

Forklifts

incident

A Georgia farm was [cited with safety violations](#) after say a worker was fatally injured in a forklift accident.

The worker was pinned between a forklift load and a metal railing while doing maintenance work on a conveyor system at a Pearson Farm's facility in Fort Valley, according to a release from the U.S. Department of Labor's Occupational Safety and Health Administration.

After investigating the incident, OSHA cited the farm, which [grows peaches and pecans](#), for several safety violations.

The farm is cited for "exposing employees to struck-by hazards," and to "fall, chemical and amputation hazards," the release says.

OSHA says employers didn't have a system to detect "anhydrous ammonia leaks" or come up with an "emergency response plan."

It also didn't train employees for what to do in the case of a leak, have "effective machine guarding" or use procedures to control "hazardous energy," OSHA says.

The company faces \$128,004 in penalties for the violations, according to OSHA.

"Employers must assess their workplaces to identify hazards and take corrective actions to eliminate serious or life-threatening injuries and illnesses," OSHA acting area director Condell Eastmond said in the release "A comprehensive safety and health program should be implemented to ensure controls are in place to protect workers."

NEED TO KNOW

To illustrate the reach of the inherent danger of forklift operation, here are four accident scenes.

1. A warehouse worker is walking beside a forklift. The driver does not see him and starts to make a turn.

The rear wheels swing out and run over the pedestrian, causing fatal injuries.

- A worker is helping to guide a forklift load into place. He is crushed between the load and a stack of crates.
- Your coworker is operating a forklift near the edge of a loading dock. The wheels roll too close the edge, and the truck falls to the level below. The driver receives disabling injuries.
- A forklift operator reaches through the uprights to the load in front of him. His arm is crushed by the descending lift mechanism.

These are typical of the kinds of serious accidents which happen around forklifts. Often the victims are pedestrians who are struck either by the forklift or by the load. The operators themselves are often the victims as well, injured by the load, or the forklift mechanism.

Forklift safety is everyone's concern – not just that of the operator. Anyone who works in the plant – or just visits it occasionally- needs to be aware of the dangers associated with forklifts.

Here is a breakdown of the most common causes of forklift accidents:

1. Poorly Trained Driver

A poorly trained driver might not know how to respond to a changing workplace. New inventory, obstacles and employees, or changes in floor gradient, can all cause problems for an inexperienced operator. It helps to incorporate a comprehensive certification process in the operators' training program.

2. Speeding

All too often, drivers become comfortable and drive irresponsibly. In some cases, workers are under pressure to finish the job

quickly or meet a time line. OSHA advises drivers to stay at or below 5 miles per hour. Even if the vehicle stops, the load may topple during harsh braking.

3. Operating a Forklift with an Elevated Load

This happens often in all sorts of industries. OSHA regulations encourage drivers to carry loads as near to the ground as possible, approximately 4 inches from the floor

4. Improper Turning

Forklifts are designed to balance heavy loads. So without a load, they're not necessarily the sturdiest machines. Turning a corner too fast can cause the lift to tilt to one side. The correct approach is to slow down well before the turn and maintain a gradual speed through the entire rotation.

5. Insufficient Warnings and Markings

In workplaces with both foot- and forklift traffic, it's an absolute necessity to mark forklift zones. Even if people must walk through these zones on a regular basis, they know when to watch out for heavy machinery. There are a number of ways to mark a forklift zone. While paint and standing signs work, floor tape is perhaps the most efficient option. If any wears or tears happen, it's easy to replace a small section of tape, which isn't true for standing signs or even paint. Also, floor tape is easy to apply, and you don't have to shut down production to get the job done.

6. Giving Rides or Riding on the Forklift Load

This is a common case of irresponsible operation. Under no circumstances should a driver transport a worker on a forklift load. Likewise, workers that are helping to load the truck should never use their body parts to balance a load.

7. Workplace Design

When purchasing forklifts, make sure it's the right design for your needs. If you work in a warehouse with minimal aisle space,

invest in a narrow-aisle lift. Workplace design can have a major impact on safe forklift operation.

BUSINESS / REGULATION

Forklifts play a key role for warehouses and other jobsites. They move heavy loads quickly and safely so that jobs get done faster. They get products in and out of the warehouse quicker. And they allow for more efficient storage. At the same time, driving a forklift involves a certain amount of risk.

Forklifts present workplace hazards for many reasons:

- They can weigh up to 9,000 lbs. (three times heavier than many cars)
- They load and unload heavy weights from high places
- They only have brakes in the front, making them harder to stop
- Uneven weight distribution can make them hard to handle
- Rear-wheel drive increases the chance of tipovers
- Full loads on the forks can obstruct the driver's view

One of the biggest safety risks is using untrained forklift workers. OSHA believes that [better training](#) could reduce forklift accidents by about 70%.

OSHA Forklift Rules and Regulations

Forklift safety guidelines are outlined in OSHA Forklift Standards, Part 1910, Subpart N. The title is "Powered Industrial Trucks." The subtitle is "Materials Handling and Storage." You can read the guidelines on OSHA's website.

General Requirements

This section covers safety guidelines for areas such as fire protection and design. It also covers maintenance and operation of certain types of trucks. These include fork trucks, tractors, platform lift trucks, and motorized hand trucks. These can be either electric or fossil fuel powered. The section does not cover compressed gas trucks, farm vehicles, earth movers, or load haulers.

All new and used forklifts must meet required design and construction guidelines. These can be found in the “American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1-1969”.

All trucks must have a label or other mark showing the approval of the testing lab. An approved forklift has passed fire safety tests performed by a recognized testing firm using approved testing standards. Any changes that alter the capacity and safety of a forklift must have written approval from the manufacturer.

OSHA Forklift Standards – Designations

- Battery charging stations should be placed in areas used only for that
- A conveyor or overhead hoist must be used to handle
- Recharged truck batteries must be safely
- Trucks must be braked to change or charge the battery.
- Battery vent caps must be in good working order.
- No smoking in the battery charging area.

This section of OSHA forklift rules and regulations covers 11 types of forklifts or tractors.

- D trucks are a lot like G trucks, except they use diesel rather than gasoline to power the engine.
- DS trucks also use diesel fuel. They come with more safeguards on the exhaust, fuel, and electrical systems.
- DY trucks have the safeguards of the DS without any

electrical equipment. They also come with features that can limit the engine temperature.

- E trucks use electric power. They come with basic safeguards for fire hazards.
- ES trucks use electric power. As with E units, they must have safeguards that prevent sparks and limit surface temperatures.
- EE trucks use electric power, and have the same requirements as E and ES units. They also have an enclosed motor and other electrical gear.
- EX trucks use electric power. They have electrical fittings that are designed for use in areas that may have flammable vapors or dusts.
- G trucks use gas fuel. They have basic safeguards to protect against fire hazards.
- GS trucks use gas fuel. They have more safeguards to protect the exhaust, fuel, and electrical systems.
- LP trucks are about the same as G trucks but use liquid petroleum gas (LPG) instead of regular gas.
- LPS trucks use LPG. They also have come with extra safeguards for the exhaust, fuel, and electrical systems.

STATISTICS

Forklift Accident Statistics Industry statistics in the United States cite a 90% probability of a forklift being involved in a serious injury or fatality accident over its useful lifetime. The Occupational Safety & Health Administration estimates that forklifts account for 61,800 minor injuries, 34,900 serious injuries, and 85 forklift related deaths every year. With almost 900,000 forklifts in operation in the United States, those numbers amount to a 1 in 10 chance that each forklift working in your facility will be involved in an accident this year. Almost 80% of forklift accidents involve a pedestrian. In the United States, 1 out of every 6 workplace deaths are forklift –related.

Forklift operations in warehouses across the industrial world are the defining mechanisms which underpin the existence of the

warehouse. Significantly, 80% of forklift injuries are caused by human error. Injuries affect forklift operators, employees interfacing with the forklift operations and pedestrians.

More statistics:

Forklift fatalities by type of accident:

Crushed by vehicle tipping over – 42%

Crushed between vehicle and a surface – 25%

Crushed between two vehicles – 11%

Stuck or run over by a forklift – 10%

Stuck by falling material – 8%

Fall from platform on the forks -4%

According to OSHA in the United States, 70% of forklift accidents could have been avoided with standardized training and safety procedures.

Industry

Mining – 1.2%

Construction – 23.8 %

Manufacturing – 42.5 %

Transportation – 11.0 %

Wholesale Trades – 12.5 %

Retail Trade – 9.0 %

PREVENTION

Important Forklift Safety Procedures Include The Following:

- Drive only as fast as you can walk comfortably. Forklifts cannot travel safely at high speeds. Without loads, they are especially unstable.
- Keep the load low—While moving, forks should be positioned low, with the mast tilted slightly back.
- Maintain good visibility—If a load blocks forward vision, drive backwards.
- Back down slopes that have an incline greater than 10 percent. Make sure your backup alarm works properly.
- Never carry hitchhikers.
- Leave aisle room for others. Honk your horn before and while you enter an intersection.
- While parking on a hill, block the wheels, lower the forks and set the parking brake.

To avoid tipping over, don't drive with tall or top-heavy loads, make sharp turns slowly, and always carry your load upgrade. Back down ramps, and never turn on slopes. Be alert for sudden bumps, chuck holes and other uneven ground. Watch the road and cross railroads diagonally.

Load and unload safely

When preparing to enter a pallet, keep the forks high enough and as wide apart as possible.

To capture a load, lift and tilt it back so it's secure. Never exceed your forklift's weight limits.

For minimum clearance, forks should clear the road by six to eight inches (15 to 20 centimeters) and be positioned higher for negotiating ramps and grades.

Plan your route for safety

Turn slowly into position. Raise the forks if necessary.

To stack on a rack, raise the load to the right height and position, tilt the load forward and lower the pallet onto the

rack. Withdraw the forks slowly. Back out, looking over your shoulder.

To stack materials on a truck, make sure the dock plate and truck can't move. Position the load, tilt it forward and release.

Everyone in an area near forklift traffic should:

- Never assume the forklift driver sees you.
- Understand that the forklift usually swings out at the rear end when turning.
- Keep clear of all the parts of a forklift.
- Never drive a forklift unless qualified to do so.

A forklift can be a big help or a source of disaster. Always treat it with respect.

The following are essential points to observe and follow in the operations of forklift activity.

- You must be both authorized and qualified before operating a forklift. Many accidents occur when untrained personnel attempt to drive a forklift. These machines operate differently from an automobile and require special training.
- Inspect the vehicle before operating it. The controls, brakes, tires, lights, horn and other parts must be functioning correctly. Follow the manufacturer's checklist for these daily inspections. Make minor adjustments if you are qualified, but leave major ones to trained and authorized mechanics.
- Check the load capacity of the forklift. Know the load capacity of any floors, elevators, ramps or trailers which you will be driving onto.
- Drive within the speed limit. Driving too fast can prevent you from stopping quickly enough, and can make the handling of the vehicle unstable.
- Stop as required at intersections. Sound the horn before proceeding around blind corners.
- If you can't see around a load, drive backwards.

- Most forklifts are designed as one-person vehicles. Do not pick up passengers. They are often the victims of serious accidents when they fall off forklifts or are crushed by loads.
- Never allow anyone to walk under the raised forks, and never leave a load suspended in the air without being at the controls.
- Be aware of the dangers of carbon monoxide poisoning around gasoline-powered forklifts. Proper maintenance of engines and adequate ventilation of work areas will help prevent carbon monoxide accumulations.
- Follow all precautions for safe refueling of a forklift. Keep in mind gasoline and propane fuels and battery recharging devices can cause fires and explosions.
- When travelling up or down an incline with a loaded forklift, keep the load uphill from you. Travel slowly on ramps.
- Keep your head, hands and feet inside the operator's compartment. Never reach through the uprights.
- Look before you back up.
- Keep the load low. Stop before you raise the load.
- Be aware of maximum height clearances. Loads can be knocked off by overhead obstructions.
- Watch for slippery surfaces, potholes and other hazards. Use the correct forklift for the surface on which you will be travelling. If a forklift is designed for indoor travel on smooth surfaces, it is hazardous to use it on outdoor terrain.

Lockout / Tagout Fatality File

PREAMBLE

Employees servicing or maintaining machines or equipment may be exposed to serious physical harm or death if hazardous energy is

not properly controlled. Craft workers, machine operators, and laborers are among the 3 million workers who service equipment and face the greatest risk.

The four-page general industry standard (29 CFR 1910.147), published in September 1989, was designed to prevent the accidental start-up of machines or other equipment during maintenance and servicing. Under the rule, hazardous energy sources must be **“isolated and rendered inoperative”** before work can begin. **Hazardous energy sources include electrical, mechanical, hydraulic, pneumatic, chemical, thermal or, as in the Ravenswood case, plain gravity.**

INCIDENT

At approximately 3:00 p.m. on November 28, 2007, Employee #1 was working as a foreman for an electrical contractor that was installing panels, transformers, and lighting into a newly-constructed single-story commercial building in Hawthorne, CA. At the time of the accident, he was completing the installation of electrical panels in the building's electrical meter room. Employee #1 was apparently working alone and he was discovered by coworkers on the ground in the panel room, next to a 480-volt pull panel from which the cover had been removed. The coworkers contacted Emergency Services. One of the firemen later stated that the 480-volt pull panel was energized and that one energized conductor was hanging loose in the panel. Employee #1 was transported to the Little Company of Mary Hospital, where he was pronounced dead at 4:55 p.m.

The County of Los Angeles Coroner's report listed the cause of death as electrocution, from contact with energized electrical equipment due to the lack of proper work procedures, safeguards, and barriers, and the lack of personal protective equipment. **The employer was cited for a violation, regulatory, of T8CCR 342(a), for failing to report a serious accident; for a violation, general, of T8CCR 1509(b), for the lack of a code of safe practices for electrical work; and an accident-related violation, serious, of T8CCR 2320.2(a), for work on energized equipment without proper procedures.**

BUSINESS / REGULATION

The OSHA standard for **The Control of Hazardous Energy (Lockout/Tagout)**, **Title 29 Code of Federal Regulations (CFR) Part 1910.147**, addresses the practices and procedures necessary to disable machinery or equipment, thereby preventing the release of hazardous energy while employees perform servicing and maintenance activities. The standard outlines measures for controlling hazardous energies—electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy sources. In addition, **29 CFR 1910.333** sets forth requirements to protect employees working on electric circuits and equipment. This section requires workers to use safe work practices, including lockout and tagging procedures. These provisions apply when employees are exposed to electrical hazards while working on, near, or with conductors or systems that use electric energy.

OSHA requires an annual audit of authorized personnel by an observer who will ensure that each associate follows the lockout/tagout procedure correctly, including putting locks in the right places, testing the machine for active energy sources and warning others to stay away from the equipment.

OSHA also requires annual audits of written lockout procedures to identify changes in the machinery that may have rendered any documented procedure obsolete and to ensure regular refreshes of LOTO processes.

STATISTICS

Lockout/Tagout (LOTO) was one of OSHA's [top ten cited violations](#) for 2017. Given that it's estimated LOTO [prevents 120 deaths](#) and over 50,000 worker injuries each year, this is a critical part of every EHS program and should be leveraged to its fullest potential. Workers injured on the job from exposure to hazardous energy lose an average of 24 days for recuperation.

In FY2016, the Occupational Safety and Health Administration received reports of 868 amputations caused by workplace incidents nationwide. Each and every one of these life-altering accidents

was preventable.

PREVENTION

Responsibilities of Employers

The lockout/tagout standard establishes the employer's responsibility to protect employees from hazardous energy sources on machines and equipment during service and maintenance.

This is generally done by affixing the appropriate lockout or tagout devices to energy-isolating devices and by deenergizing machines and equipment.

Employees need to be trained

The training must cover at least three areas:

- aspects of the employer's energy control program;
- elements of the energy control procedure relevant to the employee's duties or assignment; and
- the various requirements of the OSHA standards related to lockout/tagout.

How Do Employers Protect Workers?

- Develop, implement, and enforce an energy control program.
- Use lockout devices for equipment that can be locked out. Tagout devices may be used in lieu of lockout devices only if the tagout program provides employee protection equivalent to that provided through a lockout program.
- Ensure that new or overhauled equipment is capable of being locked out.
- Develop, implement, and enforce an effective tagout program if machines or equipment are not capable of being locked out.
- Develop, document, implement, and enforce energy control procedures.
- Use only lockout/tagout devices authorized for the particular equipment or machinery and ensure that they are durable, standardized, and substantial.

- Ensure that lockout/tagout devices identify the individual users.
- Establish a policy that permits only the employee who applied a lockout/tagout device to remove it.
- Inspect energy control procedures at least annually.
- Provide effective training as mandated for all employees covered by the standard.
- Comply with the additional energy control provisions in OSHA standards when machines or equipment must be tested or repositioned, when outside contractors work at the site, in group lockout situations, and during shift or personnel changes.

Six Tips to Improve Your Lockout/Tagout

1. Choose the Right Devices

Industrial machines, circuit breakers, plugs, switches, push buttons, and valves are just some of the items that often require lockout devices. There are two considerations that will help: necessity (knowing exactly what you need) and organization (using standardized devices and tools to help keep your devices organized).

First, determine exactly what you need. Create a list of all machines or electrical components that may need lockout devices.

Second, standardize and organize your lockout devices. Lockout Stations are one effective way to store and organize necessary devices.

2. Thoroughly Document Procedures

Lockout procedures need to be formally documented. This will keep workers and management on the same page and help to eliminate any potential confusion. Formal documentation is required by OSHA but, given the differences in workplaces and machines, not every procedure will be the same.

Procedures should thoroughly detail the steps needed to shut down and isolate hazardous energy. The procedures also should describe

how to safely place and remove all relevant lockout/tagout devices.

Procedures should be posted near the relevant machine. Machine-specific photographs detailing each step are highly recommended.

3. Clearly Mark All Isolation Points

All energy control points should be clearly and permanently marked with standardized tags or labels.

Tags and labels should be easily visible. It is also very important to make sure all energy isolation points are consistent with the machine-specific procedures.

4. Develop a Rigorous Training Program

Effective training is an indispensable part of a successful lockout program.

First, it is important for each worker to know exactly what his role is. Tasks should be clearly defined and clearly assigned to the appropriate worker. There are three types of workers involved in lockout operation: authorized, affected, or other. An **authorized** employee is directly involved in locking out equipment or machinery. An **affected** employee means any employee whose work is affected by a lockout. Usually, this means an employee who is working on locked out equipment. An employee is classified as **other** if he or she does not work on the machine receiving maintenance or repair but still works in the same area.

Each worker needs to know what type of employee he is, and strong communication needs to be developed among all workers. **Authorized employees** must clearly alert all affected employees when a lockout device is placed or removed. In order to prevent unsafe removal of devices, only authorized employees can remove devices that they have placed. Lockout padlocks have room for workers to clearly write their names in permanent ink, which underscores the strong need for clear assignments and individual responsibility.

As with procedures and isolation points, **Documentation** is an important component of training. Recording exactly what types of

training have occurred is helpful on several levels. **First**, it helps management make sure that all workers have been trained, as well as trained in the right tasks. Any gap in training can be easily found and corrected. **Second**, it documents when training took place. If you know when your last training session took place, it is easier to plan when the next one should take place. **Last**, looking at documentation of lockout training can help one see one's program from a new, more objective perspective. Suggestions can then be taken into account and improvements can be made.

OSHA requires that lockout/tagout training occur at least annually. Yearly training should be seen as a bare minimum rather than an ideal. In many cases, it would be helpful to revisit training exercises more frequently than yearly in order to ensure that critical repairs and maintenance are still being done safely. Also, repeat training helps workforces keep a "safety first" mentality.

5. Evaluate

Careful evaluation is an invaluable tool for improvement. Evaluation is necessary to make sure that the training exercises, procedures, and devices are working properly.

Inspections need to occur at least annually and should be performed by an **Authorized Employee** who is not involved in the procedure being inspected. Any and all deviations must be corrected and all roles must be thoroughly reviewed.

The date of inspection, procedures, the machines and equipment involved, and the names of all workers involved in the inspection must be recorded.

6. Evolve

A good lockout program should always be able to evolve; OSHA may introduce more requirements or more stringent guidelines.

Food Service

INCIDENT

An accidental mix of cleaners – acid and bleach – generated toxic fumes that killed the manager of a Buffalo Wild Wings in Massachusetts, authorities said Friday.

The eatery's 32-year-old manager, Ryan Baldera, was killed and 13 others were taken to the hospital, according to the Fire Department in [Burlington, Massachusetts](#), a Boston suburb.

The accident occurred shortly after 5:30 p.m. when a worker began cleaning the kitchen floor just before the dinner rush.

But that employee did not know that an acid-based cleaner, Scale Kleen, had been spilled on the floor earlier. So when the worker used [chlorine- and bleached-based Super 8](#) on the floor, the mixture turned green and started to bubble.

After that worker fled the kitchen with burning eyes and breathing issues, the manager grabbed a squeegee and tried to push the bubbling green concoction out of the restaurant and into an outdoor drain before he was unable to continue, according to the chief.

He was quickly overcome ... and the squeegeeing led him to a severe medical condition.

Both the Scale Kleen and Super 8 cleaners had clear labels warning not to mix them with other products, according to fire officials.

Baldera died at Lahey Hospital & Medical Center in Burlington.

Memphis-based Auto-Chlor System appears to be the maker of both [Scale Kleen](#) and [Super 8](#). But in a company statement, it only referred to Super 8.

"We understand the concerns, fears and questions you may have following the Buffalo Wild Wings chemical incident which may have involved Auto-Chlor's product SUPER 8," [according to the statement](#).

"First and foremost, our condolences are with the individual and their family as well as those affected yesterday during the incident. The safety and well-being of our customers are our first priority, always."

The statement continued, "At this time, working with OSHA, local authorities, and emergency teams on site, we are doing everything we can to determine all details behind this incident."

A responding state hazardous materials team spread neutralizer on the floor and into the outside air, making the restaurant safe to enter hours later, officials said.

City officials closed the restaurant and it will need to get formal clearance from the Burlington Board of Health before it can reopen.

The Occupational Safety and Health Administration (OSHA) has opened an investigation at the Buffalo Wild Wings in Burlington "to determine whether or not there were violations of workplace health and safety standards in connection to this incident," an agency spokesman said on Friday.

"Bleach by itself shouldn't be deadly," said Rick Sachleben, a retired organic chemist and member of the American Chemical Society. "However when it's mixed with incompatible chemicals, it can generate toxic gasses and that's probably what happened here."

He said millions of homes and businesses across America use these cleaning agents that are perfectly safe when properly used – and potentially harmful if combined.

"You can put all the labels you want, but there are lots of things we use on a regular basis that are potentially dangerous," said Sachleben.

“I mean, think about gasoline and how flammable and dangerous that is. But no one thinks twice about pulling up to a station and filling up with gas.”

NEED TO KNOW

The foodservice and hospitality industry is considered to be one of the largest employers worldwide, with well over 12 million workers in North America alone. As such a large business sector, the number of reported workplace injuries is disproportionately high compared to other types of work. This is also compounded by the fact that many of these workers are under the age of 20 and don't always have the experience necessary to keep themselves safe.

Physical injuries, lost time and insurance claims have a huge impact on any industry, and foodservice is no exception. Every year there are hundreds of thousands of reported injuries coming from restaurants, bars, catering kitchens and food production facilities.

Specific job training and having a clear understanding of the role that prevention plays in minimizing workplace risk are the keys to safety. Loose, on-the-job training only goes so far, and it is strongly recommended that all workers seriously considering the field as a career undertake some sort of formal training. Many colleges offer courses in culinary arts, in addition to certificates for general foodservice workers. These programs are a great way to get a jump-start on the experience necessary to be both successful and safe.

Formal training prior to employment for all workers would be an ideal situation, but the reality is that the industry is very much built on a part-time and student workforce. In these cases, even with decent on-the-job training, there will still be a trial by fire when it comes to safety precautions.

BUSINESS / REGULATION

OSHA Rules and Regulations for Restaurants

While OSHA's general rules and regulations also apply to foodservice businesses, it's important to be aware of the specific hazards employees may encounter. Additionally, one should be knowledgeable workers' OSHA rights.

OSHA Restaurant Hazards

There are a diverse range of potential safety hazards that employees can encounter at a restaurant on a daily basis. These general hazards include the following:

- Slips, trips, and falls on slippery floors
- Back and arm strain from lifting heavy trays and boxes
- Burns from hot serving ware and cooking equipment
- Cuts during food preparation
- Injuries from workplace violence
- Back and leg strain from standing for extended periods of time
- Skin or eye irritation from spilled chemicals

There is obvious potential for workplace injuries in foodservice environments. Detailed below are a few of the most effective strategies to keep a restaurant a safe place to work.

Ensuring Safety at Restaurant Work

Adhere to OSHA regulations for restaurant kitchens.

Food Handling

Employees who directly handle food should wash their hands and food prep utensils with warm water and soap before coming into contact with food. Make sure they're also thoroughly cleaning surfaces in prep areas in order to prevent the growth and spread of bacteria. They should also be wearing disposable latex gloves for maximized protection against foodborne illnesses.

Floors

Make sure your floors are clean and dry, especially near bars and sinks. These areas should have adequate drainage to keep pools of water from forming. Use rubber floor mats and raised platforms to

keep employees safe. Additionally, ensure there are no loose tiles or bumps and holes in carpets rugs that workers could slip or trip on.

Kitchen Temperatures and Safety

Kitchens can become extremely hot over the course of a long shift, so it's essential to provide employees with cool areas to take their breaks in. When you're training new workers, teach them how to determine if someone is dehydrated or suffering from heat exhaustion. Similarly, make sure all employees know how to administer first aid to coworkers in need. Following OSHA regulations on the temperature of restaurant kitchens can go a long way towards keeping workers comfortable and safe.

Age Restrictions

Ensure compliance with OSHA restaurant age regulations concerning the type of work that minors can perform and how many hours they're legally allowed to work. These rules will vary based upon the minor's age – for example, individuals under age 16 may not cook, bake, handle knives, or use appliances that could result in injury. The number of hours your younger employees may work also varies based upon the time of year, as more work hours are typically permitted on days when the minor isn't at school.

STATISTICS

The number of [foodservice and bar employees](#) killed on the job jumped by 40% in 2015, one of the sharpest increases among all professions, according to new data from the Bureau of Labor Statistics.

The increase was particularly dramatic for kitchen workers and servers, with a rise of 64%, the absolute highest among all the trades that were gauged, BLS reported.

However, the absolute numbers remained relatively low for [an industry employing more than 12 million](#) people, and one whose workforce has been growing by leaps and bounds. BLS found in its annual census of workplace fatalities that 165 foodservice and bar

employees were killed while working in 2016, compared with 118 the year earlier.

The leading cause of deaths for kitchen workers and servers was homicide, which took the lives of 21 staffers. Nineteen of the murders were committed with a firearm, according to the statistics.

Another three took their own lives at their place of employment.

Overall, BLS noted, fatal workplace incidents increased 7% in 2016, pushing the total past the 5,000 mark for the first time, to 5,190 deaths. The most common causes were traffic accidents, which accounted for 40% of the casualties, followed by violence, at 23%.

The canvass of businesses revealed that workplace drug overdoses continue to soar, climbing 32% in 2016 alone. BLS noted that overdose deaths have risen by at least 25% in each of the last five years.

Four of the on-the-job foodservice deaths were caused by a drug or alcohol overdoses, according to stats made available to Restaurant Business by BLS.

PREVENTION

Preventive techniques and procedures play a huge role in ensuring workplace safety. The following provides guidance to prevent some common foodservice and hospitality practices.

Cuts & Working with Knives

- All applicable staff should be trained in the proper use of knives BEFORE they start to work.
- Knives work best (and are actually safer) when they are sharper and well maintained.
- Always store knives with the blades covered.
- Never leave knives lying on counters or loose in sinks where they could fall or be accidentally grabbed.
- For high production cutting or slicing, be sure to wear puncture-proof gloves and a protective apron.

- Keep all machine guards in-place on electric slicers and ensure that all operation is carried out by authorized personnel only.

Fire Safety

- All staff should be trained in fire safety and evacuation procedures. Don't assume that everyone will know what to do in the case of an alarm.
- Keep adequate fire safety and suppression equipment within reach and ensure that fire extinguishers are suitable for all potential types of fires (grease, chemical, electrical, paper).
- Keep fire exits clearly marked and free of obstructions.
- Never leave ranges or stoves unattended while in use.
- Keep all cloths and aprons etc. away from hot surfaces or sources of flame.
- Keep range hoods and stoves free of grease build-up to the reduce the risk of fire.
- Do not overload electrical outlets, remove grounding pins from cords or use any equipment that appears unsafe.

Burns & Scalds

- Always use potholders to lift or move hot dishes.
- Give yourself enough room to move to avoid bumps and spills.
- Always stand back from equipment or containers that may release hot steam.
- Always wear long sleeves in the kitchen.
- Reduce water heater temperatures to avoid scalds.
- Install temperature or pressure relief valves and other safety devices on equipment to avoid explosive releases.

Slips & Falls

- Keep all floors, clean, dry and free of clutter.
- Footwear should have non-slip soles.
- Ensure that work areas have adequate lighting.
- Post signs or barriers to warn of wet or slippery floors.
- Use non-slip mats at workstations and in high traffic areas.
- Busy staff should communicate their movements with terms

like 'walking' or 'behind' to avoid collisions with co-workers, especially when carrying hot items.

Moving Heavy Loads

- Always lift with your legs, take small steps, and don't twist.
- Use a dolly, cart or a co-worker to help with heavy loads. Don't be a hero.
- Store heavy materials at waist height to avoid bending or lifting overhead.
- Employees should wear a support belt when excessive lifting is expected.

General Tips

- All new employees should be fully trained based on their individual level of experience. Keep records and re-train where necessary.
- Conduct routine safety inspections and check all workplace elements that have been identified as hazardous.
- Ensure that the facility has adequate first aid supplies for the number of employees, and that management or assigned personnel are trained in their application. All significant injuries should be documented and kept on record.
- Post warning and reminder signs throughout the facility to help reinforce safety best practices.
- Make sure that employees are trained on the use of chemicals, the dangers of mixing, protective gear, storage and ventilation.

MORE PREVENTION / PROTECTION

- Ask questions if you don't understand something or if you encounter a new situation.
- Dress for your job with safety in mind.
- Choose low-heeled, secure shoes with a non-skid sole and an enclosed toe. A falling coffee cup can inflict as much damage on your toes as a falling hammer if it lands the wrong way.
- Dress in light, layered clothing to allow for hot kitchen

conditions or cooler dining areas.

- Talk to your supervisor about fire-resistant fabrics for kitchen work.
 - Drink water frequently to prevent heat illness. Take your breaks in a cool place.
 - Follow the designated traffic patterns to avoid collisions with other workers, especially at doorways and around stoves and fryers.
 - Keep your mind on your work to prevent cuts and puncture wounds.
 - Do not reach across steam tables, fryers, stoves and other hot surfaces and materials.
 - Protect your hands from contact with detergents, cleansers and water by using gloves. Dry your hands and replenish the skin's natural oils by frequently applying moisturizers.
 - If you perform repeated tasks such as slicing food or running the cash register, be aware of developing pain or numbness in your hands, wrists and arms because these can be the first signs of repetitive strain injuries. Try to vary your movements and keep your wrists at a relaxed, natural angle. Don't hunch over your work, even if you are creating a dessert masterpiece.
-

Leadership

PREAMBLE

The "employee experience," as we're currently branding it, covers a lot of ground. Individualization, compensation, work/life balance, company mission, leadership transparency, recognition, teamwork, accomplishment – all these are essential components of the unwritten social contract employers have with their workers.

But there's one aspect that outranks them all: safety. When life or limb are lost, nothing else in the employee experience

matters. [A company has no responsibility more important than the protection of people's lives.](#)

The same hazards keep killing workers. What's most likely to kill someone is not a trick question. It's an open-book exam. Vehicles (on and off the road), heights (falling from them or being stuck by something falling from above), electricity and getting caught in machinery killed a high percentage of workers in 2017 just as they killed high percentages in previous years. Known hazards killing workers in predictable ways is a textbook definition of complacency.

INCIDENT

A report by Illinois regulators cites leadership failures by on-scene commanders in the March / 2019 death of a southern Illinois firefighter who was killed while helping battle a house fire.

Godfrey Fire Capt. Jake Ringering was killed and three other firefighters were injured on when a 21-foot wall collapsed in the village of Bethalto.

A report by the Illinois Occupational Safety and Health details the actions of crews from several fire departments that responded to the blaze about 20 miles northeast of St. Louis.

Although the home was already fully engulfed in flames when the first crews arrived, the report found that a 360-degree walk-around of the scene was never performed to observe potential hazards before the collapse, The Telegraph in Alton reported.

The newspaper, which obtained the report through a public records request, reported that OSHA investigators also found that the fire scene had "no established unified command post with unified task and purpose" to aid the fire crews battling the blaze.

"It was determined through employee interviews that IC (incident

command) could not be easily located,” the report states.

Investigators wrote that after a fire crew from the Godfrey Fire Protection District arrived, that crew volunteered to cut open the home’s garage doors to access the spreading flames, even though the garage door was unlocked.

Allowing the Godfrey team to enter through the garage doors – which were beneath the 21-foot peak of the brick gable wall – was a “greater risk than was necessary for the task,” the report states. It adds that the on-scene incident command allowed the Godfrey crew’s actions even though by that time the home was a total loss and all of its occupants had escaped.

The firefighters should have instead entered a standard door that was offset from the brick gable wall’s peak, the report found.

“If FF (firefighters) were on the side of structure less debris would have impacted FF and potentially could have saved a life and lessening injuries,” it states.

BUSINESS / REGULATION

The Occupational Safety and Health Act (OSHA)

The legal obligations to provide a safe work environment for employees arise primarily from a federal law known as the Occupational Safety and Health Act (OSH Act). OSHA was enacted in 1970 to address the uneven patchwork of state laws regarding workplace safety, and to respond to the growing number of serious injuries and deaths occurring in the workplace.

It is important to have a general understanding of the legal underpinning of the safety standards that apply to almost every employer:

- **All** businesses have a duty to comply with some general rules under what’s called a general duty clause.
- **All** businesses must also comply with industry-specific requirements and guidelines, known collectively as OSHA

standards.

State safety regulation. Although your safety obligations originate directly at the federal level, states have the right to develop their own standards under a federally approved state plan. The standards under a state plan may differ from federal OSHA regulations, but must be at least as effective as the federal standards. Some states have established and administer their own state plans for workplace safety. If your business is in a state that has a state plan, you must comply with it. If your state does not have a state plan, you must comply with federal OSHA laws.

Are You an Employer Subject to OSHA?

The Occupational Safety and Health Act is a comprehensive law – it covers most employers. Unless you are **sure** your business is exempt, you should assume that the law applies to you.

Generally, if you have employees, you are probably covered by OSHA. If you have none, you usually aren't covered, although in some cases businesses who use workers such as independent contractors are still subject to OSHA.

You are probably subject to OSHA requirements if you:

- are in control of the actions of your employee
- have power over the employee
- are able to fire the employee

Some of the usual indications of an employment relationship, such as who pays the employee, are **not** part of the definition of an employer under OSHA. There are special circumstances if you are one of multiple employers or if you have workers other than employees.

Employers Exempt From the Act

There are some very specific exemptions to employers covered by the Act. The following employers are **not covered** by the OSH Act:

- self-employed persons
- farms at which only immediate members of the farmer's family

are employed

- those whose working conditions are regulated by other federal agencies under other federal statutes (This includes most employment in mining, nuclear energy and nuclear weapons manufacture, and many segments of the transportation industries.)
- persons who employ others in their own homes to perform domestic services such as housecleaning and child care
- churches and nonsecular church activities
- states and political subdivisions (although some state plans cover public employees)
- employers not engaged in interstate commerce

STATISTICS

The number of people who died on the job dropped from 5,190 to 5,147, less than a 1% decrease, but easing a general upward trend since 2009. The rate dropped from 3.6 per 100,000 “full-time equivalent workers” to 3.5. (One person working full-time or two people working a half schedule equal one FTE.) The decline is equally slight when homicides, suicides and overdoses are subtracted, from 4,182 in **2016** to 4,142 in **2017**. The decline was too modest and the repeating pattern of fatalities is too persistent. [We're failing to crack the code on preventing these preventable deaths.](#)

Each profession presents a different risk profile, but those, too, are largely predictable from one year to another. Commercial fishing eclipsed logging in **2017** as the most dangerous profession. The **2014, 2015 and 2016** reports showed logging as the civilian occupation with the highest rate of fatal accidents. But logging deaths dropped from 135.9 per 100,000 in **2016** to 84.3 per 100,000 in **2017**. Fishing saw the fatality rate jump from 86 to 99.8 per 100,000 during the same period. It's too early to say whether either was a fluke.

Rounding out the most hazardous industries in **2017** were aircraft pilots and flight engineers (48.6 per 100,000); roofers (45.2); refuse and recyclable material collectors (35.0); structural iron and steel workers (33.4); driver/sales workers and truck drivers

(26.8); farmers, ranchers and other agricultural workers (24.0); first-line supervisors of landscaping, lawn service and groundskeeping workers (21.0) and electrical power-line installers and repairers (18.7).

Being self-employed is far more hazardous than being a company employee. The fatality rate among what the BLS classifies as “wage and salary workers” was 2.9 per 100,000 in **2017**. Among the self-employed, it was 13.1, four-and-a-half times as high. Some of the difference could be attributed to different occupation mixes between the groups; Self-employed includes many farmers, the eighth-most-dangerous job.

But the difference may also be partially attributable to the fact that a company worker is more likely to be working in an inspected environment, designed for safety and with procedures educated by past incidents. A company employee is more likely to have someone checking to ensure he is wearing personal protective equipment that, while it might not prevent an accident, frequently keeps it from being fatal. The lesson for self-employed workers is to convince their “boss” to provide the same safeguards a company worker would get.

Men die on the job at much higher rates than women. The rate of fatalities on the job for women in **2017** was 0.6. For men, it was 5.7, or 9.5 times as high. The report does not delve into how much of the increased exposure is from riskier behavior, higher proportions of men in more hazardous occupations or other possible factors.

It is dangerous for workers over 65. Seven workers aged 16 or 17 died on the job in **2017**, for a rate of 0.8 per 100,000. For most other age categories, the ratio was between 2.6 and 3.3. For those 55 to 64, it was 4.6. But for those over 65, it was 10.3. “Fifteen percent of the fatally-injured workers in **2017** were age 65 or over – a series high,” the BLS reported. “In **1992**, the first year CF0I (Census of Fatal Occupational Injuries) published national data, that figure was 8%.” One in five deaths last year in that age bracket was a farmer.

Driving is the greatest risk most workers face. While fishing was the most dangerous industry, because so many more people drive for their jobs than fish for a living, driving killed the most people on the job. “Transportation incidents remained the most frequent fatal event in 2017, with 2,077 occupational fatalities,” 40% of all work-related deaths during the year. “Heavy and tractor-trailer truck drivers had the largest number of fatal occupational injuries, with 840,” the BLS reported. “This represented the highest value for heavy and tractor-trailer truck drivers since the occupational series began in 2003.”

Commuting is the most dangerous part of most jobs. The BLS statistics include only those who were on company property or on the clock during their accidents, such as truck drivers and sales people. For most of us, our employers and the government consider driving to and from work a non-work activity. If it were, driving would easily eclipse all other causes of death, both by sheer number and rate. One [analysis estimates](#) that 24% of the roughly 40,000 traffic fatalities in 2016 occurred during morning and evening drive-times.

Watch your step – and clip in! “Fatal falls,” said the BLS, “were at their highest level in the 26-year history of the Census of Fatal Occupational Injuries, accounting for 887 worker deaths,” 17% of all fatalities during 2017. An [analysis released earlier this year](#) of data from 2011 to 2016 showed that while falls from more than 30 feet are the most common height that kills, they are not the majority. A surprisingly high proportion of deaths occur from much closer to the ground, including 402 workers who fell less than six feet. Ladders pose a danger at all heights. Falls from vehicles cause a disproportionate number of deaths at lower elevations. Roofs are the biggest risk from 20 to 30 feet. And anything that gets a person above 30 feet – roofs, scaffolds, trees or machinery – presents a serious risk.

A few layers within the statistics is a lesson about complacency and fatal falls. One of the graphs shows that 713 workers died last year from “falls to lower level.” Next to that bar is space for deaths from a “fall or jump curtailed by personal fall arrest

system.” It’s empty; the number is zero. No one who was wearing fall protection died from a fall last year.

Most people are still more likely to die away from work than on the job. It’s not part of the fatality census, but bears noting for context that unless one is a fisher, logger, roofer or worker in another high-risk-occupation, the chances of getting killed are higher on the commute, working around the house or during weekend activities. “For each on-the-job death due to unintentional injuries, there are more than 15 off-the-job deaths due to unintentional injuries,” [reports the National Safety Council](#). Much like many self-employed workers, people off the job are not required to follow safe procedures or wear protective gear. They often end up paying the price.

The best use of the fatality census is for workers and employers to highlight the statistics that apply most to them. Given that 108 of the 258 farm and ranch manager deaths involved a tractor, it makes sense for anyone in that line of business to speculate how their tractor could kill them. Given that 71 of the 244 grounds maintenance workers killed in 2017 either fell from a tree or were struck by one, some additional attention to safe tree-climbing and tree-felling practices is worth the investment.

PREVENTION

OSHA has recently updated the Guidelines for Safety and Health Programs it first released 30 years ago, to reflect changes in the economy, workplaces, and evolving safety and health issues.

The main goal of safety and health programs is to prevent workplace injuries, illnesses, and deaths, as well as the suffering and financial hardship these events can cause for workers, their families, and employers. The recommended practices use a proactive approach to managing workplace safety and health. Traditional approaches are often reactive –that is, problems are addressed only after a worker is injured or becomes sick, a new standard or regulation is published, or an outside inspection finds a problem that must be fixed.

Investigations of fatal incidents around the world have demonstrated that in order to achieve safe and fatality free production the following elements are essential:

- Maintaining a sense of vulnerability – complacency built on past success blinds us to warning signs
 - Ensuring continuous improvement in environment, equipment, strategy and systems
 - Applying the hierarchy of controls – eliminate the risk and reduce the chance of human error
 - Increasing the focus on high potential near fatal events
 - Recognizing the personal – fatal accidents are not just statistics
 - Maintaining operating disciplines – combating the gradual shift to unsafe behaviors
 - Maintaining alertness to increased and unexpected risks during abnormal operating conditions
 - Addressing culture and leadership through objective assessment and, where required, improvement plans
 - Providing courageous leadership in leading change and holding each individual in the business accountable for safe and fatality free production.
-

First Aid

INCIDENT

A 44-year-old male police officer drowns while attempting to rescue a citizen from a submerging vehicle in the Cumberland River. On the day of the incident, the victim and two other police officers responded to a call at 4:30 am of a person in a vehicle at the end of the boat ramp located inside Peeler Park threatening to drive into the river. The victim approached the driver's side of the car, and another police officer approached the passenger side of the car still parked at the water's edge. At some point

during their conversation with the driver of the car, the car started moving toward the water, and either the victim stumbled or the momentum of the car took him into the water. The other officer noticed the victim was struggling and jumped into the water to help him, but was unsuccessful. The ambient air temperature on this day in February was 40 degrees and the river currents were strong. It is possible the cold water, strong river current, and the uniform including a Kevlar vest, utility belt and winter jacket, all saturated with water, may have been too much weight for the victim to overcome.

NEED TO KNOW

Training your first aid attendants and first responders is a required part of every first aid program.

Sudden cardiac arrest, severe bleeding, shock, a near-drowning, or lack of oxygen during confined space work are all life-threatening emergencies. Without prompt and properly performed first aid a victim of any of these situations will very likely die or be permanently disabled while waiting for emergency services to arrive and begin care.

The first few minutes are important for the survival of any accident victim. If you can provide prompt and proper first aid while waiting for medical assistance to arrive, you greatly increase your co-worker's chance for a complete recovery.

When you come across an accident, first ensure your own safety. Look, listen and smell for signs of danger. Never endanger yourself to assist another person. That includes never entering a confined space to rescue a co-worker unless you use company authorized procedures. Do not allow yourself to be exposed to blood or other bodily fluids because of the danger of bloodborne diseases such as HIV and Hepatitis B. Act quickly and calmly, even if all you can do is call for medical assistance and stay with the victim to reassure him.

Many deaths and impacts can be prevented with First Aid if causalities are treated immediately. Timely care prior to the

arrival of the medical help means the difference between life and deaths. It must start immediately when the injury or illness occurs and continue until medical help arrives or the casualty recovers.

Aims of First Aid

1. To save life
2. To protect the casualty from getting more harm
3. To reduce pain and priorities of casualty treatment

Basic first-aid safety tips for common workplace injuries

- First, make sure the person is breathing. If necessary, and if you are trained, start the ABCs of first aid -Airway, Breathing and Circulation. This may include either rescue breathing or Cardiopulmonary Resuscitation (CPR).
- Be prepared to treat every accident victim for shock because it can be a life-threatening condition. Look for symptoms such as pale, clammy skin and rapid, shallow breathing. Make the person comfortable, either lying down or in a semi-sitting position, and keep him warm.
- If there is bleeding, remember the 3 P's. To slow or stop the bleeding, position the person lying down, position the limb higher than the heart and apply pressure on the wound. Cover the wound with a clean cloth and secure with a larger bandage. You must protect yourself from contact with blood.
- Support a broken bone in a comfortable position – using pillows or rolled blankets. Elevate the limb slightly if possible and apply a wrapped ice pack on the swelling. Don't move the person unless he is in immediate danger.
- Soak small heat burns in cool water for 20 minutes and protect with a light, lint-free dressing. Serious burns can be fatal and need prompt medical assistance. With all burns, don't break blisters, don't apply oil, lotions, butter, or ice and don't remove charred or melted clothing.
- For burns caused by chemicals, immediately place the person into an emergency shower. Make sure the victim continues showering for a minimum of 15 minutes while he removes all of his clothing. Medical treatment is necessary.

- Chemical eye injuries should be irrigated for at least 20 minutes in an eye wash and while the person is being transported to medical aid.
- A puncture wound to the chest or lungs is a life-threatening injury. Quickly seal the wound by placing your hand, plastic, foil, or a credit card over the injury. Have someone else send for medical assistance. Place the person in a comfortable semi-sitting position.
- Amputations can also be life threatening. First, stop the bleeding by applying pressure to an artery in the wrist, arm, groin or leg. Then apply clean dressings to the stump and treat the patient for shock. Wrap the amputated part in a clean cloth and place in a bag of ice. Make sure you send the amputated part with the patient to the hospital.

Golden rules of first aid

1. Reach the site of accident as early as possible.
2. Do not waste time asking unnecessary questions
3. Find out the cause of injury.
4. Do first things first quickly, quietly and without fuss or panic.
5. Give artificial respiration if breathing has stopped-every second counts.
6. Stop any bleeding.
7. Guard against or treat for shock by moving the casualty as little as possible and handling him gently.
8. Do not attempt too much-do the minimum that is essential to save life and prevent the condition from worsening.
9. Reassure the casualty and those around and so help to lessen anxiety.
10. Do not allow people to crowd around as fresh air is essential.
11. Do not remove clothes unnecessarily.
12. Arrange for the removal of the casualty to the care of a Doctor or hospital as soon as possible.

BUSINESS/REGULATORY

The Health and Safety (First Aid) Regulations

The Regulations require employers to provide adequate and appropriate equipment, facilities and personnel to enable first aid to be given to employees who are injured or become ill at work.

A first-aid box must be provided at each workplace location, and a first-aid 'appointed person' should be available at all times when people are at work. An '**appointed person**' must be someone who takes charge when someone is injured or falls ill (including calling an ambulance if required) and who looks after the first-aid equipment, e.g. restocking the first-aid box. An appointed person is not necessarily a fully trained first-aider. Practices fall into the category of smaller organizations where there is a low risk of injury, and are not required to have fully trained first-aiders.

However, practices will need to consider remote locations and / or locations shared with other organizations when planning their first aid provisions, and the provision of first aid cover for any shift workers and mobile workers. Staff must be made aware of the location of the first-aid box and the name(s) of first-aiders.

- [HSE guidance booklet – 'First aid at work: The Health and Safety \(First-Aid\) Regulations 1981: Guidance on regulations'](#)

All accidents / injuries at work must be recorded in an [accident book](#).

Information for first aiders about the risks of cross infection:

- [HSE guidance leaflet – 'Blood-borne viruses in the workplace: Guidance for employers and employees'](#)

First aid training

Since the **1st October 2013** HSE no longer approves training and qualifications for the purposes of first aid at work. Training

organizations who were formerly 'Approved' by HSE to deliver First Aid at Work **Training can no longer claim to be HSE Approved or use their HSE Approval number.** The flexibility arising from the changes in the **Regulations** gives employers more choice in the first aid training they provide for their employees and who they choose to provide it.

STATISTICS

Each year, thousands of workers are injured or killed due to insufficient safety processes, with the construction sector, in particular, reporting high levels of injuries and fatalities annually. There were 2.9 million nonfatal workplace injuries and illnesses reported by private industry employers in 2016.

Due to the nature of work, the risks contractors face are almost endless; amputations, broken bones, fractures, burns, risk of electrocution, cuts, lacerations and exposure to dangerous machinery.

The importance of first aid knowledge is backed up by research from St.John's Ambulance, in the UK, which suggests that up to 150,000 people a year could be given a chance of life if more people knew first aid. The service also says that 900 people a year choke to death, 2,500 asphyxiate, and 29,000 people die from heart attacks. About 610,000 people die of heart disease in the United States every year – that's 1 in every 4 deaths, according to the Centers for Disease Control and Prevention. Many of these deaths were preventable through knowledge of first aid.

The construction industry has one of the highest fatality and injury rates of any industry, with fatality rates for 2016 at the highest level since 2008, according to the Bureau of Labor Statistics (BLS). The construction fatality rate for private construction currently stands at 9.5% per 100,000 workers.

5 STATISTICS THAT EXPLAIN WHY WE NEED FIRST AID AT WORK REGULATIONS

Imagine a business that has no health and safety precautions and

regulations in place – the possibilities for workplace injuries and accidents are endless. **The Health and Safety Executive (HSE)** have some incredibly [shocking statistics](#) about injuries and fatalities in the workplace from 2015/16, and they reveal why first aid at work regulations are essential.

The Health and Safety (First Aid) Regulations 1981 states that employers are required to provide adequate equipment and trained personnel in the workplace. This ensures that employees are given immediate attention should they fall ill or become ill at work. These regulations are relevant to each and every workplace, even those with less than five employees, and those who are self-employed.

THE STATISTICS THAT SHOW THE WORTH OF FIRST AID AT WORK:

1. Estimated 621,000 workers sustained a non-fatal injury at work

Over 600,000 people became injured at work in just a year, First Aid exists to help save lives and inform people of what to do in an emergency. This proves there are many, many opportunities for First Aiders to help out fellow employees, until the emergency services take over (if needed).

2. Estimated 25,900,000 working days were lost due to work-related illness

An illness is typically harder to prevent than an injury at work, but First Aiders are made aware on how to treat illnesses such as allergic reactions, asthma attacks, fainting, seizures, and a stroke. Evidently, there's plenty of opportunities to help a member of staff in the workplace.

3. Estimated 4,500,000 working days were lost due to workplace injuries

If injuries are treated in a timely manner by somebody with First Aid training, then employees could be in working order sooner and employers could get more hours out of their staff. It's a win-win!

4. Estimated 119,000 slips, trips or falls at work led to an

injury

Almost a fifth of the workers who become injured throughout the year are harmed by slipping, tripping or falling. The amount of time taken to treat such incidents may be drastically reduced if risk assessments are carried out, with potential risks being eliminated where possible. If First Aiders are readily prepared to react to such accidents, then the average working days lost per case could be fewer.

5. Average of 7.2 working days lost per case

Each time an employee is injured at work, they take an average of 7.2 days to heal and return. If First Aid procedures are put in place and followed, this number may be reduced as timely attention and treatment could be applied – thus reducing the time taken out of work.

The source for these statistics is the HSE link.

PREVENTION

6 critical procedures connecting first responders to when emergency care can be given.

1. Teaching Methods

Training programs should:

- Help trainees develop “hands-on” skills using mannequins and partner practice.
- Have the right first-aid supplies and equipment available.
- Expose trainees to acute injury and illness situations and responses using visual aids.
- Include course resources for reference both during and after training.
- Allow enough time for emphasis on commonly occurring situations.
- Emphasize skills training and confidence-building through “hands-on” practice.
- Emphasize quick response to first aid situations through practice scenarios and drills.

2. Preparing to Respond to a Health Emergency

Include instruction and discussion on:

- Prevention as a strategy to reduce fatalities, illnesses and injuries.
- Understanding the legal aspects of providing first aid care, including Good Samaritan legislation, consent, abandonment, negligence, assault and battery.
- Understanding the effects of stress, fear of infection, panic; how they interfere with performance; and what to do to overcome these barriers.

3. Assessing the Scene and the Victim(s)

When covering scene and victim assessments include discussion and practice (if applicable) on:

- Assessing scene for safety, number of injured, and nature of the event.
- Assessing toxic potential of the environment and the need for respiratory protection.
- Assessing each victim for responsiveness, airway blockage, breathing, circulation, and medical alert tags.
- Identifying the presence of a confined space and the respiratory protection and specialized training required to perform a rescue.
- Prioritizing care when there are several injured.
- Taking a victim's history at the scene and determining the cause of injury.
- Performing a logical head-to-toe check for injuries.
- Methods for safely:
 - Moving and rescuing victims.
 - Repositioning ill/injured victims to prevent further injury.
- Stressing the need to continuously monitor the victim.

4. Responding to Life-Threatening Emergencies

The training program should be designed or adapted for each worksite and should include standard first aid, CPR, and AED use

as well as instruction in:

- Knowledge of the chemicals at the worksite and of first aid and treatment for inhalation or ingestion;
- Effects of alcohol and illicit drugs so the first-aid provider can recognize the physiologic and behavioral effects of these substances.
- Recognizing asphyxiation and the danger of entering a confined space without appropriate respiratory protection.
- Additional training is required if first aid personnel will assist in the rescue from the confined space.
- Responding to Medical Emergencies
- Chest pain, stroke, breathing problems.
- Anaphylactic reaction and hypoglycemia in diabetics taking insulin.
- Seizures and reduced level of consciousness.
- Pregnancy complications.
- Abdominal injury and an impaled object.

5. Responding to Non-Life-Threatening Emergencies

Common non-life-threatening injury and illness treatment includes:

- Wounds
- Wounds assessment and first aid for wounds including cuts, avulsions, and amputations.
- Principles of wound care, including infection precautions and use of PPE.
- Burns
- Assessing the severity of a burn.
- Recognizing type of burn is thermal, electrical, or chemical – and appropriate first aid.
- Reviewing corrosive chemicals at a specific worksite and hazard-appropriate first aid procedures.
- Musculoskeletal Injuries
- Fractures, sprains, strains, contusions and cramps.
- Head, neck, back and spinal injuries.
- Appropriate handling of amputated body parts.
- Eye injuries
- Oral injuries and the importance of preventing aspiration of

blood and/or teeth.

6. Trainee Assessment and Skills Refresher

- Assessment of successful completion of first aid training should include a skills test and a written assessment.
 - Numerous studies have shown a retention rate of 6-12 months of first aid skills.
 - Skill reviews and practice sessions are recommended at least every 6 months for CPR and AED skills.
 - Instructor-led retraining for life-threatening emergencies should occur at least annually.
 - Retraining for non-life-threatening response should occur periodically.
-

Safety Training

INCIDENT

Mélanie tells her story.

My name is Mélanie, and I'm from Dieppe, NB. In 2001, on the eve of my 22nd birthday, I was involved in a serious accident at work.

My job, a part-time position, consisted of driving mentally challenged adults to social activities on Monday nights, using a 15-passenger van.

February 12th was a particularly cold night. When it was time to bring the participants back home, the other driver and I went to warm up the vans. The two vehicles were parked one in front of the other, about two metres apart.

Next to one I noticed a patch of ice near the door where the participants would get in. Thinking of their safety, I suggested the other driver back the van away from the ice. I went in between the two vehicles to direct her.

Suddenly I saw the van rushing towards me. I didn't have time to jump out of the way. I was pinned. The bumper crushed my upper legs, breaking both femurs.

I started yelling "Move the van!" banging on the back window. I still remember the yell. I didn't know I could scream like that.

The van moved, and I looked down at my legs. They were deformed in the shape of an arch. I panicked and threw myself on the ground; scared they would snap in two.

As I lay on the frozen ground waiting for the ambulance, my co-workers and the mentally challenged adults covered me with their jackets to keep me warm.

The femur is the biggest bone in the body. Usually, a person loses consciousness when it breaks. Both of mine were broken, and I wish I had lost consciousness. Instead I dug my fingers into the ground, thinking, "Will I be able to walk again?"

At the hospital, I had a 6-hour operation. Metal rods were put inside my femurs. Screws were put in both knees and hips. The incisions, some 20 centimeters long, were stapled closed.

NEED TO KNOW

Some individuals like to reflect back on the "old days" when it was all about production to protest the ever-increasing emphasis on workplace safety. Over the last few decades many changes have come into play regarding workplace safety. Whether it is through new technologies, new laws, new rules, or just more focus given to safety, those in the same job for years have experienced a major shift towards more of an emphasis on safety than the years before.

Why Safety Can Be Redundant

Often times the same work tasks are completed every single day. Because of this, the safety issues and focuses are often the same-day in and day out. The discussions on safety will often focus on a handful of hazards for the work going on that day. The reason for this is because the same hazards often are the ones that cause

the majority of incidents and injuries.

Battling Complacency

We do many of our work tasks in the same exact way every single day. Yet paperwork is still filled out and discussions are still had regarding safety for these tasks. One of the hardest things to avoid at work is complacency with hazards as well as going through the motions with safety procedures. As time goes on, individuals become more confident in their abilities and knowledge at work and some people are willing to take more risks. This is one reason why safety issues need to be constantly reinforced, even if it has become redundant to talk about them.

Summary

It is understood that safety can be redundant at times, but it needs to be understood by employees that we all need reminded to stay focused on working safely. The same old hazards are often the ones that get people injured. OSHA's Fatal Four construction hazards are an example of this. It is known that falls, electrocutions, struck-by, and caught in or between incidents are the main causes for the overwhelming majority of fatalities in the construction industry yet it reoccurs year after year. Do not get complacent with the hazards of your work and do not view some redundancy in a safety program as a negative.

Getting workers throughout your company to display a "safety attitude" is the key to a safe and healthy work environment.

BUSINESS / REGULATIONS

Know Your Enemy – What is Workplace Safety Training?

Workplace safety training is a process that aims to provide your workforce with knowledge and skills to perform their work in a way that is safe for them and their co-workers. In addition, an effective workplace safety plan includes instructions and guidelines to identify hazards, report them, and deal with

incidents.

You need to encourage a great incident reporting culture so that you can effortlessly create a safer workplace and can identify how your company can continually improve the workplace environment. When a new incident happens, you have to have a quick method to relay the message to all your employees to avoid the incident from happening a second time. Employees need to be able to easily access old hazard reports so they can learn on-the-job. You should be able to warn and alert your employees to a hazard BEFORE it happens. When one happens, you need to be able to handle the situation DURING the incident. And then AFTER the incident, you have to be able to easily let the rest of the team know, like about the wet floor so slipping can be avoided. There is a lot that goes into protecting your employees so you must have a stable process in place.

As an employer, it is your legal (and moral) responsibility to instruct your workers how to perform in a safe and healthy manner before they even start to work. **Safety training is an integral part of the employee onboarding process but it also requires regular “refresher” courses for compliance (and effectiveness).** Not only because employee alertness goes down over time, but also because safety protocols change to keep up with changes in equipment, materials, and roles within the business.

Why You Need Workplace Safety Training in Your Business

Beyond the obvious reasons – regulation and moral responsibility – there are plenty of advantages to investing more time and thought in a well-planned workplace safety training program. Here are a few:

- Lower insurance premiums
- Less productivity loss due to illness or injury
- Higher employee satisfaction
- Reduced worker compensation for medical leave due work-related injuries and illnesses

- Protection from liability lawsuits
- Future incident prevention.

But odds are you're already convinced, and are reading this post to learn how to make your safety training program a stellar example of employer diligence.

Training Beyond Regulation

Not all workplace safety training courses are the same. For different tasks and industries, there are different safety training requirements [PDF], both in content and training frequency. So, there's really no "one-size-fits-all" when it comes to workplace safety training.

The regulatory demands of OSHA and state health and safety authorities are the bare minimum. When planning your workplace safety training program, your goal should be to minimize incidents, maximize awareness and alertness, and keep your employees healthy, happy and productive. Not just comply with regulatory demands.

Under the **Occupational Safety and Health Act of 1970**, employers are responsible for providing a safe and healthful workplace. No person should ever have to be injured, become ill, or die for a paycheck. **OSHA's mission** is to ensure the protection of workers and prevent work-related injuries, illnesses, and deaths by setting and enforcing standards, and by providing training, outreach, education and assistance. Many **OSHA standards**, which have prevented countless workplace tragedies, include explicit safety and health training requirements to ensure that workers have the required skills and knowledge to safely do their work. These requirements reflect **OSHA's belief** that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses. Researchers conclude that those who are new on the job have a higher rate of injuries and illnesses than more experienced workers. To assist employers, safety and health professionals, training directors and

others with a need to know, **OSHA's training-related requirements** have been excerpted and collected in this updated booklet. Requirements for posting information, warning signs, labels, and the like are excluded, as are most references to the qualifications of people assigned to test workplace conditions or equipment. Training in the safe way for workers to do their jobs well is an investment that will pay back over and over again in fewer injuries and illnesses, better morale, lower insurance premiums and more.

STATISTICS

Too often and for too many employees, mandatory training is seen as a bother or inconvenience that disrupts a busy workday and results in work piling up. At the end of the training, the employee downloads the digital certification, turns it in and gets back to the job at hand.

On-the-job accidents and illnesses continue to present a major issue for companies in the United States. Preliminary numbers for 2013 from the Bureau of Labor Statistics show that 4,405 workers across multiple U.S. industries were killed on the job – an average of 85 each week. Accidents and illness can result in human tragedy, lost manpower and missed production deadlines.

The construction industry, characterized as “high hazard” by OSHA, is an area in which proper safety training is essential. But all industries must consider the quality of their training and ensure that it keeps up with changes and innovations.

The segment of the construction industry involved in the wireless industry is an example in which the growing demand for wireless and broadcast communications continues to spur a dramatic increase in communication tower construction and maintenance. Employees regularly climb towers in excess of 2,000 feet tall, and they do it throughout the year in all weather conditions. **OSHA Recorded 13 Communication Tower-Related Fatalities in 2013**, but as more towers are built, that number may well continue to grow each year.

With statistics like these, safety training for employees cannot

be a “check the box” experience. The question companies face is how to provide training that enables employees to learn and retain the skills and knowledge they need to respond to a real-world emergency.

For most companies, training starts with **OSHA standards** that require the employer to train employees in the safety and health aspects of their jobs. Other **OSHA standards** make it the employer’s responsibility to limit certain job assignments to employees who are “certified,” “competent” or “qualified” –meaning that they have had special previous training, in or out of the workplace. Many companies, unions and other organizations also require employees to successfully complete training recommended by **OSHA** for worksite, insurance and job-bidding purposes.

Companies seeking training that meets OSHA standards look to organizations such as the **Health & Safety Institute (HSI)**, an Oregon-based company that is an authorized provider of **OSHA training**. HSI recently partnered with the **American Red Cross to deliver OSHA 10- and 30-hour training** for companies. It’s up to these and other training providers to keep abreast of the most effective ways in which to teach safety to employees.

Sidebar: Spanish-Language Training Important in Construction Industry

When it comes to safety in the construction industry, companies have an important demographic to consider: nearly one in four construction workers (24.4 percent) is Latino, compared to 15.4 percent of all employed workers, according to the U.S. Bureau of Labor Statistics (BLS).

Work-related fatalities in 2013 rose for Latino workers. According to the BLS, 797 Hispanic or Latino workers were killed from work-related injuries in 2013 – 7 percent higher when compared to 2012.

Of the total fatalities for Latinos, 527 (or 66 percent) involved foreign-born workers. Specific studies of Mexican-born workers show that this population accounted for 352 – or 42 percent – of the 845 fatal injuries among all foreign-born workers. The BLS

data also shows that fatalities among contract or temporary workers are on the rise, with 734 contractors dying as a result of work-related injuries in 2013, up from 715 in 2012 and 542 in 2011, when BLS began collecting data.

These statistics strongly suggest that proper safety training is even more important for companies with Latino employees, especially those in which the employees do not speak English or understand English with proficiency.

RECOMMENDATIONS

There is a measure that is **Recommended** for companies to undertake to keep employees awake while learning about safety training. It is called **Simulation Learning** the recommendation is as.

“Simulation learning,” allows learners to test their knowledge of instructional materials using online interactive, scenario-based simulations. These programs offer multiple scenarios in which to test a concept or skill. In any given scenario, students may select from a number of possible actions, each of which results in further situations and possibilities based on the course taker’s choice.

The benefits are:

1. **A no-risk experience:**Virtual interaction offers a safe environment in which to test knowledge with no fear of causing actual harm. Research shows that no-risk environments allowing for unlimited attempts at mastering knowledge and decision-making results in greater learner confidence.
2. **Real-world scenarios:**Simulation learning is effective because virtual scenarios can offer engaging psychological realism that bridges the gap between the classroom and the real world. Learners stimulated by realism retain information more effectively.
3. **A new way to train:** Although simulation learning is not intended to be a game, many individuals find the video-game aspects of the interactions engaging. Course takers can

train anytime and anywhere they have access to a computer.

4. Practice makes perfect:Simulation learning allows learners to repeatedly test their skills and knowledge at their own pace and in a variety of scenarios; this increases retention of knowledge and leads to automatic responses.

- In a 2014 survey conducted by Northwestern University's Kellogg School of Management, researchers questioned 4,888 Red Cross trainers on their views about simulation training. The majority of respondents said that simulation learning is a good addition to current teaching methods, and they are willing to use it in their training.
- In a separate Red Cross-sponsored meta-analysis of dozens of U.S. Department of Education studies and interviews with first responders and cognitive experts, researchers found that when combined with traditional classroom experience, simulation learning is more effective in preparing people to act in a crisis than classroom learning or online learning alone.
- "The value for me," said a paramedic, "is being able to make mistakes in a low-pressure environment and then learning from your mistakes, and then doing that repetitive action. So that when you do have the pressure on you and you know you have to perform with that pressure, you are able to do it because you have seen it done and felt it before."

PREVENTION

Effective Workplace Safety Training Programs

1. Identify the needs of your business, potential hazards, and training objectives. Then, analyze past incidents and common industry hazards. Figure out which issues need to be addressed through training, and which have other solutions like protective equipment or warning signs.
2. Involve your workforce in developing, implementing, and optimizing the training program. The contribution of managers, supervisors and workers is crucial. They have the best understanding of how work gets done, and where dangers

to their safety and health might be hiding.

3. Create modular training and testing processes that can be applied to each role in the business according to regulations. For example, knife safety handling instructions are the same for a waiter and fry cook, while fire safety protocols might be different for each.
4. Train managers and supervisors in the safety requirements of their teams. This will allow them to identify issues with employee compliance with safety regulations.
5. Include communication channels for hazard reporting in your training, so workers know who to contact and how to prevent a potential accident.
6. Test your workers with quizzes, surprise inspections. These can help you determine how effective your workplace safety program is before an accident forces you to discover it is not.
7. Provide continuous and easy access to safety training content to let employees refresh their memory when necessary. For example, an employee who was instructed on the safety requirements of operating a certain machine six months ago, and hasn't touched it since? Is more likely to stay safe if they have the content of the training course readily available for him to review.

SAFETY TRAINING IN 2019

Safety Training Programs today are very different from those made a decade ago. New technologies are responsible for the most obvious changes in the way we communicate. This affects the way we train and complete tasks. But keeping up with technological trends is not the only reason your business safety training plan needs to be current to be effective.

- **Mobile workforce**— More and more businesses employ remote workers as well as deskless workers on the go. These are harder to train than in-house employees.
Solution? Safety training tools and formats that **DO NOT** require on-site presence.
- **Contingent workforce**— With the “gig economy” becoming

prevalent across all industries, training (including health and safety training) needs to be fast (but thorough).

Solution? Modular training programs, easily customizable for onboarding.

- **Workplace diversity**– Global economy is getting more global in 2019. However, international organizations and businesses employing expats often lack [safety training materials](#) in multiple languages.

Solution? Technological tools that allow for quick translation and localization of the training modules.

There's no doubt that some types of safety training require hands-on demonstrations and are best delivered in person or in a small group. But when it comes to workplace safety training of deskless workers, contingent employees or a dispersed global workforce – the best choice is mobile learning.

1. Determine What Safety Training is Needed

Employers should first ask themselves if training can solve the problem at hand. If problems stem from employee performance, rather than the workplace environment itself, training is the most effective way to remedy the problem. If problems are stemming from employee motivation or attitude, training is less effective at correcting these issues.

When evaluating employee performance issues, it is important to assess the type of issue to determine the best approach. Training programs are most effective at addressing an employee's lack of knowledge about proper procedures or equipment usage.

2. Identify Workplace Safety Training Needs

The next step is correctly identifying the specific training required to address the knowledge gap. This process includes identifying the specific information that an employee needs to know to perform the job safely.

A proven method for determining the depth of training required is to conduct a Job Hazard Analysis. This process documents each step

of a task while identifying and analyzing possible safety hazards along the way. The organization can translate high risk activities into a prioritized training plan by taking the time to assess the process.

3. Identify Safety Training Goals and Objectives

Once training needs have been clearly identified, it is important that learning goals and objectives are set. Effective learning objectives must be clear and measurable, making it possible to evaluate the training at a later date. Training objectives should precisely spell out the desired skill or behavior using specific, action-oriented language. Detailed learning objectives allow employees and employers to understand the expected outcome of the training.

4. Develop Workplace Safety Learning Activities

After learning objectives are clearly identified, learning activities that support those objectives must be developed. Employers should consider which methods, materials, and resources will be needed to most effectively convey the message. The type of training chosen (group, one-to-one etc.) should be selected keeping the audience and specific skill set in mind.

Ideally, learning activities will include opportunities for employees to demonstrate the skills and knowledge they have learned in the training. These activities should directly apply to the employee's actual job and include lessons arranged in sequential order according to the job process.

5. Conduct Safety Training

Now that the above steps have been completed, training should be scheduled and conducted. Training should be presented in a clear and organized fashion. To maximize learning, provide the trainees a training overview. Ensure that the training is related to the

employee's experience. Then follow up by reinforcing the lessons learned. To keep employees interested and motivated in learning, allow trainees to participate and practice their new skills along the way. Participation in discussion and hands-on practice encourages new information to be retained, and real life examples to be incorporated into the discussion.

6. Evaluate Workplace Safety Training Program Effectiveness

After training is conducted, it is vital to evaluate its effectiveness in accomplishing defined goals. There are three ways to conduct an evaluation:

- Ask the trainees for feedback via questionnaire or informal discussions. This will provide a quick review of initial value and learning outcomes.
- Follow up with supervisors and their observations about employee behavior before and after the training. This shows whether the training had a noticeable outcome.
- Evaluate workplace data to examine if long term there is a trend toward reduced [incident or near miss rates](#). This will be the bottom-line indicator of a training program's success rate.

7. Improve the Safety Training Program

Based on the training program feedback, look for ways to improve future training sessions. A critical re-examination of all the steps of a job and in training will determine what gaps existed in the training program. Items to revisit include:

- The method chosen to determine if there is a better way to conduct the training.
- The presentation of training materials to determine if it was effective for the audience chosen.
- The key concepts and skills that were highlighted. If there was a gap, it may be beneficial to review the Job Hazard Analysis to identify any missing components or any new steps

- added to the process since the training was developed.
 - Revise training as improvements are identified.
-

Fall Protection

INCIDENT

An Edmonton Alberta manufacturing company will pay a fine and fund a new fall prevention program [after a veteran welder died on the job](#) three years ago.

Cessco Fabrication and Engineering Ltd. pleaded guilty in Edmonton Alberta provincial court to a single charge of failing to ensure a worker used a fall protection system for the Jan. 19, 2016, death of Barry Maitland.

Maitland, a pressure welder for 29 years, was fatally injured after falling more than five metres (17 feet) from the top of a liquified natural gas storage vessel on which he was performing a weld. He later died in hospital.

“We miss him,” Linda Maitland, his widow, said outside court. “The kids still talk about him today. My granddaughter especially – ‘I miss papa, I wish he was here.’ Because you don’t say goodbye.”

Maitland had just started a night shift in a fabrication shop at Cessco’s Edmonton facility at 7310 99 St. on the day of the accident.

Maitland, 52, was setting up to perform a weld on top of the LNG equipment, which measured 28 metres long and just over four metres in diameter. At some point, he stepped off an aerial work platform used to hold his welding equipment.

An agreed statement of facts states Maitland did not anchor the lanyard on his fall protection harness before stepping off the

platform. A short time later, the night shift supervisor and another worker heard Maitland hit the concrete floor, though no one witnessed the fall itself.

Maitland was rushed to the University of Alberta Hospital, where he died.

His son Steven Maitland, who also works at Cessco, was on the earlier shift and rushed back to site to find police officers everywhere, Linda Maitland said. He then went to the hospital.

“Steven found out his dad had died, and he told the doctor out in the hall that he wanted to tell me and not the doctor,” she said.

The parties agreed that while Cessco’s fall protection plan complied with occupational health and safety legislation, it did not specifically cover welding work on the LNG vessels.

Under a joint submission on sentencing, Cessco will pay a \$5,000 fine and pay the Manufacturer’s Health and Safety Association \$170,000 to create an enhanced fall protection program.

Defence lawyer Christopher Spasoff said the sentence was not an attempt to “put a dollar value on the life of Mr. Maitland,” but rather to apply the law.

An autopsy found Maitland’s cause of death was blunt cranial trauma, according to the agreed facts. It also found evidence of alcohol in his system and severe heart disease, including an enlarged heart.

A medical examiner said it was possible Maitland experienced symptoms of angina or irregular heartbeat, which could have contributed to the fall.

Court heard Maitland was known as a very safety conscious worker who regularly raised issues during safety meetings. His family described him as “anal retentive when it came to safety.”

He loved to cook, and was famous within his family for his homemade pizzas. He also mentored family members entering the welding trade.

“The boys were constantly trying to upstage their dad – ‘I’m a better welder, I can do this better than you can,’” Linda Maitland recalled. “Barry would be like, ‘Yeah, no, I don’t think so, let’s go try.’”

Linda Maitland said that while she received compensation from Occupational Health and Safety for her husband’s death, she will end up having to sell her home.

As for the sentence, “I’m OK with it,” she said. “They’re looking into becoming more safe, and I know they’re remorseful. The right guys that should have heard my victim impact statement aren’t here.”

Cessco president Dave Hummel, who was not president at the time of the accident, was visibly shaken as he addressed the court. He said the day of Maitland’s death is “forever etched in our history.”

NEED TO KNOW

Falls are one of the oldest causes of injuries and death in the workplace.

A worker is most at risk if working at heights of four feet or more; above running machinery, water and hazardous liquids, or exposed to an opening in a work surface. Fall protection equipment can mean the difference between life and death.

Working at heights is any work where a person could fall a distance and be injured. This event might include, for example, falling from a step ladder, off of a roof, or through an unguarded hole in the ground or floor. Fall protection may also be required when working above an open-top tank, bin, hopper, or vat.

Personal Fall Arrest System (PFAS) are designed to prevent workers from falling off communication towers, scaffolds at high rise construction sites, or the roof of a house.

Many workers receive little no fall protection training, use the wrong fall protection, or, use the equipment improperly, and,

sometimes do not use fall protection at all.

OSHA requires employers to provide employees for fall protection according to the fall hazards that exist on the job.

All hazards are to be addressed by using the following hierarchy of controls:

1. Eliminate the hazard
2. Substitutions
3. Engineering Controls
4. Administration controls, and
5. Personal Protective Equipment

This, if the first (1) to (4) controls are not adequate to protect against the fall hazard, then PFAS must be used.

If it has been determined that the employee must wear a harness and lanyard, there must **be training in the hazards present** when working at heights and at what heights fall protection is required. **Then the employee must be trained to use and inspect** this critical piece of personal safety equipment.

BUSINESS/REGULATORY

Falls are among the most common causes of serious work-related injuries and deaths. Employers must set up the work place to prevent employees from falling off of overhead platforms, elevated work stations or into holes in the floor and walls.

Employers must set up the work place to prevent employees from falling off of overhead platforms, elevated work stations or into holes in the floor and walls. **OSHA** requires that fall protection be provided at elevations of four feet in general industry workplaces, five and six feet in shipyards, six feet in the construction industry and eight feet in longshoring operations. In addition, **OSHA** requires that fall protection be provided when working over dangerous equipment and machinery, regardless of the fall distance. In Canada the minimum standard for construction is 10 feet or 3 meters.

To prevent employees from being injured from falls, employers must:

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover).
- Provide a guard rail and toe-board around every elevated open sided platform, floor or runway.
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment (such as a vat of acid or a conveyor belt) employers must provide guardrails and toe-boards to prevent workers from falling and getting injured.
- Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and hand rails.

OSHA requires employers to:

- Provide working conditions that are free of known dangers.
- Keep floors in work areas in a clean and, so far as possible, a dry condition.
- Select and provide required personal protective equipment at no cost to workers.
- Train workers about job hazards in a language that they can understand.

STATISTICS

According to the **Center for Construction Re-search** and training (CPWR) in a 33yr period from 1982 to 2015, falls accounted for nearly half of all construction workers deaths. More than half of the workers killed lacked access to fall protection.

NIOSH Fatality and Control Evaluation program researches found fatality reports for 768 construction industry fatalities.

Researchers after analyzing the incidents concluded that between 1982 and 2015 that:

- 42 percent (325) of the fatalities involved falls.
- 54 percent of the workers killed had no access to a personal

fall arrest system and 23 percent had access to a PFAS but did not use it.

- Most of the workers with no access to PFAS worked for residential building contractors and contractors in the roofing, siding and sheet metal sectors.
- 107 of the 325 falls were from 30 feet or higher.
- 20 percent of the 768 deaths occurred in the victims first two months on the job.

In **2016**, 697 workers died in falls to a lower level, and 48,060 were [injured badly enough](#) to require days off of work. A worker doesn't have fall from a high level to suffer fatal injuries; 134 workers were killed in falls on the same level in **2016**, according to *Injury Facts*. [Construction workers](#) are most at risk for fatal falls from height – more than seven times the rate of other industries – but falls can happen anywhere, even at a “desk job.”

[NSC data for 2016](#) includes falls from height and falls on the same level, by industry:

- Construction: 24,700 injuries, 384 deaths
- Manufacturing: 22,040 injuries, 49 deaths
- Wholesale trade: 10,250 injuries, 21 deaths
- Retail trade: 29,830 injuries, 29 deaths
- Transportation and Warehousing: 23,490 injuries, 46 deaths
- Professional and business services: 22,090 injuries, 111 deaths
- Education and health services: 43,660 injuries, 18 deaths
- Government: 63,350 injuries, 44 deaths

PREVENTION

Personal Fall Arrest System (PFAS)

In the incident with Mr. Maitland, had he anchored the lanyard and his fall protection harness before he stepped off the platform, he may have survived.

When working at height, danger of a fall is obvious; however, many workers receive little or no fall protection training, use the wrong fall protection equipment (or use their equipment

improperly) or, in some cases, fail to use fall protection equipment at all. It is every company's responsibility to prepare their employees for safely working at heights, and that preparation must include understanding the fall protection challenges of the job and how the challenges can be mitigated to get the job done safely.

Towers serve multiple functions, including supporting telecommunications networks. Each year, thousands of new towers are erected, mostly for cell phones, and as workers climb to build or maintain them, they are at risk of a fall. The tallest towers that have licensed construction permits in the United States now are over 2,000 feet tall. Tower work often requires employees to climb and move from one area of the tower to another, increasing the risk of falling at significant heights.

Personal fall arrest system is one way to protect workers from falls. They consist of a body harness anchorage and connector. When using PFASs, workers must ensure they are using components from the same manufacturer to ensure the system works as it should. If not, any substitution or change must be evaluated and tested to ensure it meets the standard.

Osha requires fall protection be provided at elevations of four feet in general industry workplaces, five and six feet in the construction industry. In Canada, the minimum standard for construction is 10 feet or 3 meters.

The procedures for implementation of (PFASs) is set out as follows:

Fall clearance

A common fall protection challenge involves calculating required fall clearance and choosing the correct equipment. The importance of knowing what the required clearance for a particular fall arrest system is obvious. If you know what the required clearance distance is and you allow for it, you help minimize the potential for injury in the event of a fall. But if you do not know what the required clearance is or you miscalculate, the results of a fall

can result in serious injury and may require a rescue operation.

Choosing equipment

To start, there are four essential pieces of fall protection equipment tower workers should have in their **“Tool Box”**: **Anchorage Connectors, Body Support, Connecting Components and Rescue Systems.**

Although many workers use a system that incorporates a shock absorbing lanyard, these systems typically require approximately 18 feet of fall clearance. Some ladder safety systems and self-retracting lifelines can reduce this number significantly and therefore are much safer and are preferred.

One example is a tie-back, self-retracting lifeline attached directly to the worker’s dorsal D-ring. A tie-back, self-retracting lifeline (SRL) features unique snap hooks with high gate strength designed specifically for tie-back use. With this type of hook, the end of the lifeline can be wrapped around the structure and tied back into itself, eliminating the need for a separate anchorage connector. These systems feature inertia-activated brakes, which lock quickly and stop a falling worker within a matter of inches. With a tie-back SRL, it still is important to consider fall clearance, but it is recommended that workers account for approximately 6 feet, compared to the more restrictive 18 feet that is recommended for 6-foot, shock-absorbing lanyards.

Mobile rope grabs and static wire rope grabs are temporary devices and can be installed or removed at any point along the lifeline. The rope grab utilizes a cam lever as well as a friction-sensitive brake to lock the rope grab onto the lifeline in the event of a fall. A static wire rope grab employs a wedging action that grips and locks onto the cable if the worker slips. For fixed connection work, a scaffold choker or tie-off adapter provides a safe and easy anchor point.

When selecting a body support harness, consider comfort, quality and durability. Since tower workers likely will be wearing the

harness for long periods of time, harnesses with hip padding, mesh lining and soft edging features will help keep workers comfortable while working at height. Further, there now are harnesses specifically made for tower climbing with built-in work seats and other specialized features.

There are many different types and options for connecting components, so think about the level of mobility the worker will need and the logistics of the work environment. Shock-absorbing lanyards and self-retracting lifelines both provide excellent protection in the event of a fall. Look for connectors that provide 100 percent tie-off capability, allowing the worker to stay protected while they move from one location to another. When work positioning is required, a rebar assembly limiting free fall distance to 2 feet or less can provide a safe connection to many kinds of structures.

For work requiring vertical mobility, the choice of anchorage connector could be a ladder safety system, a mobile rope grab or a static wire rope grab. Ladder safety systems attach to permanent, fixed ladders and provide optimal fall protection and freedom of movement for workers. A tensioned cable runs the length of the entire climbing structure, with a top and bottom bracket serving as fixed anchors for the cable. To climb, a worker connects the front D-ring of his harness to a safety sleeve on the cable, which automatically follows his movements up the fixed ladder. If the climber slips, the sleeve locks onto the cable and prevents the worker from falling.

Fire Prevention Fatality File

INCIDENT

Spencer Beach didn't want to go to work. As a flooring service technician, he had spent several days removing linoleum from a

home under construction in Edmonton. On the third day, he only had to finish the laundry room and half bathroom, but he was considering calling in sick – something he never did. Despite the warning bells in his head, he went to the job site. He was working on his hands and knees when he heard a loud whistle and a bang. Beach was immediately engulfed in a flash fire that spread quickly throughout the entire house. He tried to open the front and back doors but they wouldn't budge, since the fire was sucking up all the oxygen. He ran to the garage and tried to open the door, but it wouldn't open either.

"My clothes were immediately burning, my hair was immediately melting, the skin on my face felt like it was shrinking, the pain was really deep," Beach recalls.

After about 20 seconds, he was completely drained and collapsed on the ground. Time stopped. The heat and pain all disappeared. Beach had a near death experience. Then he thought about his wife and unborn child and he somehow found the will to try again. He got up, pulled the garage door as hard as he could and, miraculously, he got out.

NEED TO KNOW

Eliminating fire hazards is a central part of any workplace safety program.

These seem like simple and straightforward requirements. But in operation, they often prove to be anything but. Alarming numbers of citations get issued because employers fail to carry out these tasks; sadly, such breakdowns also lead to fatalities.

The key to avoiding mistakes is to remain vigilant. You must be constantly on the lookout for problems **before** fire breaks out (or an OSHA inspector finds them for you). Like most employers, you might form your workers into fire safety teams and have them conduct regular inspections. But you also need to ensure those teams know what they're doing. That's a training imperative if you want them to conduct a meaningful inspection. All of the above is just rhetoric without a well-planned and cogent foundation. The

optimal inspection is the formation and implementation of a comprehensive

Fire prevention policy which incorporates the following:

1. Emergency Plans

Tells how to evacuate in case of fire and how to account for all those evacuated. Fire drills based on the emergency plan will assist in understanding what to do during an emergency.

1. Fire Safety Equipment

Fire extinguishers, fire alarms, smoke detectors, fire sprinkler systems all play a vital role in fire prevention. It is important therefore to ensure that all equipment is in working order and in compliance with fire safety codes.

- The stipulated number of extinguishers are present (within 75 feet distance from any place in your facility).
- The size, rating, and type of fire extinguishers match the requirement for your kind of business. (At least a 2A-10BC size rating).
- The extinguishers, fire alarm panels, and fire sprinklers have been serviced and inspected within the previous 12 months.
- All extinguishers are mounted on the wall in keeping with the specified fire safety recommendations (the top of the unit must be no higher than 3.5 feet if extinguishers are greater than 40 pounds and 5 feet if lighter.)
- There are no warning lights on your fire alarm panel.
- There is adequate clearance around fire sprinkler deflectors (at least 18 inches, according to the NFPA).
- There are no signs of leakage, physical damage or corrosion on any of the equipment.
- The valves, hose connections, and water pressure are adequate to the requirements of the fire code.

1. Fire, Exit Routes

Ensure that there are no obstructions to people exiting the

building in case of a fire emergency.

This includes pathways, exits, aisles, and walkways.

- At least two stipulated fire exits are present.
- All exit doors are unlocked at all times of occupancy.
- Aisles that lead to and away from fire exits are unobstructed.
- The pathway that leads to exit doors is wide enough (at least 36 inches wide.)
- Fire exits are provided with panic hardware.
- All doors to fire exits can be easily opened in case of emergency.
- Easy access to fire protection equipment like fire extinguishers and fire alarm control panel.
- The paths to the exits are well lit and clearly marked.
- The exit signs have backup batteries (to allow for a minimum of 90 minutes power backup) in case the lights go off during a fire emergency.

1. Good Practices for Fire Safety

Strictly adhering to compliance standards in the following areas can go a long way in ensuring

fire prevention.

- All combustible materials are stored in fireproof cabinets.
- The number of people in your premises doesn't exceed the maximum occupancy limits at any time.
- Electrical sockets are not overloaded and there are no improper multi-plug adapters used.
- All electrical panels are easily accessible and there are no obstructions to their use.
- All potentially flammable materials are kept away from electrical panels. (Usually, a 3 feet clearance is required.)

BUSINESS/REGULATION

Employers should train workers about fire hazards in the workplace

and about what to do in a fire emergency. If you want your workers to evacuate, you should train them on how to escape. If you expect your workers to use firefighting equipment, you should give them appropriate equipment and train them to use the equipment safely. **(See Title 29 of the Code of Federal Regulations Part 1910 Subparts E and L; and Part 1926 Subparts C and F.)**

What the Law Requires

OSHA has several standards that address fire safety in the workplace.

The Means of Egress Standard requires employers to ensure that exits are available to escape from fires and other emergencies. Among other things, each exit must be clearly visible and continuously maintained so that it's free of obstructions or impediments.

The Portable Fire Extinguishers Standard sets requirements governing the placement, use, maintenance and testing of portable fire extinguishers to be used by workers. Among other things, portable fire extinguishers must be mounted, located and identified so that they're readily accessible. They must also be fully operable and visually inspected at least once a month. Workers expected to use fire extinguishers must also be trained how to do so.

STATISTICS

Fire kills more people each year than all-natural disasters combined.

- Every 24 seconds there is a fire that requires the fire departments attention.
- There were 1,319,500 fires reported by fire departments in 2017 resulting in 3,400 deaths.

Every 85 seconds, a fire breaks out somewhere in Canada. And in the United States, the number of fatal work injuries resulting from fires and explosions in 2010 rose to 187, an increase of 65% over the previous year. Of the 187 fatalities, 82 occurred in

multiple fatality incidents.

More than one in every four office property fires (29%) was caused by cooking equipment, but these fires accounted for just 6% of the direct property damage experienced by office properties. Fires that were intentionally set caused the largest share of direct property damage (20%), while causing 10% of office property fires. Electrical distribution and lighting equipment was the second leading cause of office property fires (12%) of fires, while causing 15% of direct property damage

Just over one-fifth (22%) of the reported fires in office properties began in the kitchen or cooking area, causing one percent of the direct property damage. The highest share of direct property damage (24% of total) resulted from fires starting in an office, which were the cause of 12% of office property fires. Although just two percent of office fires began in the attic, ceiling/roof assembly or concealed space, they were responsible for 13% of the direct property damage. Four out of five office property fires were confined to the room of origin.

When present, wet pipe sprinklers operated 90% of the time in fires large enough to activate the equipment, and they were effective in 88% of these fires. Deaths per 1,000 fires were 62% lower in stores and offices equipped with wet pipe sprinklers compared to properties with no automatic extinguishing equipment.

RECOMMENDATIONS

Forming fire safety teams with workers to ensure workers carry out fire inspections effectively is the goal. **A Questionnaire** will greatly assist in the compliance of law, regulation and common sense.

Standardize inspections: Distributing the **Questionnaire** will ensure that each team is checking for the same things and asking the same questions—the ones you mandate. This results in standardization of inspection results which facilitates analysis of the data. For example, it enables you to compare different departments within a single facility or to monitor the same

department on an ongoing basis.

Keep inspections short and focused: Fire inspection duties, although vitally important, also diminish “productive time.” That puts pressure on the safety director to keep fire safety inspections short, sweet and to the point. **A well-organized Questionnaire** enables team members to do an appropriate inspection and then get back to their regular jobs as quickly as possible.

Identify and correct problems early: A **Questionnaire** can be tailored to the unique problems of your facility or operations. For example, if your fire exit is near loading docks, you can design the **Questionnaire** to ensure team members go out of their way to verify any loaded materials aren’t being kept nearby.

Build fire safety awareness: One of the benefits of having fire safety teams conduct inspections is that it builds awareness not just among team members but other workers in areas undergoing inspection. A **well-designed Questionnaire** can maximize the awareness-building function of inspections by ensuring inspectors cover the right ground.

How to Use Questionnaire

Give the **Questionnaire** to the team leader and have that person distribute a copy to each team member responsible for inspecting an area of the facility. Once the inspection is over, the team leader should review the **Questionnaire** and sign it upon verifying that it’s complete.

After inspections, you might want to hold interdepartmental meetings with facility managers to discuss the findings. This is especially true if the inspections unearth major or recurring safety problems. Give the department leaders copies of **completed Questionnaires** of inspections in their area and include notes and suggestions for corrections. Appoint somebody to be in charge of corrective actions and set a deadline. Once the deadline passes, do a follow-up inspection to verify corrections have indeed been made.

How to Create Questionnaire

Fire inspection team Questionnaires must be tailored to the configuration, operation and needs of your particular facility. But the essential approach is the same. Like our Model Questionnaire, your form should:

Provide Clear Instructions: The first part of the Questionnaire should explain what you want team members to do. At a minimum, ask them to conduct the inspection, fill out the form and return it to the team leader; then have the team leader review the form and give it to you.

List Inspection Detail: Leave space for the inspection date, team leader's name and signature, inspecting team member and area inspected.

Ask 10 Questions: Next comes the heart of the Questionnaire, the actual things you want inspected. Like ours, your Questionnaire should ask questions about 10 things:

1. Whether all exit doors are clearly marked.
2. Whether all exits and exit routes are unobstructed.
3. Whether there are any doorways that workers might mistake for exits during a fire. Remember the OSHA General Requirements Standard requires you to mark any doorway or passageway that might be mistaken for an exit.
4. Whether workers know where in their work area portable fire extinguishers are located.
5. Whether workers in the area have been trained to use portable fire extinguishers.
6. Whether workers who are supposed to be trained to use portable fire extinguishers really know what they're supposed to be. Ask them to tell you in their own words what they would do when using the fire extinguisher.
7. Whether all fire extinguishers are where they're supposed to be. If a fire extinguisher has been removed or is missing, you'll need to immediately replace it or provide "alternate equivalent protection".
8. Whether all fire extinguishers appear to be in fully operable condition. Verify there are no signs of corrosion or mechanical damage.

9. The date of the last visual inspection listed on the tag of each portable fire extinguisher. Remember that OSHA requires that fire extinguishers be inspected at least once a month.
10. Whether there are any combustible materials, scraps or debris in the area.

Fire Inspection Team Questionnaire

Instructions: Each of the ABC Company fire inspection teams has been assigned a specific area of the facility to inspect. A team leader has also been designated to serve as the head of each team. That team leader will notify each member of the team of his or her duties including which area to inspect.

Each team member must complete this Questionnaire in conducting the inspection of the area to which he or she has been assigned. After completing the inspection, the team member will ensure that the Questionnaire has been thoroughly filled out and give it to his or her team leader. The team leader will review completed Questionnaires and sign them upon verifying their completeness and accuracy. The team leader will give all signed Questionnaires to the ABC Company Safety Director for evaluation and follow-up.

PREVENTION

Have you ever considered what you would do if you suddenly saw or smelled a fire in your work area? Take the time right now to ensure you're ready to respond.

Here are the keys to survival in the wake of a fire in your workplace.

Notify others: Are emergency numbers posted in a visible location next to the telephone in your work area? Do you know how to describe your exact location to the fire department? Where is the nearest fire alarm? Do you know how to activate it?

Follow the emergency plan: What is your company's emergency plan? Where would everyone meet so your supervisor can be sure you are safely out? Who is responsible for helping co-workers needing assistance? Do you have any other duties such as closing windows

and doors or checking employee washrooms?

Find your exits: Which fire exits would you use? Can you find two fire exits—right now— from the room that you are in? Always plan two escape routes, so if one becomes blocked by fire you have an alternative exit.

Use the stairs. Do you know that you should never use an elevator when the fire alarm sounds? Elevators can jam between floors or accidentally drop to the floor that the fire is on. When the doors open, you could be subjected to flames, hot gases and toxic smoke.

Fight or flee: Do you know how to use a fire extinguisher? Some small fires, about the size of a wastepaper basket, can be successfully fought with a portable fire extinguisher. But if you're not sure what you are doing with the extinguisher or if the fire is spreading, get out!

You should not fight a fire when:

- A properly rated fire extinguisher is not readily available.
- You are not trained or do not feel comfortable using a fire extinguisher.
- There is a chance that the fire could block your escape route.
- The fire is too large to fight or seems out of control.

GENERAL PRECAUTIONS IN THE WORKPLACE

Eliminate workplace fire hazards:

- Damaged electrical outlets, cords, cables, etc.
- Overloaded outlets and circuits
- Combustible objects in unsecured locations (included excessive trash and recycling)—keep these far from electrical equipment!
- Fire exit obstacles

Keep workspace and equipment clean, dry, and well-ventilated, and especially clean of oil and dust.

Prepare for emergencies:

- Follow workspace protocol and guidelines to ensure safety and health; know and understand rules and procedures concerning fire emergencies.
- Ensure that smoke alarms and sprinkler systems are installed, working properly, and are not blocked.
- Conduct regular fire drills.

Employers should follow these workplace [fire safety](#) tips:

- Post clear fire escape plans on every level.
- Educate all employees on emergency procedures, exit locations, escape routes, fire alarms and drills, and the use of [fire extinguishers](#).
- Conduct regular drills.
- Install and properly maintain all fire safety equipment.
- Provide for disabled employees.

HAZARDOUS ELECTRICS AND EQUIPMENT

Use only electrical products evaluated by a nationally recognized laboratory (i.e. UL).

Immediately replace damaged, hazardous equipment:

- Look out for anything that appears overheated, smells strange, or delivers electrical shock.
- Replace all damaged, worn, frayed, or old wires.

Only use three-prong plugs in three-slot outlets (and, similarly: two-slot plug into two-slot outlets).

Equipment that emanates substantial heat should be at least several feet away from combustible surfaces and objects.

- Heaters must include a thermostat control mechanism.

SMOKE ALARMS: A NECESSITY, NOT AN OPTION

Invest smoke detectors for every room or office.

- Install dual sensor smoke alarms; make sure they contain both ionization and photoelectric smoke sensors.

***Test** your smoke detectors (and sprinkling system) once a month.*

***Replace** the batteries at least once a year (possible exception: non-replaceable 10-year lithium batteries; still, be sure to test them); many manufacturers also encourage a replacement of the smoke detectors after a decade.*

***Never disable** a smoke alarm.*

Consider smoke alarms for the disabled.

- Audible alarms (pauses between the siren wail allow for auditory communication) are available for the visually impaired; **visual alarms**(with a flashing light or vibrating pad) are available for the hearing impaired.

A NO-SMOKING ZONE IS LESS OF A DANGER ZONE

***Keep the workspace a no-smoking zone.** If you must smoke, smoke outdoors, and always ensure that you properly extinguish the cigarette in a sand-filled can, or drown cigarette butts and ashes in water.*

- Never throw away hot cigarette butts or ashes without attending to them properly.

***Be alert and then alert others.** If you smell or spot fire or smoke, bring it immediately to attention.*

***Never smoke where oxygen is being used;** for instance, in a hospital room or hallway, or at a nursing home. Even if the oxygen is turned off, the building is much more vulnerable—oxygen can be explosive and will only serve to fan the flames.*

IN CASE OF FIRE: FOLLOW THE EVACUATION PLAN

***Immediately call 911** in case of a fire.*

***Know and understand** the fire emergency and evacuation plan with*

these workplace fire safety tips:

- Plan at multiple escape routes from as many locations as possible.
- Check the condition of fire ladders and fire escapes; ladders should be collapsible and have been evaluated by a nationally recognized laboratory (i.e. UL); fire escapes need to be stable, secure, and easily accessible.
- Ensure that windows don't become obstacles; glass should be opened easily and screens should be swiftly removed.

Never use the elevator. Walk—don't run—down the stairs.

If you cannot evacuate,

- Remain calm and put as much distance as possible between yourself and the fire.
- Seal all cracks with wet materials (towels, jackets) to prevent smoke from seeping into the room.
- Wait at the window; shout for help and signal your location by waving the most visible object

Open the window for air, but try not to break it; you may need to close it if smoke begins to seep in.

Hearing Loss

INCIDENT

The Helena Police Department in Montana reached a \$100,000 settlement with [a Helena teacher who suffered hearing damage during an active shooter drill](#), and has since changed its training equipment to limit noise.

Lynn Trenary's lawsuit against the city was formally dismissed following the settlement. The city confirmed that it has revised

its active shooter exercises to use quieter Airsoft firearms and training to not fire close to participants.

Trenary participated in active shooter training on June 10, 2016, at the Project for Alternative Learning in Helena. The exercise was intended to train teachers how to respond to a school shooting.

Trenary was 20 feet away from an officer shooting blank ammunition as part of the drill. She believed the officer was giving instructions and was trying to understand what he was saying when he fired, the lawsuit says.

Trenary experienced hearing loss and a permanent ringing in her ears called tinnitus. She was not given hearing protection or warned that shots would be fired near her and her husband. Hearing protection was later provided at her request.

The lawsuit alleged negligence on the part of the city for failing to provide hearing protection or warn participants and failing to properly train employees to safely conduct the exercise.

In response to the lawsuit, [attorneys for the city of Helena acknowledge](#) that a Helena police officer fired the blanks, but said Trenary was warned to cover her ears with her hands before the shots were fired. The city contended in court filings that the Helena Police Department was not negligent and had followed procedures and standards of care. The city also stated that it was possible Trenary's hearing loss could have come from a prior incident.

Trenary's attorney issued a statement in response.

"The two blank gunshots fired from the policeman's pistol at the active shooter training caused serious permanent tinnitus and hearing loss. This has caused difficult communication problems for Lynn at work, home and socially," he said. "Lynn's family and friends are very aware of the new problems which her doctors said were directly caused by the gunshots being fired too close to her from a revolver.

“The city now uses ‘airsoft’ guns and bullets which when fired don’t have the explosive danger of the blank bullets fired from a revolver. This change and the added care to not fire guns in close proximity to participants were positive results of this lawsuit.”

The city continues to conduct active shooter exercises following the settlement.

“Active shooter trainings simulate real scenarios to help prepare individuals for the worst,” public information officer Rebecca Connors said in a statement. “The city has adapted the program to both accommodate the safety of attendees while balancing the realism of the training.”

NEED TO KNOW

Health Effects

Exposure to loud noise kills the nerve endings in our inner ear. More exposure will result in more dead nerve endings. The [result is permanent hearing loss](#) that cannot be corrected through surgery or with medicine. Noise-induced hearing loss limits your ability to hear high frequency sounds and understand speech, which seriously impairs your ability to communicate. Hearing aids may help, but they do not restore your hearing to normal.

HEARING LOSS OCCURS

Hearing loss occurs when workers are exposed to high levels of noise, whether suddenly or on an ongoing basis. Sadly, this type of hearing loss cannot be corrected medically – neither surgery nor hearing aids are effective if hearing has been significantly damaged by hazardous noise. In some cases, the hearing loss is temporary. After leaving work, you may notice a reduced ability to hear, which returns after a few minutes or several hours. Unfortunately, constant exposure will eventually lead to permanent tinnitus (ringing in the ears) or permanent, significant hearing loss. The temporary hearing loss is merely the first stage of permanent damage.

SIGNS OF WORK-RELATED HEARING LOSS

The signs of a worker's exposure to dangerous, potentially permanently damaging noise levels include the following symptoms:

- Ringing in the ears (tinnitus)
- Buzzing sound in ears
- Roaring sound in head or ears
- Difficulty hearing the words of a person close to you at normal volume
- Indistinct sounds at higher ranges

Workers can experience these symptoms after leaving the place of employment, and as the hours pass, the effect reduces and regular hearing appears to be restored. In fact, if you are experiencing any of these symptoms, you may be in the early stages of permanent hearing loss.

Hearing Loss in the Manufacturing Industry

For workers in the manufacturing industry, hearing loss is the most commonly recorded occupational injury. Between compressed air, which is an estimated 92 dB, and loud machinery like grinders, drills and milling machines, which typically hit dB levels 95 and above, it's important for employers to take extra care to protect workers' hearing.

Hearing Loss in the Construction, Carpentry and Mining Industries

Loud power tools also make workers in construction, carpentry and mining industries particularly susceptible to hearing loss. In fact, some tools, like a jackhammer, can reach up to 130 dB—more than 45 dB above the recommended limit. When exposed to these sounds for extended periods of time during a shift, the risk of hearing damage increases.

Likewise, miners are regularly exposed to sounds related to drilling into rock in a confined work environment, and as a result most miners have some form of hearing loss by the time they retire, according to the CDC.

Other industries most commonly affected by hearing loss include entertainment and nightlife, military, agriculture and farming.

WORKPLACE RISKS ASSOCIATED WITH HEARING LOSS

Hearing is the body's built-in alarm system and plays a vital role in protecting a person from physical harm. Hearing picks up on possible dangers that may not be visible yet, like the sound of an approaching truck or the clanging of a broken machine. However, when hearing is compromised, the built-in alarm system isn't as effective and may not pick up on incoming dangers as quickly, putting workers at risk.

Workplace accidents are common among workers with hearing damage due to reduced situational awareness or the inability to hear a warning siren or signal.

The risks associated with hearing loss don't stop there. Not only does hearing loss contribute to workplace-related issues, it can also take a toll on an employee's quality of life. Hearing loss is permanent, and as it worsens, it can make interpersonal communication difficult and frustrating, putting a strain on relationships. In addition, ringing in the ears associated with hearing loss can be disruptive to normal sleep patterns and concentration, which sometimes can increase the risk of depression, anxiety and stress. All of these factors may contribute to underperformance or dissatisfaction at work.

BUSINESS/REGULATION

[OSHA requires](#) employers to implement a hearing conservation program when noise exposure is at or above 85 decibels averaged over 8 working hours, or an 8-hour time-weighted average (TWA). Hearing conservation programs strive to prevent initial occupational hearing loss, preserve and protect remaining hearing, and equip workers with the knowledge and hearing protection devices necessary to safeguard themselves.

Under **OSHA's Noise Standard**, the employer must reduce noise exposure through [engineering controls, administrative controls, or](#)

[Hearing Protection Devices \(HPDs\)](#) to attenuate the occupational noise received by the employee's ears to within levels specified in Table G-16 and Table G-16A of 29 CFR 1910.95(b)(1).

Know Your Workplace Noise Levels!

If you need to raise your voice to speak to someone 3 feet away, noise levels might be over 85 decibels. Several sound-measuring instruments are available to measure the noise levels in a workspace. These include sound level meters, noise dosimeters, and octave band analyzers.

Noise may be a problem in your workplace if you:

- Hear ringing or humming in your ears when you leave work.
- Have to shout to be heard by a coworker an arm's length away.
- Experience temporary hearing loss when leaving work.

STATISTICS

- The Center for Disease Control (CDC) estimates that 22 million workers are exposed to potentially damaging noise at work each year. Whether you work at a sports venue, on a tarmac, or operate a jackhammer—hearing loss is preventable.
- Some of the most prevalent workplace hazards aren't seen—they're heard. The National Institute for Occupational Safety and Health (NIOSH) reports that 22 million U.S. workers are exposed to damaging noise levels at work, and according to the Centers for Disease Control and Prevention (CDC), workplace-related hearing loss is the most commonly reported injury.
- It's not surprising, then, that hearing loss disability accounts for an estimated \$242 million in workers' compensation payments each year, according to the Department of Labor.
- Approximately 48 million Americans have some degree of hearing loss, according to the Hearing Loss Association of America. The National Institutes of Health estimates that 15% of those aged 20 to 65 are living with some level of noise-induced hearing loss.

- Noises over 85 decibels (dB) warrant the use of protection. For reference, normal talking is 60 dB, city traffic is 85 dB and a rock concert or a tractor is about 100-115 dB. Without proper protection, prolonged noise exposure in a factory setting can compound the hearing loss incurred from every day noises.

PREVENTION

Steps to reduce the hazard from noise

Noise controls are the first line of defense against excessive noise exposure. The use of these controls should aim to reduce the hazardous exposure to the point where the risk to hearing is eliminated or minimized. With the reduction of even a few decibels, the hazard to hearing is reduced, communication is improved, and noise-related annoyance is reduced. There are several ways to control and reduce worker exposure to noise in a workplace.

Engineering controls that reduce sound exposure levels are available and technologically feasible for most noise sources. Engineering controls involve modifying or replacing equipment, or making related physical changes at the noise source or along the transmission path to reduce the noise level at the worker's ear. In some instances the application of a relatively simple engineering noise control solution reduces the noise hazard to the extent that further requirements of the [OSHA Noise standard](#) (e.g., audiometric testing (hearing tests), hearing conservation program, provision of hearing protectors, etc...) are not necessary. Examples of inexpensive, effective engineering controls include some of the following:

- Choose low-noise tools and machinery (e.g., [Buy Quiet Roadmap \(NASA\)](#)).
- Maintain and lubricate machinery and equipment (e.g., oil bearings).
- Place a barrier between the noise source and employee (e.g., sound walls or curtains).
- Enclose or isolate the noise source.

Administrative controls are changes in the workplace that reduce or eliminate the worker exposure to noise. Examples include:

- Operating noisy machines during shifts when fewer people are exposed.
- Limiting the amount of time a person spends at a noise source.
- Providing quiet areas where workers can gain relief from hazardous noise sources (e.g., construct a sound proof room where workers' hearing can recover – depending upon their individual noise level and duration of exposure, and time spent in the quiet area).
- Restricting worker presence to a suitable distance away from noisy equipment.

Controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control. This control may be applicable when workers are present but are not actually working with a noise source or equipment. Increasing the distance between the noise source and the worker, reduces their exposure. In open space, for every doubling of the distance between the source of noise and the worker, the noise is decreased by 6 dBA.

Hearing protection devices (HPDs), such as earmuffs and plugs, are considered an acceptable but less desirable option to control exposures to noise and are generally used during the time necessary to implement engineering or administrative controls, when such controls are not feasible, or when worker's hearing tests indicate significant hearing damage.

An **effective program** must be implemented by employers in general industry whenever worker noise exposure is equal to or greater than 85 dBA for an 8 hour exposure or in the construction industry when exposures exceed 90 dBA for an 8 hour exposure. This program strives to prevent initial occupational hearing loss, preserve and protect remaining hearing, and equip workers with the knowledge and hearing protection devices necessary to protect them. Key elements of an [effective hearing conservation program](#) include:

- Workplace noise sampling including personal noise monitoring

which identifies which employees are at risk from hazardous levels of noise.

- Informing workers at risk from hazardous levels of noise exposure of the results of their noise monitoring.
- Providing affected workers or their authorized representatives with an opportunity to observe any noise measurements conducted.
- Maintaining a worker audiometric testing program (hearing tests) which is a professional evaluation of the health effects of noise upon individual worker's hearing.
- Implementing comprehensive hearing protection follow-up procedures for workers who show a loss of hearing (standard threshold shift) after completing baseline (first) and yearly audiometric testing.
- Proper selection of hearing protection based upon individual fit and manufacturer's quality testing indicating the likely protection that they will provide to a properly trained wearer.
- Evaluate the hearing protectors attenuation and effectiveness for the specific workplace noise.
- Training and information that ensures the workers are aware of the hazard from excessive noise exposures and how to properly use the protective equipment that has been provided.
- Data management of and worker access to records regarding monitoring and noise sampling.

How to Improve Hearing Conservation Program

When it comes to hearing loss, prevention is key. Almost all work-related hearing loss is cumulative and permanent, so it's important for employers to take steps to prevent damage before it happens.

A great step in preventing work-related hearing damage is to implement a **Hearing Conservation Program**. Not only do these programs protect workers from occupational hearing loss, but they can also play a role in increasing employees' sense of well-being and reduce the incidence of stress-related disease. Stress

decreases blood flow that helps hair cells within the ear work properly. Therefore, reducing workers' stress can help maintain the overall health of the ear.

Hearing conservation is an OSHA mandate that requires companies to take action and institute occupational noise and hearing conservation programs for employees who work in areas where the probable exposure to noise equals or exceeds an eight-hour time-weighted average (TWA) sound level of 85 dB.

An effective hearing conservation program includes regular, ongoing sound monitoring, audiograms, employee training and protective equipment.

Regular, Ongoing Sound Monitoring

Sound level meters and dosimeters are two important elements of an effective hearing conservation program. Sound level meters measure sound intensity at a specific moment, while dosimeters measure a person's average exposure to noise over a period of a time. Employers can monitor and record sound levels throughout the workplace to help employees understand areas where the risk of hearing loss may be higher.

Audiograms

An effective hearing conservation program includes taking a baseline audiogram, which takes place 14 hours or more after the employee was last exposed to occupational noise. Following the baseline audiogram, annual audiograms should be performed to record any changes. These results should be analyzed and compared to previous tests to provide insights into how an employee's hearing has changed. These changes are recorded as a Standard Threshold Shift (STS) if the loss is greater than a certain level.

An STS is a detectable change in hearing when compared to the baseline audiogram. If a shift is identified, an employer is required to inform the employee within 21 days and refer them to an audiologist for follow-up testing and possible treatment. This also is a good opportunity for both employers and employees to assess hearing protection methods and make any needed changes.

Employee Training

Training workers is another essential step to educating a workforce about the risks associated with hearing loss and the importance of prevention. At a minimum, employers should conduct an annual noise training with all employees, but regular reminders throughout the year are also recommended. For example, hanging educational posters and noise maps, which highlight decibel levels throughout the workplace, is a great way to remind employees throughout the year to take steps to mitigate hearing damage.

It can also be helpful to offer one-on-one educational sessions with individual employees who may be exposed to louder noises on a regular basis.

Protective Equipment

In addition to monitoring and training, employers must also provide workers with suitable equipment to protect hearing while at work. In fact, this is an OSHA requirement for workplaces where the noise levels meet or exceed 85 dB.

There are a wide variety of options when it comes to hearing protective devices and employers can often find several appropriate options that fit the needs of employees and the workplace. Examples include earplugs and earmuffs that come in a wide variety of different styles, like disposable and reusable, to fit employers' and employees' preferences.

Noise

INCIDENT

In 2008, Jeff Ammon, 55, began noticing a feeling of pressure in his ears every day after work.

Over the next months, when his symptoms progressed into a slight

loss of hearing and sensitivity to noise, he became worried. Ammon, a construction worker for 32 years, eventually started wearing ear protection hoping this would address these complaints – but it was too late.

From that point on, sounds ranging from the hum of a lawnmower to normal tones of conversation caused a piercing, jabbing pain in his inner ear. He stopped working in 2011, when the pain became unbearable. He also hears ringing in his ears and experiences dizziness, both side effects of the auditory damage.

“It’s debilitating ... completely,” he said.

Ammon spent almost all of his working life surrounded by the loud noises of jackhammers, saws and air compressors.

Ammon worked for several small construction companies building houses. He said he was never told to wear ear protection. His colleagues didn’t wear it either. No one talked about it and, even when he worked with loud equipment, he wasn’t aware of the need for ear protection.

NEED TO KNOW

It is recognized now, that Hearing Loss has a dramatic impact in our economy borne out by statistics.

The steps to eliminate the negative effects of hearing loss, economically and personally, is done through **Disclosure of Hearing Loss, Workplace Accommodations and Managing Hearing Loss in the Workplace.**

BUSINESS / REGULATIONS

The [Centers for Disease Control and Prevention](#), said hearing loss is the most common work-related injury with approximately 22 million workers exposed annually to hazardous levels of occupational noise. An [estimated \\$242 million](#) is spent on worker’s compensation annually for hearing loss disability, according to the Department of Labor.

The Labor Department launched a challenge called [“Hear and Now,”](#)

in which it is soliciting pitches for innovative ideas and technology to better alert workers of hazardous noise levels.

But critics say that while these efforts might help, technology to reduce hearing injuries already exists. They contend that the maximum level of noise exposure allowed before employers are required to provide sound-protection equipment is too low, and the regulations developed by the Occupational Safety and Health Administration are outdated. For example, those regulations use sound level limits that don't factor in the noise exposures that occur beyond the workplace – at [restaurants, concerts](#) and [sporting venues](#), for instance – that can add to workers' cumulative risks of harm.

According to OSHA officials, the agency will issue a request for information about current regulations at construction sites to figure out if more stringent protections are needed and how companies are complying.

The review may lead to an update to these rules, most of which [date back to the 1970s](#). A [similar call for information](#) was issued in 2002, but [no changes](#) resulted from the action.

Employers may also have to shoulder the responsibility of instilling more awareness and education among their workers. For example, workers sometimes choose not to wear hearing protection at work sites because they are not aware of their risks – especially when they are not operating loud equipment.

[Mark Cullen](#), a professor at Stanford University who explores workplace hazards, [found in a study](#) that “at very high noise exposures, people very faithfully wear hearing protection and at low noise situations, people don't.

For general industry workers who are exposed to noise for eight hours a day at or above a time-weighted average of 85 decibels, [OSHA requires](#) employers to provide notification, audiometric testing and free hearing protectors. Employers also have to offer training programs for affected workers. The limit is 90 decibels for an eight-hour exposure for construction industry

workers.

Cullen said employers could build noise barriers or eliminate noisy equipment, but old factories often choose to just offer hearing protection gear.

“But the problem with hearing protections is it is way too easy, unsupervised, to take it off,” he said. “What would really make a difference is to train employers.”

He said there is also [existing technology](#) that will measure noise exposure in real time in each worker’s hearing protection gear, with lights that will flash when the level becomes hazardous. The data can be downloaded each day to monitor daily exposures.

Some of the steps taken by the federal government to move toward tightening regulations and increasing awareness suggest this might be changing. But in the meantime, people like Ammon, who feel disabled by their condition, might face difficulties in getting recognition for their symptoms and financial support.

He applied for Social Security disability benefits but was rejected because his condition was not on the Social Security Administration’s [list of medical diseases](#) considered disabling. When he first experienced his symptoms, he visited dozens of audiologists who only told him he had slight hearing loss. Research linking [hyperacusis](#) – unusual tolerance toward ordinary sounds – and pain was [only at its infancy](#). [Specific treatments](#) still are not available for people with this type of hearing damage.

These days, he experiments with new medications or therapies, hoping for more awareness about the illness – and about protecting hearing at the workplace. He is waiting for the third appeal for Social Security disability benefits.

“I’m hearing a little more about it, but not nearly enough,” he said. “And it needs to start at the workplace.”

Now, he avoids going outdoors, choosing instead to stay in his soundproof basement in Lebanon, Pa., and communicate with his

doctor mostly through an online patient portal.

“The medication to address pain has not been very successful at all. ... I’m also on some medication for stress, anxiety and depression,” he said. “It has isolated me from society.”

STATISTICS

Occupational Hearing Loss

- The [National Institute for Occupational Safety and Health](#) (NIOSH) recommends that workers are not exposed to noise at a level that amounts to more than 85 decibels (dBA) over 8 continuous hours.
- NIOSH estimates that [30 million U.S. workers are exposed](#) to noise levels high enough to cause irreversible hearing loss.
- According to the [U.S. Bureau of Labor Statistics](#), more than 20,000 workplace hearing loss cases occur annually, many resulting in permanent hearing loss.
- An estimated 24% of hearing loss in the United States has been attributed to workplace exposure, according to the [Centers for Disease Control](#)

Employment and Economic Costs

- 48% of people who have hearing loss were [employed in 2014](#), but about the same amount (47%) are not in the labor force.
- Adults with hearing loss are [more likely](#) to have lower education, lower income, and be unemployed or underemployment, compared with their typical-hearing peers.
- Individuals with hearing loss also experience greater difficulties in employment transition and career development, compared with those with typical hearing.
- Untreated hearing loss can [decrease one’s annual income](#) by as much as \$30,000. The yearly cost to society is estimated to be as high as \$26 billion in unrealized federal taxes; and an estimated aggregate yearly income loss of \$176 billion due to underemployment.
- For those who did collect an income, [individuals with hearing loss made about 25% less](#); their mean wage was

\$23,481, compared with \$31,272 for typical-hearing peers.

- Hearing aids were shown to reduce the risk of income loss by 90 to 100% for those with milder hearing loss, and from 65 to 77% for those with moderate to severe hearing loss.

Untreated hearing loss shows a higher rate of unemployment:

- Those with severe hearing loss had an unemployment rate (15.6%) double that of the typical-hearing population (7.8%), and nearly double that of their peers (8.3%) who use hearing aids. ([BHI](#))

PREVENTION

1. The essential parts of a Hearing Loss Prevention Program are as follows:

- Identify and assess areas and activities where employees may be exposed to:
 - high noise levels that may exceed 85 decibels (dBA) averaged over an eight-hour period,
 - extreme noise levels of 115 dBA at any time (greater than one second)
 - extreme impact noise levels of 140 dBC (less than one second)
- Reduce or control noise using engineering and administrative controls, where feasible.
- Post signs at noisy areas and require hearing protectors.
- Identify employees who need hearing protection.
- Provide hearing protectors to employees and train them in their use.
- Provide baseline and annual audiometric hearing exams to employees.

1. Responsibilities of Managers, Supervisors and Investigators

- Identify areas of excessive noise and affected employees.
- Coordinate sound level surveys and personnel monitoring for noise exposure, conducted by EH&S, to provide a quantitative assessment of noise hazards in your workplace.

- If employees are exposed to noise above 90 dBA averaged over the work shift, implement engineering or administrative controls. See the [L&I Hearing Loss Prevention \(Noise\) webpage](#) and [Reducing Hazards from Noise](#) (OSHA).
- Ensure individuals exposed to noise levels at or above 85 dBA averaged over an 8-hour work shift are enrolled in the Hearing Loss Prevention Program, receive training and medical surveillance.
- Ensure employees are provided with baseline and annual audiometric exams at the [UW Speech and Hearing Clinic](#), or equivalent, through EH&S.
- Ensure staff has taken the [Hearing Conservation training](#).
- Provide at least two types of hearing protectors to employees if controls cannot be implemented, and for all employees exposed to noise levels at or over 85 dBA averaged over an 8-hour work shift, greater than 115 dBA any time and 140 dBC impact noise any time.
- Ensure hearing protectors are worn properly.
- Post caution signs where noise may exceed 85 dBA averaged over an 8-hour work shift.
- Post danger signs where noise may exceed 115 dBA, even intermittently.
- Ensure that reports of high noise are investigated.
- Maintain records as required.

1. Responsibilities of Employees

- Report elevated noise levels, noisy equipment and hearing protector problems to supervisor.
- Take training on [Hearing Conservation](#).
- Choose the most comfortable, effective hearing protection devices that fit well. Remember that the BEST protector is one you'll wear. Earplugs are available in different sizes and shapes to fit different ear canals; earmuffs are easy to put on and take off for short-term loud noise exposure. A combination of earmuffs and earplugs may be needed.
- Wear hearing protectors in posted noise areas.
- Keep hearing protectors clean and replace when necessary.
- Take baseline and annual audiogram tests.

Ladder Fatality from Fall

INCIDENT

On Friday, Aug. 25, 2017, four gutter installation specialists arrived on the construction site of a new private residence for the purpose of installing gutters. This was their first day on the site. At approximately 11:00 a.m., the victim and a co-worker gathered two, 16 ft. aluminum extension ladders and approached the front porch.

The workers set up the first ladder on the side of the house in order to access the porch roof. The two then worked together to carry the second ladder up to the porch roof, where they positioned it in order to take measurements of the house roof. The victim ascended the second ladder while his coworker held the base of it in order to keep it in place.

The victim took measurements and verbally communicated the results to the owner of the company who was located on the ground below.

In an interview with the coworker who was holding the ladder, he stated that as the victim completed his measurements and began descending the ladder that was placed on the porch roof, the steep angle of the porch roof caused the base of the ladder to 'kick out' and strike the employee who was holding the ladder. This resulted in the victim, the coworker and ladder all falling 10 ft. 9 in. from the porch roof to the ground below.

As the incident occurred, the owner of the company stated that he had his back turned away from the house and was walking away in order to cut the guttering material when he heard the noise behind him. As he turned, he observed the two employees and the ladder on the ground.

The coworker was uninjured, but the victim had landed on his head and neck area, and was unresponsive. The owner of the company

rushed to the victim and called 911. Emergency services arrived within five minutes of the call and transported the victim to a local hospital where he was pronounced dead at 3:13 p.m. the same day.

Cause of Death

The cause of death was blunt force head and torso injuries due to a fall from height.

NEED TO KNOW

Falls are the leading cause of deaths and injuries in the construction industry.

Make sure your ladder is positioned at least to deal with the following:

1. Repeated Handling of Heavy Climbing Equipment

Strains and sprains caused by moving and setting the ladder are usually less serious, but because they are by far the most common kind of injury, they account for the greatest expense to the employer. By using modern advances in fiberglass-resin composites and engineering design, the weight of an extension ladder can be reduced by up to 25 percent without reducing its strength. Reducing the weight of the ladder, along with proper training, will greatly reduce this type of injury.

2. Using the Wrong Ladder for the Job

Using a ladder that is too short for the job, climbing on the top rung, or using a stepladder and leaning it against the wall like an extension ladder are prime examples of this mistake. This type of accident is usually more serious because it involves a fall that might result in broken bones or a permanent disability. Proper training is important to educate the user about proper ladder selection. Multipurpose ladders, which adjust to multiple sizes and configurations can also be used if needed.

3. Falls Due to Over-Reaching

Over-reaching leads to the most serious type of ladder-related injuries, often disability or death. Instead of climbing down and moving the ladder over a few feet, some users try to reach beyond the recommended distance and cause the ladder to tip. Uneven ground is also a factor in this type of accident. Just one inch out of level at the bottom of a 28-foot ladder will cause the top of the ladder to be more than 19 inches off center, vastly increasing the likelihood of a side-tip fall. Adding levelers to the ladder can help alleviate this concern, but levelers do not prevent the user from over-reaching. In addition, they add extra weight to the ladder and increase the possibility of a strain or sprain. Training everyone to keep their belt buckle between the side rails while working on a ladder will help. The best solution to the over-reaching problem is adding retractable wide-base levelers to greatly increase side-to-side stability. Since no jobsite is perfectly level, these outriggers also adjust to uneven ground to ensure a perfectly level base.

BUSINESS/REGULATIONS

Contributing Factors

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. Investigation identified the following unrecognized hazards as key contributing factors in this incident:

- Lack of hazard recognition and safety training
- Performing work at heights without adequate fall protection
- Ladder not used on stable and level surface

STATISTICS

Each year, more than 4,000 construction workers are injured so seriously by ladder falls that they miss work. Each year, about 70 construction workers DIE in falls from ladders.

Every year more than 300 people die in ladder-related accidents, and thousands suffer disabling injuries.

The study, published in the most recent [Morbidity and Mortality Weekly Report \(MMWR\)](#), found that falls remain a leading cause of unintentional injury mortality nationwide, and 43 percent of fatal falls in the last decade have involved a ladder.

Percentage of ladder fall fatalities and nonfatal ladder fall injuries treated in emergency departments, by fall height. In 2011, work-related ladder fall injuries (LFIs) resulted in 113 fatalities (0.09 per 100,000 full-time equivalent [FTE] workers), an estimated 15,460 nonfatal injuries reported by employers that involved more than 1 day away from work (DAFW) and an estimated 34,000 nonfatal injuries treated in emergency rooms. Rates for nonfatal, work-related, emergency room-treated LFIs were higher (2.6 per 10,000 FTE) than those for such injuries reported by employers (1.2 per 10,000 FTE).

“LFIs represent a substantial public health burden of preventable injuries for workers,” noted the researchers.

According to the study:

1. Men and Hispanics had higher rates of fatal and nonfatal LFIs compared with women and non-Hispanic whites and workers of other races/ethnicities.
2. LFI rates increased with age, except for injuries treated in emergency rooms.
3. Fatality rates were substantially higher for self-employed workers (0.30 per 100,000 FTE workers) than salary/wage workers (0.06 per 100,000 FTE workers).
4. Companies with the fewest employees had the highest fatality rates.
5. The construction industry had the highest LFI rates compared with all other industries.
6. Across all industries, the highest fatal and nonfatal LFI rates were in the following two occupation groups: construction and extraction (e.g., mining) occupations, followed by installation, maintenance and repair occupations.
7. Head injuries were implicated in about half of fatal injuries (49 percent), whereas most nonfatal injuries

involved the upper and lower extremities for employer-reported and emergency room-treated nonfatal injuries.

RECOMMENDATIONS

Perform a job hazard analysis of the worksite.

A job hazard analysis (JHA) is a technique employed by site supervisors, experienced employees, and safety personnel that focuses on job tasks as a way of identifying potential hazards that workers may encounter when performing each task. Had a job hazard analysis been performed, it is likely the employer would have recognized potential hazards on the site, which included working at heights above six feet and using a ladder on an uneven surface.

Train employees on and enforce the use of fall protection when working at heights above 6 ft.

The victim and a coworker were on the roof of the porch, 10 ft. 9 in. above the ground. In interviews with other employees, they acknowledged that the owner of the company had never directed them to wear fall protection nor were they ever trained on how to inspect or adjust a personal fall arrest system (PFAS). Failure to protect employees while working at heights and failure to properly train and document completion of fall protection training directly violates two separate OSHA standards.

Ensure ladders are placed on sturdy, level ground or secured before use.

At the time of the incident, the victim was descending a ladder whose base was being held in place by a coworker. The base of the ladder was positioned on the roof of the porch that had a measured pitch of 6:12. A roof's pitch is measured by how many inches the roof rises for every 12 in. it moves inwards toward the peak (or ridge). A roof with a pitch of 6:12 would convert to an angle of 26.5°. If there was no feasible way to secure the top of the ladder to the house roof, efforts should have been made to secure the base of the ladder to the porch roof.

Ladder Regulation

1. On a construction project, where an employer intends to have work performed at heights, the employer shall use a scaffold or other equipment as outlined by sections 125 to 149 of the Regulation. Where the hazard assessment for the use of a ladder to perform the work in question determines that there are no hazards posed by the use of a ladder or that any identified hazards have been mitigated, an employer may consider the use of a ladder to perform that work. Where a ladder is used, the employer shall ensure that the ladder and its use comply with regulatory requirements and that all reasonable precautions for the protection of the worker when using the ladder are taken.
2. Portable, manufactured ladders must be designed, constructed, and maintained so as to not endanger a worker and must be capable of withstanding all loads to which they may be subjected.
3. Ladders must be used in accordance with manufacturers' instructions. It is a requirement of the regulation that "a portable ladder at a project shall be manufactured and shall meet the design, performance, test and marking requirements of a Grade 1, Grade 1A or Grade 1AA ladder in the CSA Standard Z11-12, Portable Ladders"(O. Reg. 213/91, ss. 80(1))
4. Workers must be adequately trained on the selection, setup, use, and maintenance of a ladder.
5. An employer's site-specific health and safety program must address the hazards and risks associated with the use of ladders to ensure that a worker's health and safety are protected.
6. The work to be performed from a ladder must also not adversely affect the stability of the ladder (e.g., overreaching to where the worker's "belt buckle" or mid chest is beyond the side rails of the ladder, and reaching to extreme overhead would not be allowed).
6. A worker must not carry any materials, tools or equipment in his/her hands while climbing/descending the ladder or supporting heavy objects that will overload the weight capacity of the ladder.

7. When a ladder is used as a means of access, the ladder must be erected in accordance with the manufacturer's instructions, and a worker must maintain three-limbed contact so that both hands are used when climbing up or down.
8. When ladders are used as a means of work positioning, the Ministry of Labour expects that a worker will be protected from falling, while in the work position and exposed to fall hazards described under section 26 of Ontario regulation 213/91. The worker's fall protection must be secured to an adequate anchor point independent of the ladder.
9. Any equipment including ladders which are damaged must be immediately taken out of service and repaired in accordance with manufacturers' instructions or be replaced.
10. Ladders that are used as access between levels of a structure must be secured at the top and bottom to prevent movement.
11. Where possible, it is recommended that ladder stabilizers be used with portable, manufactured ladders.
12. A ladder is not designed or intended to be used as a "work platform". Work platforms must meet the requirements of sections 134 and 135 of the Regulation respecting loading, dimensions, configuration, etc. It should be noted by employers considering ladder use that the narrower width of ladders does provide additional ergonomic stresses to workers using ladders, and results in less stability necessitating strict work practices to avoid overreaching while on a ladder.
13. The use of ladders with built-in work platforms that are designed and manufactured in accordance with CSA Standard Z11-12 Portable Ladders are a preferable choice over standard step ladders.
14. MOL inspectors will review situations where a ladder is being used for work based on a ladder risk assessment for the tasks being performed and may issue orders or requirements, as appropriate, where they determine that the use of the ladder contravenes or may contravene the OHSA and the regulation.

PREVENTION

1. Inspect the ladder before every use

- Inspect the rails, rungs, feet, and spreaders or rung locks of your ladder for defects or damage every time you use it. If you see any damage, tag it “do not use” and request another ladder in proper working order. And check your ladder’s duty rating – certain ladders may not support you and your toolbelt!

2. Position your ladder properly

▪ For all ladders:

- Make sure you have level, solid footing for your ladder.
- Position the ladder near your work to avoid overreaching.

▪ For extension ladders:

- Set the base one foot away from the building for every four feet of height.
- Tie off the ladder at the top – and bottom where possible!

3. Use the ladder safely

- Maintain three-point contact with the ladder at all times.
- Do not stand on the top two rungs of a stepladder, or the top four rungs of an extension ladder.
- Have your partner hold the ladder to steady it as you ascend.
- Don’t carry tools and materials while climbing. Use a rope to haul or hoist materials to the upper level!

4. Falls from portable ladders (step, straight, combination and extension) are one of the leading causes of occupational fatalities and injuries.

- Read and follow all labels/markings on the ladder.
- Avoid electrical hazards! – Look for overhead power lines before handling a ladder. Avoid using a metal ladder near power lines or exposed energized electrical equipment.
- Always inspect the ladder prior to using it. If the ladder

is damaged, it must be removed from service and tagged until repaired or discarded.

- Always maintain a 3-point (two hands and a foot, or two feet and a hand) contact on the ladder when climbing. Keep your body near the middle of the step and always face the ladder while climbing (see diagram).
- Only use ladders and appropriate accessories (ladder levelers, jacks or hooks) for their designed purposes.
- Ladders must be free of any slippery material on the rungs, steps or feet.
- Do not use a self-supporting ladder (e.g., step ladder) as a single ladder or in a partially closed position.
- Do not use the top step/rung of a ladder as a step/rung unless it was designed for that purpose.
- Use a ladder only on a stable and level surface, unless it has been secured (top or bottom) to prevent displacement.
- Do not place a ladder on boxes, barrels or other unstable bases to obtain additional height.
- Do not move or shift a ladder while a person or equipment is on the ladder.
- An extension or straight ladder used to access an elevated surface must extend at least 3 feet above the point of support (see diagram). Do not stand on the three top rungs of a straight, single or extension ladder.
- The proper angle for setting up a ladder is to place its base a quarter of the working length of the ladder from the wall or other vertical surface (see diagram).
- A ladder placed in any location where it can be displaced by other work activities must be secured to prevent displacement or a barricade must be erected to keep traffic away from the ladder.
- Be sure that all locks on an extension ladder are properly engaged.
- Do not exceed the maximum load rating of a ladder. Be aware of the ladder's load rating and of the weight it is supporting, including the weight of any tools or equipment.

Safety tips:

- Eliminate the risk by doing all or some of the work on the ground or from a solid construction.
- Reduce risk by using fall prevention devices like scaffolds, perimeter screens, guardrails, elevated work platforms or safety mesh.
- Travel-restraint systems, industrial rope-access systems, catch platforms and fall arrest harness systems can also be used to reduce the risk of falls.

Construction work involving a risk of a fall from more than two metres is considered high-risk work and a Safe Work Method Statement (SWMS) is required.

Fire Extinguisher

INCIDENT

Barney's heart pounded when he opened the back room and saw smoke and a small but growing flame. Hands shaking, he yanked a fire extinguisher off the wall. Someone had taped a note on it – "P.A.S.S." Barney recognized the reminder, but too many months had passed since he had that safety lesson. Unable to remember the steps for using an extinguisher, he yelled for help. By the time a co-worker heard him, the room was ablaze.

NEED TO KNOW

Using a portable fire extinguisher is an important safety skill. You never know when you might have to use it at work, home or on the road.

To extinguish small fires before they become large, extinguishers' contents smother or cool the flames. However, not everyone knows how to use an extinguisher. If a fire broke out in your work area, you need to stop it before it spreads. You wouldn't have time to ask your safety officer to teach you how to use equipment.

Fire extinguishers have received a new letter. The well-known Class A, B, C and D extinguishers have been joined by a Class K extinguisher. This new type was designed to fight fires that involve cooking oil.

The Class K extinguisher is a response to the trend toward using vegetable oils for frying instead of animal fats. The vegetable oils cook at a higher temperature. The Class B extinguishers used previously are not effective against these hotter fires.

What else do you need to know about the Class K extinguisher?

- A Class K extinguisher should be located near any deep fat fryer where vegetable oil is used. Make sure you know where to find it quickly in an emergency.
- The route to the extinguisher must be kept clear at all times. This means you must not place boxes, equipment or other obstructions in the path.
- The extinguisher must be maintained and serviced regularly. If it has been used, it must be refilled or replaced so it is ready to use again. Tell your supervisor if you see anything wrong with the extinguisher.
- You need training so you will understand when and how to operate a fire extinguisher. You also need hands-on practice to be able to operate a fire extinguisher in an emergency.

Most portable fire extinguishers operate in a similar manner. Use the word PASS to help you remember the steps in working an extinguisher:

P – pull the pin

A – aim at the base of the fire

S – squeeze the handle to release the extinguishing material

S – sweep from side to side until the extinguisher is empty

What about those other kinds of extinguishers besides the new K extinguisher? They are still around and useful for many other kinds of fires.

- The Class A extinguisher is used for fires in ordinary combustibles. Wood, paper, plastic and cloth are examples.

- The Class B extinguisher is used for fires involving combustible and flammable liquids – except vegetable oils.
- The Class C extinguisher is for fires in electrical equipment.
- The Class D extinguisher is a specialized one used in certain workplaces. It fights fires involving combustible metals such as magnesium.

Classes A, B and C are often combined into one extinguisher, such as the Class ABC extinguisher you probably have in your home, or the Class BC extinguisher you carry in your motor vehicle.

And remember: It's "K" for 'kitchen.'" This is the extinguisher to use now for a cooking fire.

BUSINESS/ REGULATIONS

When OSHA conducts workplace inspections, it checks to see whether employers are complying with OSHA standards for fire safety.

OSHA standards require employers to provide **Proper Exits, Fire Fighting Equipment, And Employee Training** to prevent fire deaths and injuries in the workplace.

BUILDING FIRE EXITS

1. Each workplace building must have at least two means of escape remote from each other to be used in a fire emergency.
2. Fire doors must not be blocked or locked to prevent emergency use when employees are within the buildings. Delayed opening of fire doors is permitted when an approved alarm system is integrated into the fire door design.
3. Exit routes from buildings must be clear and free of obstructions and properly marked with signs designating exits from the building.

PORTABLE FIRE EXTINGUISHERS

- Each workplace building must have a full complement of the proper type of fire extinguisher for the fire hazards present, excepting when employers wish to have employees

evacuate instead of fighting small fires.

- Employees expected or anticipated to use fire extinguishers must be instructed on the hazards of fighting fire, how to properly operate the fire extinguishers available, and what procedures to follow in alerting others to the fire emergency.
- Only approved fire extinguishers are permitted to be used in workplaces, and they must be kept in good operating condition. Proper maintenance and inspection of this equipment is required of each employer.
- Where the employer wishes to evacuate employees instead of having them fight small fires there must be written emergency plans and employee training for proper evacuation.

STATISTICS

Of the 4,401 **fires** reported, portable **fire extinguishers** successfully extinguished 4,216 **fires** (95%). A single **fire extinguisher** was **used** to extinguish the **fire** in 3,339 reported **fires** (72%). The most common types of fuel that were involved in these **fires** were Class A (47%), Class B (35%), and Class C 14%.

Fire extinguishers have proven their effectiveness in extinguishing fires, saving lives, and protecting property from fire. Most uses of fire extinguishers are never reported because users do not want the authorities (fire departments and insurance companies) to know that there was a fire. It appears that because the effectiveness of fire extinguishers is not generally known, there are those who think they are not required. Every effort should be made to ensure that, as a minimum, fire extinguishers are located and maintained in accordance with the **NFPA standards**.

RECOMMENDATIONS

Three important protocols must be followed to ensure workplace safety.

1. EMERGENCY EVACUATION PLANNING

- Emergency action plans are required to describe the routes

to use and procedures to be followed by employees. Also procedures for accounting for all evacuated employees must be part of the plan. The written plan must be available for employee review.

- Where needed, special procedures for helping physically impaired employees must be addressed in the plan; also, the plan must include procedures for those employees who must remain behind temporarily to shut down critical plant equipment before they evacuate.
- The preferred means of alerting employees to a fire emergency must be part of the plan and an employee alarm system must be available throughout the workplace complex and must be used for emergency alerting for evacuation. The alarm system may be voice communication or sound signals such as bells, whistles or horns. Employees must know the evacuation signal.
- Training of all employees in what is to be done in an emergency is required. Employers must review the plan with newly assigned employees so they know correct actions in an emergency and with all employees when the plan is changed.

2. FIRE PREVENTION PLAN

- Employers need to implement a written fire prevention plan to complement the fire evacuation plan to minimize the frequency of evacuation. Stopping unwanted fires from occurring is the most efficient way to handle them. The written plan shall be available for employee review.
- Housekeeping procedures for storage and cleanup of flammable materials and flammable waste must be included in the plan. Recycling of flammable waste such as paper is encouraged; however, handling and packaging procedures must be included in the plan.
- Procedures for controlling workplace ignition sources such as smoking, welding and burning must be addressed in the plan. Heat producing equipment such as burners, heat exchangers, boilers, ovens, stoves, fryers, etc., must be properly maintained and kept clean of accumulations of flammable residues; flammables are not to be stored close to

these pieces of equipment.

- All employees are to be apprised of the potential fire hazards of their job and the procedures called for in the employer's fire prevention plan. The plan shall be reviewed with all new employees when they begin their job and with all employees when the plan is changed.

3. FIRE SUPPRESSION SYSTEM

- Properly designed and installed fixed fire suppression systems enhance fire safety in the workplace. Automatic sprinkler systems throughout the workplace are among the most reliable fire fighting means. The fire sprinkler system detects the fire, sounds an alarm and puts the water where the fire and heat are located.
- Automatic fire suppression systems require proper maintenance to keep them in serviceable condition. When it is necessary to take a fire suppression system out of service while business continues, the employer must temporarily substitute a fire watch of trained employees standing by to respond quickly to any fire emergency in the normally protected area. The fire watch must interface with the employers' fire prevention plan and emergency action plan.
- Signs must be posted about areas protected by total flooding fire suppression systems which use agents that are a serious health hazard such as carbon dioxide, Halon 1211, etc. Such automatic systems must be equipped with area predischage alarm systems to warn employees of the impending discharge of the system and allow time to evacuate the area. There must be an emergency action plan to provide for the safe evacuation of employees from within the protected area. Such plans are to be part of the overall evacuation plan for the workplace facility.

PREVENTION

When you notice a fire, sound the building's alarm and call the fire department. If you don't feel you can handle the fire, leave immediately. Get everyone out of the building. Close doors behind

you to slow the flames' spread, but don't lock any doors. Stay between fire and exit so you don't let the fire block your escape.

If the fire is small enough to put out with a portable extinguisher, you can do so swiftly by telling yourself to P.A.S.S. "PASS" is an easily remembered abbreviation describing the four-step process for most fire extinguishers: Pull, Aim, Squeeze and Sweep.

- **PULL** the pin. On some extinguishers, you release a latch or press a lever.
- **AIM** the nozzle at the base of the fire.
- **SQUEEZE** or press the handle. Or you may have to press a button to discharge the extinguishing agent.
- **SWEEP** from side to side, aiming at the base of the fire until the flames appear to be out. Repeat if the fire reappears.
- Don't turn your back on a fire once you think it's out, because it could flare up again.
- Avoid breathing smoke, fumes or extinguishing agent.
- Take care of the extinguisher and recharge it after each use.

Monthly inspections will do the following:

- Ensure the fire extinguishers are present where they're supposed to be.
- Ensure the fire extinguishers are in good condition and ready for use.
- Ensure the fire extinguishers do not need any service, maintenance or annual certification.

Training

- You need training so you will understand when and how to operate a fire extinguisher and hands-on practice to be able to operate a fire extinguisher in an emergency.
- Most portable fire extinguishers operate in a similar manner. Use the word PASS to help you remember the steps in operating an extinguisher.

P – pull the pin

A – aim at the base of the fire

S –squeeze the handle to release the extinguishing material

S –sweep from side to side until the extinguisher is empty

OSHA prohibits the use of fire extinguishers by anyone that has not been properly trained to use them. Training should be done annually and should also include a periodic practical component to give workers an opportunity to practice actual use.

Performing Inspection Effectively

- Make sure the extinguisher is in its designated place, is easily visible, and has unobstructed access for immediate use in case of emergency.
- Check that the annual certification tag is present and the fire extinguisher is within its service date interval. Tags indicate the last date of inspection so if a tag is labeled 2018 and the October option is punched or indicated that means it was last inspected in October of 2018 and needs to be re-inspected by a certified testing service by the end of October 2019.
- Check the pressure gauge for damage and that the indicator needle is within the operating (green) range. If the needle is out of the operating range it may indicate a loss of pressure, an equipment failure, or that it has been used.
- Remove the extinguisher from the mounting system to ensure it is easily accessible and that the mounting bracket/system is secure and in good condition.
- Check the extinguisher body and all external metal parts for signs of damage or corrosion. If damage is found remove extinguisher from service and replace. Have extinguisher inspected by certified testing service.
- For dry-powder extinguishers turn the extinguisher upside down and shake to loosen extinguishing media.
- Check to make sure the safety pin is in place and secured with an easily removable retention device, usually a

breakaway zip-tie or similar.

- Check the hose and nozzle for damage.
 - Check the labels for damage and legibility. The labels should clearly indicate the extinguisher's size and capability. Ensure the correct fire extinguisher is in the designated location.
 - Record the inspection. Most annual certification tags have a grid on the reverse side for this purpose. Record the date of inspection and the initials of the person performing the inspection.
-

Hearing Conservation

INCIDENT

In 2008, Jeff Ammon, 55, began noticing a feeling of pressure in his ears every day after work.

Over the next months, when his symptoms progressed into a slight loss of hearing and sensitivity to noise, he became worried. Ammon, a construction worker for 32 years, eventually started wearing ear protection hoping this would address these complaints – but it was too late.

From that point on, sounds ranging from the hum of a lawnmower to normal tones of conversation caused a piercing, jabbing pain in his inner ear. He stopped working in 2011, when the pain became unbearable. He also hears ringing in his ears and experiences dizziness, both side effects of the auditory damage.

“It’s debilitating ... completely,” he said.

Ammon spent almost all of his working life surrounded by the loud noises of jackhammers, saws and air compressors.

Ammon worked for several small construction companies building

houses. He said he was never told to wear ear protection. His colleagues didn't wear it either. No one talked about it and, even when he worked with loud equipment, he wasn't aware of the need for ear protection.

He applied for Social Security disability benefits but was rejected because his condition was not on the Social Security Administration's list of medical diseases considered disabling. When he first experienced his symptoms, he visited dozens of audiologists who only told him he had slight hearing loss. Research linking hyperacusis – unusual tolerance toward ordinary sounds – and pain was only at its infancy. Specific treatments still are not available for people with this type of hearing damage.

These days, he experiments with new medications or therapies, hoping for more awareness about the illness – and about protecting hearing at the workplace. He is waiting for the third appeal for Social Security disability benefits.

"I'm hearing a little more about it, but not nearly enough," he said. "And it needs to start at the workplace."

Now he avoids going outdoors, choosing instead to stay in his soundproof basement in Lebanon, Pa., and communicate with his doctor mostly through an online patient portal.

"The medication to address pain has not been very successful at all. ... I'm also on some medication for stress, anxiety and depression," he said. "It has isolated me from society."

NEED TO KNOW

Noise, or unwanted sound, is one of the most pervasive occupational health problems. It is a by-product of many industrial processes. Sound consists of pressure changes in a medium (usually air), caused by vibration or turbulence. These pressure changes produce waves emanating away from the turbulent or vibrating source. Exposure to high levels of noise causes hearing loss and may cause other harmful health effects as well. The extent of damage depends primarily on the intensity of the

noise and the duration of the exposure.

Noise-induced hearing loss can be temporary or permanent. Temporary hearing loss results from short-term exposures to noise, with normal hearing returning after period of rest. Generally, prolonged exposure to high noise levels over a period of time gradually causes permanent damage.

OSHA's Hearing Conservation Program is designed to protect workers with significant occupational noise exposures from hearing impairment even if they are subject to such noise exposures over their entire working lifetimes.

What monitoring is required?

The **Hearing Conservation Program** requires employers to monitor noise exposure levels in a way that accurately identifies employees exposed to noise at or above 85 decibels (dB) averaged over 8 working hours, or an 8-hour time-weighted average (TWA). Employers must monitor all employees whose noise exposure is equivalent to or greater than a noise exposure received in 8 hours where the noise level is constantly 85 dB. The exposure measurement must include all continuous, intermittent, and impulsive noise within an 80 dB to 130 dB range and must be taken during a typical work situation. This requirement is performance-oriented because it allows employers to choose the monitoring method that best suits each individual situation.

Employers must repeat monitoring whenever changes in production, process, or controls increase noise exposure.

Employees are entitled to observe monitoring procedures and must receive notification of the results of exposure monitoring. The method used to notify employees is left to the employer's discretion.

Employers must carefully check or calibrate instruments used for monitoring employee exposures to ensure that the measurements are accurate. Calibration procedures are unique to specific instruments. Employers should follow the manufacturer's instructions to determine when and how extensively to calibrate

the instrument.

What is audiometric testing?

The employer must establish and maintain an audiometric testing program. The important elements of the program include baseline audiograms, annual audiograms, training, and follow-up procedures. Employers must make audiometric testing available at no cost to all employees who are exposed to an action level of 85 dB or above, measured as an 8-hour TWA.

The audiometric testing program follow-up should indicate whether the employer's hearing conservation program is preventing hearing loss. A licensed or certified audiologist, otolaryngologist, or another physician must be responsible for the program. Both professionals and trained technicians may conduct audiometric testing.

What is a baseline audiogram?

The baseline audiogram is the reference audiogram against which future audiograms are compared. Employers must provide baseline audiograms within 6 months of an employee's first exposure at or above an 8-hour TWA of 85 dB. An exception is allowed when the employer uses a mobile test van for audiograms. In these instances, baseline audiograms must be completed within 1 year after an employee's first exposure to workplace noise at or above a TWA of 85 dB. Employees, however, must be fitted with, issued, and required to wear hearing protectors whenever they are exposed to noise levels above a TWA of 85 dB for any period exceeding 6 months after their first exposure until the baseline audiogram is conducted.

What are annual audiograms?

Employers must provide annual audiograms within 1 year of the baseline. It is important to test workers' hearing annually to identify deterioration in their hearing ability as early as possible. This enables employers to initiate protective follow-up measures before hearing loss progresses. Employers must compare annual audiograms to baseline audiograms to determine whether the

audiogram is valid and whether the employee has lost hearing ability or experienced a standard threshold shift (STS). An STS is an average shift in either ear of 10 dB or more at 2,000, 3,000, and 4,000 hertz.

What is an employer required to do following an audiogram evaluation?

The employer must fit or refit any employee showing an STS with adequate hearing protectors, show the employee how to use them, and require the employee to wear them. Employers must notify employees within 21 days after the determination that their audiometric test results show an STS. Some employees with an STS may need further testing if the professional determines that their test results are questionable or if they have an ear problem thought to be caused or aggravated by wearing hearing protectors. If the suspected medical problem is not thought to be related to wearing hearing protection, the employer must advise the employee to see a physician. If subsequent audiometric tests show that the STS identified on a previous audiogram is not persistent, employees whose exposure to noise is less than a TWA of 90 dB may stop wearing hearing protectors.

The employer may substitute an annual audiogram for the original baseline audiogram if the professional supervising the audiometric program determines that the employee's STS is persistent. The employer must retain the original baseline audiogram, however, for the length of the employee's employment. This substitution will ensure that the same shift is not repeatedly identified. The professional also may decide to revise the baseline audiogram if the employee's hearing improves. This will ensure that the baseline reflects actual hearing thresholds to the extent possible. Employers must conduct audiometric tests in a room meeting specific background levels and with calibrated audiometers that meet American National Standard Institute (ANSI) specifications of SC-1969.

When is an employer required to provide hearing protectors?

Employers must provide hearing protectors to all workers exposed

to 8-hour TWA noise levels of 85 dB or above. This requirement ensures that employees have access to protectors before they experience any hearing loss.

Employees must wear hearing protectors:

- For any period exceeding 6 months from the time they are first exposed to 8-hour TWA noise levels of 85 dB or above, until they receive their baseline audiograms if these tests are delayed due to mobile test van scheduling;
- If they have incurred standard threshold shifts that demonstrate they are susceptible to noise; and
- If they are exposed to noise over the permissible exposure limit of 90 dB over an 8-hour TWA.

Employers must provide employees with a selection of at least one variety of hearing plug and one variety of hearing muff. Employees should decide, with the help of a person trained to fit hearing protectors, which size and type protector is most suitable for the working environment. The protector selected should be comfortable to wear and offer sufficient protection to prevent hearing loss.

Hearing protectors must adequately reduce the noise level for each employee's work environment. Most employers use the Noise Reduction Rating (NRR) that represents the protector's ability to reduce noise under ideal laboratory conditions. The employer then adjusts the NRR to reflect noise reduction in the actual working environment.

The employer must reevaluate the suitability of the employee's hearing protector whenever a change in working conditions may make it inadequate. If workplace noise levels increase, employees must give employees more effective protectors. The protector must reduce employee exposures to at least 90 dB and to 85 dB when an STS already has occurred in the worker's hearing. Employers must show employees how to use and care for their protectors and supervise them on the job to ensure that they continue to wear them correctly.

Training

Employee training is very important. Workers who understand the reasons for the hearing conservation programs and the need to protect their hearing will be more motivated to wear their protectors and take audiometric tests. Employers must train employees exposed to TWAs of 85 dB and above at least annually in the effects of noise; the purpose, advantages, and disadvantages of various types of hearing protectors; the selection, fit, and care of protectors; and the purpose and procedures of audiometric testing.

BUSINESS / REGULATION

OSHA adopted regulations requiring employers to create a **Hearing Conservation Program** in situations where workers are exposed to a time-weighted average noise level of 85 A-weighted decibels (dBA) or higher throughout an eight-hour shift.

These **Hearing Conservation Programs** require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protection equipment unless changes to tools, equipment and schedules are made to reduce exposure below the 85-dBA level.

OSHA's maximum permissible (as opposed to day-long average) exposure limit is 90 dBA for all workers for an eight-hour day. In addition, the OSHA standard employs a 5-dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half.

Federal regulations require employers to operate an effective **Hearing Conservation Program** (HCP) for people working in hazardous noise. However, even with specific rules and recommendations to guide them, employers may struggle to be pro-active and able to prevent occurrences of noise-induced hearing loss. This webinar will address some common reasons for HCP ineffectiveness and offer tools and recommendations for improving the management of HCPs. This webinar is designed for all persons who play a role in delivering hearing loss prevention services in the workplace.

The **Labor Department** launched a challenge called “Hear and Now,” in which it is soliciting pitches for innovative ideas and technology to better alert workers of hazardous noise levels.

But critics say that while these efforts might help, technology to reduce hearing injuries already exists. They contend that the maximum level of noise exposure allowed before employers are required to provide sound-protection equipment is too low, and the regulations developed by **the Occupational Safety and Health Administration** are outdated. For example, those regulations use sound level limits that don’t factor in the noise exposures that occur beyond the workplace – at restaurants, concerts and sporting venues, for instance – that can add to workers’ cumulative risks of harm.

According to **OSHA officials**, the agency will issue a request for information about current regulations at construction sites to figure out if more stringent protections are needed and how companies are complying.

Employers may also have to shoulder the responsibility of instilling more awareness and education among their workers. For example, workers sometimes choose not to wear hearing protection at work sites because they are not aware of their risks – especially when they are not operating loud equipment.

Mark Cullen, a professor at Stanford University who explores workplace hazards, found in a study that “at very high noise exposures, people very faithfully wear hearing protection and at low noise situations, people don’t.

For general industry workers who are exposed to noise for eight hours a day at or above a time-weighted average of 85 decibels, **OSHA** requires employers to provide notification, audiometric testing and free hearing protectors. Employers also have to offer training programs for affected workers. The limit is 90 decibels for an eight-hour exposure for construction industry workers.

Cullen said employers could build noise barriers or eliminate noisy equipment, but old factories often choose to just offer

hearing protection gear.

STATISTICS

Noise-induced hearing loss is a serious and preventable workplace and off-the-job hazard. Here are seven statistics relating to this problem.

1. Four million American workers who go to work each day are exposed to damaging noise levels. (NIOSH)
2. A WorkSafeBC study found that 25 percent of young people entering the workforce showed early signs of hearing loss, with a further 4.6 percent showing abnormal hearing test results.
3. In 2007, approximately 82 percent of occupational hearing loss cases were reported among workers in the manufacturing sector. (NIOSH)
4. The two most common causes of hearing loss are noise-induced hearing loss and age-related hearing loss.
5. Noise-induced hearing loss is the number one occupational disease in North America. (Workplace Medical Corp.)
6. **A Comprehensive Hearing Conservation program** consists of these seven elements: noise measurement; education and training; engineered noise control; hearing protection devices; the posting of signs warning of noise hazards and the need for hearing PPE; annual hearing tests; and an annual program review.
7. Noise above 90 decibels (dBs) can cause hearing loss, especially when the exposure lasts for an extended period of time. (Bureau of Labor Statistics).

Occupational Hearing Loss

- The National Institute for Occupational Safety and Health (NIOSH) recommends that workers are not exposed to noise at a level that amounts to more than 85 decibels (dBA) over 8 continuous hours.
- NIOSH estimates that 30 million U.S. workers are exposed to noise levels high enough to cause irreversible hearing loss.
- According to the U.S. Bureau of Labor Statistics, more than

20,000 workplace hearing loss cases occur annually, many resulting in permanent hearing loss.

- An estimated 24% of hearing loss in the United States has been attributed to workplace exposure, according to the Centers for Disease Control

Employment and Economic Costs

- 48% of people who have hearing loss were employed in 2014, but about the same amount (47%) are not in the labor force.
- Adults with hearing loss are more likely to have lower education, lower income, and be unemployment or underemployment, compared with their typical-hearing peers.
- Individuals with hearing loss also experience greater difficulties in employment transition and career development, compared with those with typical hearing.
- Untreated hearing loss can decrease one's annual income by as much as \$30,000. The yearly cost to society is estimated to be as high as \$26 billion in unrealized federal taxes; and an estimated aggregate yearly income loss of \$176 billion due to underemployment.
- For those who did collect an income, individuals with hearing loss made about 25% less; their mean wage was \$23,481, compared with \$31,272 for typical-hearing peers.
- Hearing aids were shown to reduce the risk of income loss by 90 to 100% for those with milder hearing loss, and from 65 to 77% for those with moderate to severe hearing loss.

Untreated hearing loss shows a higher rate of unemployment:

- Those with severe hearing loss had an unemployment rate (15.6%) double that of the typical-hearing population (7.8%), and nearly double that of their peers (8.3%) who use hearing aids. (BHI)

PREVENTION

1. The essential parts of a Hearing Conservation Program are as follows:

- Identify and assess areas and activities where employees may

be exposed to:

- high noise levels that may exceed 85 decibels (dBA) averaged over an eight-hour period,
- extreme noise levels of 115 dBA at any time (greater than one second)
- extreme impact noise levels of 140 dBC (less than one second)
- Reduce or control noise using engineering and administrative controls, where feasible.
- Post signs at noisy areas and require hearing protectors.
- Identify employees who need hearing protection.
- Provide hearing protectors to employees and train them in their use.
 - Provide baseline and annual audiometric hearing exams to employees.

1. Responsibilities of Managers, Supervisors and Investigators

- Identify areas of excessive noise and affected employees.
- Coordinate sound level surveys and personnel monitoring for noise exposure, conducted by EH&S, to provide a quantitative assessment of noise hazards in your workplace.
- If employees are exposed to noise above 90 dBA averaged over the work shift, implement engineering or administrative controls. See the L&I Hearing Loss Prevention (Noise) webpage and Reducing Hazards from Noise (OSHA).
- Ensure individuals exposed to noise levels at or above 85 dBA averaged over an 8-hour work shift are enrolled in the Hearing Loss Prevention Program, receive training and medical surveillance.
- Ensure employees are provided with baseline and annual audiometric exams at the [UW Speech and Hearing Clinic](#), or equivalent, through EH&S.
- Ensure staff has taken the [Hearing Conservation training](#).
- Provide at least two types of hearing protectors to employees if controls cannot be implemented, and for all employees exposed to noise levels at or over 85 dBA averaged over an 8-hour work shift, greater than 115 dBA any time and

140 dBC impact noise any time.

- Ensure hearing protectors are worn properly.
- Post caution signs where noise may exceed 85 dBA averaged over an 8-hour work shift.
- Post danger signs where noise may exceed 115 dBA, even intermittently.
- Ensure that reports of high noise are investigated.
- Maintain records as required.

Responsibilities of Employees

- Report elevated noise levels, noisy equipment and hearing protector problems to supervisor.
- Take training on Hearing Conservation.
- Choose the most comfortable, effective hearing protection devices that fit well. Remember that the BEST protector is one you'll wear. Earplugs are available in different sizes and shapes to fit different ear canals; earmuffs are easy to put on and take off for short-term loud noise exposure. A combination of earmuffs and earplugs may be needed.
- Wear hearing protectors in posted noise areas.
- Keep hearing protectors clean and replace when necessary.
- Take baseline and annual audiogram tests.

Fatality File: New / Young Worker Safety

INCIDENT

The incident happened at an agricultural cooperative (co-op). The co-op's retail store was connected to the co-op's tire shop and a warehouse. Also, on the grounds was an equipment storage shed, a fertilizer shed, and an outdoor storage area where 200-pound molasses animal licks were stored. A large flat concrete parking lot extended in front of the store entrance and around one side of

the warehouse where a loading dock and ramp were located.

At the time of the incident a customer was helping the victim as he loaded a molasses lick into another customer's trailer using a forklift. Approximately 5 minutes later, the customer heard a loud crashing sound. He ran over to the area where the victim had been operating the forklift and saw the forklift tipped over on its side. The victim was lying face down and pinned under the cage of the forklift and with one leg extended and the other leg doubled up under him.

The customer ran to get help. While he and a co-worker ran back to assist the victim, another coworker ran into the company's store to call 911. The customer and co-worker were unable to lift the forklift manually and told another co-worker to get a front-end loader. As co-workers lifted the forklift off the victim using the front-end loader, the customer pulled the victim clear. The victim was conscious but having difficulty breathing.

The police and fire department responded to the scene at 2:00 p.m., the ambulance was dispatched at 2:08 pm. and responded at 2:09 p.m. EMS personnel examined the victim and inserted an endo-tracheal tube at 2:18 p.m. followed by a needle chest decompression immediately after, to help the victim breathe.

A medical helicopter was dispatched to transport the victim to a trauma center, but while the ambulance was in route to meet the helicopter, the victim's condition deteriorated, and the victim was transported instead to a local hospital. The victim arrived at the hospital at 2:32 p.m. and was pronounced dead at 3:16 p.m. in the hospital's emergency room.

NEED TO KNOW

A 17-year-old warehouse worker was fatally injured in forklift incident when he was crushed to death. He was employed under a work-based learning program. He had been working for 3 months in this program at the time of his death.

BUSINESS / REGULATIONS

The entrance/exit of the warehouse was narrow, measuring 70 inches in width. A post and an abandoned grain feed dispersal bin located inside the entrance left just enough room for the forklift to pass through.

- Old scrape marks on the forklift and on the post and grain bin inside the warehouse were likely indicators of a tight fit.
- The local manager said that forklift operators had to speed up to make it up the ramp and then had to slow down at the entrance to fit through the narrow passage after passing through the warehouse door.
- The ramp's surface was patched and rough where the ramp joined the flat, level parking lot.
- The co-op was being relocated so the rough pavement in the transitional area where the level parking lot met the ramp, and the confined areas in the warehouse had not been changed because of the planned move.
- It is worth noting these issues were known and identified as problematic.
- A well-developed safety and training program were lacking.

STATISTICS

This young warehouse worker had only been working for 3 months in an apprentice program. Yet, he was apparently qualified to drive and manipulate one of the most dangerous vehicles in the warehouse scenery – the forklift.

Forklifts accidents cause many deaths in the warehouse workplace across North America for inexperienced and experienced workers alike.

Workers between the ages of 15 and 24 are the largest percentage of part-time, temporary, contract, casual and seasonal workforces. They're a tremendous asset to many organizations, tackling jobs with energy and enthusiasm. Unfortunately, though, these workers also face unique and substantial risks for work-related illnesses and injuries. In 2008, more than 139,000 American youth between

the ages of 14 and 24 were injured at work; 436 died. Every year in Canada, more than 48,000 young workers are injured seriously enough to require time off from work. Also, in 2007, 38 young Canadian workers died from work-related injuries.

PREVENTION

“an ounce of prevention will yield a pound of cure.”

The following procedures, policies and precautions will help prevent similar accidents:

To help prevent similar occurrences:

- Conduct periodic inspections and frequently remind equipment operators to use seat belts provided and never try to jump from an overturning sit-down type forklift.
 - Check travel routes used by forklifts are free of obstacles and other unsafe conditions.
 - Establish work policies that comply with child labor laws prohibiting youths less than 18 years of age from performing hazardous work, including operating power-driven hoisting equipment such as forklifts. All employees should be aware of this policy.
 - Develop, implement, and enforce a comprehensive written safety program for all workers which includes training in hazard recognition and the avoidance of unsafe conditions.
 - A written training plan should require training for all forklift operators that includes the equipment manufacturers' recommendations for safe equipment operation.
 - Identify and label equipment not to be operated by workers under 18 and only provide keys to trained and authorized operators.
-

Fatigue

INCIDENT

Air Force Reserve Command's top three safety emphasis items for 2020 are off-duty private motor vehicle accidents (with an emphasis on driving under the influence and fatigued driving), ladder safety and the proper use of personal protective equipment.

The Safety Office is focusing its attention on the role driving under the influence and fatigue play in private motor vehicle mishaps.

"Each year, the Air Force experiences an average of 14 private motor vehicle fatalities involving cars and trucks, and 10 private motor vehicle fatalities involving motorcycles," said Rich Burns, AFRC's Occupational Safety Program manager. "In many of these cases, the mishaps are attributed to the use of alcohol while driving and driving while fatigued. Our goal is to reduce the number of private motor vehicle mishaps to zero. This can only be accomplished if everyone takes note of what the causal factors are and focuses on preventing them."

Over the last six years, the Air Force has had 163 private motor vehicle off-duty fatalities, including eight involving Air Force Reservists. **Nearly One-Third of the Fatalities Involved Alcohol and Another One-Third Involved Fatigue.** Based on the Consumer Price Index, the Department of Defense estimates that each fatality costs the service \$9.6 million.

NEED TO KNOW

Workers suffering from fatigue—physical and mental—are not only less productive and more prone to illness but also more distracted and thus more likely to be involved in a safety incident.

Fatigue can be broadly defined as a feeling of weariness, tiredness or lack of energy. Fatigue is a common complaint but, medically speaking, it's recognized more as a symptom or cause of other conditions than as a condition itself. The best way to

understand fatigue is along a continuum. On one end of the spectrum is the fatigue that most of us occasionally experience in the course of our lives when we get physically or mentally overburdened. This kind of fatigue isn't serious and can usually be resolved simply and quickly, such as by getting extra rest. On the other end is a less common but more serious form of fatigue that's symptomatic of a more chronic and disabling condition, such as major depressive disorder or chronic fatigue syndrome. This form of fatigue is an acute and/or ongoing state of tiredness that leads to mental or physical exhaustion and prevents people from functioning as usual.

Fatigue clearly impairs work ability. Studies have shown that workers with fatigue are significantly more likely to miss work and experience long-term work absences than workers without fatigue

You're an accident waiting to happen if you are not alert at work. This applies to most high-risk jobs, trucking and transport jobs, repetitive jobs, such as sorting logs in a lumber mill, and a host of other jobs – regardless of the inherent risk level.

What's the Danger?

The risk of making mistakes at work increases dramatically if workers sleep for less than seven to eight hours or are awake for more than 17 consecutive hours.

- Fatigue reduces your ability to make decisions and to do complex planning.
- Communication skills and your ability to respond to and remember directions and recall details also suffer.
- Fatigue slows your reaction time, and your ability to respond to changes in surroundings or information provided.
- It also shortens your attention span, especially during boring or mundane tasks.
- Fatigue lowers your productivity and performance and your ability to handle stress.
- It makes it hard to stay awake, increases forgetfulness and increases errors in judgment.

Experiencing one or more of these factors can make you dangerous to work with, because it increases the chances for incidents and injuries.

Electricity, toxic chemicals, bone-crushing machines, fall hazards and fire are just some of the dangers the 20th century workplace health and safety programs were designed to root out.

The safety program of the new millennium must deal not just with these old enemies but new threats that are still not fully recognized or understood—**Ergonomics, Workplace Violence, Mental Stress and What May Be the Newest of the Newfangled Hazards—Fatigue.**

BUSINESS / REGULATIONS

Fatigue increases the risk of injuries or other accidents. As an employer, ensure your workers are not experiencing signs or effects of fatigue on the job. You can help make your workers and your business safer by including information on fatigue and sleep in your safety guidelines and orientations. You can also develop a fatigue management plan.

Fatigue is a state of feeling very tired, exhausted, weary, or sleepy. Fatigue results from a lack of sleep and can be heightened from prolonged mental activity or long periods of stress or anxiety. Boring or repetitive tasks can also intensify feelings of fatigue.

Fatigue can be acute or chronic.

Acute fatigue results from a sudden onset of short-term sleep loss, such as getting less sleep than normal before a work shift. Adequate sleep is necessary to reverse the effects of acute fatigue. Chronic fatigue is a long-term state that results from an extended loss of necessary sleep. A sleep debt can build over weeks or months from a reduction or disruption of a normal sleep routine.

Signs and symptoms of fatigue recommendation

Train supervisors and workers to recognize the immediate signs and symptoms of fatigue, which include the following:

- Tiredness or sleepiness
- Memory lapses
- Difficulty concentrating
- Slower reaction times

Effects of fatigue

Studies indicate that the risk of making mistakes at work increases significantly if workers sleep for less than the average (7.5–8.5 hours) or are awake for more than 17 consecutive hours.

The effects of fatigue can reduce a worker's:

- Ability to make decisions
- Ability to do complex planning
- Communication skills
- Productivity and performance
- Attention
- Ability to handle stress
- Reaction time
- Ability to recall details
- Ability to respond to changes in surroundings or information provided

Fatigue can also result in:

- Inability to stay awake
- Increased forgetfulness
- Increased errors in judgment

Over the long term, fatigue can result in health effects, such as loss of appetite and digestive problems, and other chronic health conditions, including depression. **These effects can result in:**

- Increased sick time, absenteeism, and rate of turnover
- Increased medical costs
- One study has shown that fatigue can have similar effects to drinking alcohol:

- 17 hours awake is equivalent to a blood alcohol content of 0.05 (the legal limit in British Columbia)
 - 21 hours awake is equivalent to a blood alcohol content of 0.08
 - 24–25 hours awake is equivalent to a blood alcohol content of 0.10

Causes of fatigue

Fatigue is caused primarily by long hours of being awake. Other causes include extended shifts, shift rotations (days and nights), and irregular or disrupted sleep. **Workplace factors, such as the following, can also increase feelings of fatigue:**

- High temperatures
- High noise levels
- Dim lighting or poor visibility
- Work tasks that are long, repetitive, paced, difficult, boring, or monotonous

Alcohol and caffeine

A lack of quality sleep can contribute to fatigue.

Substances such as caffeine and alcohol can affect sleep quality and quantity, particularly if taken in the hours before bedtime. Alcohol may shorten the time to fall asleep, but it will disrupt sleep patterns.

Medications

Prescription medications and over-the-counter medications can also affect sleep and may cause a sense of sleepiness and loss of alertness during work.

Sleep disorders

Sleep apnea, narcolepsy, insomnia, and other disorders affect alertness. If workers are experiencing any symptoms related to sleep disorders, they should seek a doctor's advice.

How to help your workers stay safe prevention

Create shift schedules that give workers enough time

If the job requires long hours or overtime, consider that your workers will need enough time for other daily activities, such as commuting, preparing and eating meals, socializing, and relaxing.

Provide a work environment that has good lighting, comfortable temperatures, and reasonable noise levels.

Ensure that jobs provide some variety, with work tasks that change throughout the shift. Be flexible when assigning tasks – assign workers who may be fatigued to tasks that aren't safety sensitive.

If your workplace has long shifts or frequent overtime, consider providing amenities, such as the following:

- Prepared meals
- On-site accommodations
- Facilities where workers can nap either during the shift or before driving home

Tips for getting a better sleep

People need at least 7.5 to 8.5 hours of sleep a day.

Studies have found that most night-shift workers get less sleep per week than those who work day shifts.

The quality of sleep during the day is not the same as during the night.

Here are some guidelines you can pass on to your workers for improving quality of sleep:

- Go to bed and get up at the same time every day.
- Turn out the light immediately when going to bed.
- Don't read or watch television in bed.
- Make your room as dark and quiet as possible.

In addition to the general duty to not drive a fatigue-regulated heavy vehicle on a road while fatigued, drivers must comply with certain maximum work and minimum rest limits.

Parties in the supply chain have to take all reasonable steps to prevent the drivers from exceeding these limits. This is similar to occupational health and safety laws and means that drivers must be allowed to stop if they are at risk of exceeding the limits and make alternative arrangements.

STATISTICS

Fatigue is defined as being in a state of physical or mental exhaustion, which compromises both workplace safety and a worker's ability to perform efficiently. Here are 7 statistics relating to fatigue in the workplace

1. There are three causes of fatigue: sleep loss, disruption of a person's body clock, and prolonged mental or physical activity.
2. Fatigue can reduce a worker's alertness, leading to errors and an increased possibility of injury under these two conditions: either when operating equipment or vehicles, or when performing important tasks requiring considerable concentration.
3. Seven long-term health effects of fatigue include increased risk for heart disease, high blood pressure, gastrointestinal disorders, diabetes, anxiety, depression, and reduced fertility. (Safe Work Australia)
4. A University of Pittsburgh School of Medicine study found that fatigued workers had nearly twice the risk for injury compared to non-fatigued workers.
5. Five symptoms indicating that a worker is experiencing fatigue include excessive yawning or falling asleep at work; impaired decision-making ability; short-term memory impairment and reduced concentration; slowed reflexes and reduced hand-eye coordination; and a noticeable decrease in one's ability to communicate clearly.
6. One major cause of fatigue is a work schedule that limits the amount of rest time a worker has before starting the

next shift, because of issues such as overtime on the previous shift.

7. Three things supervisors can do to reduce fatigue among their workers are: allowing workers to vary their work tasks to avoid monotony; allowing workers to take short power-nap breaks, especially on the night shift; and encouraging workers to manage their fatigue risk factors. Risk factors include cutting sleep time short to complete tasks or to read, use a computer or watch TV, and consuming excessive nicotine, alcohol or caffeine, especially in the hours close to bedtime.

Bottom Line Analysis

- It is estimated that workers with fatigue cost U.S. employers \$136.4 billion a year in health-related lost productivity time \$100 million more than workers without fatigue.
- Individually, fatigue reduces productivity to the time of 1,961 per worker each year.

RECOMMENDATION

There are six fatigue management recommendations that need to be implemented.

Scheduling and rostering – scheduling of individual trips and rostering of drivers are to be in accordance with limits prescribed in legislation

1. Fitness for duty – drivers are in a fit state to safely perform required duties and meet the specified medical requirements
2. Fatigue knowledge and awareness – personnel involved in the management, operation, administration, participation and verification of the BFM option can demonstrate competency in fatigue knowledge relevant to their position on the causes, effects and management of fatigue and the operator's fatigue management system
3. Responsibilities – the authorisations, responsibilities and duties of all positions involved in the management,

operation, administration, participation and verification of their operations under the BFM option are current, clearly defined, documented and carried out accordingly

4. Internal review – an internal review system is implemented to identify non-compliances and verify that the activities comply with the BFM standards and the operator's fatigue management system
5. Records and documentation – the operator will implement, authorise, maintain and review documented policies and procedures that ensure the management, performance and verification of the BFM option in accordance with the standards.

PREVENTION

Fatigue – A Safety Hazard

Fatigue is more than simply sleepiness. It's the body's response to sleep loss and/or prolonged physical or mental exertion, e.g., as a result of working nights or rotating shifts. Over time, this can result in physical and mental damage.

But it's the immediate effects of fatigue that make it such a significant safety risk. Fatigue does things to workers' minds and bodies that make them more likely to get hurt on the job, such as:

- Slowing their reaction time;
- Reducing their level of vigilance;
- Impairing their judgment and ability to make decisions;
- Making them more distractible; and
- Causing them to lose awareness in critical situations.

Managing Fatigue In The Workplace

Progressive companies have been quick to grasp the danger and develop systems to manage fatigue.

The Fatigue Risk Management System

Such systems are similar to OHS systems and can be incorporated into an organization's existing OHS system. The guide lists the key elements of a Fatigue Risk Management System, Including:

A fatigue management policy spelling out how the company plans to address fatigue in the workplace and lists the roles and responsibilities of all stakeholders.

Fatigue risk management which involves collecting and analyzing relevant data to assess fatigue hazards and implementing controls to minimize identified risks. The ACOEM identifies 5 types of controls:

1. Balancing workload and staffing;
2. Shift scheduling;
3. Worker fatigue training and sleep disorder management;
4. Workplace environment design; and
5. Fatigue monitoring and alertness for duty.

Fatigue reporting system that workers can use to report when they feel unfit to work safely as a result of fatigue or report workplace incidents caused by fatigue.

Fatigue incident investigation which should basically parallel standard incident investigation but also focus on the role played by fatigue, why the worker was fatigued and why any fatigue-control mechanisms in place failed.

Fatigue management training and education of both management and workers on the fatigue risk management system, including:

- Hazards of working while fatigued and the benefits of being well rested;
- Impact of chronic fatigue on personal relationships, mental/physical well-being and general happiness;
- Recognition that while fatigue can't be eliminated, it can be managed;
- The key role quantity and quality of sleep play in managing fatigue;
- Basics of sleep physiology and circadian rhythms;
- Sleep hygiene, i.e., how to get adequate sleep;
- The potential results of sleep disorders and how to manage them;
- Importance of diet, exercise, stress management and

management of other health conditions;

- How to recognize fatigue in themselves or co-workers; and
- Alertness strategies to use at work, e.g., caffeine, rest or exercise breaks.

Sleep disorder management programs that screen workers for sleep disorders and help them get appropriate treatment.

System auditing on a regular basis to ensure that it's effective, identify weaknesses and implement corrections or improvements.

What Can Employers Do?

Employers can reduce the risk of worker fatigue in the workplace by:

- Examine staffing issues such as workload, work hours, understaffing and worker absences, scheduled and unscheduled, which can contribute to worker fatigue.
- Arrange schedules to allow frequent opportunities for rest breaks and nighttime sleep.
- Make adjustments to the work environment such as lighting, temperature and physical surroundings to increase alertness.
- Provide worker education and training addressing the hazards of worker fatigue, the symptoms of worker fatigue, the impact of fatigue on health and relationships, adequate quality and quantity of sleep and the importance of diet, exercise and stress management strategies to minimize the adverse effects of fatigue.
- Consider implementing a Fatigue Risk Management Plan under which, like other risk factors, fatigue can be managed.

Look Out for the Symptoms of Fatigue

Train your managers and supervisors to recognize the signs of fatigued workers, including:

- excessive yawning;
- irritability;
- bloodshot eyes;
- poor performance;

- lack of focus

If you have identified any fatigued workers in your workplace, discuss the issue of fatigue with them as soon as practicable. You may also choose to discuss the issue with other workers who could be at risk of fatigue.

Direct a worker to take leave

Following discussion with a fatigued worker, you may:

- direct a worker to take paid personal or annual leave if they have any paid leave entitlements;
- allow a worker to take unpaid leave if they wish to do so; or
- choose to grant a worker paid leave if they have exhausted all of their leave entitlements.

Better Recommendations

It's also recommended that you include a clause in your workers' employment contracts that states that you reserve the right to send a worker home from work if you believe that the worker is not fit to perform their duties.

Driving while fatigued could be dangerous, so if you decide to send a fatigued worker home, arrange a safe method of travel for them, e.g. a taxi or colleague, and check that they have arrived home safely.

What can workers do?

One of the most important ways to protect against fatigue is to get enough rest. For most people that means seven to eight hours of sleep per night.

Tips for getting a good night's sleep:

1. Go to bed and get up at the same time every day, even on weekends.
2. Don't eat too close to bedtime, as doing so can cause

heartburn and just generally make it hard to fall asleep. Do eat a balanced diet of fruits, veggies, healthy fats, proteins and whole grains.

3. Turn off your cell phone or tablet at least one hour before you go to sleep and don't watch TV in bed.
4. Exercise regularly, but not too close to bed time. Exercising an hour or so before bed can make it hard to fall asleep.
5. Avoid caffeine, tobacco and alcohol before bed as well. Stay away from foods and drinks that contain caffeine for at least five hours before bedtime.
6. Keep your room dark and cool. Most of us sleep better in a cooler room.
7. If you can't sleep, get up and go into another room and read or perform some other quiet activity that doesn't involve staring at a screen until you feel sleepy.

At work, remember these fatigue-triggering factors and try to avoid them:

1. Dim lighting.
2. High temperatures, high noise, and high comfort, such as sitting for long periods in a very comfortable chair.
3. Repetitive, long, boring and monotonous tasks.

Tips for staying alert:

1. If you can, take breaks or break up tasks and keep the lights bright.
2. On longer breaks or lunch time go for a run, bicycle ride or brisk walk in every kind of weather.
3. Perform the most boring tasks at the start of your shift if permitted.
4. Eat light, healthy snacks throughout your shift instead of heavy, fatty snacks.
5. If you're driving, be sure to take breaks at least every few hours and change drivers if you can.

Health and Wellness

INCIDENT

Heart attacks can be covered by workers' compensation insurance depending on the circumstances. Witness and expert medical testimony swayed the court in this case.

Martan Kelly Jr. was a technician for Card Heating & Air Conditioning in Pennsylvania. One morning, he reported to work at a funeral home where the company was installing heating and air conditioning equipment. He told his foreman that he felt weak, tired and had a kink in his neck from sleeping poorly the night before. Kelly declined an offer to go home and was given a light-duty assignment of running thermostat wire.

Feeling better around noon, Kelly decided to run wire in the attic of the one-story building by climbing a 12-15-foot ladder. A short time later, employees heard moaning coming from the attic and found Kelly lying incoherent on the floor, bleeding from his head, face and leg.

Kelly was pronounced dead at a local hospital a short time later.

An autopsy revealed coronary artery and heart disease, three heart arteries significantly blocked (60-90%), and 90% stenosis of the left main descending coronary artery. The cause of death was a [heart attack](#).

Kelly's widow filed a workers' compensation claim for survivors' benefits, claiming his [heart attack](#) occurred as a result of his employment. Card denied the claim, and the case went before a workers' comp judge (WCJ).

Kelly's widow testified he didn't have any health problems, didn't complain about chest pain, never saw a heart doctor and wasn't on any medications. She acknowledged her husband [smoked a pack of](#)

[cigarettes a day](#) for the last 30 years.

Card's foreman also testified about how Kelly said he felt when he arrived for work the day he died. The foreman said he would not consider running wire to be physical labor, rather it was light duty work. A Card supervisor agreed running wire was a "pretty low strenuous job."

A board-certified cardiologist testified for Kelly's widow that Kelly's heart attack occurred because he exerted himself by climbing the ladder that could have led to a plaque rupture and his heart attack. The doctor also said it was likely Kelly fell because of his bleeding when found by co-workers. A fall also could have caused a plaque rupture. The doctor acknowledged he couldn't be certain when the plaque ruptured and that Kelly had other risk factors, including smoking, a family history of coronary artery disease (his mother died of it at age 59) and untreated high cholesterol.

When he was cross-examined, the doctor said his statement that Kelly "likely fell and hit his head" "should probably be changed to 'potentially.'"

Card also had a doctor board certified in cardiovascular disease testify. The company's doctor didn't believe Kelly's heart attack was work-related. The company's doctor said Kelly's pre-existing coronary artery disease put him at a high risk for a sudden cardiac death. Since three of his arteries were so severely blocked, he was an imminent risk for a heart attack whether he was working or not.

The company doctor also said Kelly had been suffering from insufficient blood flow to the heart for 8 to 12 hours before coming to work. The doctor noted Kelly slept in a recliner chair the previous night because he wasn't able to lie flat in bed due to his cardiac symptoms. The doctor also said Kelly's duties the day he died were insufficient to cause the heart attack. Climbing the ladder wouldn't have elevated Kelly's heart rate enough to cause a cardiac event unless he had done it quickly or repeatedly and for more than nine minutes.

The WCJ ruled in favor of the company. The judge found the company doctor's testimony to be more credible and agreed with the foreman that the work Kelly was doing wasn't strenuous. The judge also noted Kelly's pre-existing blockages that put him at risk of an imminent heart attack with or without physical exertion.

Kelly's widow appealed, and the Pennsylvania Workers' Compensation Appeal Board affirmed the WCJ's ruling. She took her case to a state court

Not enough proof it was work-related

The burden is on the claimant (in this case Kelly's widow) to show that a fatal heart attack is work-related. Specifically, the claimant must show the heart attack:

- arose in the course of employment, and
- was related to employment.

Kelly's heart attack happened at work, so there's no question it arose in the course of employment. The question is whether it was related to employment.

If a worker's sudden cardiac death isn't obviously caused by work, a connection must be established by "unequivocal medical testimony."

Kelly's widow argued the Board erred because there wasn't proof, he was having symptoms 8 to 12 hours before the heart attack as the company doctor said.

Kelly's widow would not receive workers' comp survivor benefits for her husband's at-work heart attack.

NEED TO KNOW

Many people live sedentary lives. We spend most of our waking hours at work sitting behind a desk, behind the wheel, or behind a counter. Then we plop down on the couch and relax in front of the TV when we get home. Even those of us who have more active jobs likely don't get enough exercise. A lack of physical activity is hazardous to your overall health and wellness.

Workers who are depressed often feel tired, unmotivated and have difficulty concentrating. Depression can cause problems with decision-making abilities and an increase in errors and accidents.

Workers with depression also miss work more often and experience a higher level of presenteeism, where a worker is present at work but less focused and productive than workers without depression.

Due to the stigma of mental illness, many people find it hard to talk about their depression and seek help for it. Getting help is important, because if left untreated, depression can lead to job loss, damaged relationships, substance abuse and suicide.

What's the danger?

Too little activity has been shown to increase the likelihood of:

- Cancer.
- Heart attack and heart disease.
- Stroke.
- Diabetes and obesity.
- Without enough exercise you lose muscle mass, strength and flexibility, and bone loss progresses faster in people who aren't active. These factors can lead to falls, broken bones and mobility issues.
- Lack of regular exercise has also been linked to an increased risk of dementia, mood swings and depression.
- Lastly, a sedentary existence can leave you with a weakened immune system and make you more susceptible to illnesses such as colds and the flu.

BUSINESS/REGULATION

The **Patient Protection and Affordable Care Act**, [Pub. L. 111-148](#), was enacted on March 23, 2010; the Health Care and Education Reconciliation Act, [Pub. L. 111-152](#), was enacted on March 30, 2010 (these are collectively known as the "Affordable Care Act"). The **Affordable Care Act** reorganizes, amends, and adds to the provisions of part A of title XXVII of the Public Health Service Act (PHS Act) relating to group health plans and health insurance issuers in the group and individual markets. The term "group

health plan” includes both insured and self-insured group health plans. The Affordable Care Act adds section 715(a)(1) to the Employee Retirement Income Security Act (ERISA) and section 9815(a)(1) to the Internal Revenue Code (the Code) to incorporate the provisions of part A of title XXVII of the PHS Act into ERISA and the Code, and to make them applicable to group health plans and health insurance issuers providing health insurance coverage in connection with group health plans. The PHS Act sections incorporated by these references are sections 2701 through 2728.

B. Wellness Exception to HIPAA Nondiscrimination Provisions

Prior to the enactment of the Affordable Care Act, titles I and IV of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), [Pub. L. 104-191](#), added section 9802 of the Code, section 702 of ERISA, and section 2702 of the PHS Act (HIPAA nondiscrimination and wellness provisions). These provisions generally prohibit group health plans and group health insurance issuers from discriminating against individual participants and beneficiaries in eligibility, benefits, or premiums based on a health factor. An exception to the general rule allows premium discounts or rebates or modification to otherwise applicable cost sharing (including copayments, deductibles, or coinsurance) in return for adherence to certain programs of health promotion and disease prevention.

The Departments of Labor, Health and Human Services (HHS), and the Treasury (collectively, the Departments ^[3]) published joint final regulations implementing the HIPAA nondiscrimination and wellness provisions on December 13, 2006 at [71 FR 75014](#) (the 2006 regulations). The 2006 regulations divided wellness programs into two general categories: Participatory wellness programs and health-contingent wellness programs. Under the 2006 regulations, participatory wellness programs are considered to comply with the HIPAA nondiscrimination requirements Start Printed Page 33159without having to satisfy any additional standards if participation in the program is made available to all similarly

situated individuals, regardless of health status. Paragraph (d) of the 2006 regulations provided that, generally, distinctions among groups of similarly situated participants in a health plan must be based on bona fide employment-based classifications consistent with the employer's usual business practice. A plan may also distinguish between beneficiaries based on, for example, their relationship to the plan participant (such as spouse or dependent child) or based on the age of dependent children. Distinctions are not permitted to be based on any of the health factors listed in the 2006 regulations.

Under the 2006 regulations, plans and issuers with health-contingent wellness programs ^[6] were permitted to vary benefits (including cost-sharing mechanisms), premiums, or contributions based on whether an individual has met the standards of a wellness program that meets the requirements of paragraph (f)(2), which outlined five specific criteria.

C. Amendments Made by the Affordable Care Act

The Affordable Care Act (section 1201) amended the HIPAA nondiscrimination and wellness provisions of the PHS Act (but not of ERISA section 702 or Code section 9802). (Affordable Care Act section 1201 also moved those provisions from PHS Act section 2702 to PHS Act section 2705.) As amended by the Affordable Care Act, the nondiscrimination and wellness provisions of PHS Act section 2705 largely reflect the 2006 regulations (except as discussed later in this preamble), and extend the HIPAA nondiscrimination protections to the individual market.^[7] The wellness program exception to the prohibition on discrimination under PHS Act section 2705 applies with respect to group health plans (and any health insurance coverage offered in connection with such plans), but does not apply to coverage in the individual market.

D. Proposed Regulations Implementing PHS Act Section 2705 and Amending the 2006 Regulations

On November 26, 2012, the Departments published proposed regulations at [77 FR 70620](#), to implement PHS Act section 2705 and amend the 2006 regulations regarding nondiscriminatory wellness programs in group health coverage. Like the 2006 regulations, the proposed regulations continued to divide wellness programs into participatory wellness programs and health-contingent wellness programs. Examples of participatory wellness programs provided in the proposed regulations included a program that reimburses for all or part of the cost of membership in a fitness center; a diagnostic testing program that provides a reward for participation and does not base any part of the reward on outcomes; and a program that provides a reward to employees for attending a monthly, no-cost health education seminar. Examples of health-contingent wellness programs in the proposed regulations included a program that imposes a premium surcharge based on tobacco use; and a program that uses a biometric screening or a health risk assessment to identify employees with specified medical conditions or risk factors (such as high cholesterol, high blood pressure, abnormal body mass index, or high glucose level) and provides a reward to employees identified as within a normal or healthy range (or at low risk for certain medical conditions), while requiring employees who are identified as outside the normal or healthy range (or at risk) to take additional steps (such as meeting with a health coach, taking a health or fitness course, adhering to a health improvement action plan, or complying with a health care provider's plan of care) to obtain the same reward.

The proposed regulations re-stated that participatory wellness programs are not required to meet the five requirements applicable to health-contingent wellness programs. The proposed regulations also outlined the conditions for health-contingent wellness programs, as follows:

1. The program must give eligible individuals an opportunity to

qualify for the reward at least once per year.

2. The reward for a health-contingent wellness program, together with the reward for other health-contingent wellness programs with respect to the plan, must not exceed 30 percent of the total cost of employee-only coverage under the plan, or 50 percent to the extent the program is designed to prevent or reduce tobacco use.
3. The reward must be available to all similarly situated individuals. For this purpose, a reasonable alternative standard (or waiver of the otherwise applicable standard) must be made available to any individual for whom, during that period, it is unreasonably difficult due to a medical condition to satisfy the otherwise applicable standard (or for whom it is medically inadvisable to attempt to satisfy the otherwise applicable standard).
4. The program must be reasonably designed to promote health or prevent disease. For this purpose, it must have a reasonable chance of improving the health of, or preventing disease in, participating individuals, and not be overly burdensome, not be a subterfuge for discriminating based on a health factor, and not be highly suspect in the method chosen to promote health or prevent disease. The proposed regulations also stated that, to the extent a plan's initial standard for obtaining a reward (or a portion of a reward) is based on results of a measurement, test, or screening that is related to a health factor (such as a biometric examination or a health risk assessment), the plan is not reasonably designed unless it makes available to all individuals who do not meet the standard based on the measurement, test, or screening, a different, reasonable means of qualifying for the reward.
5. The plan must disclose in all plan materials describing the terms of the program the availability of other means of qualifying for the reward or the possibility of waiver of the otherwise applicable standard.

STATISTICS

5 lifestyle behaviors (physical inactivity, poor nutrition, smoking, alcohol use, and non-adherence to medications) and five

chronic medical conditions (diabetes, heart disease, lung disease, mental illness, and cancer) drive 75% of all deaths worldwide.

More than 60% of survey respondents in a RAND report, reported that workplace wellness programs reduced their organizations' health care costs. Soeren Mattke et al., RAND Inc. Workplace Wellness Programs Study: Final Report (Santa Monica, CA: RAND Health, 2013).

Michael Roizen, M.D., chair of the Cleveland Clinic Wellness Institute, has determined there are **five behaviors that mitigate chronic disease**:

- Walking 30 minutes a day
- Eating healthy
- Not smoking
- Having a waist size that is less than half of your height
- Drinking alcohol only in moderation.
- If an individual engages in these five behaviors, they typically spend 33% to 50% less on health care costs compared with people who have health risks.

Multiple authors published an article in the Journal of Occupational and Environmental Medicine that asked the question, "Do Workplace Health Promotion (Wellness) Programs Work?" The authors concluded that programs using evidence-based strategies produced a ROI between \$2 and \$3.60. Employees adopted healthy habits, less time away from work, and lower medical and pharmacy costs.

PREVENTION

Get Moving!

- Research consistently shows that engaging in three days of physical activity per week, totaling 150 minutes or 50 minutes per session, produces health benefits.
- Brisk walking, running, bicycling, jumping rope, and swimming are all great examples of cardio exercises.
- Start with light or moderate aerobic exercise, for short periods of time (10 to 15 minutes) with sessions spread

throughout the week to reduce your risk of injury and fatigue. Gradually build up to 50-minute sessions as your level of fitness improves.

Pump it up!

- Strength training, including lifting weights or resistance training, improves bone density and helps slow bone loss as you age.
- Weight training strengthens connective tissue, muscles and tendons. This decreases your risk of falls, sprains and strains.
- Strength training also helps prevent loss of muscle mass.
- Remember to start slowly to reduce the risk of injury and give your muscles time to rest and recover. Wait at least 48 hours before you train the same muscle group again.

Talk to your doctor before beginning a workout routine to make sure you are healthy enough for physical activity.

Talk to your doctor before beginning a workout routine to make sure you are healthy enough for physical activity. Talk to your doctor before beginning a workout routine to make sure you are healthy enough for physical activity.

Needlesticks and Sharps Fatality File

INCIDENT

Lisa Black contracted HIV and hepatitis C when she was accidentally stuck. She has a warning for other health care professionals. "Nurses need to realize that needlesticks can happen to them and that they do happen to nurses every day. The

statistics are unbelievable. When I started looking at the issue, all I could think was, this is unreal. How can it be happening this much in this country?' The reality is that it does happen, and people need to realize that it is preventable and it is not an acceptable risk."

NEED TO KNOW

Once every 39 seconds, a nurse in this country sustains a needlestick injury. While most needlestick injuries result in nothing more than a good scare, far too many of them result in serious, life-altering (and in some cases, life-ending) diseases.

Most nurses accept accidental needlesticks as part and parcel of the job. Others are optimistic that it won't ever happen to them.

Needlestick incidents are not situations that affects one person. It affects entire families.

Most cases might be low-risk, but that doesn't negate the fact families are then frightened. The psychological impact is huge."

BUSINESS / REGULATIONS

Black is on a mission to educate others: "When you figure that as an industry, nurses and other health care workers sustain in the area of 800,000 needlestick injuries every year – and not because people aren't careful, but because it just happens – ethically and morally if you know it's within your power to prevent something like what happened to me from happening, then how do you justify not doing it?"

The Needlestick Safety and Prevention Act was enacted into law, the legislative portion of the battle enacting needlestick safety programs.

The question is -the legislation sets forth guidelines, but how they will be implemented, will be done at the state level.

"This process is only going to be really successful if nurses and other health care workers get involved. My message to them is that if they want to see legislation that is most beneficial to them,

then they need to take it upon themselves to see that it gets done.”

As part of **HR 5178**, she explains, in cases where a health care facility has a choice between traditional devices and safety devices, the safety device must replace the traditional unless you can show that it is either not in the best interest of the patient or that it poses an additional hazard to the user.

Federal legislation also has emphasized that not only must the safety devices be used whenever possible, but bedside nurses should be included in the decision and selection process.

In addition to selecting safety devices, the new federal law mandates that health care facilities adopt a record-keeping program that will allow them to track the incidences of needlesticks among their employees. Employers will be required to maintain a sharps injury log, which must cover, at the bare minimum, the type and brand of device involved in the incident; the department or work area where the exposure incident occurred; and an explanation of how the incident occurred.

The information will be recorded and maintained in a way that will protect the confidentiality of the injured employees, and the log will be an important source of data for researchers to determine the relative effectiveness and safety of devices now on the market and those that may be developed in the future.

Black notes that 17 states have already independently enacted needlestick prevention safety regulations, but the federal law will take them to a new level.

This legislation requires that every exposure that occurs be recorded in one place and logged by exposure, the type and brand of device that was used, how it was used, if it has a safety feature, and if not, why.

While the government has made certain that needlestick prevention programs will be in place in every health care facility, it can't mandate that health care professionals follow those instructions.

All health care facilities also are mandated by law to provide employees with annual training on preventing bloodborne pathogens, Black suggests merging the two subjects and providing employees with training on how to use the new devices (such as syringes with retractable needles), and how to use them most effectively.

But there is the usual problem – money.

Cost is the argument against it,” Black explains. “The argument goes that it just costs too much money to enact such a program on the off-chance that a worker may sustain an injury that may or may not cause them to become infected.

For a needlestick injury that doesn’t lead to infection, the cost of treatment is somewhere in the neighborhood of \$3,000. “That covers lab work, follow-up prophylactic medications, and if it was a high-risk stick, that person will be taking some very costly medication that may or may not work,” Black points out. And, she adds, when you extrapolate that to every high-risk needlestick, “you’re talking about a lot of money.”

Take that one step further to someone who does become infected, and you’re talking about a huge monthly sum for medications and Medicare disability payments. Black, for example, says her HIV medication costs between \$2,000 and \$3,000 a month, while her hepatitis C medication is another \$2,000 a month. Add to that several thousand dollars in disability, and it costs about \$7,500 a month to keep her alive . . . and that’s provided she remains “healthy.” She recently suffered from a severe infection that put her in intensive care. The cost: \$80,000 for one week.

Compliance

OSHA always has issues with funding. So, if the enforcement is lax the odds of being caught if you don’t have a strong program in place are slim. If a facility is not in compliance, it’s up to the employees to call and report it and ask for an investigation. If that’s done, OSHA is obligated to comply, and the facility can be cited.”

Citations have a greater effect than a slap on the hand.

By and large, facilities are going to comply, but to get true compliance and the highest level of protection, have the power to anonymously report these offenders to OSHA.

Today, Black can no longer practice bedside nursing, a job which she loved and still misses. She has spent countless hours and days in the hospital and is on a strict regimen of medications. And her young children may one day find themselves without her.

STATISTICS

Statistics emerging from the Center for Disease Control and Prevention (CDC)

- There are nearly 385,000 sharps related injuries that occur annually in the U.S healthcare industry, an average of 1000 per day.
- More than 20 bloodborne pathogens have been reportedly transmitted from these types of injuries. Some may lead to severe and fatal infections such as hepatitis B, hepatitis C, or human immunodeficiency virus (HIV). In fact, about 2 percent of needlestick injuries are likely to be contaminated with (HIV).
- Projected medical and work productivity costs from sharps related injuries are estimated to be \$185.5 million per year in the U.S.
- Direct Costs ranging from \$500 to 5,000 per injury depending on the injury.
- According to the American Hospital Association, one case of severe infection by bloodborne pathogens can add up to \$1 million or more in expenditures for testing, follow-up, lost time and disability payments. The costs that are harder to quantify include stress from injury, emotional cost from fear and anxiety of contracting a communicable disease or infection, lost time from work, expenses from laboratory testing, medical treatment, and the cost of any litigation.

PREVENTION

“An ounce of prevention, will yield more than a pound of cure”

What most employers and employees need to do prevent injury from needlestick incidents in the workplace.

Employers:

- Implement the use of engineering controls to reduce needlestick injuries.
- Avoid the use of needles when there are other safe alternatives.
- Implement use of devices with safety features.
- Set priorities and strategies for needlestick injury prevention by examining local and national information about risk factors.
- Ensure proper training of employees on the safe use and disposal of needles.
- Modify work practices that have an increased risk of a needlestick injury.
- Promote safety awareness in the work environment.
- Establish procedures for and encourage the reporting of all needlestick and other sharps-related injuries.
- Evaluate the effectiveness of prevention efforts and provide feedback on performance.

Employees:

- Avoid recapping needles.
- Before beginning any procedure using needles, plan for safe handling and proper disposal.
- Help your employer select and evaluate devices with safety features.
- Use devices with safety features.
- Report all needlestick and other sharps-related injuries.
- Dispose of used needles in appropriate sharps disposal containers.
- Inform your employer of hazards from needles that you observe at work.
- Participate in bloodborne pathogen training and follow recommended infection prevention practices, including hepatitis B vaccination.

What should employees do if they have experienced a needlestick/sharps injury at work.

They should **immediately**:

- Wash wound with soap and water
 - Flush out mouth, nose, or skin with water
 - Irrigate eyes with water, saline, or sterile irrigates
 - Report the incident to your supervisor
 - Immediately seek medical treatment at the nearest ER or treatment facility.
-

Hazcom

INCIDENT

Global Manufacturing reports that Apple is eliminating use of two particularly toxic chemicals, benzene and n-hexane, from its manufacturing assembly process. The move follows on the heels of a joint publicity campaign by Green America and China Labor Watch (CLW), as reported by [Manufacturing Weekly](#), to pressure Apple into removing the toxins from the manufacturing process.

In making the move, Apple stated there was no evidence of workers being at risk in any of the 22 factories where assembly takes place by over 500,000 employees. Still, the company ordered the testing of substances at the ingredient level to ensure the two toxins are rooted out from the facilities.

Saferchemicals.org reports that Green America and CLW used petitions, with 23,000 signatures, to call attention to the issue. These petitions, along with stories by a variety of news outlets about an Apple boycott called for by Green America and CLW put the spotlight squarely on Apple.

Apple for its part, along with the announcement of banning the two

toxins, released the [Apple Regulated Substances Specification](#), a guide to the chemicals the company has on its watch list.

It would be easy to look at Apple's predicament and believe the pressure it feels is something only bigger companies have to worry about; nonetheless, the introduction to Apple's specifications document provides an important lesson to every company in the hazardous chemical supply chain, especially vendors selling to larger consumer facing companies. It reads in part:

"We require our suppliers to adhere to this Regulated Substances Specification, which describes Apple's global restrictions on the use of certain chemical substances or materials in our products, accessories, manufacturing processes, and packaging used for shipping products to Apple's customers. We derive these restrictions from international laws or directives, agency or eco-label requirements, and Apple policies—but in many cases, they go beyond the minimum required by law. And we hold our suppliers accountable by conducting factory audits, testing components with independent laboratories, and verifying the results in a lab we built at our headquarters in Cupertino, California.

"Taking precautions against or screening out chemicals of concern listed in this specification should merely be a first step. We expect our suppliers to take their own actions to understand the human health and environmental impacts of all chemicals that are used in the manufacturing process and present in materials supplied to Apple."

Essentially, Apple is saying that it's not just their responsibility to improve the chemical footprint of its products, but that it calls on and expects its vendors to be proactive in reducing the hazards posed by chemicals in the products supplied to them.

And it's not just Apple, across all industries, larger companies in the crosshairs of industry regulators and consumer groups are starting to pressure smaller companies up the supply chain to be just as attentive to chemical concerns.

In the end, it's a business decision. Not only is it bad for business to have headlines about employees exposed to, or injured by, toxic workplace chemicals, it is unproductive, less efficient, and in the end more costly to use highly hazardous chemicals when safer alternatives are available.

Furthermore, those companies that are taking an aggressive approach to sustainability and greener products are being rewarded by consumers in the marketplace.

NEED TO KNOW

You work with chemicals that are hazardous and harmful to your overall – health. But you must be protected from injury or illness along with your co-workers.

The chemical manufacturer or importer prepares Material Safety Data Sheets (MSDs) to enable you to know how to handle chemicals, what protective equipment you need to use and, finally, what to do if something goes wrong.

WHAT'S THE DANGER?

Exposure to chemicals in your work can have the following effects:

- Cause illness / injuries
- Toxic effects on a long-term impact basis.
- Negatively limit your ability to work.

There can be even environmental problems with chemicals like solvents. Solvents can cause fires and explosions if not handled properly.

BUSINESS / REGULATION

In many work environments, dangerous chemicals are constantly present to allow the completion of different types of tasks. To help ensure that the chemicals are able to be used safely for the facility, employees, and surrounding environment, **a set of hazardous communication standards were established.**

The [Hazard Communication Standards](#) (HCS), or HAZCOM for short were

made to make it faster and easier for people to get the information they need about specific chemicals. This is critical because when there is a leak or other issue, being able to take the right action, and being able to take it quickly, is critical for everyone's safety.

All companies that use dangerous chemicals need to make sure that the HAZCOM standards are followed by employees, contractors, and anyone else working in the area.

Global Recognition

The HAZCOM requirements have been developed over the course of many years to help improve workplace safety. Today, the standards that are in place have been adopted by many countries around the world. In the United States, OSHA has aligned their communication standards with the **Globally Harmonized System of Classification and Labeling of Chemicals** ([GHS](#)).

In Canada, the Workplace Hazardous Materials Information System is used, and in Europe, the European Agency for Safety and Health at Work focuses on ensuring clear communications are used at all facilities. Having as many facilities around the world following the same type of communications is essential for keeping everyone safe at work.

OSHA's HAZCOM Requirements

OSHA has made the HAZCOM standards mandatory for just about all types of businesses that exist in the United States. There are a number of different requirements that need to be followed in order to avoid citations.

Scope

OSHA identifies exactly which companies must incorporate these standards, and to what extent. Due to the nature of the standards, and the differences in types of facilities, only certain aspects will be applicable in each situation.

Chemical manufacturers and importers need to classify the specific hazards of all the chemicals that they produce or import. All of the employees who work with or around these chemicals also need to be informed about the risks associated with exposure.

In situations where employees are only responsible for transporting or storing chemicals, the requirements are less strict. This is because the containers holding the chemicals are never opened, which greatly reduces the overall risk associated with working with them. Employees still must be trained sufficiently on how to respond to an accidental spill.

Following OSHA Standards

For businesses operating in the United States, it is important to comply with **OSHA's [standards related to HAZCOM](#)**. **OSHA** works hard to make sure all companies have everything they need to remain in compliance, as this will help to improve workplace safety.

Companies that need to become compliant can find resources available from **OSHA**, and depending on the situation, can often get direct help and support from **OSHA**. They offer a variety of **HAZCOM** solutions, most of them free of charge, to help improve safety and ensure compliance with all applicable laws and regulations.

Making the effort necessary to become, or remain, compliant is not only important for avoiding penalties, but also for ensuring everyone in the facility is safe. Programs such as this one from **OSHA** have helped to dramatically reduce the number of workplace accidents, injuries, and fatalities associated with exposure to chemicals over the years.

Reducing or eliminating these issues helps to ensure that a facility is able to remain up and operational as much as possible, and reduces the expenses associated with an unsafe work environment.

STATISTICS

The new standard covers over 43 million workers who produce or handle hazardous chemicals in more than five million workplaces

across the country. The modification is expected to prevent over 500 workplace injuries and illnesses and 43 fatalities annually.

Hazards

The **OSHA Hazard Communication Standard (HCS)** is intended to ensure exposed these workers and their employers are informed of the identities of these hazardous chemicals, associated health and safety hazards, and appropriate protective measures. The HCS covers some 650,000 hazardous chemical products.

Over 30 million American workers are exposed to hazardous chemicals in their workplaces. **The Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (HCS)** is intended to ensure that these workers and their employers are informed of the identities of these hazardous chemicals, associated health and safety hazards, and appropriate protective measures. The HCS covers some 650,000 hazardous chemical products found in over three million establishments.

Since the HCS was adopted 20 years ago, the availability of chemical information in workplaces has increased dramatically, and the provision of labels and MSDSs with products has become a standard business practice. Surveys have shown that employers rely on MSDSs to select less hazardous substitutes, as well as to help them identify appropriate protective measures. In addition to these workplace uses of hazard information, MSDSs have evolved into sources of information on other aspects of chemical use.

PREVENTION

Written Program

Companies that have dangerous chemicals stored and/or used on site also need to create a written hazard communication program. This program needs to be customized to the specific facility and should include information such as:

- **Chemicals**– Identify which chemicals are used in the facility. This would include any chemicals that are present at any time, even if they aren't always being used.

- **Safety Data Sheets**– The program has to have safety data sheets (SDS) on each of the chemicals listed.
- **Warnings**– Warning information about all of the chemicals so that employees can quickly see what risks are associated with exposure.
- **Response Plans**– Instructions on what should be done in the event of exposure or an accident. This would include details on what to do for anything ranging from basic skin exposure to a full chemical spill or any other possible situation.

Labels

Any containers or machines that use chemicals need to be labeled with specific information about the chemicals being used. In America, these labels must be written in English with clear fonts. Employers may add additional labels in other languages as appropriate for their work environment.

The labels can either be pre-printed and applied to the containers that are delivered to the facility, or printed on an [industrial label printer](#) in the facility itself. The labels must be applied to the containers as soon as is reasonably possible.

HAZCOM Training

Having the information available in the facility is not sufficient for OSHA compliance. Facilities must also provide all employees with training that covers the safety hazards, and responses necessary if there is a spill or other accident.

This training should also explain how to read warning labels, safety data sheets, and any other information that is on site and part of the hazardous communication standards. If there are any additions or changes to the type of chemicals used on site, employees should be trained on those specific chemicals prior to their arrival if possible.

Providing annual refresher training will also help to ensure the facility is kept as safe as possible. These annual trainings can be conducted as one large group, or given to individual employees

by their direct supervisors. Tracking the training as it is given is important for OSHA compliance as well.

Prevention Reminders / Overview

- Determine which employees are affected. Clerical workers, for example, need to know that a hazard communication program is in place, but since they do not use the chemicals directly, they may not need to know the details of the hazards associated with chemicals in use.
- Review the requirements of OSHA's Hazard Communication Standard (or applicable Canadian law). Become familiar with the key elements of the standard, so that you can explain why this program is necessary and useful.
- Review the inventory of hazardous chemicals in your facility. Be able to explain the hazards of chemicals to the employees who use them. If you have several chemicals of the same class, such as solvents or corrosives, explain the hazards of these materials by class.
- Review the labels on the chemical containers in use in your facility. Be sure that they contain the proper information such as the name of the chemical, the generic name of the chemical, the hazards of the chemical and, if required, the target organ affected.
- Make sure that you can tell your employees where they can readily find a copy of your company's written hazard communication program. Also, make sure they know how to find a material safety data sheet. If your material safety data sheets are online, make sure employees know how to access them this way, as well.
- Use this training opportunity to reinforce the use of required personal protective equipment (PPE). Reinforce your company's policies about personal protective equipment, and let employees know about the next training session on the use of PPE.
- Review your company's emergency procedures. Although you are trying to prevent injuries and incidents, you want your employees to be ready just in case the unexpected happens. Make sure they know how to locate emergency contact numbers,

as well.

Most Frequently Cited Provisions

- Employers shall maintain any safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible during each work shift to laboratory employees when they are in their work areas.
 - Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and safety data sheets to convey the hazard information to their downstream customers.
 - All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals appropriately.
 - Chemical manufacturers and importers are required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
-

Near Miss

INCIDENT

An event or incident in a Near-Miss lethal accident case are in the of a Tertiary Care Hospital.

Case History:

A fifty-five-year-old man was taken up for MRI of the lumbosacral spine for detecting metastases from bronchogenic carcinoma of the lung. He was accompanied by his son a government security officer) who was allowed with him for assistance in the MRI scanner room. Both the patient and accompanying person were verbally asked to

remove all ferromagnetic unsafe objects, from their possession. The accompanying person wore a jacket with a pistol in the inside pocket, which was inadvertently forgotten and not removed. As a result, when the patient's son neared the magnet, he felt a strong pull towards the magnet of the scanner. He was frightened and quickly pulled off his jacket which flew to the magnetic bore where it was lodged. The examination was abandoned at the time. Fortunately, the jacket could be removed along with the pistol by a careful and sustained pull, without quenching the magnet without damage to all the persons in the magnet room, computer room, or the equipment. Otherwise, quenching the magnet would have been required as suggested by engineering department.

In the case under discussion, although the pistol of the officer was dual locked, the magnetic pull could have unlocked the pistol and a potentially fatal accident could have occurred.

NEED TO KNOW

A near miss is a chain of events that very nearly results in property damage, serious injury, or death, but not quite. The official definition of a near miss is: "an unplanned event that had the potential to result in an injury or physical damage (but did not)."

A near miss is not a lucky break. A near miss is an indication of a problem, either systematic or mechanical, that has very real potential for hazard. It's a red flag calling for change to ensure that a similar situation in future doesn't result in worker injuries or deaths.

A near miss can occur in virtually every industry. Many incidents of property damage, injury or death can be predicted by near misses. Engaging a near miss as a preemptive problem-solving opportunity is crucial.

BUSINESS / REGULATIONS

The conclusions set out very clearly the limitations and shortcomings of the policies and procedures of MRI in place at the time incident described.

- Faulty design and consequent improper zoning of the MRI section of the hospital,
- unrestricted access of patients and their attendants,
- incomplete screening partly due to
- inadequate training of the personnel, including doctors and technologists, and
- absence of signage and posters.

These conclusions drawn about the incident reveals a system of near-miss reporting.

STATISTICS

- According statistics provided by Safety Unlimited INC, about 3 billion “close calls” or “near misses” occur annually in the U.S workplaces. Statistics show that for every 300 near misses, 29 minor injuries occur, along with one injury serious enough to keep the injured out of work.
- Report by Houston Business Bureau, Cll and Exxon Chemical estimates about 1,000 near miss events for every fatality. According to the Bureau of Labor Statistics, 4,836 people died in workplace accidents in 2015 – which equates to nearly five million near misses.

Even though 85.66% of companies track near misses and 71% of employees say safety training was part of their new employee orientation, the vast majority of near misses go unreported.

- The National Safety Council provided a recent survey that 50% of workers said they were afraid to report safety issues.
- The National Safety Council survey said 76% of workers agreed with management that they care about employee safety.
- Researchers estimate that near misses cost organizations over 6 trillion dollars which is twice as much as serious incidents or fatalities.

PREVENTION

Specifically, the incident was an eye opener regarding potential adverse events lurking in the relatively safe MR environment and

provides an opportunity to rectify the inadequacies in MR safety. It is recommended that guidelines should be followed, MR safety manual developed and used. Adequate screening and warning systems should be established. A system of reporting of the near-miss/adverse incidents should be established in the hospital.

Generally, several solutions can be put forward to achieve a culture-based safety system:

- Define expectations that all employees report unsafe conditions or perceived risks
- Provide employees with safety training
- Provide measurement for how near-miss reporting has improved safety performance
- Recognize and reward employees and crews for pro-active safety actions.
- Close call incidents trigger the fact that something is seriously wrong. They allow us the opportunity to investigate and correct the situation before the same thing happens again and causes an injury or death.
- Experience has proven that if the causes of accidents are not removed, the potential for an accident will occur again and again. Unfortunately, a typical story told after many accidents is; "Yeah, that happened to Jim as well – just last week!"
- Why are close call incidents not reported? Typical reasons are: fear of reprimand or repercussions, red tape, not being aware of their importance in controlling future accidents, embarrassment, the spoiling of a safety or production record or lack of feedback when similar issues have previously been raised.
- If you keep silent about a close call – you may avoid having to deal with it. But try to explain that to a co-worker who ends up in a wheelchair because of a hazard that you knew existed but were too proud to talk about.
- Controlling close call incidents is really the secret to reducing the overall frequency of accidents. One survey of 300 companies discovered that for every 600 close call incidents, they had 30 property damages, 10 minor accidents

and 1 very serious accident.

- Close call incident reporting is a very valuable tool in helping us all manage an effective safety program.
 - But the vital part is to apply corrective action immediately. The only way this can be done is if a close call is reported immediately after it has occurred. This way we can learn as much as possible.
-

Infection Control Fatality File

PREAMBLE

Pathogens

- Infection is caused by pathogens ('bugs') such as bacteria, viruses, protozoa or fungi getting into or onto the body.
- It can take some time before the microbes multiply enough to trigger symptoms of illness, which means an infected person may unwittingly be spreading the disease during this incubation period.

Infection Control

- Infection control in the workplace aims to prevent pathogens from coming into contact with a person in the first place.
- Employers are to provide a safe workplace for their employees, including the provision of adequate infection control procedures and the right equipment and training.

Transmission of infection

Infectious agents can be spread in a variety of ways, including:

- breathing in airborne germs – coughs or sneezes release airborne pathogens, which are then inhaled by others
- touching contaminated objects or eating contaminated food – the pathogens in a person's faces may be spread to food or

other objects, if their hands are dirty

- skin-to-skin contact – the transfer of some pathogens can occur through touch, or by sharing personal items, clothing or objects
- contact with body fluids – pathogens in saliva, urine, faces or blood can be passed to another person's body via cuts or abrasions, or through the mucus membranes of the mouth and eyes.

Assumption of risk

The basis of good infection control in the workplace is to assume that everyone is potentially infectious. Proper procedures have to be followed at all times. Every workplace should have an appropriate first aid kit, with at least one staff member trained in first aid. Equipment such as gloves, gowns, eye goggles and face shields should be provided if necessary.

INCIDENT

Johns Hopkins School of Medicine researchers recommend that funeral home workers take the same precautions as medical workers to prevent transmission of the sometimes-fatal disease.

The 35-year-old dead man had AIDS as well as an active infection of tuberculosis, which is transmitted by tiny particles of respiratory secretions that can hang in the air for hours.

DNA fingerprinting established that the embalmer's TB came from the dead man, said researcher Dr. Timothy Sterling.

During embalming, the blood is drained and preservative fluids are injected into the body under pressure.

Secretions sometimes become airborne when fluids gurgle through the corpse's mouth and nose or when embalming fluids are dumped down a drain.

The embalmer reportedly had 15 years of experience, always wore gloves, and usually wore a mask.

He was treated with antibiotics for six months and is now

tuberculosis-free.

Around the world, 2 million people die of TB annually, and up to 8 million new cases of it are diagnosed each year, according to John Hopkins University.

OSHA recommends only that hospital workers and those performing autopsies wear gloves and masks when handling patients or bodies.

BUSINESS / REGULATION

The healthcare and social assistance sector is among the largest of the industrial sectors in the U.S. As of 2013, there were 18.6 million employees in this sector, 11.7 million of those are classified as healthcare workers (HCWs). HCWs work in a great variety of settings. A large proportion of these HCWs provide direct patient care (i.e., they provide healthcare services with face-to-face or hands-on contact with patients) and have occupational exposure to infectious agents during the performance of their duties. Depending on the workplace setting and the job tasks, workers performing ancillary tasks (e.g., laboratorians, medical examiners, medical waste handlers) also have occupational exposure to infectious agents.

Employees in health care and other high-risk environments face long-standing infectious disease hazards such as TB, influenza and MRSA, as well as new and emerging infectious disease threats. **OSHA is considering the need for a standard to ensure that employers establish a comprehensive infection control program and control measures to protect employees from exposures to infectious agents that can cause significant disease. Although the [Bloodborne Pathogens standard](#) has been very effective in protecting workers, it does not address infectious diseases transmitted by other routes (e.g., contact, droplet and airborne).** In addition, OSHA believes that a standard is needed because transmission-based infection control guidelines, though readily available, are not consistently followed.

The Agency has thus far published an Infectious Diseases Request for Information (RFI), held stakeholder meetings, conducted site

visits, and completed the SBREFA process. Feedback from these sources helped the Agency to further refine its development of a Notice of Proposed Rulemaking (NPRM) regarding an Infectious Diseases standard. In the Spring, 2017 Regulatory Agenda the ID NPRM has been placed under long term action.

STATISTICS

TB in the United States:

- **9,025:** number of reported cases of TB in the United States in 2018 (a rate of 2.8 cases per 100,000 persons)
- **Up to 13 million:** estimated number of people in the United States living with [latent TB infection](#)
- In 2017, the most recent data available, 515 deaths in the United States were attributed to TB. This is a decrease from 528 deaths attributed to TB in 2016.

▪ **TB disease in the United States is most common among people who were born in countries with high rates of TB.**

- In 2018, a total of 70.2% of reported TB cases in the United States occurred among non-U.S.-born people.

The percentage of TB cases that are drug resistant has remained stable for the last 20 years.

TB bacteria may become resistant to the drugs used to treat TB. This is called drug-resistant TB and means that the drug can no longer kill the bacteria. Drug-resistant TB poses a serious threat to our ability to treat and control TB.

- In 2018, the most common form of primary resistance was isoniazid (INH) resistance. INH resistance occurred in 605 cases (9.4% of cases with drug susceptibility results).
- Multidrug-resistant TB (MDR TB) is resistant to at least isoniazid (INH) and rifampin (RIF). There were 98 MDR TB cases (1.5% of cases with drug susceptibility results) in 2018.
- Extensively drug-resistant TB (XDR TB) is resistant to INH

and RIF, any fluoroquinolone, and at least three of the injectable second-line anti-TB drugs. There was 1 case of XDR TB in the United States in 2018.

- The number of drug-resistant cases in 2018 decreased by 30 cases from 2017. However, the percentage of TB cases that are drug resistant has remained stable for the last 20 years.

Approximately half of all TB cases were reported from four states.

In 2018, among U.S. states, the majority of TB cases continued to be reported from 4 states: California (23.2%), Texas (12.5%), New York (8.3%), and Florida (6.5%).

A total of 9,421 TB cases (a rate of 2.96 cases per 100,000 persons) were reported in the United States in 2014. Both the number of TB cases reported and the case rate decreased; this represents a 1.5% and 2.2% decline, respectively, compared to 2013. The most recent State by State surveillance report, Reported Tuberculosis in the United States, 2014, includes data from 60 reporting areas (the 50 states, the District of Columbia, New York City, Puerto Rico, and seven other U.S. jurisdictions in the Pacific and Caribbean). Since the 1992 peak of TB resurgence in the United States, the number of TB cases reported each year has decreased, however, according to the National TB Controllers Association, TB cases have become more complex to manage, with more medical complications and associated conditions, including diabetes. A significant number of cases are resistant to one of the major first line medications, INH, making treatment more complicated.

Public health investigators have estimated that greater than 90% of persons reported to have clinically apparent disease are those who have harbored tuberculosis (TB) infection for at least a year or more; the remaining 10% have an immediate progression of a recently acquired infection (Centers for Disease Control (CDC), unpublished data). The number of persons with latent infection in the United States is estimated to range from 10 million to 15 million (CDC, unpublished data).

As of this writing, the Coronavirus is estimated to have caused the deaths of 600 people in China, and over 24,000 have been infected with it in more than a dozen countries. So far, 10 individuals in the U.S. have been found to have contracted it, while hundreds were being tested for the disease in 26 states. On Jan. 30, the World Health Organization (WHO) declared the coronavirus outbreak a global health emergency,

By contrast, more than 8,200 Americans have died of the flu so far this winter, and 34,000 died of the flu last year, which was not considered to have been a particularly severe year for that illness. WHO has estimated the flu kills up to 650,000 people per year worldwide?

PREVENTION

Infection control procedures relating to cleanliness in the workplace include:

- regularly washing the floors, bathrooms and surfaces (such as tables and bench tops) with hot water and detergent.
- periodically washing the walls and ceilings
- thoroughly washing and drying mops, brushes and cloths after every use – drying mops and cloths is particularly important, since many pathogens rely on moisture to thrive
- using disinfectants to clean up blood and other spills of bodily fluids
- when using disinfectants – always wearing gloves, cleaning the surfaces before using the disinfectant, and always following the manufacturer's instructions exactly
- spot cleaning when necessary.

Body fluid/spills

Examples of body fluids include blood, saliva, urine and faeces. When dealing with spills of body fluids, infection control procedures need to be followed carefully. Always:

- Isolate the area.
- Wear gloves, a plastic apron and eye protection, such as goggles.

- Soak up the fluid with disposable paper towels, or cover the spill with a granular chlorine-releasing agent for a minimum of 10 minutes. Scoop up granules and waste using a piece of cardboard (or similar), place in a plastic bag and dispose of appropriately.
- Mix one part bleach to 10 parts water and apply to the area for 10 minutes.
- Wash the area with hot water and detergent.
- Dry the area.
- Dispose of paper towelling and gloves appropriately.
- Wash your hands.
- Rinse any contaminated clothing in cold running water, soak in bleach solution for half an hour, then wash separately from other clothing or linen with hot water and detergent.

To dispose of infectious waste that has been contaminated with blood or other body fluids:

- Wear heavy duty gloves.
- Place waste in plastic bags marked 'infectious waste'.
- Dispose of waste in accordance with [EPA guidance](#).

Infection control procedures when handling needles and other sharp contaminated objects include:

- Never attempt to re-cap or bend used needles.
- Handle by the barrel.
- Place in an appropriate puncture-proof container (that meets the Australian and New Zealand Standards AS 4031:1992 and AS/NZS 4261:1994) – this will be yellow, labelled 'Danger contaminated sharps' and marked with a black biohazard symbol.

If you come in contact with blood or body fluids:

- Flush the area with running water.
- Wash the area with plenty of warm water and soap.
- Report the incident to the appropriate staff member.
- Record the incident via the Disease/Injury/Near Miss/Accident (DINMA) reporting procedure.
- Seek medical advice.

Facilities and Maintenance

INCIDENT

A hospital maintenance worker did some plumbing on a leaking sewer pipe without wearing a complete outfit of personal protection equipment. The line broke and he was partially soaked in sewer water. He lived for days in fear until medical testing assured him that he apparently had not caught a disease from being exposed to bodily-fluid pathogens; he was lucky.

NEED TO KNOW

A maintenance worker, is responsible for a lot – providing a steady flow of water, heat and cooling as well as upkeep of every part of the workplace. As a result, you need to know about a broader range of safety issues than probably anyone else who works in the facility.

These workers are in all areas of the facility encountering hazards from power equipment to paint vapors and are exposed to injury from electrocution, falls, chemical splashes, confined spaces and other dangers.

The [National Safety Council](#) reports that 104 million production days are lost due to work related injuries. The causes of workplace injuries are not as outlandish as you might think. They can include overexertion, contact with objects and equipment and slips, trips, and falls.

The facilities team is the front line for inspecting and fixing building issues and keeping the entire company safe. However, it is also equally as important to put the procedures in place to keep the team itself safe.

Exposure to asbestos is significant. This exposure can be the result of performing tasks, such as repairing pipes, stringing

telephone cable or installing new electrical wires.

The asbestos hazard

Employees who work in areas that contain asbestos, but who do not remove asbestos, must be trained as associated workers. If you are an associated worker, you need initial training in the hazards of asbestos and the ways to protect yourself and others from exposure. Included in this training, which must be repeated annually, will be methods on the use of respirators, cleaning up loose asbestos and establishing protective zones to prevent exposure to others in the area. Typically, asbestos removal on a large scale is performed by outside contractors who have been specially trained on how to perform this work in a safe manner.

Exposure

The work of maintenance employees carries them throughout the facility. Maintenance workers in a healthcare facility, for example, travel through patient care areas and into Maintenance Workers Must Maintain Safety laboratories. They have the potential of exposing workers to a number of hazards, such as infection, vapors emitted from glue in floor tiles or the vapors of paint used to freshen up walls.

Communicate the hazards

Under the "Hazard Communication Standard," as dictated by the Occupational Safety and Health Administration, an important obligation exists. This obligation requires maintenance staff to discuss hazards with managers and other workers so they can be prepared to take action to protect themselves.

Maintenance workers may be exposed to a variety of chemicals used in their tasks or used in the areas they work in. Not only must the maintenance department share information about the work it performs and the material it uses, workers in other departments must warn maintenance employees about the potential hazards they will be exposed to.

BUSINESS / REGULATIONS

According to OSHA's website, the Occupational Safety and Health Administration (OSHA) was created by congress "to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education, and assistance." They have established common sense standards, law enforcement actions, and compliance assistance. These programs have prevented injuries and illnesses, and saved lives.

Maintenance workers are among the many workers that are exposed to workplace hazards on a daily basis. OSHA aims to protect them by providing access to information for vulnerable workers in high-risk jobs. Information ranges from raising awareness of job hazards to safe chemicals handling and promotion of workplace best practices. Under OSHA law, it is an employer's responsibility to provide a safe and healthful workplace for its workers.

OSHA Requirement	Maintenance Action
Control of hazardous energy (lockout/tagout)	Use loto software to develop proper procedures for each piece of equipment where hazardous energy is a concern
Restore all fire detection systems and components to normal operating conditions as promptly as possible after each test or alarm	Assure availability of any necessary spare devices and components that are normally destroyed during testing
Ensure that powered industrial truck operators are competent	Conduct any training under direct supervision of persons who have knowledge, training, and experience, and only in locations where other employees will not be exposed to danger

Enforcement

Carrying out OSHA's mission requires enforcement. Inspections are carried out without advance notice to employers. These can be done via telephone, onsite, or fax. Trained compliance officers inspect for imminent danger, fatalities, hospitalizations, worker complaints, specific hazards, and/or follow up inspections.

Workers or representatives of workers may file complaints to OSHA when they believe there is a serious hazard in the workplace or their employer is not compliant with OSHA standards. It is a violation of OSHA for an employer to retaliate against a worker that files a complaint.

When inspectors find violations onsite, OSHA may issue citations or fines to employers. Citations include methods that an employer may use to fix a problem and the date the corrective actions must be completed by.

STATISTICS

The following information is provided by the [Occupational Safety and Health Administration \(OSHA\)](#).

- 4,821 workers were killed on the job in 2014.
 - On average, more than 92 a week or more than 13 deaths every day.
 - Worker deaths in America are down on average, from about 38 worker deaths a day in 1970 to 13 a day in 2014.
- Fatal work injuries involving contractors accounted for 17 percent of all fatal work injuries in 2014.
- One in five worker deaths in 2014 were in the construction industry.

[Grounds maintenance](#) workers accounted for 244 workplace fatalities in 2017, a small decrease from the previous year at 247. This was still the second-highest total since 2003. Falls from trees accounted for a total of 36 deaths and 35 more were as a result of being [struck by a fall tree/branch](#).

A total of 1,142 grounds maintenance workers (GMWs) were fatally injured at work during 2013–2018, an average of 190 each year. GMWs accounted for 3.4% of all occupational fatalities, and 31% of those GMWs were Hispanic or Latino. Approximately 83% of the Hispanic or Latino GMWs who died were born outside the United States. In 2008, approximately 1.52 million persons were employed as GMWs, constituting 1.0% of the U.S. workforce. During 2003–2007, an average of 13.3 per 100,000 employed GMWs died each year, compared with an overall rate of 4.0 fatalities per 100,000 U.S. workers. The rate of on-the-job fatal injuries among GMWs has remained elevated relative to other workers for >20 years. This report characterizes events leading to GMW fatalities and differences in fatality characteristics across demographic groups among GMWs, based on an evaluation of 2003–2008 data from the U.S. Department of Labor’s Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) program. The report also identifies workplace interventions that might reduce the incidence of fatal injuries. Major events leading to GMW occupational fatalities included transportation incidents (31%), contact with objects and equipment (25%), falls (23%), and traumatic acute exposures to harmful substances or environments (e.g., electrocution and drowning) (16%). To reduce the incidence of such fatalities, employers, trade and worker associations, and policy makers should focus on effective, targeted workplace safety interventions such as frequent hazard identification and training for specific hazards. Diversity among the populations of workers requires use of culture- and language-appropriate training techniques as part of comprehensive injury and illness prevention programs.

PREVENTION

There is a significant role for maintenance workers in safety compliance.

The role of maintenance in safety compliance

Establishing a safe and healthy work environment can substantially reduce the amount and severity of workplace injuries and illnesses. A comprehensive program that includes management

support, worker cooperation, hazard identification, hazard prevention, education and training, and program evaluation/improvement is key to maintaining a safe and healthful workplace.

Here is an overview of those these elements:

- **Management commitment and employee involvement:** State and define clear and specific worksite policies to facilitate clear understanding of onsite personnel; provide top level leadership involvement when implementing programs
- **Worksite analysis:** Conduct baseline surveys for safety and health and periodic update surveys; analyze injury and illness data trends over time to help identify root causes and prevention measures
- **Hazard prevention and control:** Establish work practices and policies early and ensure understanding and compliance; keep facility, equipment, PPE's in proper condition; plan and prepare for emergencies
- **Safety and health training:** Training helps identify responsibilities of both management and employees to promote accountability and compliance; educational programs should be designed to ensure understanding and awareness of hazards and proper methods of avoiding them

PERSONAL RESPONSIBILITY OF MAINTENANCE WORKERS ARE:

Wear the gear

Face shields, water-repellant boots and coveralls are part of your protection against a sewer spill. From safety-toed boots to hardhat, you need personal protection equipment (PPE) suitable for each task. Pulling nails requires a different set of gloves than cleaning up a chemical spill. You need to have safety glasses and wear them, as well as wear earplugs or earmuffs when needed.

Hazard communication

If a department or laboratory in the facility uses chemicals, make sure you know where and what the chemicals are. Read the material safety data sheet for each chemical you use, and make sure you

know where to find the MSDS fast in an emergency.

Electrical

Obey signs warning of any electrical hazard. Don't work with electricity if not qualified to do so. Don't stand on an aluminum ladder when working near electrical wiring.

Lock out

When working with power equipment and power sources, beware of unexpected release of energy. The lockout/tagout system protects you and others, and safety laws require it.

Beware asbestos

You may encounter asbestos in an older facility while stringing telephone cable or installing electrical wires. Likewise, renovations may spill loose asbestos. Employers should hire outside contractors for large-scale removal of asbestos. Even if you do small-scale removal, you need special training and authorization. Learn how to establish a protective zone so others are not exposed either.

MORE PREVENTION:

- The most important quality when choosing safety equipment is if your employees want to actually use and wear it. If they don't like the way it fits or feels, employees will be less likely to use the equipment and therefore will be more likely to put themselves in danger.
- Safe habits can slip, so training sessions and talks should occur individually when people start, and team-wide throughout the year – such as at the start of each season. If any procedures change, new equipment is introduced, or if an injury occurs, a safety training should be scheduled for the entire team immediately
- employees that have been working at the same facility for some time may feel more comfortable on the job and might relax their commitment to safety equipment and procedures.

Even the best trained and equipped team needs to be monitored to ensure that workers are wearing what they should be wearing.

- Maintaining employee safety might seem like an overwhelming job, but as you can see facilities managers can prevent all types of workplace injuries. All you have to do is ask the right questions, provide the right tools, and always stay vigilant.
-

Excavation and Trenching

INCIDENT

Carlos Moncayo, a 22-year-immigrant from Ecuador. He died on April 6 when a 13-foot deep trench he was working in collapsed at a New York City construction site. Inspectors repeatedly had warned contractors supervising the site that the trench was an imminent hazard because it was not properly shored up. Lacking support walls, the trench eventually did collapse. Moncayo was buried up to his neck and crushed to death by thousands of pounds of dirt.

On August 5, the Manhattan district attorney indicted two companies and two supervisors for causing Moncayo's death. Harco Construction, Sky Materials, foreman Wilmer Cueva and site superintendent Alfonso Prestia have been charged with manslaughter, negligent homicide and endangerment.

NEED TO KNOW

An excavation is any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal. Trench is a narrow excavation (in relation to its length) made below the surface of the ground.

In general, the depth is greater than the width.

Excavations can be any size: wide, narrow, deep, or shallow.

Dig a hole in the ground and you have made an excavation.

A trench is an excavation, too, if it isn't more than 15 feet (4.5 meters) wide at the bottom. And, if you install forms or other structures in an excavation that reduce its width to less than 15 feet, measured at the bottom, the excavation is also considered a trench.

Most regulations require that if you work in an excavation that is five feet deep (or deeper), your employer must protect you from trench collapse, cave-ins and other trenching and excavation hazards. If a competent person determines there is a potential for an excavation to cave-in, you must be protected regardless of its depth.

BUSINESS / REGULATIONS

In an investigation, OSHA found that the project's general contractor, Harco Construction LLC of New York City, and Moncayo's employer, subcontractor Sky Materials Corp. of Maspeth and Calverton, did not provide cave-in protection for the trench or support or brace a section of undermined and unsupported sidewalk to prevent it from collapsing into the trench.

"Carlos Moncayo was a person, not a statistic. His death was completely avoidable. Had the trench been guarded properly against collapse, he would not have died in the cave-in," said Kay Gee, OSHA's area director in Manhattan.

"Managers from Harco and Sky Materials were aware of these deadly hazards and did not remove employees from the trench, even after warnings from project safety officials. This unconscionable behavior needlessly and shamefully cost a man his life."

OSHA issued each employer two citations for willful violations of workplace safety standards and assessed fines of \$140,000 – the maximum fines permitted – for each company.

In addition to the OSHA citations, officials from both companies

were indicted for manslaughter, among other charges on Aug. 5 in New York State Supreme Court.

OSHA further opined.

Construction work hazards are well-known, and so are safeguards to prevent death and injuries.

Employers must provide a workplace that allows employees to return home safely at the end of a day.

STATISTICS

In 2003, OSHA conducted an investigation because there were 48 trench fatalities.

Because of these steps with more information of trench hazards and stepped up enforcement the annual trench fatalities declined. But fatalities still occur.

The results of OSHA's investigation are useful in understanding why trench fatalities **still occur today** and how to avoid them.

1. Main Reason

1. Trenches collapse because they are not properly protected.
2. Protective systems were properly employed in only 24 percent of the trenches. In the remainder, a protective system was either improperly used (24%), available but not in use (12%) or simply unavailable (64%).

2. Competent Person

Further, despite the fact that environmental conditions were a contributing factor in 68 percent of the fatalities, the competent person was not onsite when the fatality occurred 86 percent of the time. Most of the time (65%) the employer had not identified the soil type even though soil type is a factor in trench cave-ins.

3. Mondays

Also, a disproportionate number of fatalities (36%) occurred on Mondays, probably because rain or other factors changed conditions

over the weekend. Under OSHA regulations, the competent person must inspect trench work in progress before each shift and after any changes in conditions.

4. Schedule/Deadlines Times

The OSHA investigations showed that schedule time was more important than safety in 88 percent of the incidents. Seventy-two percent of the fatalities occurred in trenches less than nine feet deep. Only nine percent occurred deeper than 15 feet.

5. Trades/Fatalities

The most commonly killed employees were construction laborers (53%), with plumbers and pipe fitters following next at nine percent. Most (58%) were killed while installing pipe.

6. Nationalities/Fatalities

Fifty-six percent of these fatalities were Hispanics, and 52 percent were foreign-born. For 44 percent, Spanish was their primary language. At least 30 percent had been working for their employer for less than a year, and most (59%) worked for a subcontractor.

7. Union vs Nonunion

Only six percent were union members. Since, nationwide, about 20 percent of construction work is union, the expected rate of union fatalities would be near 20 percent. The lower rate suggests that union jobs are safer, that supervisors and workers on union sites are better trained and that the union offers the kind of protection that workers need to speak up about safety issues on the worksite.

8. Written safety/health program and safety training

Just over half the employers had a written safety and health program, but, of these, only 40 percent covered trenching. Sixty-five percent provided no trench safety training. Most employers (71%) had never been inspected by OSHA, but 21 percent had been previously cited by OSHA for trench safety violations.

9. Type of worksite/Company size

About three in every four fatalities occurred at residential worksites. Most companies were small; 42 percent had fewer than ten employees. Though, typically, five or less workers were present on the site when the incident occurred, most of the projects (52%) involved contracts worth \$100,000 or more.

PREVENTION

The following is a 10 Point Work Plan for Excavation and Trenching for managing and maintaining safe excavation work.

1. Regulatory Requirements

All employers must provide a workplace free of recognized hazards that may cause serious injury or death. As a supervisor you must understand and follow regulatory requirements for trenching and excavation work.

2. Designate Competent Person/Persons

A competent person is someone designated by the employer, who can identify existing and predictable hazards or working conditions which are hazardous or dangerous, and who is authorized to take prompt corrective measures to eliminate them.

3. Determine Soil Type

Excavation work is dangerous, and a hazard assessment must be done before any excavation or trenching work is started. This assessment begins by determining the type of soil. A competent person must determine the soil type using visual and manual tests.

The entire excavation site, including soil adjacent to the site, will be checked for tension cracks, indications of layered geologic structuring on the open side of the excavation, signs of bulging, boiling, or sloughing, as well as signs of surface water seeping from the side of the excavation or from the water table.

Moisture content also affects soil strength. Once opened, the moisture content of the soil begins to change almost immediately.

This can affect the strength of the walls. The longer an excavation is left open the greater the risk is for cave-in.

4. Identify and Remove Sources of Vibration

Vibrations from nearby equipment, machines, vehicle traffic, and operations such as earth moving, compactions, pile driving, and blasting can all affect the stability of the excavation and contribute to the collapse of excavation and trench walls.

Place barricades to keep unnecessary equipment out of the excavation area

5. Location of Spoil Piles

Excavated soil, equipment and other material located next to an excavation puts pressure on the excavation's walls and can lead to cave-in. It can also lead to equipment or soil falling into the excavation and onto workers.

Keep soil and equipment at least 1 meter (2 feet in the US) away from excavation and trench edges.

6. Access and Egress

Whether protected by sloping, boxes, or shoring, trenches must be provided with ladders so that workers can enter and exit safely. Ladders must:

- Be placed within the area protected by the shoring or trench box.
- Be securely tied off at the top.
- Extend above the shoring or box by at least 1 meter (3 feet).
- Be inspected regularly for damage.

7. Protective Systems

Designing a protective system requires consideration of many factors, including: soil classification, depth of cut, water content of soil, weather and climate, and other operations in the vicinity.

- Sloping and benching the sides of the excavation;
- Supporting the sides of the excavation; or
- Placing a shield between the side of the excavation and the work area.

8. Preplanning

Waiting until after the work starts to correct mistakes in shoring or sloping slows down the operation, adds to the cost of the project, and makes a cave-in or other excavation failure more likely.

Before preparing a bid, you should know as much as possible about the jobsite and materials needed to perform work safely and in compliance with safety standards. Factors to consider:

Traffic

- Proximity and physical condition of nearby structures
- Soil classification
- Surface and ground water
- Location of the water table
- Overhead and underground utilities
- Weather
- Quantity of shoring or protective systems that may be required
- Fall protection needs
- Number of ladders that may be needed
- Other equipment needs

9. Inspections

A competent person must inspect excavations, adjacent areas, and protective systems daily for possible cave-ins, indications of failures in protective systems and equipment, hazardous atmospheres, and other hazardous conditions.

Inspections must be done prior to the start of work and as needed throughout the shift and are required after natural events, such as rainstorms, or other hazard-increasing occurrences, such as blasting work.

10. Training

Any worker who has a part in any excavation work must be trained on the procedures and responsibilities they have for working safely in excavations and trenches. This includes the competent person, supervisors, equipment operators, and the workers down in the excavations.

Equipment and Machinery

INCIDENT

A 20-year-old temporary worker, was killed August/2019 on his first day on the job when he was crushed by a palletizer machine. OSHA cited Bacardi Bottling with [12 alleged OSHA violations](#).

Davis was an employee of a temporary staffing service, Remedy Intelligent Staffing, which is contracted by Bacardi Bottling to provide workers for certain jobs. OSHA requires that employers protect the health and safety of all workers under their supervision and control, even temporary workers who are employed by other companies.

“A worker’s first day at work shouldn’t be his last day on earth,” said Assistant Secretary of Labor for Occupational Safety and Health Dr. David Michaels. “Employers are responsible for ensuring the safe conditions of all their employees, including those who are temporary.”

Bacardi sent a statement to EHS Today that says, in part, “As a family-owned company with a long history of operating as an industry leader in workplace safety, Bacardi takes seriously any accident and continues to extend its sincerest condolences to the family. Always looking to improve in safety measures and operational performance, Bacardi conducted additional employee re-training on lockout/tagout procedures, updated safety policies and

procedures, and completed a thorough review of all equipment in order to prevent such an accident from happening again.”

Davis was cleaning glass from under the hoist of a palletizing machine when an employee restarted the palletizer. Bacardi Bottling had failed to train temporary employees on utilizing locks and tags to prevent the accidental start-up of machines and to ensure its own employees utilized procedures to lock or tag out machines. Proposed penalties for the willful and serious violations total \$192,000.

Bacardi said that it worked with OSHA following the incident and “took immediate steps to correct any noted safety concerns identified by the inspector, rather than waiting until after the final report was issued ... The company shares with OSHA the common goals of well-trained employees and safe workplace conditions.”

Two alleged willful citations have been issued for failing to develop, document and utilize lockout/tagout procedures for the control of potentially hazardous energy and train temporary workers on lockout/tagout procedures. A willful violation is one committed with intentional knowing or voluntary disregard for the law’s requirements or with plain indifference to worker safety and health.

“We are seeing untrained workers – many of them temporary workers – killed very soon after starting a new job. This must stop,” said Michaels. “Employers must train all employees, including temporary workers, on the hazards specific to that workplace – before they start working. Had Bacardi done so, this tragic loss of life could have been prevented.”

OSHA also cited Bacardi for nine alleged serious violations for exposing workers to trips, struck-by and fire hazards where fixed permanent conveyors crossed through the aisle; obstructing exit routes; exposing workers to falling bottles and debris from overhead conveyors and electrical shock hazards. The employer also failed to provide an adequate number of lockout/tagout devices to perform lockout/tagout procedures of energy sources on various equipment, conduct an adequate periodic review of the energy

control procedures, perform servicing and maintenance on machines and equipment without training in the methods and means for energy isolation, and require workers to wear safety goggles and long sleeves when using air guns at 90 pounds per square inch. A serious violation occurs when there is substantial probability that death or serious physical harm could result from a hazard about which the employer knew or should have known.

NEED TO KNOW

Machines need to move to perform their tasks. Whether it's a conveyor belt carrying raw material to a mixing tank, power presses bending sheet metal or a drill press punching holes in a piece of wood, they all operate by movements that cause a serious risk to workers.

The risks occur because workers sometimes put their hands or other body parts in the point of operation, get caught in between two moving parts or fail to use proper safety procedures to clear a jammed machine. Not a day goes by when someone isn't killed by moving machinery or suffers a serious injury like an amputation because they got too close or didn't follow basic safety procedures.

Working with machinery and equipment is always hazardous. But workers are especially at risk when they try to troubleshoot machinery that isn't working properly. And troubleshooting is a common task in many workplaces. So given its inherent hazards, it's important that you have a troubleshooting policy to ensure that workers can safely address machinery issues.

The potential hazards, and include:

Safety hazards

- Contact with moving parts
- Contact with electricity, heat, fire, cold, and other energies
- Contact with pressurized gas or liquid

Health hazards

- Contact with harmful chemicals or biological hazards
- Contact with harmful noise, radiation, and/or vibration
- Exposure to ergonomic or MSD hazards
- It's a simple fact: Machines need to move to perform their tasks. Whether it's a conveyor belt carrying raw material to a mixing tank, power presses bending sheet metal or a drill press punching holes in a piece of wood, they all operate by movements that cause a serious risk to workers.
- The risks occur because workers sometimes put their hands or other body parts in the point of operation, get caught in between two moving parts or failure to use proper safety procedures to clear a jammed machine. Not a day goes by when someone isn't killed by moving machinery or suffers a serious injury like an amputation because they got too close or didn't follow basic safety procedures.

Mechanical Equipment Failures That Cause Workers to Suffer Long-Term Injuries or Death

Employers are increasingly using mechanical equipment and tools to increase productivity. While this can reduce the amount of manual labor some workers must perform and reduce the types of injuries workers once suffered, mechanical equipment and tools can be dangerous. Workers can suffer debilitating injuries or deaths when machinery and smaller tools fail or malfunction.

Reasons for Equipment, Machinery, and Tool Failures

Mechanical failure of equipment, machinery, and tools can involve many problems, such as misalignment of parts, power surge overloads, broken gear sets, chips or breaks of parts, and oil contamination. In some cases, the breakdown of a part can cause further damage to the machinery and lead to its malfunction and a worker being injured. There are many reasons why equipment fails and causes accidents including:

- **Wear and tear.** Parts in machinery and tools will wear down over time due to their constant use. At some point, they

must be replaced due to wear and tear. When employers fail to replace them due to the cost, they will malfunction—sometimes repeatedly if only minor repairs are done.

- **Defective design or manufacture.** In some cases, the machinery, equipment, or tools were designed or manufactured improperly. If the defect is serious enough, it can cause a catastrophic workplace accident if the machinery malfunctions or breaks down.
- **Lack of training.** Workers must be trained in the safe use of heavy equipment, like forklifts, bulldozers, and other heavy machinery and equipment, before using them on the job. Even drills, power saws, and other power tools can be extremely dangerous if workers use them without training in their safe use. Many tragic accidents occur when employers do not take their workers' safety seriously and do not invest the time to properly train their employees.
- **Improper maintenance.** Employers have a duty to inspect, repair, and replace machinery, equipment, and tools on a regular basis. Unfortunately, many employers do not do this, which can result in a tragic workplace accident.
- **Operator error.** Many accidents occur when operators of equipment and machinery make errors or engage in negligent actions. This can lead to their own injuries or the injuries of others, such as when a heavy machine operator hits a nearby worker.
- **Third-party negligence.** In some cases, a third party, such as a sub-contractor or supplier, may have provided the machinery, operated it, or maintained it and may have caused an accident due to negligence. For example, a sub-contractor's employee could cause an accident using a forklift or crane on a construction site that leads to other workers' injuries.

BUSINESS/ REGULATIONS

Workplace machine safety law in Ontario is based on the Occupational Health and Safety Act (OHSA). Regulations specified under the Act that are applicable to specific workplaces.

In the Act, the sections dealing with responsibilities of employers (s.25), supervisors (s.27) and workers (s.28) set out general duties with respect to machine safety.

Moving machine parts create workplace hazards and potential machinery-related injuries, making machine guards vitally important. [Machine safeguarding](#) can help you protect workers from preventable injuries.

OSHA's requirements for machine guarding are found in **29 CFR 1910 Subpart O, Machinery and Machine Guarding**. The regulation is broken down into these components:

1910.211 – Definitions 1910.212 – General requirements for all machines 1910.213 – Woodworking machinery 1910.214 – Cooperage machinery [Reserved] 1910.215 – Abrasive wheel machinery 1910.216 – Mills and calendars in the rubber/plastics industries 1910.217 – Mechanical power presses 1910.218 – Forging machines 1910.219 – Mechanical power-transmission apparatus

General requirement 1910.212(a)(1) states that one or more methods of machine guarding must be used to protect operators and other employees from hazards, including those created by point of operation, in-running nip points, rotating parts, flying chips and sparks.

Hazardous Mechanical Motions and Actions

Identifying hazards is the first step toward protecting workers and promoting safety in the workplace.

Federal Law Mandates

Under federal law, you are entitled to a safe workplace. Your employer must provide a workplace free of known health and safety hazards. If you have concerns, you have the right to speak up about them **without fear of retaliation**. You also have the right to:

- Be trained in a language you understand
- Work on machines that are safe

- Be provided required safety gear, such as gloves or a harness and lifeline for falls
- Be protected from toxic chemicals
- Request an OSHA inspection, and speak to the inspector
- Report an injury or illness, and get copies of your medical records
- See copies of the workplace injury and illness log
- Review records of work-related injuries and illnesses

STATISTICS

Employee exposure to unguarded or inadequately guarded machines is prevalent in many workplaces. Consequently, workers who operate and maintain machinery suffer approximately 18,000 amputations, lacerations, crushing injuries, abrasions, and over 800 deaths per year.

Occupational Safety & Health Administration (OSHA) nominated OSHA's top ten cited violations in 2017. Machine guarding was N0.8 on this not so famous list with 1.933 violations. In 2018, machine guarding was N0.9.

A lack of machine safeguarding also held the dubious distinction of making the list of OSHA's ten largest monetary penalties for the year – not once but four times. In fact, the largest proposed monetary penalty, a staggering \$2.6 million (USD), arose from an incident where a worker was crushed to death while clearing a sensor fault in a robotic conveyor belt.

According to the most recent Bureau of Labor Statistics data, manufacturing plants reported approximately 2,000 accidents that led to workers suffering crushed fingers or hands, or had a limb amputated in machine-related accidents. The rate of amputations in manufacturing was more than twice as much (1.7 per 10,000 full-time employees) as that of all private industry (0.7).

There was an average annual decrease of 2.8% in overall machine-related fatality rates from 1992 through 2010. Mobile machine-related fatality rates decreased an average of 2.6% annually and stationary machine-related rates decreased an average of 3.5%

annually. Groups that continued to be at high risk included older workers; self-employed; and workers in agriculture/forestry/fishing, construction, and mining.

RECOMMENDATIONS

Identifying and controlling the hazards of operating and maintaining equipment or machinery is the start of the process to reduce and eliminate serious injury or death in equipment / machinery operations.

The following are five **Recommendations** safety checklist.

1. Employer Responsibilities:

- Have a copy of the machine or equipment operator's manual available for your workers to read and ensure they have read and understood it.
- Ensure workers who operate mobile equipment are properly trained and competent.
- Ask yourself: Have you provided adequate instruction and information to your workers on how to properly operate the equipment or machine?
- Ensure all machines or equipment are in good working condition and ready for operation.
- Ensure all machine shields and guards are in good condition and safety labels are on the equipment.
- Maintain your equipment as per the manufacturer's instructions (i.e., clutch, brakes, steering).
- Ensure all equipment has a roll-over protective structure (roll bar).
- Confirm equipment brakes are working well in both directions (forward and reverse).
- Confirm all equipment requiring seatbelts have one in good working order.
- Check that the machine has guards where moving parts could injure workers.
- Ensure lock-out procedures are clearly posted and followed.

2. Worker responsibilities

- Wear proper foot protection.
- Wear eye and hearing protection.
- Regularly apply sunscreen in accordance with instructions, or wear sun-protective clothing.
- Ensure all clothing is close-fitting, and secure long hair with a hat or some other means.

3. Pre-operational safety checks

- Locate and ensure you're familiar with all machine or equipment operations, controls, and lock-out procedures.
- Ensure all equipment or machine shields and guards are fitted, secure, and functional. (If any machine parts are missing or in need of repair, do not operate the equipment.)
- Read the operator's manual and review the safety labels attached to the equipment before installing or using power take-off equipment (PTO). (If labels on equipment are missing, affix new labels before using it.)
- Use only implements that meet the specifications listed in the machine operator's manual.
- Keep records of your pre-operational checks.
- Ensure someone knows where you are, what you will be doing, and when to expect you back.

4. Operational safety checks

- Ensure your roll-over protective structure (roll bar) on the machine is in the up position.
- When operating machines, fasten your seatbelt before you move the equipment.
- Operate the machinery using a lower speed, unless the operator's manual specifically states that it's safe to use the higher speed.
- Keep all bystanders away from powered equipment and machines.
- Assess the machinery by walking around the operating equipment.

5. Ending operations and cleaning up

- Ensure you shut down, disengage any powered equipment, and

shut off the machine engine once you're done work. Remember to remove and take the keys with you before leave.

- Keep warning labels clean and free from obstructing material. Replace damaged or missing labels with new labels available from the equipment supplier.
- Wait until all moving components have completely stopped before getting off equipment or connecting, disconnecting, adjusting, cleaning, or servicing any powered equipment.
- Keep the work area safe, clean, and tidy.

6. Check-lists

- Pilots must go through a **pre-flight checklist** which helps ensure the safe operation of the airplane and checks that the emergency response system is ready to be used.

The same type of check should be done before operating any machinery or equipment

One kind of pre-work check is known as the circle check for vehicles. Here are examples of how it is accomplished.

- Walk around the equipment and check for any signs of problems. In the case of a motor vehicle for instance, check to make sure tire pressure is adequate, lights and turn signals are working correctly, there is sufficient oil, fuel, and battery fluid, and windows are clear/clean.
 - Another type of circle check is useful before starting up any vehicle. Walk around the vehicle, but this time look over the surroundings. Make sure there is nothing you will strike when the vehicle begins to move, such as another vehicle, a child playing behind the vehicle, or an overhead obstruction such as a power line. This type of circle check is especially important if you must back up.
1. Make sure it will not cause danger to another person when you start the machinery. If anyone is doing repairs or adjustments on the equipment it should be labeled with lockout-tagout information, and the power should be disconnected.
 2. Check over the machinery for any signs of wear or damage

which could affect safe operation. In the case of office equipment, you would pay particular attention to the condition of electrical cords and connections.

3. Make sure machine guards are in place and functioning correctly.
4. When examining machinery prior to start up, use only a safe source of light. For example, never check a vehicle battery while using a match for light—you could be injured in an explosion.
5. Check yourself. Are you wearing the appropriate Personal Protective Equipment (PPE)—such as eye protection when using a power tool?

PREVENTION

1. TRAINING/INFORMATION

Training is required to use work equipment

Training must be sufficient to ensure that all people know how to competently use any equipment they use at work, without unnecessary risks to the health and safety of themselves or others. Training therefore depends on the task, and to what extent an employee already has relevant knowledge and experience. Individual training needs are likely to be greatest when a person is first recruited, although further training may also be required in any of the following examples:

- if the work task and its associated risks change;
- if new technology or equipment is introduced; and
- if the system of work changes

In many industrial sectors, there are well-recognized standards for training, whether delivered in-house or by external providers. These are often accompanied by some form of competence assessment to help ensure minimum standards of attainment. However, for many simple tasks, on-the-job training, which is locally assessed and backed up with simple records, will suffice. There will also be a need for refresher training to ensure that skills don't decline. Again, the nature and frequency of refresher training should be sufficient to ensure ongoing health and safety, so far as

reasonably practicable.

To be appropriately trained to prepare and check work equipment, doesn't always mean formal, certificated training. Often the work to prepare or check equipment prior to use can be carried out following manufacturer's instructions using basic skills and common sense. However, for certain types of equipment, there are well-recognized industry schemes that cover, for example, the mounting of abrasive wheels. There are also certain equipment-specific legal requirements.

Information Needed in Use of Work Equipment

Any worker who uses or operates work equipment, or any other person who may be affected by the use of the equipment, **must be made aware of the hazards involved.**

Any person using work equipment must be **properly trained** in the safe use of the equipment or machinery. There should also be **proper supervision and inspection of the use of work equipment** to ensure that safety procedures are followed correctly.

Risk assessments:

Before any work equipment or machinery is used or installed a risk assessment must be carried out. The purpose of the risk assessment is to identify the hazards and risk of injury that may arise when using the work equipment. The risk assessment should also identify ways in which the hazards and risk may be eliminated or reduced.

1. Hazards

There are many ways in which work equipment and its use can create a risk of injury. The most common hazards are:

- **Entrapment**– for example when fingers are caught in the moving parts of a machine
- **Impact**– when workers are crushed by moving parts of equipment or by other items being processed by a machine
- **Contact**– when the body comes into contact with sharp edges, hot parts or live electrical items

- **Entanglement**-when clothing, hair or jewelry become caught in parts of a machine
- **Ejection**– when workers are hit by parts or objects flying out or off machines

1. Maintenance

Maintenance work should only be undertaken by those who are competent to do so, who have the necessary knowledge and experience to:

- know what to look at
- know what to look for
- know what to do, and
- be aware of, and able to avoid, unnecessary risks to themselves and others

In some cases, workers undertaking maintenance on certain types of equipment should have specific training which is relevant to that work (eg where they may encounter asbestos).

1. Employers have the duty to provide suitable work equipment that is well designed and suitable for the job.

When selecting new work equipment employers should:

- obtain full information about the safe use of the equipment
- ensure that the equipment has a CE safety mark to show that it complies with standards
- arrange adequate training for using the equipment

1. Inspections

Employers, you are legally required to provide safe equipment for use in connection with your work. Where the safe of equipment depends on the installation conditions or is exposed to conditions causing deterioration liable to result in dangerous situations, you must inspect your equipment to identify whether it can be operated, adjusted and maintained safely. Doing this on a regular basis can help you detect any deterioration and take action before it results in any health and safety risk.

Inspection frequencies depend on the type of work equipment, its use and the conditions to which it is exposed. This should be determined through:

- risk assessment, taking full account of any manufacturer's recommendations
- the advice of others, such as trade associations and consultants
- other sources, such as published advice on health and safety

Different types of [inspection](#) include:

- quick checks before use (eg the condition of electric cables on hand-held power tools, functional testing of brakes)
- weekly checks (eg tire pressures, presence of guarding, function of safety devices)
- more extensive examinations, undertaken every few months or longer (eg the general condition of a ladder, close examination of a safety harness, portable appliance testing).

1. Use of personal protective equipment and clothing:

This may be necessary when certain hazards from work equipment cannot be avoided. Examples of personal protective equipment and clothing that may be necessary when using work equipment are:

- safety helmets
- gloves
- safety goggles
- ear protectors
- safety footwear
- types of clothing – for instance high visibility garments

Personal protective equipment or clothing must:

- be suitable for the task being undertaken
- give adequate protection against the hazard
- fit properly and comfortably

Here Are A Dozen Basic Machinery Safety Tips:

- Only operate machinery if you've successfully completed the required training and are authorized to do so.
- Know how to stop the machinery before you start it.
- Check to see if the area around the machine is tidy and free of obstructions.
- Wear the required personal protective equipment (PPE), such as safety footwear and eyewear.
- Do not wear loose items including gloves, dangling chains, rings or unrestrained long hair. These could get caught in the moving parts and pull you in.
- Make sure all machine guards are fitted correctly and securely and are maintained in good working order.
- Do not remove or disable machine guards, unless the machine requires repair or maintenance, you are authorized to conduct those repairs or maintenance AND the proper Lockout-Tagout procedures are followed.
- Never attempt to start a machine that has a lockout tag on it.
- Before using the machine, first, ensure that it's working properly. Inform your supervisor if you discover any problems.
- If the machine malfunctions while you are operating it, report the problem immediately to your supervisor and do not continue to use the machine until it has been inspected and determined safe to operate.
- Never place your hands or any other body part in the point of operation or other moving parts.

The essence of providing a safe work place is encapsulated in the **BIG THREE**:

- Training
 - Maintenance
 - Inspections / Risk assessment
-

Emergency Equipment

INCIDENT

STILLWATER, N.J. – Two people are dead after a fatal fire and accident in Sussex County.

The Star-Ledger is reporting that the driver of an ambulance has died after his vehicle left the roadway and crashed while transporting a burn victim from the house fire to the hospital. The patient and other crew members survived the crash.

Authorities report that a fire on Potters Road in Stillwater killed one person and injured another. A New Jersey State Police spokesman reported that the injured person was being transported when the driver of the ambulance suffered a “medical issue”.

The patient was transferred to another ambulance and taken to the hospital. The driver of the ambulance was pronounced dead on the scene.

NEED TO KNOW

Unexpected emergencies occur every day in many facilities, including laboratories, offices, plants, manufacturing, construction sites and residential buildings. If you don't know what to do during an emergency the odds increase that you or others around you will be injured or killed.

- Emergencies include severe weather, such as heavy wind, flooding, tornados, or hurricanes
- Utility outages
- Fires
- Explosions
- Widespread infection
- Hazardous materials
- Earthquakes
- Workplace violence
- Terrorism

Special equipment for emergencies

Your employees may need personal protective equipment to evacuate during an emergency. Personal protective equipment must be based on the potential hazards in the workplace. Assess your workplace to determine potential hazards and the appropriate controls and protective equipment for those hazards. Personal protective equipment may include items such as the following:

- Safety glasses, goggles, or face shields for eye protection;
- Hard hats and safety shoes for head and foot protection;
- Proper respirators;
- Chemical suits, gloves, hoods, and boots for body protection from chemicals;
- Special body protection for abnormal environmental conditions such as extreme temperatures; and
- Any other special equipment or warning devices necessary for hazards unique to your worksite.

Choose the appropriate respirators and other equipment

Consult with health and safety professionals before making any purchases. Respirators selected should be appropriate to the hazards in your workplace, meet OSHA standards criteria, and be certified by the National Institute for Occupational Safety and Health.

Respiratory protection may be necessary if your employees must pass through toxic atmospheres of dust, mists, gases, or vapors, or through oxygen-deficient areas while evacuating. There are four basic categories of respirators for use in different conditions. All respirators must be NIOSH-certified under the current 29 CFR 1910.134.

Test your emergency equipment frequently to ensure it's ready when someone needs it.

Installation and testing of emergency drenching equipment according to the American National Standards Institute (ANSI) requirements can offer workers peace of mind while on the job. Yet, installing the right emergency solutions according to the

ANSI standard does not guarantee workers will use the fixtures in an emergency.

Six critical but often overlooked steps – training, accessibility, visibility, functionality, privacy and signaling for assistance – help ensure drench showers and eyewash units are ready to use and will be operated by injured workers (and those trying to help them) when necessary.

BUSINESS / REGULATIONS

Emergency equipment such as rescue rings, ropes, extracting boards, and stretchers used to extract a diver from the water must be directly accessible. Oxygen must be on hand and in sufficient quantities for use until emergency medical personnel arrive. For unconscious divers, a forced ventilation system is used. This system must be equipped with an overpressure relief valve to avoid damage to the lungs of the victim when it is used. As with all oxygen systems, every related precautionary measure must be observed, such as no contact with grease or bare electrical contacts.

For the protection of support personnel, the use of defibrillators is not recommended in wet environments. If required to treat a cardiac arrest, the subject must be transported to a dry area, where it is safe to use the defibrillator.

In support of a diving operation, a hyperbaric chamber must be accessible within a short period, such as 1 h, from the time and location of any potential incidents. Should no hyperbaric chamber be accessible directly on-site, it is necessary to study and practice the transport of an injured subject to the nearest operating chamber. In addition, regular audits of these chambers must be conducted to ensure their availability during an emergency.

In some cases, transportation by helicopter could be required. If so, a dedicated landing zone free of obstacles must be available adjacent to the location of the diving activity, and personnel must be trained to interact properly with the helicopter crew. In

case of decompression sickness, the helicopter must not fly higher than 300 m (1000 ft) above ground level.

Adequate emergency equipment and resources, communication systems, documentation (such as procedures, checklists, telephone numbers and manuals) should be available where needed to properly initiate and support the emergency response actions described in Section 23.11.4.

Instruments, tools, equipment, documentation and communication systems to be used in emergencies should be appropriate and maintained in good operating condition, in such a manner that they are unlikely to be made unavailable by the postulated emergency and environmental conditions. Equipment, communications, vehicles, etc., should be regularly checked and tested.

All employers are obligated to ensure staff are trained in workplace emergency procedures. This may include what to do in case of a fire, earthquake, or other emergency; identifying locations of emergency exits; and processes to follow to evacuate the building in the case of an emergency. These procedures are site specific and should be a part of the training for all new employees. In addition, regular drills or reviews of procedures are important to ensure that if an actual emergency occurs, everyone is able to react accordingly and safely.

Orientation to any new job site, even if temporary, should always include the following information:

- Location of emergency exits
- Location of first aid supplies or the procedures to call for an attendant
- Location of fire extinguishers
- Evacuation procedures and muster stations
- Any hazards present on the site

First Aid Procedures

Providing access to first aid supplies or attendants is a requirement of employers under the OHS Regulation, but the

required vary according to the size of the employer and many other factors. For example, in some cases it is required that a designated first aid attendant be on duty, while in others it is enough to provide a first aid kit stocked with a prescribed list of supplies. Many industrial settings and B.C. training institutions are equipped with a first aid station with a trained attendant. The person who staffs that station is able to perform a wide variety of services from bandaging minor cuts to stopping major bleeding and splinting broken bones.

All workers should know where the first aid station is, who staffs it, and what services are available. If you sustain an injury, no matter how minor, ensure that the incident is reported in the first aid station log. Minor irritations often develop into major problems, so report all injuries promptly.

Emergency Wash Station or Shower Locations

There may be times when you are working with acids or hazardous substances such as cleaning solutions which may burn your flesh or splash into your eyes. If you accidentally splash or spill a corrosive substance on your skin, you will want to wash the affected area very quickly with large amounts of water to dilute the acid and minimize burning. It is therefore necessary that you be aware of the location of your emergency eyewash stations, sinks, or showers throughout your work site.

Fire Safety Procedures and Regulations

Components that produce fire

Before a fire can occur, these three components must be present:

- Fuel (a combustible material such as wood, gasoline, paper, or cloth)
- Heat (sufficient to raise the fuel to its ignition temperature)
- Oxygen, usually in the form of air (to sustain combustion)

When these three components combine, as shown in the fire triangle

(Figure 14), the result is rapid combustion (fire). Keeping these three components separated will prevent a fire from occurring. An existing fire can be extinguished by removing any one of the three components:

- Remove the fuel (combustible material) from the vicinity of the fire. For example, if you shut off the valve of a gas main, the result will be starvation.
- Remove the heat. For example, by applying water, the result will be cooling.
- Remove the oxygen. For example, if you cover the fire with a lid, a wet blanket, or some sand, or you use a carbon dioxide, foam, or dry chemical extinguisher, the result is smothering.

Remember, keeping these three components separated will prevent a fire from occurring. Likewise, an existing fire can be extinguished by removing any one of the three components.

STATISTICS

There were 5,250 fatal work injuries recorded in the United States in 2018, a 2 percent increase from the 5,147 in 2017, the U.S. Bureau of Labor Statistics reported today. (See chart 1 and table 1.) The fatal work injury rate remained unchanged at 3.5 per 100,000 full-time equivalent (FTE) workers. These data are from the Census of Fatal Occupational Injuries (CFOI).

Transportation incidents remained the most frequent type of fatal event at 2,080, accounting for 40 percent of all work-related fatalities.

Incidents involving contact with objects and equipment increased 13 percent (from 695 to 786), driven by a 39 percent increase in workers caught in running equipment or machinery and a 17 percent increase in workers struck by falling objects or equipment.

Unintentional overdoses due to nonmedical use of drugs or alcohol while at work increased 12 percent from 272 to 305.

Violence and other injuries by persons or animals increased 3

percent in 2018, due to an 11 percent increase in work-related suicides from 275 to 304.

Fatal falls, slips, and trips decreased 11 percent to 791, after reaching a series high of 887 in 2017. This decline was due to a 14 percent drop in falls to a lower level (713 to 615), the lowest total since 2013.

RECOMMENDATION

Six critical steps to take to help and assist injured workers and those trying to help them come with the following recommendations:

1. Train on proper use

If workers cannot quickly find and operate the nearest emergency equipment, a simple injury can become severe or, even worse, deadly. For example, if not properly trained on emergency protocol, a worker with a serious eye contamination may run to the restroom to rinse out the affected eye. Unfortunately, in the time it could take to reach the nearest restroom, it may be too late and the result could be permanent eye damage. Also, the flow of water from standard restroom fixtures is insufficient to adequately wash contaminants from the injured worker.

This unfortunate scenario is avoidable. First, have a solid emergency response plan in place. Clearly define the different types of hazards on the jobsite and indicate the actions to be taken in the event of an emergency. Next, all employees must be trained on what constitutes an emergency and whether a drench shower or eyewash unit is most appropriate for a particular situation. Most importantly, each person should have an opportunity to test the equipment so he or she feels comfortable activating it.

2. Install within reach

To ensure equipment is used in an emergency, it must be located near potential hazards. The ANSI Z358.1-2004 emergency standard requires emergency equipment be placed within 10 seconds reach of any hazard. As a guideline for placement, an average person can

cover about 55 feet in 10 seconds.

To minimize injuries, remove all clutter or obstacles between the hazard and emergency equipment. In addition, fixtures should be on the same level as the hazard. Remember, physically disabled or injured workers cannot go up or down stairs to reach a fixture. For hazards involving a strong caustic or acid, the drench shower or eyewash should be placed immediately adjacent to the hazard.

In remote locations without plumbed emergency equipment, such as construction sites, portable units should be supplied. Gravity-fed eyewashes are a good solution – specify units that are designed for easy transportation and that can be quickly refilled.

3. Increase visibility

Location is important, but the unit must also be placed in a well-lighted area and have a visible sign for quick identification. Although no specific color is designated for emergency drench showers or eyewashes in either ANSI Z358.1-2004 or the ANSI Z535.1-2002 American National Standard for Safety Color Code, choose a bright yellow color easily found in an emergency. Yellow is the most visible color and is the first color the human eye notices, research suggests.

4. Keep clean and in working order

For optimal performance during an eye emergency, eyewash units must flush contaminants without exposing the infected eye to dust or other contaminants. One of the easiest ways to be sure equipment is in good working order is to conduct the ANSI required weekly and annual testing procedures. Routine testing provides an opportunity to inspect units for corrosion and remove any debris that could pose a problem.

Eyewash dust covers are beneficial for industrial applications where contaminants fill the air. In some cases, dust covers can be retrofitted to current equipment. The dust cover swings back and out of the way when the push handle is activated.

Bottled eyewashes are a common oversight when it comes to

emergency preparedness. Even if a bottle is sealed, the solution may not be sterile if it's past the manufacturer's expiration date. Keep the tops of bottles clean and ready for use.

5. Protect users' privacy

Privacy can be a major factor for a worker choosing not to use an emergency drench shower in an emergency. To be effective, users must disrobe completely to flush contaminants from their skin. In a mixed-gender environment, it is easy to understand why this would be a concern.

Installing privacy curtains around drench showers or combination shower and eyewash units is an easy and effective way to address the privacy issue. High-visibility yellow vinyl laminate privacy curtains that are chemical and mildew resistant are good for industrial applications. A durable stainless-steel curtain rail and mounting brackets can provide strong, corrosion-resistant support.

6. Sound the alarm

To ensure emergency equipment is not only used" but used properly in the event of an emergency to assist users in summoning help from others. An alarm system can be triggered as soon as an emergency fixture is activated. Injured persons can continue flushing without the added worry of calling for help. An added benefit of an alarm system is that it deters vandals from tampering with the emergency equipment.

Check with the manufacturer of your emergency fixtures to determine if there are any other accessories or solutions that will help keep the equipment ready to use in case of an emergency. You hope you'll never need an emergency fixture, but **PROPER TRAINING, ACCESSIBILITY, VISIBILITY, PRIVACY, FUNCTIONALITY AND SIGNALING FOR HELP** can minimize injuries and ensure emergency preparedness.

PREVENTION

Emergency Equipment in modern, diverse, complicated industries and

infrastructures take on many different forms.

Assuming all prudent, steps are taken to ensure Emergency Equipment is available, what is the next most important thing to do??

It comes in a Threefold answer.

Emergency Equipment must be:

1. Properly located.
2. Properly maintained.
3. Staff properly trained in use.

Where should emergency equipment be located?

A Hazard Identification process should be conducted to identify all locations where emergency equipment may be required.

This should include equipment such as:

- Firefighting equipment
- Drench showers and eye-baths where workers are at risk of being in contact with harmful substances (particularly corrosive substances such as acids).
- Spill control equipment

Emergency equipment should be located in easily accessible areas and within a reasonable distance from the source of hazard.

Training

It is essential to train all personnel so that they are thoroughly familiar with the locations of all emergency equipment and the correct methods for using them.

It is also beneficial to ensure that all staff members are familiar with the use and locations of emergency equipment during the induction training process.

Maintenance

To ensure that all emergency equipment is in proper working order,

regular inspections and maintenance must be carried out. This will put your equipment in a state of readiness in the event of an emergency.

Enlist qualified personnel to carry out all inspections in accordance with controlled inspection check sheets.

Be sure to keep full records of inspections and testing of emergency equipment.

Minutes and seconds can seem like an eternity in an emergency situation. To prevent injuries and save lives, quick actions are needed.

TRAINING – MORE PREVENTION

Specific Categories of Emergency Procedures and Equipment Require Training

- Alarms, cautions, and warnings;
- Fire and smoke, including the location of smoke detectors, gas masks, extinguishing equipment, and [fire suppression](#) ports, as well as the means for suppressing a fire, e.g., the dump command for purging the atmosphere of an isolated module;
- First aid, e.g., a crew health care system, including methods for cardiopulmonary [resuscitation](#), the stabilized stretcher, intravenous injection doses, etc. (see medical emergencies);
- Potable water collecting and sanitizing equipment, shelter, fire, radio, beacons, etc.;
- Environmental protection against wet or dry, and cold or hot environments such as sea, snow, or desert, including typical garments to be used for each purpose; and
- Protection against wildlife or signalization.

The last and least desirable step once all preventive, corrective, and recovery safety measures have been exhausted, or if time does not allow for a sudden contingency to be controlled is to prepare the crew to cope with emergency cases, i.e., those requiring immediate action to ensure crew survival. Training for emergencies

must be performed regularly and repeatedly, and it must be performed onboard to achieve automatic responses by the crew should an emergency occur.

In all emergency cases, the order of priority for the crew actions is always to:

- Ensure their own survival;
- Take care of the vehicle;
- Safe the systems; and
- Safe the [payloads](#) or science.

Evacuation and Egress

Any evacuation from a space vehicle, regardless of whether this occurs on orbit, or at the launch pad or landing site, is always considered to be a critical operation. It is an emergency mode conducted within a generally hostile environment. For example, the launch pad contains large amounts of explosives, flammable materials, and pyrotechnics, and a landing site is contaminated by toxic gases and trace materials generated by the vehicle [propulsion system](#), or pyrotechnics.

Workplace Violence – Nurse Stabbed to Death

INCIDENT

#1 Gail Sandidge, a Nurse from Longview Texas cared for and protected her patients at a Medical

Center in Longview. She died 2 days before Thanksgiving Day in 2013 when she was stabbed to death. The assailant was a 22-year-old Kyron Templeton who went on a killing spree with a hunting knife. This young male was in the hospital waiting for his mother's surgery and become distraught. He stabbed Gail in the

chest which ended her life. He also killed 82-year Harris Teel, visitor to the hospital. Three others were injured.

#2 Cara Russell, was the executive director of the Colorado Association For Recycling she had recently filed for divorce from her husband Mickey Russell. This 52-year-old was the shot multiple times by her husband who then killed himself. The shooting took place at her work.

The shooting was an act of domestic violence, and that's actually exactly what a work place shooting looks like.

NEED TO KNOW

Workplace violence is front and center one of the most vexing issue in our society. It is trending upwards!!! Domestic violence morphs into our workplace. Sadly, women are more often the victims in the home and in the workplace. There are two scenarios. One where the victim has some family or personal connection to the assailant, and one where the victim does not know or have any family or personal connection to the assailant.

BUSINESS / REGULATIONS

Gail's situation can be contracted with Cara's. With Gail, she did not know or have any family or personal connection to her killer. She was merely doing her job. The New England Journal of

Medicine in 2016 published a comprehensive review of Workplace Violence in the U.S. and "statistically" comes to a conclusion that is widely accepted. HealthCare is the most Dangerous Profession to work.

Gail's life would have been saved had a proper safeguards and regulations been in place to prevent violence from occurring.

70% of U.S. workplaces do not have formal programs or policies that address workplace violence.

In Cara Russell's case, there is a different dynamic. She was killed in the workplace by her husband. Obviously, a personal connection.

Homicide is a leading cause of workplace death for women.

Why is that?

Abusers shoot women at work because it's easy to find them there!!!

The most dangerous time for victims of domestic abuse is when they try to leave. A woman who leaves her partner can find a new living arrangement and change her phone number, but she'll probably keep going to the same job.

"It's access," said Lydia Waligorski, public policy director at the Colorado Coalition against Domestic Violence. "Your guard is down at work. The doors are open. There are other people around. It's a place where you feel safe.

"Survivors cannot be survivors 24 hours a day without losing their minds," she added. "Especially as women, we're taught there is safety in numbers."

Gail had given her life in the service of others in the nursing field. She wanted to be a nurse since she was 7 years old. She was consummate caregiving.

Cara Russell simply wanted to live her life without fear of retribution from her husband. But she could not escape him even at her work.

Workplace violence is defined by the Occupational Safety and Health Administration (OSHA) as any act or threat of physical violence harassment, intimidation or other threatening disruptive behavior that occurs at the worksite.

Workplace violence is one of the major causes of death in the corporate world, second only to transportation. This growing issue can have very damaging effects on morale, reputation and revenue; making it something business have to address now.

The impact on Business is enormous and like the perpetration of homicides itself, the trend is going up, not down.

A half-million employees miss an estimated 1.8 million work days each year due to workplace violence – resulting in more than \$55 million in lost wages on 2018. The annual comprehensive cost to businesses, including estimated losses, was \$130 billion compared to \$36 billion in 1995.

- Workplace violence crimes also extend beyond victims to co-workers, clients, executives, shareholders and even out to the community. There are also direct losses reflected in diminished productivity, low morale and negative publicity – which can all damage a company's reputation in the long-term.
- What's more, incidents are often followed by lawsuits charging organizations with negligent retention, negligent supervisor and inadequate security. The average out-of-court settlement is around \$500,000 and the average jury award is \$3 million.

STATISTICS

The prestigious New England Journal sets out interesting facts and statistics. Their review concludes healthcare is the most dangerous profession for women to work. Almost entirely are women the objects of assault and violence in their profession.

The review included data from the (B.L.S) showing healthcare workers are nearly four times as likely to require time away from work as a result of violence.

The (B.L.S.) keeps a grim list, the Census of Fatal Occupational Injuries. In 2014, homicides accounted for 8 percent of all workplace deaths and 8 percent of workplace death for men. They accounted for 19 percent of workplace deaths for women, a very close second behind transportation accidents at 20 percent. When men are murdered at work, it's most commonly in the course of a robbery, but for women, it's more likely to be someone they know that is husbands, boyfriends and exes.

The review also reported that, although employees in the healthcare and social assistance sectors account for [12.2% of the](#)

[working population](#) (and despite there being the potential for underreporting in other industries), nearly 75% of workplace assaults occurred in a healthcare setting.

There are other notable statistics:

- 80% of Emergency Medical Services personnel have been attacked by patients.
- Homicide is the second leading cause of workplace death for home healthcare workers.
- 78% of Emergency Department physicians and 100% of Emergency Department nurses have experienced violence from patients within the last year.
- The annual incidence of physical assault in a psychiatric setting is 70%.
- Among nursing homes with dementia units, 59% of nursing aides reported being assaulted by patients weekly and 16% daily.
- 46% of nurses reported some form of workplace violence during their five most recent shifts.
- Between 2000 and 2011, there were 154 shootings with injury either inside or on the grounds of American hospitals.
- The healthcare industry makes up [9% of the U.S. workforce](#), yet healthcare professionals experience more workplace violence injuries than all other industries combined.
- The third leading cause of death for workers in the [healthcare and professional services](#) industries (education, law and media) is due to workplace violence.

According to OSHA:

- About 2 million people each year report some type of workplace violence.
- It is estimated that 25 percent of workplace violence goes unreported.

PREVENTION

Financial losses and business loss usually attract a lot of attention. Especially when discussions are lead dealing with Prevention of Work Place Violence. Studies have shown:

- 00 or more is saved for each dollar invested in workplace safety.
- Domestic violence issues that are brought to the workplace cost nearly 727 million in lost productivity.

In both Cara and Gail's cases, the same steps must be implemented to prevent these tragedies.

- Develop, publicize, and enforce a workplace violence prevention policy.
- Conduct a risk assessment in the workplace to determine the types of violence that might most impact your workplace and to identify where in the workplace and/or at what time of day employees might be most vulnerable to violence.
- Enforce a no-weapons policy for employees, as allowed by law.
- Take administrative and environmental precautions; initiate prevention activities, conduct trainings on workplace violence.
- Take security measures to mitigate the threat of violence, create a workplace culture that supports victims and holds perpetrators of violence accountable.
- Take time to address these concerns before an incident occurs. Take proactive measures now to protect your employees. ensure a safer, more supportive environment for victims of domestic violence by taking these preventative steps.

The ounce of prevention by taking these preventive safety steps will be rewarded in "pounds" of safety!!!