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Administrator’s message:  
The limits of injury and illness rates

By Michael Wood

Over the past decade, many have come to appreciate the limitations of using injury and illness rates to track safety and health performance. While such rates can be an important piece of information, we should also be aware of their limitations.

One of the most obvious limitations of injury and illness rates is that they are lagging, rather than leading, indicators. You will not know whether the actions you take to reduce risks today have worked until you are looking back at what happened. At that point, it is often too late to adjust your strategy.

One of my particular concerns is the tendency for fatality risks to drop from our awareness when injury logs are the only real indicator of safety and health success. Severe risks and less severe risks do not necessarily track one another. Too many operations celebrate their success in bringing injuries down only to discover how little they are doing to address lockout/tag-out or confined spaces when they lose one of their numbers to a workplace fatality.

Another limitation of almost any indicator is that illnesses are vastly underreported, if at all. Workplace illness is often difficult to diagnose, and many of the most severe risks (asbestosis, cancer, and silicosis to name a few) have long latency periods and uncertain causation that make it difficult to tie a particular illness to a particular workplace – or even to a workplace exposure of any sort.

But perhaps the most meaningful limitation comes out of the statistical issues involved when small worksites are evaluated based on injury and illness rates. Did the 10-employee business that moved from a rate of 10 injuries per 100 workers to 20 injuries per 100 workers really get more dangerous when the worksite experienced two injuries instead of the previous year’s one injury? Not necessarily. With numbers that small, the meaning of such a shift is certainly difficult to understand, and may be completely nonexistent.

If we imagine 100 worksites, each with five employees and an injury risk of 10 percent per employee per year, we can see the limitations of rates when dealing with small numbers. Based on the worksite’s risk, each one “deserves” one half an injury – as a group they are likely to have roughly 50 injuries. But at least 50 will have no injuries, not because they are safer but because of the luck of the draw. It is likely that several worksites will experience more than one injury. A careless analysis will conclude that more than half have no risk at all. That’s simply not true. And it would assume that those with two injuries were two times as dangerous as those with one. That’s also not necessarily true.

Oregon OSHA has recognized the limitations of such risk characterization, particularly in Oregon where in 2005 the Employment Department reported that 90 percent of individual businesses had fewer than 20 employees.

This recognition is why in 2005 the Legislative Assembly, at Oregon OSHA’s request, modified the “high risk” employer notification requirements to eliminate a reliance on disabling claims rates. It’s why in 2007 the Legislative Assembly, again at Oregon OSHA’s request, eliminated special safety committee requirements for individual employers with higher-than-average disabling claims rates. And it’s why Oregon OSHA is proposing rules that will focus our enforcement activity on worksites in particular, high-hazard industries, rather than focusing our activities on individual worksites that experience a disabling claim.

If we’re going to prevent workplace injuries and illnesses, we need to look at the underlying risks. Finding the right tools to identify such risks will be a continuing challenge. But it’s necessary if we’re to be effective in pushing Oregon’s injury and illness rate down in the years and decades to come.
Rustic stone fireplaces and contoured granite countertops may look beautiful, but workers creating such masterpieces face a real risk. Silica, a naturally occurring mineral, is found in rock and sand all across the world and can lead to tissue damage, scar tissue, and even lung cancer.

When silica particles are sent airborne, the minerals enter the lungs and can build up over time. Chronic obstructive pulmonary disease (COPD), bronchitis, and a fibrotic lung disease called silicosis can develop over 20 to 40 years, often over the lifetime of a tradesperson.

“It is a hazard to workers any time granite or sand is ground into small particles and the small particles are sent airborne,” said Brian Hauck, an Oregon OSHA industrial hygienist and compliance officer. “Those small particles are breathed in and can become lodged deep in the lungs. This fine silica is generated when concrete is cut with dry saws or smoothed with a disc grinder. In manufacturing, it is generated when sand is used as an abrasive blasting media in sand blast booths. During road maintenance, silica dust is created when crews cut concrete with dry saws, producing massive dust clouds.”

Because of the hazards associated with silica, Oregon OSHA has an inspection emphasis program.

“The trick is to avoid creating dust in the first place,” said Hauck.
One company managing the exposure risk is We Cut Concrete, a Bend-based family business that does commercial and residential work.

“When we cut, there is almost no dust,” said David Lannen, president of We Cut Concrete.

Lannen takes on jobs large and small, including one job that required just one cut. His entire six-member crew uses wet cutting methods, which are preferred, according to Hauck.

“Saws should be equipped with water attachments to cut down the dust at the source,” Hauck said. “Grinders should be fitted with ventilation controls whenever feasible. In some applications, such as house siding in residential construction, saws can be replaced with sheers.”

Only in rare circumstances, does Lannen’s staff work without wet cutting machines.

“Let’s say we are breaking concrete with a jackhammer or chipping gun, we wear respirators,” said Lannen. “It’s a last resort type of thing.”

“When work is done dry, we often find overexposure and that’s when a respirator is required,” said Hauck.

Hauck said companies he inspects often don’t take advantage of wet saws because they are perceived as expensive and difficult to use. And Lannen has found many contractors don’t realize the speed and ease that a concrete cutting professional has when completing a job.

“The cost of hiring a professional concrete cutter often decreases the amount of time spent actually completing the job,” said Lannen. “You have someone who understands the hazards and is able to complete the job safely and quickly without exposing workers to silica dust through dry cutting methods.”

We Cut Concrete uses wet saws during nearly every job.
Silicosis is a progressive, disabling lung disease caused by breathing dust containing particles of crystalline silica — particles so small you can see them only with a microscope.

Crystalline silica can cause silicosis only when you breathe it into your lungs as dust or a fine powder. The silica particles become trapped in your lungs and damage the tissue. The tissue scars and typically forms small, rounded masses called nodules. Over time, more nodules form, making breathing increasingly difficult.

You may be using products or materials that contain crystalline silica and not even know it. Construction activities that could put workers at risk include:

- Abrasive blasting and sandblasting
- Chipping, hammering, or drilling rock
- Crushing, loading, hauling, or dumping rock, sand, or gravel
- Demolition of concrete or masonry structures
- Dry sweeping or using pressurized air to clean concrete or rock
- Installing and handling fiber-cement siding
- Sawing, hammering, drilling, grinding, and chipping masonry or concrete

Preventing silicosis

The best way to prevent silicosis is to identify activities that produce silica dust at your workplace, then eliminate or control the dust so that it isn’t hazardous. Oregon OSHA’s air contaminants rules for the construction industry limit the maximum amount of airborne crystalline silica dust that a worker can be exposed to during a standard work shift. The maximum amount, called the permissible exposure limit (PEL), is 0.1 milligrams of crystalline silica per cubic meter of air (mgm3) averaged over an eight-hour period.

If you do work that could produce silica dust, you should determine your exposure and whether you’re exceeding the PEL. It’s not a difficult task, but is best left to an industrial hygienist.
Controlling silica dust

How to control silica dust

Identify activities that expose workers to hazardous levels of crystalline silica, then eliminate or control the dust so that it isn’t hazardous. Here are some suggestions:

- Use materials and work processes that don’t contain crystalline silica.
- Use wet drilling or sawing to control dust. Remove dust with a wet vacuum or hose it down. Don’t blow it around with compressed air or sweep it with a dry broom.
- Use local-exhaust ventilation to keep work areas dust free.
- Use dust-containment systems or enclosed cabinets with gloved armholes on machines that generate dust.
- Have workers wash their hands before eating, drinking, or smoking – then shower, if possible, and change into clean clothes before leaving the worksite.
- Put up signs that identify work areas and equipment that may expose workers to crystalline silica. Signs should also warn workers about crystalline-silica hazards and identify required personal protective equipment.

A note on respirators: Respirators are a special type of personal protective equipment. When carefully selected, worn, and used, respirators will protect workers from inhaling crystalline silica dust. You should use a respirator only if you can’t eliminate or control the dust with any other method, and you need to understand Oregon OSHA’s requirements for using respirators. Don’t use a respirator as your only means of protection.

Air monitoring: how it works

Determining a worker’s exposure to silica dust requires a special instrument called a cyclone sampler that collects an air sample from a worker’s breathing zone. The cyclone is clipped to clothing in the worker’s breathing zone and connected by a flexible tube to a calibrated pump usually attached to the worker’s waist. The pump pulls air through the cyclone, which removes large nonrespirable particles with a centrifugal motion and lets small respirable particles settle on an internal filter.

The dust sample on the filter is analyzed by a laboratory to determine the silica concentration. If the concentration exceeds the silica PEL then you must lower the worker’s exposure below the PEL or, better yet, eliminate the exposure.

Workers who may be exposed to crystalline silica dust should have regular medical exams. They should be examined before they begin their jobs and at least every three years thereafter. Examinations should include medical and work histories, chest X-rays, and tuberculosis evaluations. Medical evaluations should supplement air monitoring and other controls – not replace them.
The crew started at approximately 7 a.m., had a safety meeting, and prepared the equipment for the initial start of the job. They arrived at the job site about an hour later to set up their equipment — a track-hoe and a forklift. They began to excavate the trench, which would be approximately nine feet deep and approximately nine feet wide. The trench was being cut in disturbed soil, with the task of replacing a three-foot diameter pipe by a larger five-foot diameter pipe for water drainage. The superintendent initially excavated the trench, which was to be about 30 feet long. He had dug about 20 feet of the 30-foot length of trench.

At approximately 10:45 a.m., enough of the trench had been excavated to lay the first section of 20-foot long by 60-inch diameter pipe into the trench. The trench did not require a bed of gravel be placed beneath the pipe because the purpose was to lay the pipe as an aqueduct. The superintendent and crew then took a 15-minute break before starting another section.
When work resumed, the victim placed a measuring rod in the trench for the track-hoe operator to gauge depth. A measurement of approximately 8-foot-8 was recorded. The superintendent, who had been operating the track-hoe, returned the track-hoe back to the track-hoe operator to continue the excavation. The operator dug out approximately another 18 feet.

At this time, the superintendent took a front-end loader and gathered a bucket full of gravel for back filling the pipe for stability and integrity. As he returned to the trench, he noticed the victim coming from the west end of the culvert pipe. As he walked up past the superintendent, he stated that the culvert would make a neat fort and it was good in there. The superintendent did not say anything.

The victim at this time was watching the track-hoe from the top of the trench on the north side when he noticed a piece of concrete or asphalt in the bottom of the trench. He made his way down an earthen embankment alongside the first pipe that was laid. He then walked inside the 60-inch diameter culvert pipe and came out the end of the pipe into the trench. It appears the victim took one step into the trench when the track-hoe operator spotted him and started to yell for him to get out. At that very moment, the side of the trench wall collapsed, burying the victim up to his chest.

The track-hoe operator pulled the bucket of the hoe out of the trench and swung it to the north side. He stopped the machine, jumped out and ran for help. The forklift operator, who was in close vicinity to the trench and delivering the next 20-foot length of pipe, heard the operator call for help. He quickly got a shovel, ran to the trench, jumped in, and then tried to dig the victim out.

The track-hoe operator, while running to other members of the crew for help, called for emergency services, informing them of the trench collapse. Meanwhile, two other crew members had reached the trench and frantically dug to free the victim. After approximately five minutes, the victim was uncovered to his hips. A co-worker assisted him in standing, when the victim stated to him that he was going into shock. The victim went unconscious and fell forward from the waist up. One crew member cradled the victim while they dug, trying to uncover as much of the victim as possible before the fire department arrived. He died on his way to the hospital from the crushing injuries.

Applicable standards:

1926.652(a)(1)

Each employee in an excavation shall be protected from cave-ins by an adequate protective system.
Ask Technical

Q:
A question came up regarding the regulations or law concerning whether it is a requirement to periodically test retractable fall protection devices. If so, what are the requirements?

A:
Oregon OSHA rules are not specific to individual components used in conjunction with any particular system. The rule requires that personal fall arrest systems be inspected prior to each use for wear, damage, and other deterioration, and defective components must be removed from service. It’s also recommended that you review the manufacturer’s requirements and follow those accordingly.

Practical Safety
Do you have a useful safety tip you would like to share? Submit your creative or interesting tip to Resource editor Melanie Mesaros at Melanie.I.Mesaros@state.or.us, and include “Practical Safety” in the subject line. You may see your tip printed in the next issue of Resource!
Northwest Workplace Violence Conference focuses on prevention

After watching some chilling fatal incident case studies, audience members at the Northwest Workplace Violence Conference in Portland were asked to try to identify missed warning signs. This examination of extreme workplace violence was one aspect of what was covered at the two-day event in June, which was led by law enforcement veteran and security improvement initiatives expert, John J. Posey.

Posey outlined several trends in fatal attacks by employees or former employees, including the following:

• The fatal attack is preceded by warnings from the attacker (verbal remarks or e-mails)
• The average delay in an attack is nine months after an incident (for example, a layoff or firing)
• The assailant knows the area and procedures
• The attack usually occurs midday

Oregon OSHA Administrator Michael Wood also spoke at the conference, urging employers to address violence, but also stressing that violence between employees is not as great a risk as the risk of violence that arises out of the work, whether it’s violence in support of criminal intent, such as a robbery, or violence that results from frustrations by customers or clients, such as that experienced in health care and government.

“I want to caution you all that we can’t achieve perfection,” Wood said. “As long as we have humans interacting, the risk will always be there.”

Wood told attendees to use the resources available through the conferences to reduce the risks. He noted there are many things employers and workers can do to reduce the risk of violence in the workplace – and its potential consequences.

He pointed to the security guard killed at the Holocaust Museum in Washington, D.C., as a recent example of the reality of workplace violence.

Wood said that in handling inspections related to violence, Oregon OSHA would investigate, but could not simply assume there was a violation because an incident occurred.

“What we will be looking at (in these type of cases) is whether what the employer did was reasonable under the circumstances,” Wood said.
Oregon OSHA announces results of tower crane emphasis

Oregon OSHA released the results of an emphasis program it began in August 2008 in response to the number of tower crane failures and accidents across the country.

Oregon OSHA inspected seven cranes as a result of the tower crane program. Because some cranes involved multiple employers, these visits resulted in 13 inspections. Among the 13 violations cited, eight were classified as “serious” in nature and the remaining violations were cited as “other than serious.” Nine of the inspections resulted in no serious violations, while six of those resulted in no violations at all.

“We found some problems but nothing that was widespread or systemic,” said Oregon OSHA Administrator Michael Wood.

Some of the areas of concern Oregon OSHA identified were grounding issues, operator training, procedures, and training for riggers. Inspections covered crane operator qualifications, crane maintenance, and training records.

The results of the emphasis were shared with the Construction Advisory Committee, a group made up of construction industry leaders from both the employer community and labor.

Four students honored with Workers’ Memorial Scholarships for 2009

Four Oregon students were honored with Workers’ Memorial Scholarships at a July 23, 2009, ceremony in Salem.

The Department of Consumer and Business Services program provides an opportunity to help surviving family members reach their educational goals. The loss of a parent due to a workplace accident or disease can have a profound effect on a family’s ability to finance higher education.
The recipients are:

Brittany Ford, Gresham

Ford plans to start this fall at Oregon State University and hopes to become a dietician. She has had an interest in nutrition since grade school, when she started reading food labels. Ford ran cross country in high school.

Ford is a 2009 graduate of Gresham Barlow High School. She lost her father when a machine crushed him two weeks after her seventh birthday. This is Ford’s first Workers’ Memorial Scholarship. She is receiving a $2,000 award.

Austin Stinson, Albany

Stinson plans to study culinary arts on the East Coast in the fall. With a passion for cooking, his goal is to become a high school culinary teacher.

Stinson is a 2008 graduate of South Salem High School and currently works at an upscale restaurant. His father was killed in 2003 while working on a Cascade Locks construction project. This is Stinson’s first Workers’ Memorial Scholarship award. He is receiving a $1,500 award.

Brittiany Wilson, Oregon City

Wilson plans to attend Clackamas Community College this fall and would like to work in the youth corrections or probation field.

Wilson is a 2009 graduate of North Clackamas Christian High School. She has volunteered at a local hospital and makes it a habit to donate blood every six weeks. Her father was permanently and totally disabled in a workplace accident when she was 5 years old. This is Wilson’s first Workers’ Memorial Scholarship award. She is receiving a $1,500 award.

Marissa Becker, Molalla

Becker is starting graduate school this fall at the University of Montana. Once she earns a master’s degree in health promotion, her goal is to work for a nonprofit organization to help fight childhood obesity.

Becker is a 2003 graduate of Molalla High School and was just entering college when her father died from an overexposure to metal dust. This is Becker’s first Workers’ Memorial Scholarship award. She is receiving a $1,500 award.

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 assist in the postsecondary education
of spouses or children of permanently 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 and totally disabled while on the job.

Applicants must be Oregon residents receiving fatality benefits, 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.

**Rule change for all small employers to take effect in September**

After an extended phase-in period, the rule revision requiring all employers to have a safety committee or hold safety meetings with their employees takes effect on Sept. 19, 2009, for small employers (10 or fewer employees) not in construction.

Under the new rules, all employers will need either to have a safety committee or to use the less formal option of safety meetings to involve their employees in addressing jobsite safety.

Previously, a stricter set of safety committee requirements applied to employers with more than 10 employees. Smaller employers also had to have a safety committee, regardless of size, if they were in a high-risk industry or if they had a high rate of claims requiring time off work, compared to their industry as a whole.

According to the Oregon Employment Department, small businesses employing 10 or fewer employees represent 80 percent of the state’s employers. These small employers, mobile employers, and companies with primarily office environments now have the option to hold safety meetings with a significant reduction in paperwork. The rule change also eliminates the mandatory penalty of at least $100 for not having a safety committee.
Tell me about your background and safety philosophy?

I graduated from the University of Idaho with a degree in business. I spent my first couple of years out of college as a front-line supervisor in both manufacturing and distribution. In 2007, I was given an opportunity to transfer to the Purdy Portland facility into a position within the Human Resource Department. At that time, the site was working to become a Voluntary Protection Program (VPP) Star site. The company needed someone to move into more of a safety role to champion this effort. I quickly jumped at the opportunity to become the safety coordinator. At that time, I only knew about safety from a production point of view and understood some basics such as participating on the safety committee and lockout/tagout. I think stepping right into a role where we were very focused on becoming a VPP site was the best way for me to learn about the Oregon OSHA program and how to develop a world-class safety culture.

One thing that was most intriguing to me about the safety profession is how much of an impact you have not only on your employees, but also on their families. Our site is very focused on sending employees home at the end of the day in the same, if not better, condition than when they came in.

Continued on Page 16
The development of a good safety program starts with management commitment and employee involvement. If management isn’t providing the resources, such as training, PPE, machine guarding, time for safety meetings, etc., then your safety program isn’t going to grow. At Sherwin-Williams, safety is the first of five core values. As an example, we start all of our meetings and shifts with a safety contact.

Tell me about what you do at the Purdy Portland facility?

We manufacture handmade paintbrushes and paint rollers. Our Purdy employees work in jobs that are highly repetitive. All of our paintbrushes are handmade so some of our employees will make 300 to 500 brushes a day.

Ergonomics was one of the leading causes of recordable injuries at our site in the past 10 years. We have since made ergonomics one of our top safety priorities. We formed an ergonomic committee made up of hourly employees. In the spring of 2008, we had an industrial hygienist from our corporate office lead a two-day training session for our committee. The training included ergonomic risk factors and conducting ergonomic job analysis. The committee now conducts job analyses monthly.

There has also been an emphasis put on early reporting of discomfort. We have a Discomfort Form that employees fill out if they start to feel discomfort from their job. This has allowed us to take a proactive approach to ergonomics, rather than reactive. If an employee tells us right away that a particular area is bothering them, then we can work with them through stretches and job analysis and coaching to prevent an injury to the employee. The form also gives the ergonomics committee data on which jobs to focus their attention on. This year, we looked at data from the past three years and discovered we had one job that was associated with 60 percent of our discomfort forms. With this information, the committee started having those employees do a one-minute stretch-n-flex routine every hour, which has been very successful.
How do you engage employees in your safety culture?

To get employees involved, you need to become innovative. I feel one of the best ways is to make safety fun. We have a VPP committee, which develops games that get employees involved in learning about safety. One of the games was called “VPP Feud,” which was set up like the game Family Feud, but the questions focus on VPP concepts and safety training that our employees have had.

Do you have examples of any current projects with unique safety challenges?

It seems like at our facility we are in constant change. One of the things we have been focusing on is our “management of change” process. This allows us to analyze and mitigate any inherent safety or health hazards before the change occurs. We are also working on getting more employee involvement in this process because they know better than anyone how the change will affect them.

The Sherwin-Williams Portland facility became a VPP company in 2008. Did going through that process change your safety culture? If so, what improved?

If you asked employees when I started at the plant who was responsible for safety, the general answer would be Human Resources, my supervisor, or the plant manager. Employee ownership of the safety program was in its infancy. Now when you ask our employees who is responsible for safety the answer will be “we all are.” The biggest change that the VPP process brought was our employee engagement and ownership of the safety process. Employees started getting involved in ways that had never been seen before. As we progressed through the VPP process, we also noticed more engagement in other areas beyond safety such as housekeeping and quality. During our OSHA VPP audit we had 30 employees give presentations to the auditors. For most of them this is way beyond their comfort zone, but the VPP process has given them confidence to stand up and talk about their safety program.

You mentioned that your employees speak a variety of different languages. How has that made safety a challenge?

We have 12 languages that are spoken at our facility. One of the main challenges we faced as we developed our program was how to make our safety training effective. We generally would do our safety training in the classroom setting, where you would bring a group of employees in and go over an hour-long PowerPoint presentation. We realized that by giving our Purdy associates the entire training course during one time period was not effective for our worksite. We already had a system in place where we do a safety contact at the start of every shift so we decided to incorporate our...
safety training into the safety contact. We have broken our safety trainings into five-minute daily portions. By conducting our training this way, the lessons are reinforced throughout the month instead of once.

The site also started offering English as a Second Language (ESL) classes two years ago. We have an ESL teacher come in once a week and she conducts two classes, one for each shift. We have 25 employees enrolled in this class. The teacher has also incorporated safety topics into her class.

We also hand out key chains to our employees. Any information we want them to remember, we put on small laminated cards, which they can put on their key chains. The purpose of this is to make the information readily available to them.

What advice do you have for other safety managers hoping to make a difference?

The best advice I can give to other people in the safety profession is to start networking and get involved. There is so much information that is already out there. Not long after I took on the role of safety coordinator, I went to a Region X VPPPA conference. This allowed me the opportunity to learn from other safety professionals who had already developed world-class safety cultures in their own companies. I attend the Region X VPPPA conference and national conference every year and always come back with something new that I can implement. Whether it is ASSE, VPPPA, or another safety organization in your community, start networking.

At Sherwin-Williams our success in creating a sustainable environmental health and safety culture has been through meaningful employee engagement.