can be applied to stairs, and they are generally determined by the building codes governing the project. For example, any structure over seven stories requires photoluminescent (glow in the dark) emergency egress pathways on the stairs. This includes glow-in-the-dark strips to identify stairs, railings, landings, and obstructions. While the non-slip stair surfaces are designed for the protection of the ultimate occupants of the structure, they provide surer footing on the stairs for the workers traversing them during construction.

Every stair type (concrete, steel, wood, precast, or poured-in-place) can benefit from application of a non-slip surface. The desired coefficient of friction — the grip that a surface has as measured both wet and dry — is normally called out in the specification, and thus eliminates such tactics as adding sand to paint. The materials of construction impact what type of product is used. We'll explore the most common types of non-slip surfaces typically found on construction sites, but first a little vocabulary lesson is in order. Every industry has their industry terms, and stairs are no exception.

1. Nosings are non-slip surfaces that cover the leading edge of the horizontal step surface.
2. Treads are non-slip surfaces that cover the entire (or vast majority) of the horizontal step surface.

Cast Nosings and Treads

Normally available in abrasive cast aluminum or abrasive cast iron, cast nosings and treads provide maximum durability in rough usage. Products such as Alumogrit® have been around for over 100 years–a

NITEGLOW® affords greater traction due to the high coefficient of friction, as well as the safety afforded by its glow-in-the-dark technology. *Image courtesy of Wooster Products.*

true testament to their durability and to their ongoing functionality. They are unusually resistant to corrosive environments, making them well suited for indoor or outdoor usage. Anti-slip safety properties are cast into the surface, providing sure footing during construction and for decades afterwards. Cast nosings and treads can be applied to new concrete (whether cast-in-place or precast), or steel pan-filled stairs. They are typically used in parking structures and on outdoor stairs leading to skywalks or other structures.

Extruded Aluminum Nosings and Treads

Extruded aluminum nosings and treads feature a heat-treated, corrosion-resistant, extruded aluminum base with a satin/lacquered enamel finish for aesthetics and durability. Diamond hard aluminum oxide within the fillers assures a long service life even under heavy pedestrian traffic. They provide excellent safety at a lower cost than cast nosings and treads, making them ideal for indoor or outdoor installations in a wide variety of settings. Bright, long-lasting epoxy filler is free of hazardous and radioactive substances and extends uniformly throughout the filler. A high content of aluminum oxide abrasive provides traction and long service life and is replaceable.

The use of precast stairs significantly impacts the safety of a construction environment because the precast stairs can be used soon after installation as opposed to cast-in-place stairs, which take time to cure. During the curing process, ladders or other temporary devices are often used to allow workers to gain access to the upper floors, creating a potential safety hazard. Precast stairs eliminate these temporary devices and the safety concerns inherent with them and speed the construction process. Whatever method of producing stairs is opted for, extruded aluminum nosings and treads can be applied, providing sure footing for workers traversing them.

Extruded aluminum nosings and stairs are available as ribbed abrasives (aluminum channels for abrasives), or as full abrasive (solid abrasive surface). Both offer a high degree of grip. The ribbed abrasive allows two colors to be used so that college facilities, for example, can match their stadium color schemes, or a contrasting color - like optic yellow - can be used to draw further attention to the step. Photoluminescent (glow in the dark) technology is available for either ribbed abrasive or full abrasive styles. Protective tape is also available and may be applied to keep the abrasives clean during construction. While not as efficacious as the abrasive itself, tape over abrasive does provide a better grip and surer footing than plain concrete or steel stairs.

Another option available for extruded aluminum nosings and treads is two-piece construction, like Spectra® or Supergrit®. With this option, the extruded aluminum base is the same, however the abrasive portion is not added until late in the construction process, with wooden slats installed in the interim. This keeps the abrasives section looking pristine for the owners or occupants of the building. While the coefficient of friction for the wooden slats is less than the abrasives, it does afford users some footing advantages during the construction process.

As previously stated, photoluminescent technology is specified for use in buildings over seven stories tall. In addition to glow-in-the-dark materials on steps, the railings, landings, and obstructions must also be marked with photoluminescent tape to comply with Emergency Egress codes. Glow in the dark tape used to mark steps does not contain abrasive, and therefore affords no better footing. For best results, always specify that photoluminescent abrasive filler be used on emergency egress stairways - like NITEGLOW® from Wooster Products, which affords traction due to the high coefficient of friction as well as the safety afforded by its glow-in-the-dark technology.

The good thing is cleaning of

Every stair type (concrete, steel, wood, precast or poured-in-place) can benefit from application of a non-slip surface. *Image courtesy of Wooster Products.*

photoluminescent treads and nosings (and other brightly colored abrasives) is easily accomplished with common commercial cleaners such as Simple Green and Fantastik. Wipe off any major dirt or grime first, then spray cleaner onto steps, and wipe off. For more heavily soiled areas additional dwell time of the cleaner may be required, this is normally determined by trial and error. Do not use bleach or other caustic cleaners as it may damage the abrasive filler mixture. CS

Wooster Products is an industry leader in anti-slip stair treads and walkway products. The company has been manufacturing anti-slip products for new construction, renovation, marine, and OEM applications since 1921 from the Wooster, OH facility. Products include cast aluminum (Alumogrit®) cast iron (Ferrogrit®), extruded aluminum (Spectra, Supergrit®, Stairmaster®, and Flexmaster®), pressure sensitive adhesive tape/deck covering (Flex-Tred®), and coatings (WP-70, Walk-A-Sured®, and Safe-Stride®), as well as photoluminescent (glow-in-the-dark) nosings and treads (NITEGLOW®). For additional information visit www.WoosterProducts.com.

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*Bureau of Labor Statistics

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Provide Fall Prevention First, Fall Protection Last

BY MARK STROMME, CONTRIBUTOR

Historically, falls are the leading cause of fatalities in construction, accounting for about one-third of all fatalities in the industry. Falls can be prevented by following the applicable OSHA standards, understanding how to avoid exposure to fall hazards, knowing what fall protection is needed, providing it, and ensuring employees are adequately trained.

However, even when using fall prevention equipment, there are instances when a fall does occur. That's why it's important to provide workers with a Personal Fall Arrest System (PFAS) if fall prevention controls aren't adequate.

Fall Threshold Heights

OSHA requires the use of fall protection in various situations. For construction work, one of the most common is when employees are working on a surface with an unprotected side or edge that is six feet or more above a lower level.

However, it applies at heights of less than six feet when working above dangerous equipment, such as working over machinery with open drive belts, pulleys or gears, or near open vats of degreasing agents or acid.

When working on scaffolding that is 10 feet above a lower level, employees must be protected from falling to that lower level. Steel erection work (regulated at 29 CFR 1926 Subpart R) has an entirely different set of fall protection threshold height criteria.

OSHA addresses fall prevention and protection in construction under 29 CFR 1926 Subpart M, Fall Protection, along with five non-mandatory appendices.

Fall Prevention

Fall prevention is always the number one goal. Options to prevent employees from falling are guardrails, safety net systems, covers, warning line systems, controlled access zones, and safety monitoring systems.

Fall Protection

A PFAS is used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. The use of a body belt for fall arrest is prohibited.

PFASs are categorized as personal protective equipment and are the last line of defense for protecting workers.

OSHA requires employers to:

- Select the components that make up the PFASs to ensure they stop the fall as required
- Make sure the anchor points, lanyard, and harness are correctly connected to each other
- Provide prompt rescue of employees in the event of a fall, and
- Train employees to inspect and don the harness, attach it to the lanyard, and attach the lanyard to the anchor point.

Training

Employee training is often considered the cornerstone of worker protection. For fall protection training, OSHA requires the employer to train each worker exposed to fall hazards.

Written certification is required that shows the training was done by a competent person.

OSHA defines a competent person as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has the authorization to take prompt corrective measures to eliminate them."

Retraining

There may be times when employee retraining is necessary. This includes when an employee who has already been trained no longer has the understanding and skill to work safely. Examples of this can be when:

- Changes in the workplace, or changes in the types of fall protection used, make previous training obsolete or
- An employee's lack of understanding about properly using fall protection systems or equipment indicates that the employee hasn't retained the training content.

For decades, falls on construction sites have been the number one cause of death in the industry. The first line of defense is fall prevention and if that's not possible, provide a PFAS and train employees on the proper use. CS

Mark Stromme is the Senior EHS Editor for J. J. Keller & Associates, Inc., the nation's leading provider of regulatory, safety, and compliance solutions, serving more than 500,000 customers, including 90% of the Fortune 1000® companies (www.jjkeller.com).

OSHA-Required Fall Protection Inspections

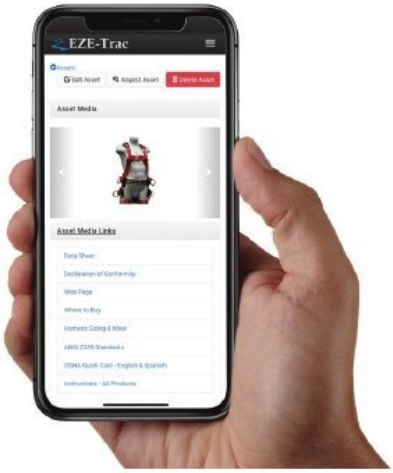
BY MARK C. CONOVER, CONTRIBUTOR

We all know that "personal fall arrest systems shall be inspected prior to each use…" [OSHA 1926.502(d)(21)]. But did you know that OHSA and ANSI require annual inspections on all fall protection equipment by a competent person? What's more, OSHA requires these inspections to be documented. While most of us already know this, do you have a good way of tracking and efficiently recording these inspections on a timely basis? Well, there are new ways that can help you make safety inspections, asset management, and documentation much less burdensome.

When I ask most safety professionals how they do their annual competent person safety inspections I get a variety of responses from, "We have a written file…"; "We record ours on an Excel spreadsheet…"; to "My assistant compiles the info…". Regardless of how you document your competent person inspections I most invariably hear "It's a pain!" Well, it does not have to be.

Asset Management and Safety Inspection Software

Technology has given us the mobile phone and by now most everyone has a smartphone. Can you imagine being able to do your annual personal fall arrest inspections on your smartphone or tablet at the jobsite and store your documentation on the cloud in a matter of minutes? Also, can you imagine having several jobsites around town, around the state, throughout the country/the world and using the same cloud-based system for asset management and safety inspections? If you can imagine it, it is probably available to you now. This is simply made possible by the use of RFID/QR code tracking tags, and Asset Management and Safety Inspection Software. Several fall protection companies already install



With the use of your smart device, scan the RFID or QR code on your fall protection equipment, or other asset, and it's automatically input to your cloud-based software. *Image courtesy of Elk River*

RFID tracking tags on their products. With the use of your smart device, scan the RFID or QR code on your fall protection equipment, or other asset, and it's automatically input to your cloud-based software. Your asset inventory and safety inspection can be a breeze.

It sounds simple, and it is. What makes it easy is the hardware is already available to you with your smart device or laptop. You no longer need to bring the equipment into a central location to do these asset management and safety inspections. You can keep your competent person in the field being productive and having your asset/safety inspections being done on time. With reminders from the cloud-based software there is no reason for delayed inventory or inspections, and your results are instantaneous. In addition, most RFID systems can offer limited or unlimited multiple authorized user platforms. But note that software flexibility or cloud storage may vary by vendor, and some RFID systems are not as flexible as others. Your research will let you know what fits your company's needs.

What you should look for in a RFID/QR code Asset Management and Safety Inspection Software:

- RFID and QR code capable system- Some smartphones and tablets cannot read RFID. All smartphones can read QR code.
- Flexible system- Do I have the ability to use multiple vendor products, and can I add asset management to the system?
- Cloud-based Software- Can I access the software from anywhere and is the info I input limited?
- Additional RFID/QR Code tracking tags available- Some vendors offer additional tags for asset management tracking.

Inspecting harnesses, self-retracting devices, and other fall protection equipment is critical to employee safety and OSHA compliance but is time consuming and easily ignored. This is why an RFID/QR code equipment tagging system can be time-saving and critical to your jobsite safety and asset management success. With electronic reminders set from your cloud-based software you can record safety training dates and send out notices of expiring certificates, or even driver's licenses. You're able to conduct inspections in a fraction of the time it would take with paper forms or spreadsheets. You can save and recall all inspections, from anywhere, in real time. No double entry. No missed inspections. No keeping track of paper forms. Make your inspection documentation painless for all involved. CS

Mark C. Conover is the National Sales Manager for Elk River, Inc. (www.elkriver.com). Conover is a 20-year veteran in fall protection working in sales and represents Elk River on the ANSI Z359 Fall Protection Code committee. Elk River, Inc is a leading U.S. manufacturer of personal fall protection equipment to construction and general industry.

Digging Through Compliance Toward Safety

BY ROBERT LAHEY, CONTRIBUTOR

For decades, the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) has emphasized the risks associated with work involving below-grade excavation operations. Trench safety has been the focus of a Compliance Directive (1985) and a National Emphasis Program (2018). A public awareness campaign continues today in order to raise public awareness about the need to prevent collapses and save lives.

The Chicagoland Construction Safety Council - a recent recipient of an OSHA safety grant on this topic – supports these initiatives by providing training at the local level to thousands of workers annually. From this experience, it is evident that employers have the best intentions, but too often do not adhere to current trenching and excavation standards.

In order to ensure 100% compliance, a competent person must be assigned to a jobsite, perform inspections, and deliver training to at-risk workers. This requires a complete understanding of the guidelines; foremost among them being the need for a system that protects employees from cave-ins, except when an excavation is made in stable rock or, if it is less than five feet in depth, an examination of the ground by a competent person indicates no potential for a cave-in (29 CFR 1926.651 and 1926.652).

Violations of this standard typically indicate indifference to the law, resulting in employees being placed in unsafe situations. Such willful acts are preventable and can be avoided by an investment in the training of supervisors who oversee this type of work. Instruction to competent persons is available through the national network of OSHA Training Institute Education Centers. Visit www.OSHA.gov/otiec to locate the nearest Center and register to attend Course #3015: Excavation, Trenching, and Soil Mechanics.

The consequences of an ill-conceived safety plan can be costly – and sometimes tragic. Therefore, trenching and excavating operations require a meticulous approach that is not prejudiced by a rush to "get the job done."

Beyond training, however, is the need to equip employees with the tools and supplies appropriate for the task at-hand. Although they make look similar, excavation sites are not equal. Workers must be enabled to address variations in depth, width, soil conditions, environmental surroundings, and scope of work. Each of these factors must be accounted for in the development of a thoughtful and thorough site safety plan.

The most important elements to consider in such a plan: 1.) Ensure a safe passage of entrance and exit from an excavation; 2.) Provide sufficient cave-in protection; 3.) Keep materials and equipment outside the trench far from the edges of the dig area; 4.) Look for standing water and test for atmospheric hazards; 5.) Inspect the excavation site and equipment regularly.

The consequences of an ill-conceived safety plan can be costly - and sometimes tragic. Therefore, trenching and excavating operations require a meticulous approach that is not prejudiced by a rush to "get the job done." There is simply too much at risk in underground environments where time and space are extremely limited. Instead, it is better to "Slope It. Shore It. Shield It." CS

Robert Lahey is the President & CEO of the Chicagoland Construction Safety Council located in Hillside, Illinois. For more than 30 years, the Council has delivered programs and services in support of its mission to improve human safety performance through education and training. Learn more at www.buildsafe.org.

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