

Health and Safety

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RESOURCE



*Oregon*OSHA
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Peter Jon Winchester suffered severe frostbite while working at a food processor.

On the cover: Find out how to prevent workplace burns on page 4.

RESOURCE

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Using all our tools

By Michael Wood



As I have told a couple of the audiences to which I've spoken recently, one of my themes for the year is a combination of frustration and impatience, particularly when it comes to the hazards that we know can seriously injure or kill Oregon workers.

This can be a difficult message to get right – I'm not suggesting that we turn away from consultation or that we quit viewing all of our activities (including our enforcement activities) as an educational opportunity. Those are critical elements in the success of Oregon OSHA and the entire Oregon workplace safety system. They are not going away.

But when I look at the number of serious injuries and fatalities that result from construction falls, and I compare that to the fact that the most frequent serious violations, year in and year out, involve those same fall hazards, I cannot help thinking that we need to take a harder line with employers who simply refuse to get the message. Something needs to change – and while the approaches of the past have served us well, those approaches clearly have not gotten through to everyone.

A few weeks ago, we here at Oregon OSHA announced a significant penalty against a small construction employer for continued violation of fall protection rules. We do not take that lightly – we understand that a penalty of more than \$50,000 can have a real impact on a small employer's operations. But we also do not view it as something we did as much as it is something that the employer brought on itself. In the same way, I recently saw a \$70,000 willful violation settled – in that case, the employer (who also was a repeat violator) had decided that the crew was more comfortable ignoring the fall protection rules. As it turned out, that was an expensive decision.

I have made it clear to my staff: We will cite what we find. But, I also expect them to look more closely at the circumstances of violations that cause a meaningful risk of lifelong disability or death. Whether we are talking about fall protection or trenching or lockout/tagout or confined space issues, you are likely to see more willful and significant repeat violations cited in the coming months and years. Not because we

want to – our goal is, as always, compliance with the rules and the elimination of those hazards that can cause serious injury, illness, or death.

The simple truth is that, in some cases, the time for a gentle reminder has long since passed. Instead, it is time for a bit more impatience. And it's time to make better use of the full range of our enforcement tools.

A handwritten signature in black ink, which appears to read "Michael Wood". The signature is written in a cursive, flowing style.

A person wearing tan work pants and dark shoes is using a floor buffer on a light-colored floor. The person is holding the handle of the buffer with both hands. The background shows a doorway and a dark mat.

Surviving a workplace burn

Understand the risks

By Melanie Mesaros

In March, Peter Jon Winchester was working on the sorting line at a Portland frozen food processor. After an hour, he began to feel his right hand get cold and go numb. He called out for help, but no one responded. Thirty minutes later, he was relieved and was allowed to warm up; however, no medical treatment was provided. Winchester, who was wearing gloves, suffered second- and third-degree frostbite burns and ended up losing one fingertip.

"It still feels like little knives are poking me across all my fingers," Winchester said. "Because of the frostbite, my hand is now very susceptible to heat and cold."

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Above: Peter Jon Winchester is on light duty months after a severe frostbite incident.

Surviving a workplace burn continued



Above: Winchester lost part of his index finger and has sensitivity to cold and heat in his other fingers.



Left: Winchester says he still doesn't have much feeling in his fingertips.

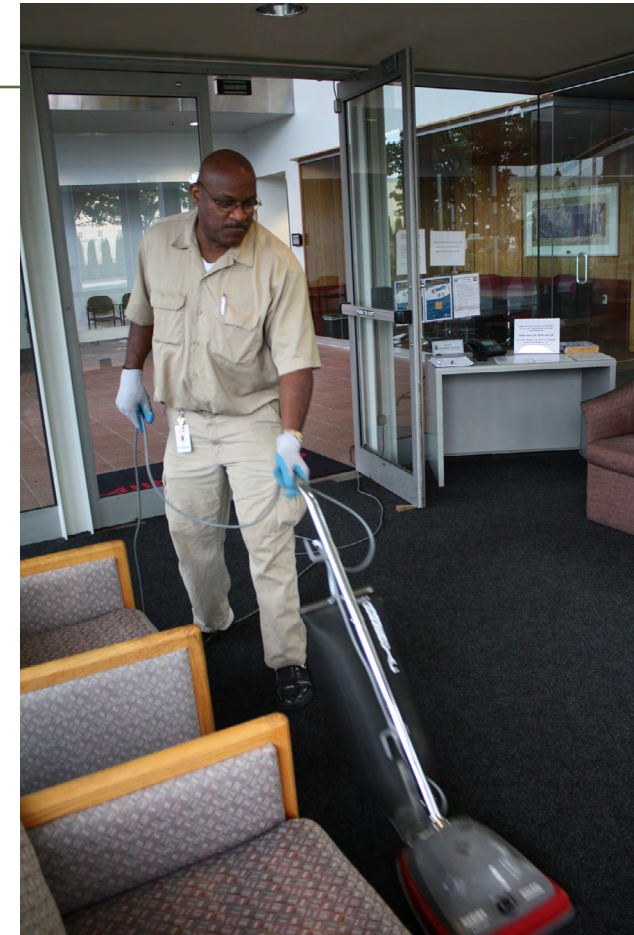
Winchester remains on light duty, performing janitorial work and he may not be able to return to the food processing line again.

A severe burn such as frostbite might be one of the most difficult types of workplace accidents from which to recover, said Dr. Joseph Polito, a surgeon at Legacy Oregon Burn Center in Portland. Polito has front-line experience helping the victims through life-changing accidents.

"If you break a bone, you don't see the bone deformity that's there," said Polito. "The skin is how people see us. With scarring, it does leave physical deformities and that can also leave emotional scarring."

Polito works in Oregon's only burn center. Five to eight percent of patients seen at the burn center suffered from on-the-job injuries. One of the biggest risks to burn patients is infection, and hospital stays can often last months at a time.

"If a person has a 30 percent burn to their body, they are going to be in the hospital for one to one and a half months," said Polito. "They have dressing changes, surgery, but it takes that long for the wound to be closed."



Above: Winchester must wear gloves to protect his hand during his light-duty assignment.

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Surviving a workplace burn continued



Electrical contacts can be some of the most devastating, according to Polito, who has treated patients for exposure to flames and arc flash injuries, which can expose the skin to 4,000 degrees F for a very short duration.

“In the worst case, electrical contacts can be fatal and people can end up losing parts of their body such as arms or legs,” he said.

Chemical burns pose similar concerns, with hydrofluoric acid being among the most hazardous. As the fluoride ion penetrates the skin, it binds with the calcium in blood and can cause people to develop cardiac arrhythmia and suffer heart failure.

“It is very important knowing how it happened and what the source is,” he said of the patients who are brought in with burn injuries.

“The thing that kept me doing this is the resiliency of those who are injured,” Polito said. “Some people say it affects them when people whisper and point at them. They’d rather have someone just ask them what happened.”

In 2010, Oregon OSHA investigated a case in which two workers were applying texture to damaged drywall in a home office. A nearby natural gas water heater ignited the volatile vapors, leaving one of the workers with burns to his hands and arms. The investigation showed the workers were unaware of the product’s flammable nature.

“It’s important for employers and employees to read the label for the product they are using,” said Penny Wolf-McCormick, Oregon OSHA’s health enforcement manager in Portland. “Often, it comes down to not recognizing the hazard, especially if they are working with something new.”

Polito has also treated severe cases of frostbite involving an exposure to Freon, an air-conditioning coolant, and a contact with a liquid propane line. Frostbite causes tissue to freeze and lose blood flow. The liquid propane exposure is of concern especially for young workers filling tanks without any training or PPE.

“Too often, the hazard isn’t recognized, so treatment is delayed,” said Wolf-McCormick. “Managers and supervisors should be trained to recognize the symptoms of exposure so they can ask good questions.”

For restaurant workers, a scald from hot oil is more severe than from water because it has a higher heat index. The burn can be deeper and more severe and Polito said it’s important not to delay any treatment.

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Photo: Chris Gillett

Above: The spray texture above caught fire, burning a worker who was using it near a natural gas water heater.

Top: Electrical burns can be some of the most devastating according to Polito.



Above: Hot-oil burns are often more severe than water because of the heat index for oil.

Tips to avoid a workplace burn:

- Read product labels and the Safety Data Sheet to understand the hazards.
- Know what sort of personal protective equipment (PPE) should be used.
- Understand the properties of the chemical being worked with. Is it flammable? Is it caustic or corrosive? Is it reactive?
- If a chemical is flammable, are you using it in an enclosed space? Can you add ventilation? Is there a source of ignition nearby? It doesn't take a lot of a flammable liquid to vaporize in a small space and result in a flash burn.
- If it's corrosive or caustic, eye, face, and hand protection, or even body coverings such as an apron, can minimize or prevent injury in the event of a splash or spill.
- Know what actions to take in the event of an exposure. Is there a working eyewash or emergency shower available?
- Don't wait if there is an exposure. Wash or treat an affected area immediately and seek help.

Photo: Chris Gillett

The nature of burns

By Ellis Brasch

Most of us know the feeling of a superficial burn, especially after spending a sunny day on the beach without sunscreen. But severe burns are another matter. Recovery from a severe burn may take years, leaving the victim with a loss of physical abilities, disfigurement, and scarring.

Burns happen when an energy source damages living tissue. The energy takes one of four forms: *thermal*, *electrical*, *chemical*, or *radiation*. A burn's first contact point is typically the human body's largest organ – the skin. The skin is also a sensory organ that regulates body temperature, stores water and fat, and prevents entry of bacteria. A superficial burn can upset the skin's delicate functions. A severe burn can overwhelm them, damaging underlying bones, muscles, tendons, and nerves.

Classification of burns

You're probably familiar with the three-level classification of burns. Do you know what each level means?

- **First-degree burns** affect only the outer layer of skin. The burn site is red, painful, and dry, but has no blisters. Long-term tissue damage is rare.
- **Second-degree burns** affect the skin's outer layer and part of the middle layer. The burn site is red, blistered, and may be swollen and painful.
- **Third-degree burns** destroy all three layers of skin and may also damage underlying bones, muscles, and tendons. The burn site is white or charred and there is no sensation of pain because nerve endings are destroyed. Third-degree burns over large areas of the body can be life threatening.

A victim's age and the percentage of body surface area affected are critical factors affecting the outcome of a burn. Clinicians evaluate these factors to determine if people with severe burns need treatment at specialized burn centers.

Types of burns

Thermal burns

The most common source of thermal burns is heat: fire or flame, scalding liquids, and contact with hot objects account for 86 percent of burn cases in the U.S.

Although heat is the source of most thermal burns, contact with extremely cold substances (such as dry ice and liquid nitrogen) will also damage living tissue and is classified as a burn in the current edition of the Bureau of Labor Statistics' *Occupational and Injury Classification Manual*.

Electrical burns

Electrical burns can cause surface damage to skin as well as damage to underlying tissues and other organs. Severe electrical burns penetrate deep into the skin, causing muscle or tissue damage that may affect every system of the body.

Voltage, current, resistance, and contact time are key factors that determine the severity of an electrical burn. Severity also depends on the path the current takes through the body as it seeks an exit point. Blood vessels and nerves offer the least resistance – but muscle, skin, tendon, fat, and bone are also suitable exit paths.



Chemical burns

Chemical burns are caused by the corrosive action of chemicals. The word **corrosive**, which means “to eat away or consume” gives a stark description of the nature of chemical burns. Most chemical burns occur immediately on contact with skin but some chemicals (such as hydrofluoric acid) can be absorbed through the skin and will damage underlying tissue without apparent damage to the skin’s surface.

Household products that may cause chemical burns include bleach, concrete mix, drain cleaners, and metal cleaners.

Because there are thousands of products that can cause chemical burns, the best way to avoid one is to read the label on the product’s container and follow the safety instructions for using it. Make sure that safety data sheets are available for such products and keep them readily available for emergencies.

Radiation burns

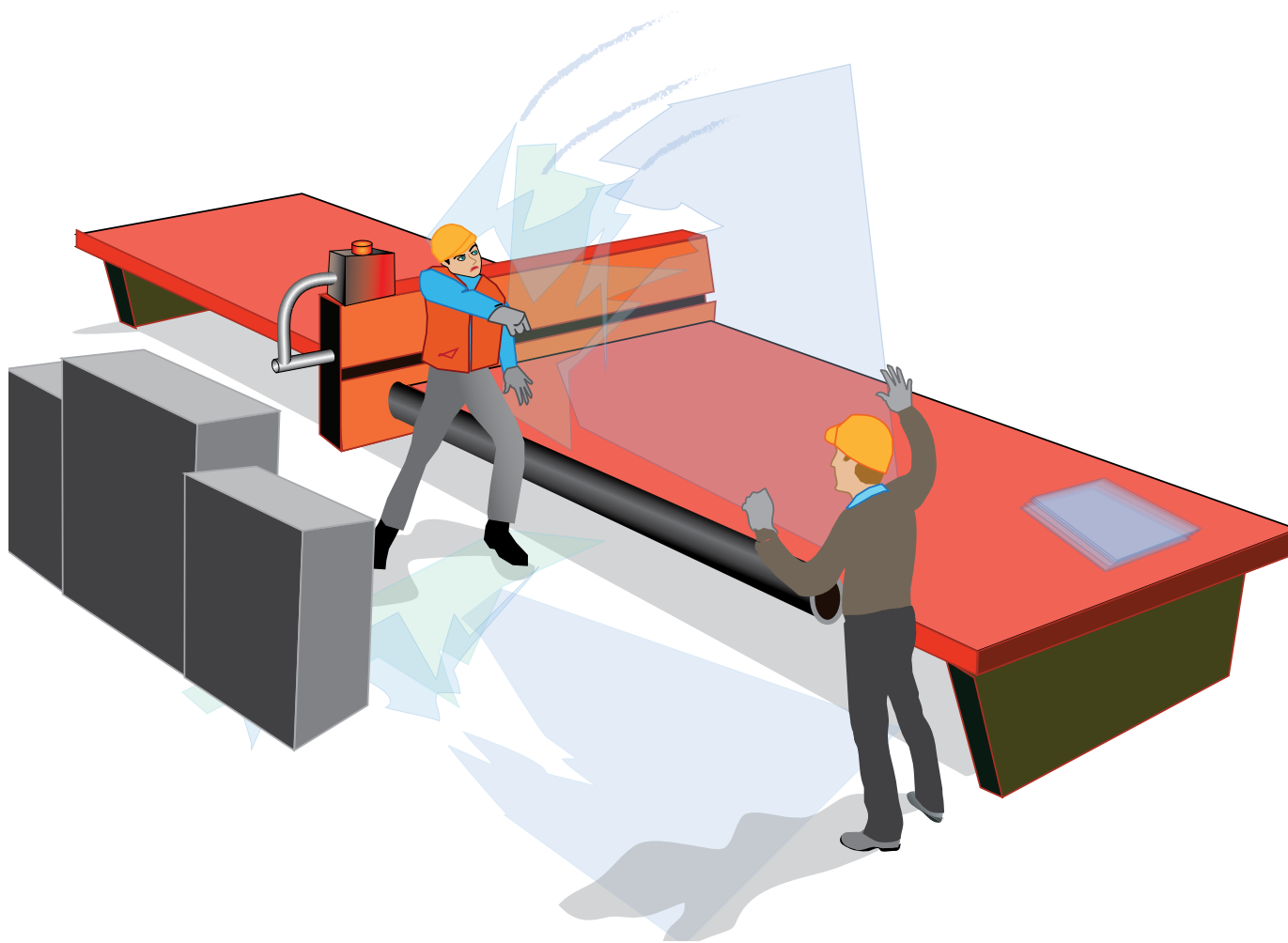
Overexposure to the sun’s ultraviolet light is the most common radiation burn and the most common cause of first-degree burns. Ultraviolet radiation from a welding arc will also burn unprotected skin. Radiation therapy, X-rays, and radioactive fallout are also sources radiation that will also burn unprotected skin. The light from some lasers can burn the eyes and skin as well.

Accounting for burns: on the job

In Oregon, burns account for a small percentage (about 1 percent) of the claims that insurers accept for disabling work-related injuries. Thermal burns – especially those caused by contact with hot objects – accounted for 73 percent of work-related burn injuries in 2011. Cooks and food preparers, especially those younger than age 25, have the largest proportion of such injuries.

In 2012, the average cost of a burn-related disabling injury claim was \$8,670. ■





Accident Report

Incident | Struck by broken glass

Business | Glass fabrication

Employee | Glass cutter

Two glasscutters, Jore and Garcia, had just finished cutting the 12th piece of a 23-piece, quarter-inch plate glass order on a CNC cutting table. The piece measured 61 5/8 inches by 80 7/16 inches and weighed 105 pounds.

Attached to the side of the table was a rubber roller that the company installed to help the employees lift large pieces of cut glass.

The two workers separated the cut piece and pulled it toward them. As they started to lift the glass, Jore heard a “popping” sound. He released his side of the piece and stepped back from the table.

The glass broke into two pieces. The upper piece fell on the CNC table and the lower piece dropped to the floor. Jore noticed that Garcia was holding his neck. He asked him if he was OK, then helped him around the table to the first-aid box. Garcia had trouble standing and leaned against the table as blood rushed from a cut in his neck.

Jore tried to find gauze in the first-aid box but there wasn’t any. He picked up the two-way radio and said he needed help because Garcia was badly cut.

Another worker came running to the CNC table with a box of towels. Jore put

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The lower section of the plate glass shattered on the ground. The upper section fell on the table.

them around the cut and applied pressure. The lead maintenance worker rushed over and together they laid Garcia on the table. He told Garcia to put his head down as he applied pressure to the laceration.

The production manager called 911 and emergency responders arrived about six minutes later; they assessed the injury and called for a LifeFlight helicopter, which took Garcia to a nearby hospital where his injury was stabilized. Then he was flown to Legacy Emanuel Hospital in Portland and admitted to the intensive care unit.

Two weeks later, Garcia was released from the hospital, although his swollen neck and throat prevented him from speaking for another week. He told an interviewer that when the glass broke, there was a piece in his right hand and he thought the force of the break caused the glass to come back towards him and cut his neck. He said he was not able to step back from the glass because the company-installed roller and an emergency stop control box were directly behind him.

Editor's note: The workers' names have been changed to protect their identities.

Applicable standards

437-002-0022(2) Plant Arrangement – Provisions for safety, such as adequate work and storage space, must be included in plant design, layout, and operation.



Keynote speaker
Shawn Galloway

Central Conference focuses on workplace safety culture

Keynote speaker Shawn Galloway challenged attendees of the Central Oregon Conference in Redmond to become better safety leaders in their organizations.

“Even though well intended, most organizations work hard to fail less rather than achieve success in safety,” said Galloway. “We tend to measure and motivate the wrong things and most strategies aren’t effectively aligned to solicit the discretionary effort vital for sustaining excellence.”

Galloway, co-author of STEPS to Safety Culture Excellence and award-winning workplace safety expert, has produced more than 300 podcasts, 100 articles,

and 30 videos on the subject of safety excellence in culture and performance.

In a separate presentation, Gary McDonough, a retired employee of Georgia-Pacific, Toledo, shared how the company reacted and changed its culture after two fatalities in 1993.

“We picked all the low-hanging fruit in a year,” he said. “Then the hard part of putting a safety program in place to prevent injuries began.”

The annual conference, held Sept. 18-19, offered a number of workshops specific to firefighters, such as respiratory protection, fatigue management, and best practices for live fire training. ■



Gary McDonough



Oregon OSHA cites Cornelius construction company \$70,000 for willful fall violation

Oregon OSHA cited Munoz Construction \$70,000 for not protecting its employees from falls. The fine was based on a willful violation and was the result of an inspection at a Portland apartment complex on Feb. 27, 2013. The employer appealed the citation but agreed to it following an informal conference with Oregon OSHA.

During the inspection, an Oregon OSHA inspector observed two employees

working on a second-story roof standing on trusses. Neither employee was wearing fall protection. The owner was on site and said his employees were comfortable working without fall protection, even though it was available in the company trailer.

“Falls are the primary source of serious injury and deaths in construction,” said Oregon OSHA Administrator Michael Wood. “With that in mind, there is simply no excuse for an employer to decide that compliance with the rules is not necessary.”

Under Oregon OSHA's rules, employers must protect employees from falls when working at heights of 10 feet or more. The typical penalty for a first-time violation ranges from \$400 to \$1,000 for a small employer and increases with each repeat violation. A willful violation, where an employer intentionally or knowingly allows a violation to occur, can result in a \$70,000 penalty.

Munoz Construction was also cited \$2,920 for a repeat fall violation on Sept. 13, 2013, at a site in North Plains, Ore. Employees were working at 12 feet on a house without fall protection.

In addition to the 10-foot rule, employees working at six feet or above a lower level also need to be protected from falls near open windows, doors, mezzanines, balconies, or walkways. There are different ways to comply with Oregon OSHA's fall protection rule, such as using guardrails, catch platforms, and personal fall arrest systems. Since 2000, the agency has placed an emphasis on fall hazard inspections in construction.

More details can be found on Oregon OSHA's website at http://orosh.org/subjects/fall_protection.html. Federal OSHA also has training tools and posters available to help raise awareness around falls: <http://www.osha.gov/stopfalls/index.html>.



Photo: Michael Netsch

Workers were not protected from a fall during a Feb. 27, 2013, inspection.

Oregon OSHA restarts rulemaking on confined space entry

Oregon OSHA is withdrawing the state-initiated confined space rule the agency adopted in September 2012. Employers need to comply with the pre-existing federal rules in general industry, as well as the limited construction requirements previously in place.

To develop a new proposal, Oregon OSHA Administrator Michael Wood said the agency will bring together previous advisory groups to review industry concerns about the Oregon rule and its economic effects. He said Oregon OSHA remains committed to a comprehensive rule addressing confined space hazards in general industry and construction workplaces.

“We received questions about certain provisions of the rule and their impacts on the industry,” Wood said. “We concluded there was enough substance to their concerns to justify taking it back to the drawing board. It was simply the right thing to do.”

In order to avoid creating problems for employers who moved forward under the new rule, Oregon OSHA will not cite an employer who is in compliance with either the federal rule or the Oregon-initiated rule. Wood expects a new proposal will be adopted in about six months. He emphasized that the new proposal will not include requirements beyond those in the rule being withdrawn.

“The state rule will be the starting point for our new proposal – we may reconsider some provisions, but we aren’t planning to add any new ones,” he said.

Confined spaces, such as tanks, wells, or tunnels, have limited ability to exit, may contain potentially harmful material, and are not intended for human habitation. Workplace safety rules require employers take proper precautions when their employees must work in such spaces. In Oregon, Oregon OSHA enforces those rules.



For more information on the federal confined space rule that is being temporarily restored in Oregon, go to www.orosha.org/pdf/rules/division_2/div2_j-prior.pdf for general industry and www.orosha.org/pdf/rules/division_3/div3c-prior.pdf for construction.

Oregon OSHA launches video series to educate young workers

From singing restaurant workers to a quirky teacher passionate about lifting techniques, four videos to educate young workers about common workplace hazards are now available at http://www.orosha.org/subjects/young_worker.html and on YouTube.

The videos cover general awareness for teens about speaking up on the job, safe lifting, ladder safety, and restaurant safety. Austin Coburn, a 19-year-old summer intern at Oregon OSHA, created the videos. Coburn was the 2013 winner of the Oregon Young Employee Safety Coalition's "Speak Up. Work Safe." video contest for his video "Safety: The Musical."

Coburn, currently studying film at George Fox University, said he wanted to make young people aware of safety issues on the job and keep the messages entertaining.

"I relied on elements such as music and comedy that I knew teens could relate to," Coburn said. "The videos not only needed to teach the teens, but had to be memorable."

Workers age 25 and younger are more likely to be injured on the job, according to a 2005 study published in the American Journal of Industrial Medicine.

"It's important to reach young workers at the start of their career because they are forming safety habits and a perspective that will inform them in future years on the job," said Oregon OSHA Administrator Michael Wood. "Reaching them – getting their attention – requires creativity. We can't just rely on the same methods we've used for years."



Above: Austin Coburn (right), films a video on safe lifting techniques.

Willamette University student honored with Workers' Memorial Scholarship



Marissa Parr

Marissa Parr was awarded \$1,000 for the 2013 Workers' Memorial Scholarship on Sept. 12, 2013, in Salem. Parr's father suffered a debilitating back injury in 1991 and is wheelchair bound.

Parr hopes to earn a law degree or pursue a career in social services and is currently studying women and gender studies at Willamette University. This is Parr's third time as a scholarship recipient.

"It's particularly gratifying to give this award to the same recipient and watch as she continues to pursue her education and goals," said Oregon OSHA Administrator Michael Wood.

Award recommendations are made by Oregon OSHA's Safe Employment Education and Training Advisory Committee, an advisory group with members from business, organized labor, and government. Oregon OSHA presents the awards annually to help in the postsecondary education of spouses or children

of permanently and totally disabled or fatally injured workers. The 1991 Legislature established the Workers' Memorial Scholarship at the request of the Oregon AFL-CIO, with support from Associated Oregon Industries.

The Workers' Memorial Scholarship is open to any high school graduate, graduating high school senior, GED recipient, or current college undergraduate or graduate student who is a dependent or spouse of an Oregon worker who has been fatally injured or permanently disabled while on the job.

Applicants must be a dependent or spouse of a fatally injured worker, or the dependent or spouse of an Oregon worker who has incurred a permanent total disability and whose claim for workers' compensation benefits has been accepted.

Interest earned on a DCBS fund derived from Oregon OSHA civil fines and penalties funds the awards.

NEWS BRIEFS

Oregon OSHA announces partnership with Oregon Fatality Assessment and Control Evaluation Program

Oregon OSHA has entered into a partnership with the Oregon Fatality Assessment and Control Evaluation (FACE) Program to improve the quality and quantity of fatality investigations. The FACE program, funded through the National Institute for Occupational Safety and Health, is designed to deepen the understanding of factors that contribute to workplace injury and deaths and to identify more proven strategies for prevention.

FACE program researchers will be provided access as a silent observer to select fatality investigations and will be able to make suggestions to Oregon OSHA investigators about questions that should be explored. The FACE program will not publish any information until the Oregon OSHA investigation report is public. Oregon OSHA can also nominate compelling closed cases for follow-up and further investigation. Program priorities include any fatality in the Portland metro area, falls in residential construction, and workers 65 and older involved in transportation or mobile machinery events. Ultimately, the partnership will result in new outreach and educational materials surrounding workplace fatalities.

Oregon OSHA renews alliance agreements

Oregon Coalition for Healthcare Ergonomics

Oregon OSHA renewed its 2011 alliance with the Oregon Coalition for Healthcare Ergonomics (OCHE). As part of the alliance, best practices will be shared on safe patient handling protocols through training and education to health care facilities. It also calls for the development of curriculum to retrain workers in the health care industry in the use of safe patient handling equipment.

A health care ergonomics conference is planned for September 2014 that will allow both organizations to raise awareness and promote research to the health care industry.

Oregon Restaurant and Lodging Association

A partnership with the Oregon Restaurant and Lodging Association (ORLA) will continue to focus on increased awareness surrounding hazard communications, electrical contacts, ergonomic issues, personal protective equipment, and slips and falls. The alliance also includes a commitment to share information through events and conferences.



Oregon Home Builders Association

Oregon OSHA will continue its alliance with the Oregon Home Builders Association (OHBA), with a goal to increase awareness of fall and motor vehicle safety hazards, and ultimately, to reduce accidents and fatalities in residential construction. OHBA will help publicize safety materials and best practices.

Left: Oregon OSHA's Administrator Michael Wood (front) signs a renewal to partner with OHBA's President Jon Chandler.



Above: OCHE's Linda Enos (front) renews an agreement with Oregon OSHA's Administrator, Michael Wood.

Port of Portland celebrates SHARP graduation

The Port of Portland Marine Facilities (marine terminals, marine facilities maintenance and property maintenance) graduated from SHARP in September, with an injury rate that decreased from 12 percent to 4 percent through the process. The program served as a guide for the Port's safety management system.



Above: (left to right) Buddy Kloster, Sam Ruda, Vince Granato, Lyle Larson, Phil Friesen, Russ Ziemer, Chris MacQuarrie, Mark Hurliman, and Richard Henry.

Cintas Document Management graduates from SHARP

Cintas Document Management graduated from SHARP in September. Clint Saunders, general manager, expressed his gratitude, "The support you and your team have provided us over the past five years is priceless."



General Manager Clint Saunders



Congratulations to the new SHARP companies:

- Oregon Child Development Coalition, Inc. — Jefferson County
- Nortek Inc. — Huntair, Tualatin



Cintas Document Management staff

Oregon bootmaker taps into company's soul

A SHARP success story

By Melanie Mesaros



Above: Kris Oman shows off custom guarding in the shoe-maker's factory.

In the 1980s, the West Coast Shoe Company was faced with a wave of employee retirements and new, more inexperienced employees were hired to replace them. The handcrafted boots manufacturer in Scappoose saw injuries such as back strains and muscle pain begin to increase.

"I remember there was an article in the *Oregonian* about carpal tunnel and some of our employees were saying, 'That's what I have,'" said Roberta Shoemaker, who took over as the third-generation leader of the business started in 1918.

At that time, Shoemaker said the company was spending \$100,000 a year in workers' compensation premiums and was in the high-risk insurance pool for its injury rate. She said the economic impact on the company was crippling.

It wasn't until Shoemaker started working with Oregon OSHA consultation that things began to turn around. There was a new focus on ergonomics, management training, and employee participation. Employees were cross-trained to ease the time spent on repetitive tasks and the safety committee was provided training regarding ergonomic risk factors.

"We tackled the higher risk things first – workstation heights, use of hand tools and vibration, lighting, and stretching," she said.

The other key to building safety momentum came with grassroots employee involvement, said Jeff Jackson, an Oregon OSHA consultant who saw the company through the Safety and Health Achievement Recognition Program (SHARP) process. West Coast Shoe graduated in August after five years of continuous improvement in the program.

"Some companies drop out and don't have the commitment to see the process through," said Jackson. "West Coast Shoe was able to develop a positive and active safety culture that was integrated into their daily business activities. With staff and management working together, employees built trust and weren't willing to fail."

Factory supervisor Kris Oman said the company made sure employees were reporting injuries and asked them to be creative and honest with ideas for solutions. The business had a safety committee since the 1960s, but only in recent years had it become a group making a big difference.

"They started to realize slowly, 'We have a voice and we will be heard,'" said Oman. "They started seeing the changes."

Jackson said it's one of the biggest turnarounds he's witnessed as an Oregon OSHA consultant.

"The employees really took ownership of the safety and health programs," said Jackson.



"This could not have been done without the company demonstrating a strong commitment by funding solutions and creating an open-door policy to voice concerns. The management empowered workers to find the best way to perform tasks."

Not only has the company reinvested workers' compensation savings, it has brought the total case injury rate down from 29.5 percent in 2006 to 4.9 percent in 2012. The company experienced two years with no recordable injuries during the five-year SHARP process. Employees had one day of restricted duty in 2012, with no time-loss incidents.

"It's self-fulfilling to me to see what the employees have accomplished," Shoemaker said. "It adds substance to the company and has led to increases in our production." ■



Above: Workers hold up the SHARP flag at the company's graduation ceremony.

Top: (Left to right) Adam Camberg, Kris Oman, and Roberta Shoemaker.

Q:

I recently walked into our staff break room – which has a refrigerator and sink – and found one of our managers washing her pet Chihuahua in the sink. That’s also the only room in the building where I am allowed to prepare and eat my food. I told her it was unsanitary but she said there was absolutely nothing wrong with it. This is a family-run business and her brother is the owner. Are there any Oregon OSHA rules prohibiting the practice?

A:

Oregon OSHA's sanitation rules do not prohibit the situation you describe. There is a basic requirement that all places of employment must be kept clean, but the requirement does not forbid washing a Chihuahua; it would only require that the sink be cleaned afterwards.



GOING THE DISTANCE – Meet a leading Oregon health and safety professional



Organization: Oregon OSHA

Lab manager: Kermit McCarthy

Analysis: Provide assessments on lead, asbestos, metals, silica, and other chemicals

What is your industrial hygiene background?

I started here in 1980 in the Accident Prevention Division's Occupational Health Lab. I didn't know what OSHA was or what industrial hygiene was so I got a lot of on-the-job training. I had a bachelor's degree in chemistry and a master's in organic chemistry and spent time in graduate school running gas chromatographs and liquid chromatographs so I was hired because of my analytical experience. I worked on a couple of construction jobs and doing farm work for several summers. I was a quality control supervisor in a gypsum wallboard plant where I was in an industrial accident. I got my arm caught in an unguarded roller. Fortunately, the circuit breaker flipped and the machine stopped before I was seriously hurt. There was no training, no accident investigation, and no guarding of the roller after the accident.

The first few years here, I did analytical chemistry full tilt. When the industrial hygienists dropped off samples, I would discuss where they came from and what the processes were. I accompanied them in the field on many occasions and got to know what they were up to. Sampling for personal exposures in the field is tedious and time consuming. It became evident that the industrial hygienists need as much support as they can get to ensure the samples that are collected will provide useful data. I developed a guide to help them select the correct sampling media for the compounds of interest and have accompanied them in the field to provide assistance. Over the years, my focus has

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GOING THE DISTANCE - Continued



Above: Kermit McCarthy (left) oversees Cuong Nguyen preparing midget impingers.

been on customer service so that we can obtain useful data to evaluate critical exposures. I always told the industrial hygienists no question was a dumb question and that I was here to help. In the lab, my focus has been on providing good, quality data.

In the early 1980s, the industrial hygiene field was burgeoning and there was a big influx of new industrial hygienists into the Accident Prevention Division (the precursor to Oregon OSHA). Most of them had master's degrees in industrial hygiene and this was their first job out of graduate school. It was exciting to work with these highly educated and motivated new employees as we learned together. Over the years, 169 industrial hygienists have worked here in my tenure. Some of them are professors, some work in research at the National Institute for Occupational Safety and Health, some are corporate industrial hygienists with major corporations, some have had their own consulting firms, and several have gone on to federal OSHA. I feel fortunate to have worked with all of them and spent 33 years working in a field where the results really matter in protecting the safety and health of workers.

What is your role at the Oregon OSHA lab?

I have been the lab manager for the past 12 years. Previously, I was an industrial hygienist in the lab where my duties included interacting with and advising industrial hygienists as well as analytical chemistry. Before that, I analyzed all types of samples received by the lab.

Oregon OSHA's lab is one of a few full-service industrial hygiene labs in the country. There are only six other states that have accredited labs and only Iowa and Washington provide full service with the ability to analyze all types of samples.

The lab's role is to provide analytical services to the roughly 40 compliance and consultant field staff members. We analyze welding fume samples for metals and hexavalent chromium; electroplating fumes for acids and hexavalent chromium; painting processes for organic solvents and diisocyanates; sawing and grinding operations for particulates; crystalline silica during concrete cutting, grinding, or demolishing; and particle board manufacturing and hair straightening for formaldehyde. We look for metals, wax fumes, and cristobalite in samples from foundries; lead, cadmium, and other metals in colored glass manufacturing; and methylene chloride in paint stripping operations. We determine the amount of asbestos present in bulk materials, or the exposure to asbestos during asbestos removal processes. We analyze for many other exposures too numerous to list.

We also provide technical advice on a wide range of issues. It may include advice on what to sample for during a specific operation and how to sample for it, or helping interpret what the results mean.

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GOING THE DISTANCE - Continued



Above: McCarthy looks at asbestos fibers under a microscope.

What are some of the unique samples that have been brought in or cases that you were instrumental in?

Years ago, we got a lung to analyze for toluene. That would not happen anymore. We don't have the appropriate licensing to handle body tissue. We attempted to sample the lung using a syringe and injected into the gas chromatograph and we didn't see any toluene. We also analyzed a hat for metals and have looked for acids in pants.

One of the places the lab stands out is in the analysis of diisocyanates. Diisocyanates are used to make polyurethanes that are used in auto body paints, truck bed liners, foam rubber, hard polyurethane foams, and adhesives. Oregon OSHA is the only place in the world to have PELs for some diisocyanates used in paints due to the hard work and forethought of Mike Rodia and my former boss, Marija Janko. We are also one of the few places to still use impingers – a much more efficient sampler – for sampling. Because of this, we have analyzed several thousand samples for isocyanates, published papers, and have given

several presentations. We have found exposures up to 30 times the permitted exposure level and still find a large percentage of samples over the PEL. Diisocyanates are sensitizers and affected people cannot be in a building where diisocyanates are being used, let alone work with them. Usually, sensitized workers must leave the trade they are working in to avoid further exposures.

You have analyzed samples from construction sites, hair salons, auto shops, and more. Have any of the results surprised you?

I have done more than 58,000 determinations in my time here. The lab has done several times more than that. For the most part, the samples are routine, but I was involved in the investigation of a fatality where a salesman was demolishing a thermospray device that was being used to recoat turbines in a hydroelectric power plant. Our investigator devised a system where the thermosprayer could be operated remotely so we could simulate the exposure and assess it using several direct-reading instruments and sampling

Right: McCarthy removes a sample inside a chemical fume hood.



media with pumps. Two types of wire were used with the thermospray. When the chromium wire was used, we could see smoke and our instruments registered some exposure. When nickel wire was used, there was no smoke and the room looked fairly

clear. But all the instrumentation stopped a couple of minutes into the test. At first we thought there was something wrong with the instrumentation, but on closer look, we found they were all plugged up. Evidently, the nickel wire produced such fine particulate that it was not visible in the air. Analysis of filter samples showed nickel exposures at about 400 mg/m³ – which is huge and right at the Immediately Dangerous to Life and Health (IDLH) level for nickel.

We analyzed a hair-straightening product that was supposed to be formaldehyde free and found about 10 percent formaldehyde. That result surprised me and we also ran the sample using four different methods. Three of the methods agreed within a couple

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of percent. The fourth method gave a low result, but the amount of formaldehyde was over range for that method. These methods used completely different principles and analytical instrumentation and each analysis was performed by a different analyst. This analysis generated a lot of media attention. Fortunately, we have spent years analyzing bulk samples from the wood products industry for formaldehyde and have learned a lot from them on issues around formaldehyde analysis. When the hair straightening products showed up, we were ready.

What advice do you have for other safety and health professionals hoping to make a difference?

I encourage you to question assumptions. This is harder than it might appear. Assumptions are often hard to ferret out. Be open to information from all kinds of sources. Learn what it is to really know about an issue. It can be really important to have a thorough understanding of the technical issues. You are not always finished when you think you are. Sometimes, the real solutions require digging for more information and trying different approaches. In the lab, we are constantly looking for better analytical methodologies. To keep up, you have to look for ways to improve processes. ■



Above: McCarthy poses with Roberta McCrae next to the X-ray diffractometer.

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