THE MAGAZINE FOR ENVIRONMENT, HEALTH AND SAFETY LEADERS

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Safety Leadership: THE POWER OF WORDS

P. 8

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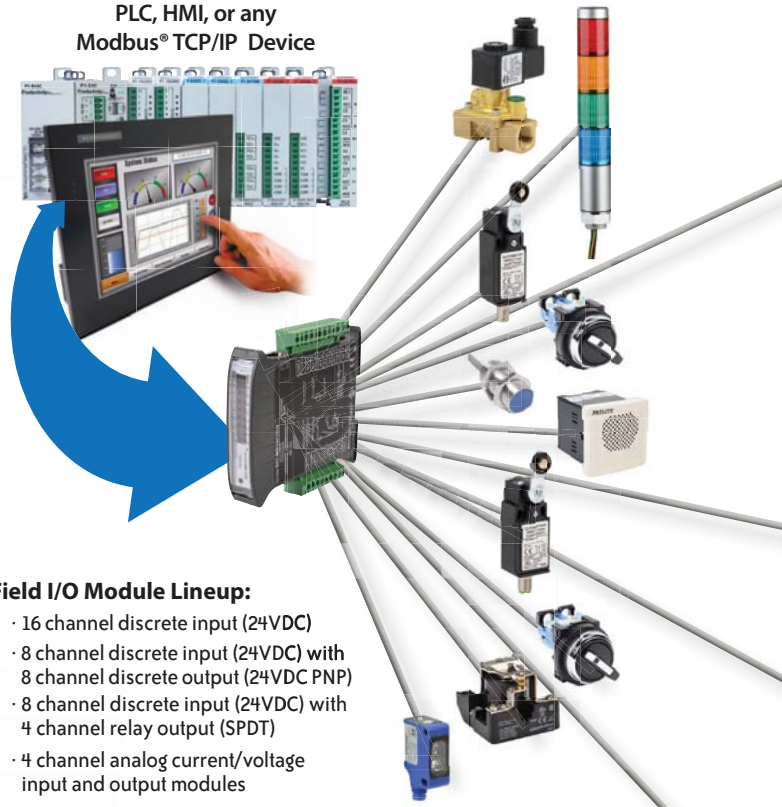

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EHS Today

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DAVE BLANCHARD

Editor-in-Chief

The Unintended Consequences of Social Distancing

Staying at home isn't always the safest place to be.

Human beings are social creatures. We rely on each other not only for the goods and services we need for the physical basics of food, shelter and clothing, but also for the emotional basics we need, such as compassion, understanding, friendship and love. As the weeks of lockdown and self-quarantining from the COVID-19 virus have extended into months, and as the pandemic hits its half-year mark this month with no end in sight, it's becoming evident that while we've made great strides at protecting people from a deadly virus, we've inadvertently exposed far too many people to other unhealthy environments. And it's going to take a concerted effort—with health and safety professionals at the forefront of that effort—to find a way to fix the damage.

Scott Geller, director of Virginia Tech's Center for Applied Behavior Systems, has suggested that the term "social distancing" is inappropriate since the word "social" reflects *an interpersonal connection or companionship a person experiences with one or more individuals.* "Physical distancing," Geller says, would be more appropriate. I understand the semantics behind Geller's point (which he discusses at length in his article, "The Power of Words," p. 8), but based on some disturbing developments, "social distancing" seems to be exactly the right way to describe the impact COVID-19 is having on people, since keeping oneself isolated from other people is part of the reason why so many are feeling disconnected, alone and helpless right now.

Workplace stress, anxiety and depression are tough enough to cope with when the world seems to be somewhat predictable, but when a pandemic forces people indoors—separated from the support systems that help sustain them—then it becomes an almost unendurable situation. And the longer the virus lingers on and people are asked to go without the very things that give their lives purpose—whether it's attending a worship service, a group therapy session, a family reunion, or any other gathering—the more impactful will be the effects.

Consider this chilling observation made by Drs. Betty Pfefferbaum and Carol North in a recent edition of *The New England Journal of Medicine* (August 6, 2020): "Uncertain prognoses, looming severe shortages of resources for testing and treatment and for protecting responders and healthcare providers from infection, imposition of unfamiliar public health measures that infringe on personal freedoms, large and growing financial losses, and conflicting messages from authorities are among the major stressors that undoubtedly will contribute to widespread emotional distress and increased risk for psychiatric illness associated with COVID-19."

And don't expect an immediate return to normalcy once the pandemic ends. As Dr. Ken Duckworth, chief medical officer of National Alliance on Mental Illness (NAMI), told *The Guardian,* "When life finally returns to normal, the following year will not be a good one for mental health." According to NAMI, half of the adult population with mental illness were not receiving treatment even before the virus struck, and the organization has seen a 65% increase in calls to its helpline during the pandemic. The great fear among healthcare professionals is that the suicide rate, which was already near crisis levels even before the pandemic, will accelerate the longer that social distancing is in effect.

The frightening spike in alcohol and drug abuse throughout the pandemic should also put all safety managers on alert that work-from-home situations aren't always going to go well. It's vital that managers keep in touch with their employees, especially during times of work-from-home or staggered shifts, and make sure employees know about the resources available to them if they're feeling overwhelmed or hopeless.

One positive recent development is that the Federal Communications Commission (FCC) has approved the use of 988 as a new, nationwide, three-digit phone number. Anyone in crisis will be able to call 988 and connect with suicide prevention and mental health crisis counselors. The FCC's rules require all phone service providers to direct all 988 calls to the existing National Suicide Prevention Lifeline (800-273-8255) by July 16, 2022.

That's good news, but full implementation of 988 is still two years in the future, so as the pandemic continues on, it's incumbent on all EHS professionals to ensure their employees, wherever they might be working, are kept out of harm's way—whether the harm is external or internal. Staying home, after all, isn't always safe.

Send an e-mail with your thoughts to dblanchard@endeavorb2b.com.

HOW LEADERS UNDERMINE THEIR OWN SAFETY PROGRAMS

Effective safety leadership strategically plans to coordinate all efforts.

LEADERS OFTEN HAVE A LIMITED UNDERSTANDING OF WORKPLACE REALITIES AND ASSUME GIVING THE RIGHT MARCHING ORDERS WILL SOLVE THE PROBLEM.

A Fortune 50 company once discovered a problem with the way accident investigations were being conducted. Their directors of safety put together a training program to address the problem. It involved a half-day session for safety professionals and first-line supervisors. A schedule was devised to roll out the training to every division and location as soon as possible. The leadership team approved the plan and it was put into action. An operational issue came up and one of the leaders scheduled a visit to every business unit to address that issue. His visits conflicted with the safety training schedule in nine locations. He did not even attempt to minimize his disruptions to the training.

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When the problem was pointed out to him, he replied that the training for those units should simply be rescheduled. Problem was the training schedule involved all available trainers every day for 75 days. At the end of the 75 days, summer vacations were starting and many of the needed participants for the training would not be onsite. Most of the missed sites did not receive the training for 5-9 months after they were originally scheduled. The safety data for those months clearly demonstrated that the rescheduled business units experienced more problems than the ones that received the training in a timely fashion.

The CEO of a huge, multinational company decided to make an address in real time to his entire worldwide management team down to the site level. The address involved significant expense due to the state of communication equipment at the time and required almost half of the managers involved to attend in the middle of the night. The VP of EHS was excited at the prospect of the CEO really giving priority to safety and launching a new safety initiative that had just been approved. The CEO did promote safety but failed to mention the new initiative.

When the VP pointed out the omission, the CEO said that his omission in the one address would not compromise the importance of the new program. The disappointed VP mentioned that intelligent managers around the world would take what the CEO chose to discuss in such an important and unprecedented address as more important than anything he chose to omit. The CEO did not take the criticism well and the VP was reassigned to a regional position.

The manager of a complex of four petrochemical production units was concerned with the lagging indicators of his safety performance. He decided to get more personally involved in safety. One of his several chosen activities was to call anyone who was involved in an accident and anyone who turned in a near-miss report into his office for a personal visit. He thought this would demonstrate his concern for safety and possibly help him discover things he could do to improve. He felt successful when the number of accidents and near misses began to diminish and then disappear.

He got a wake-up call when a near fatality happened and the investigation uncovered the fact that the risk involved was common, well known and repeatedly happening. After further talks with his safety professionals and workers involved, he discovered that his efforts had driven reporting underground. What he considered a demonstration of his caring about safety was perceived by workers as being called on the carpet for reporting. Their response was to quit doing what got them into trouble.

A refining company hired a brilliant engineer who had just finished his PhD and quickly promoted him through the ranks and ultimately to manage a refinery. He assessed the state of his workforce and noticed that he had several

senior engineers who were only a few years away from retirement age. He determined that he could quickly recoup the costs of forcing these engineers into early retirement and hire new graduates for a fraction of what the older ones were being paid. He reasoned that fresh blood would bring fresh ideas and innovate the processes and site culture. He was admonished to use the retiring engineers to mentor the new ones or to keep a few of them to train the new ones and serve as subject-matter experts and advisors. The manager ultimately decided against these steps.

Shortly after making the changes in personnel, the refinery had a fire, then an explosion, then another of each. The new engineers tried to solve the problems, but the problems not only persisted but got progressively worse. The company replaced the young manager with another brilliant recent graduate from a prestigious engineering university and considered the problem solved. It was not!

A service providing company lost an important contract because their safety record was less than stellar. The stockholders angrily demanded the directors take action to correct the problem. Without formulating a strategy to address the underlying issues, each director took to the field criticizing perceived problems and suggesting solutions. None of the directors had any background in safety, nor had they really studied the data to understand underlying causes of their accidents. The net result was that everyone in the field was given different feedback and went in different directions in their safety efforts. The net result was that safety performance got worse instead of better.

These and dozens of other cases I observed suggest to me that, regardless of good intentions, leaders often sabotage their own safety efforts. In every one of these cases the leaders lacked an overarching strategy for safety. They had programs and activities and assumed these would solve their safety challenges. Such approaches fail to create the unity of effort needed for success. They also often miss the mark of addressing underlying influences on their safety culture's performance.

Leaders often have a limited understanding of workplace realities and naively assume that giving the right marching orders will solve the problem. Effective safety leadership strategically plans to coordinate efforts, so the right hand does not undo what the left hand is accomplishing. **EHS**

Terry Mathis, founder and CEO of ProAct Safety (www.proactsafety.com), has served as a consultant and advisor for top organizations the world over. A respected strategist and thought leader in the industry, Mathis has authored five books, numerous articles and blogs. EHS Today has named him one of the "50 People Who Most Influenced EHS" four times. He can be reached at info@proactsafety.com or 800-395-1347.

OSHA Changes Rules Regarding Worker Medical Records

OSHA has amended the process by which its employees gather and use sensitive and personally-identifiable medical files.

The agency's Rules of Agency Practice and Procedure Concerning Occupational Safety and Health Administration Access to Employee Medical Records details how information is obtained and utilized. Revisions to the rule are meant to "improve efficiency in implementing these internal procedures."

One main amendment to the rule transfers approval of written medical access orders (MAOs) from the Assistant Secretary of Occupational Safety and Health to the OSHA Medical Records Officer (MRO). The MRO is responsible for determining the transfer and public disclosure of personally-identifiable employee medical information in OSHA's possession.

It also clarifies that a written MAO does not constitute an administrative subpoena, and it establishes new procedures for the access and safeguarding of personally-identifiable employee medical information maintained in electronic form.

DAVID WATTS JR. | DREAMSTIME

Real-time Imaging Can Help Prevent Deadly Dust Explosions

Dust explosions can be among the most dangerous and costly workplace incidents. Dust builds up in agricultural, powder-handling, or manufacturing settings, causing hazards to employees and posing the risk of exploding.

Researchers at Purdue University have developed an image- and video-based application using OpenCV algorithms that detect explosible suspended dust concentration. The app uses a camera or a video recording device to image and determine suspended dust and to accurately distinguish it from normal background noise.

"Determining suspended dust concentration allows employers to take appropriate safety measures before any location within the industry forms into an explosive atmosphere," says Kingsly Ambrose, an associate professor of agriculture and biological engineering who leads the research team. "I believe this technology could help prevent dust explosions and will be of great benefit to the industry."

Purdue researchers have created technology to help prevent dust explosions. (Purdue University)

Ambrose says current technology for detecting dust levels is inconvenient because it is expensive, difficult to install in a workspace and separates dust matter into multiple filters that must be weighed and further manipulated for analysis.

Ambrose said that in testing, the algorithm successfully recognized 95% of sawdust and 93% of cornstarch particulates in the air.

"This technology is unique because it is easy to use without extended training, location independent and does not require permanent installations," Ambrose says.

The Purdue team's work is published in the Journal of Loss Prevention in the Process Industries.

ASSP Forms Task Force to Address Diversity, Equity and Inclusion

A newly-formed task force will aim to address diversity, equity and inclusion in the occupational health and safety industry.

The American Society of Safety Professionals (ASSP) created the group following as part of its renewed commitment to "the principles of fairness, respect and equal opportunity for all."

"Achieving widespread safety and equity requires a deep-seated commitment, and we have embarked on a journey to transform our culture by bringing together people with a wide range of backgrounds and perspectives," says Deborah Roy, ASSP's president. "We must do more to challenge long-held assumptions and better understand how unconscious bias can influence decisions. By prioritizing diversity, equity and inclusion, ASSP will grow stronger and help our members create safer and healthier work environments around the world."

The new task force will be a critical part of ASSP's ongoing journey toward

HORST KÖNEMUND | DREAMSTIME

a welcoming and transparent environment based on the highest ideals, the organization stated. Members will include professionals from the organization's common interest groups as well as other safety and health professionals who want to help advance the Society through inclusivity. Once formed, the group is expected to present a recommended strategy and action plan to the ASSP board of directors by January 2021 that helps define the Society's goals for diversity, equity and inclusion. A separate staff team will address these issues internally.

ASSP issued a statement in June calling for social change to stop violence against black people and clarifying its support of the Black Lives Matter movement. ASSP has also created learning opportunities—such as a diversity and inclusion panel discussion at its virtual annual conference—to help safety professionals better understand how societal issues such as racism and systemic inequities impede career advancement, undermine workplace safety and disenfranchise workers.

Wellness-Equipped Office Makes Employees Feel Safer

Adapting to the pandemic is taking many forms. One is the underutilization of existing office spaces, which has triggered a need for smart, wellness-equipped office spaces in the future, according to analyst firm Gartner Inc.

"Due to COVID-19 many offices remain unoccupied or underutilized as employees choose to work remotely," says Gavin Tay, research vice president at Gartner. "However as more people return to offices, those that have been turned into smart, wellness-equipped spaces make employees feel safer."

The research firm predicts that by 2022, 60% of hybrid workers will prioritize a wellness-equipped smart office over a remote office.

How can employers create these types of offices? Gartner suggests using technology such as integrated workplace management systems (IWMS) solutions and resource scheduling applications. These solutions, which use artificial intelligence and Internet of Things technologies such as motion sensors and beacons, can remind employees to adhere to social distancing rules based on their whereabouts. For those companies that need help implementing contact tracing, they can use virtual personal assistants as wellness coaches.

NUTTAPONG PUNNA | DREAMSTIME

Organizations should not only augment existing hygiene policies with thermal imaging systems, but also invest in systems that monitor air quality in real-time and keep employees informed, the report says.

Additionally, features that provide the ability to continuously disinfect, improving air quality by reducing airborne and surface contaminants like viruses, bacteria, germs, volatile organic compounds, smoke, and other allergens will be important. Ultimately, cleaner air allows for improved recycling of air, which will contribute to energy-saving benefits as well as make the workplace healthier.

Safety Leadership: THE POWER OF WORDS

Words can be powerful. How can a safety professional best use them to enhance worker engagement?

By Scott Geller

"Words are magical in the way they affect the minds of those who use them.... Words have power to mold men's thinking, to canalize their feelings, to direct their willing and acting."

—Aldous Huxley, *Words and Their Meanings*

The above quote reflects the power of words to influence our feelings, expectations, attitudes and behaviors. When people use expressions like, "Say that enough times and you'll start to believe it," "Can't I talk you into it?" or "Do as I say, not as I do," they are acknowledging the influence of words on behavior.

The reply, "What good is it?" to the friendly "Good morning," and the assertion "It's a pain in the neck" to the question, "How is your job?" not only reflect a person's feeling or attitude at the time; but these sorts of negative reactions can influence negative feelings of both the deliverer and the recipient of such words. Years ago, when my two daughters discussed horse manure at the dinner table, I would lose my appetite for the food before me. Similarly, using negative, uninspiring words to describe everyday events or ourselves can contribute to losing our appetite (or passion) for life.

What does all of this have to do with occupational health and safety? I propose that certain words we commonly use can contribute to debilitating and counterproductive perceptions or attitudes regarding occupational health and safety. Moreover, certain expressions used frequently in the health and safety domain can actually reduce people's engagement in safety-related efforts. Using many of these words has become habitual and we are often unaware of how our verbal behavior contributes to less-than-optimal commitment to health, safety and human welfare. This article pinpoints a few of the more commonly used words in the health and safety field that we should consider eliminating from our everyday language, and suggests some "healthy" alternatives.

FROM "ACCIDENT" TO "INJURY"

When a young boy soils his pants (i.e., an "inside job"), we label the event an "accident," implying the occurrence of a chance event with no one to blame—"He just couldn't help it." Perhaps this inference is warranted in this case, but many other situations referred to as "accidental" did not have to happen.

Workplace "accidents" are usually unintentional, of course, but are they truly chance occurrences? Are there specific controllable factors (e.g., changes in the environment, behavior, and/or attitudes) that can prevent various "accidents"? Answering "yes" to these two questions implies "accident" is the wrong word to use when referring to unintentional injuries. Continuing to use this term in our culture can reduce the number of people who will answer "yes" to those questions with personal conviction. We need to use words that support the belief and expectation that various factors can be controlled in order to prevent unintentional injuries at work, at home and throughout the community at large

Over recent years, the term "incident" has been substituted for "accident," but an incident can be intentional. For example, people refer to the tragic shooting of 32 students and faculty at Virginia Tech on April 16, 2007, of which I am all too familiar, as an unfortunate "incident." Why not tell it like it is? It's not a traffic "accident," it's a vehicle crash or collision. It's not a workplace "accident," but an occupational injury or fatality that can be

prevented with strategic safety-related improvements in environmental, behavioral and management-system factors.

FROM OCCUPANT RESTRAINTS TO SAFETY BELTS

For years, many transportation and safety professionals have used the terms "occupant restraints" and "child restraints" for vehicle safety belts and child safety seats, respectively. Not only do those terms imply discomfort and lack of personal control, they fail to convey the invaluable function of these devices.

Although "seatbelt" is better than "occupant restraint," this popular term is not adequate because it does not describe the device—neither in function nor in appearance. Vehicle safety belts were once only lap belts and now they are combination lap-and-shoulder belts. Yet the term "seatbelt" is still the most common word used to refer to both of these devices. We need to get into the habit of saying "safety belt" and "child safety seat." Why? Because then we will be conveying the critical life-saving function of these devices, and thereby support their consistent use. Relatedly, should we say, "air bag" or "safety cushion"?

FROM PRIORITY TO VALUE

From flight attendant announcements on airplanes to TV commercials, we frequently hear the popular slogan: "Safety is our top priority." What does such language mean? Our everyday experiences with "priorities" teach us that priorities change—they come and go. A priority today might not be a priority tomorrow. Depending upon the demands of the moment, we often shift our focus from one top priority to another. Do we really want to associate safety with such a term?

For many years, I have advocated talking about safety as a "value"—an inherent principle or ideal associated with every priority, every day, and in every way. Safety should be a "value" that employees bring to every job, regardless of the ongoing priorities or task requirements. A safety mission statement should refer to safety as a "value" rather than a "priority."

AUTONOMY AND SELF-ACCOUNTABILITY

Substantial research in psychological science has demonstrated that the perception of personal choice enhances self-motivation or self-accountability, and our everyday experiences verify this evidence-based human dynamic. Consider, for example, how certain words from others or said to ourselves (as in self-talk) reflect external control versus internal choice, and thereby imply other-directed versus self-directed behavior. In other words, which word choice would you prefer to use and receive:

- Did you receive and perceive that assignment as a "requirement" or as an "opportunity"?
- Would you rather be asked to "change" or "improve" your behavior?
- Are your behaviors influenced by "peer pressure" or "peer support"?
- Was that safety rule presented as a "mandate" or an "expectation"?
- Were you "trained" or "coached" to perform that job safely?
- Should we refer to safety professionals as "loss-control managers" or "safety-achievement facilitators"?
- Should we discuss the results of a safety audit as "meeting OSHA standards" or "fulfilling our corporate mission"?
- Does your workplace have a "safety compliance" or a "safety achievement" task force?
- Should we acknowledge employees for working "30 days without an injury" or for working "30 safe days"?
- When attending a group meeting or a teaching/learning session do you say to yourself, "I've got to do this" or "I get to do this"?
- Finally, do you wake up to an "alarm clock" or an "opportunity clock"?

COVID-19 LANGUAGE

Even some critical words used currently and frequently to discuss the prevention of the global Coronavirus are misleading and should be improved. Specifically, we are advised (or mandated) to keep a six-foot "social" distance from others when in public settings. Is "social" the most appropriate word to use in this context? Obviously, the word "social" does not imply a particular physical distance, but rather reflects an interpersonal connection or companionship a person experiences with one or more other individuals, independent of physical distance. Some people do use the more appropriate term—six-foot "physical" distance, but "social" seems to be the more popular adjective used these days.

Although "seatbelt" is better than "occupant restraint," this popular term is not adequate because it does not describe the device—neither in function nor in appearance.

What about those facemasks we are asked to wear in public places? This disease-prevention device is consistently labeled PPE for "personal protective equipment." The misleading word here is "personal." In the workplace, employees do wear PPE for personal protection, but the primary purpose of the COVID-19 facemask is to protect others from the spread of this deadly virus. Thus, the first "P" of PPE should represent "public," making PPE signify "public protective equipment." In this way, wearing a facemask is communicated as protecting others more than ourselves, with such behavior portrayed as more selfless than selfish—as actively caring for people (AC4P) behavior.

This is obviously a limited list of word substitutions to consider, but I hope the message is clear. Simple word usage can affect both attitude and behavior. Considering the ramifications of using the various word substitutions suggested here can be a useful personal or group exercise. Adding alternatives to this list would be even more beneficial. However, understanding and appreciating critical relations between our words, attitudes and deeds is only half the "battle." We need to improve our everyday verbal habits, but that is easier said than done. **EHS**

E. Scott Geller, Ph.D., alumni distinguished professor, just completed his 50th year as a teacher and researcher in the Department of Psychology at Virginia Tech, where he is director of the Center for Applied Behavior Systems. He is a co-founder and senior partner of Safety Performance Solutions Inc., and GellerAC4P Inc. (www.gellerac4p.com).

Drone flying over oil refinery plant during site survey.

Five Ways Hazards are Being Combated in the Oil & Gas Industry

The oil & gas industry is turning to new technologies and better education to improve its safety performance. **By Henry Berry**

The oil industry has always been one which, to put it mildly, has been prone to risks and hazards. Even the most cursory of online searches will reveal countless industry disasters and sobering statistics. Whether it be onshore or offshore, oil production traditionally has been fraught with danger.

Over the past decade or so, however, things have begun to change. More stringent regulations have been introduced, more accountable and transparent legal frameworks have been put in place, and significant technological advancements have been made. All of which sees the industry in the safest position it's ever been.

There's no room for complacency, however. After all, the Deepwater Horizon disaster was only 10 years ago and while annual fatalities are indeed showing a downward trend, those are lives lost, not just some statistics. With that in mind, let's look at how the industry is making proactive steps towards a safer future.

DRONES

One of the greatest additions made to the oil industry over the past few years has been the advancement and implementation of drone technologies. Whether fixed-wing or rotary-based, these now relatively commonplace aerial vehicles have a wide range of applications within the sector. From surveillance through to routine inspection work, their efficacy is perhaps most demonstrable in terms of safety improvements.

Their benefits in this regard are twofold. First, they're used for the predictive maintenance of critical rig infrastructure, meaning that problems can be spotted before they become problems. This invariably helps the development of various hazards, from explosion risks to general machinery wear and tear (which, if left unchecked,

can lead to serious personal injury).

Second, they're being used for the more dangerous inspection processes: the examination of flare towers, for instance, or confined storage spaces. These highly versatile drones can be fitted with a whole host of different sensors (including ultrasonic, thermal and LiDar, as well as high-resolution photographic cameras), meaning that the "picture" they paint is as comprehensive, if not more so, than that which a manual inspection could provide, with the added benefit of not having to put workers in potentially hazardous situations.

EDUCATION

While perhaps not as eye-catching as state-of-the-art drone technology, there's no getting around the fact that better industry education can (and does) save lives within the sector. This means education across all facets of the industry—from extraction through to logistics and delivery.

Let's first look at the dangers posed by driving fatigued. Drivers transporting oil must cover huge stretches of terrain on a regular basis, expanses of road which may offer little variety, and be quiet for long periods. The monotony of such drives (when paired with the objectively large distances) places drivers at real risk of falling asleep at the wheel. If not that, then they certainly run the risk of having their awareness/judgment impaired by their weariness.

Better education is one of the best ways in which drivers may be better protected against the dangers of driving tired. Even a basic awareness of the importance of adequate rest (and the risks associated with a lack thereof) can have a big positive impact, whether it be full-blown training courses, fact sheets or something in between.

Moreover, the better-informed industry workers are, the less likely they are to cut corners. Traditionally, the oil sector was one in which workers played somewhat fast and loose when it came to rules and regulations. It is perhaps unsurprising, therefore, that over the years the industry has had as tumultuous a relationship with safety as it has.

THE INTERNET OF THINGS AND GPS

The oil industry can be a lonely place at times, one in which working remotely, and alone, is by no means uncommon. Should lone workers have an accident while they're working on a pump jack, let's say, then there's every chance nobody would know about it; at its worst, this can lead to fatalities. Recently, the have been large advances in the Internet of Things (IoT)—a term used to describe not just the internet, but anything that could conceivably connect with it: wearable tech and smart home sensors, for instance, but also connecting entire environments and large-scale processes.

What this means for the oil industry, from a safety perspective, is that near real-time GPS data is now becoming a reality. And what that means is that accurate data pertaining to a lone worker's positioning is much more readily available, and much more accurate. Not only that, but other data can be communicated to a worker's safety manager, such as physiological metrics; for example, their heartrate being detected by a smartwatch. So, should anything go wrong, or seem out of the ordinary, the worker can be reached as quickly and accurately as possible. So, though these remote workers may often be in pretty much as isolated a location as is possible, they're now arguably more connected than ever before.

One of the greatest additions made to the oil industry over the past few years has been the advancement and implementation of drone technologies.

PPE AND TESTING EQUIPMENT

Recent events have brought the importance of personal protective equipment (PPE) into a keener focus. However, PPE serves a wider purpose than solely in the protection against global viruses (crucial though that is). The oil industry employs a plethora of different protective equipment to better protect its workers, ranging from the basic ear and eye protection, to more heavy-duty flame-resistant clothing.

A particular industry hazard is the threat posed by hydrogen sulfide. This highly toxic, fast-acting gas can cause symptoms ranging from headaches and nausea, all the way through to death upon high levels of exposure. To combat this, many rig and well workers are given, and trained on the use of, portable hydrogen sulfide monitors, so that they can regularly test the gas level.

ROBOTICS

Undisputedly the coolest of the lot, developments in the field of robotics has seen it progressively make more of a mark within the industry, over the past decade or so. You need only look at the ARGOS Challenge, run by Total S.A. between 2013 and 2017, to see how excited leading industry players are by these machines. The potential applications of robotics brought to light by the ARGOS (which stands for Autonomous Robot for Oil and Gas Sites) challenge are manifold.

Particular interest is being paid to how robotics may improve standards of industry health and safety, both onshore and offshore. Robots such as the ARGOS, and more recent counterparts such as the ANYmal, have been designed to work in harsh and severe environments, as well as potentially explosive environments. It's been programmed to carry out inspection tasks (in a similar way to drones).

It's clear, then, that improvements are indeed being made. Encouraging though this may be, the one thing the industry cannot do is rest on its laurels. Until there are consistently no deaths, year-on-year, then the oil industry has significant work to do. Whether this be in terms of technology, education or more rigorous legislation, there's always room for innovation when it comes to protecting people. While danger will never entirely be mitigated from the industry—as there's always going to be an element of risk when working with heavy machinery—it can be removed as much as possible. **EHS**

Henry Berry is managing director of Tri-Stone Holdings (www.tristoneholdings.com), a non-operating company within the oil and gas sector.

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Work From Home's Impact on Drug Testing

Here's what safety leaders should know about drug testing in a world of increased remote employment.

By Jared Rosenthal

There are many aspects of both our work and personal lives that have changed since the start of the Coronavirus pandemic. Many non-essential companies and workers quickly pivoted into remote work, otherwise known as "work from home" (WFH). More than 40 million Americans have lost their jobs. Companies are dealing with many critical changes that they are struggling to adapt to. Ensuring that long-standing employment drug testing policies are adjusted for a dramatically changed work environment is one of those crucial matters.

HOW COVID-19 IS AFFECTING EMPLOYMENT DRUG TESTING

For companies that drug test employees in normal times, the COVID-19 pandemic presents some challenges. The act of drug testing itself raises questions about safety, personal protective equipment (PPE) and social distancing. Fortunately, most drug tests are performed in healthcare clinics which are well prepared to manage these risks. Most drug testing locations remain open, but employees need to be prepared to come in wearing masks and follow strict social distancing protocols.

The tests themselves have not changed, but the employee may sit further away from the technician when doing the paperwork. Collection sites should be sanitized in accordance with OSHA guidelines, and these safety precautions should be clearly communicated to employees so they're aware of what measures are being taken to protect their safety.

DRUG TESTING REMOTE WORKERS

Because of the sudden and dramatic shift to remote work, there is clearly a risk of increased drug and alcohol use for people who are not used to being home all the time. The increased economic and health-related strain combined with the closure of most social gathering places has led to a 55% rise in alcohol consumption compared to the same time last year. Drug use may be increasing as well for the same reasons. Therefore, it's crucial that companies continue to follow their regular drug testing guidelines to make sure that stress-related consumption doesn't impact their workplace.

Drug testing remote employees who suddenly find it harder to resist using drugs presents the likelihood that staff may push back. To clear up misconceptions, employers should restate to WFH staff any regulations that govern their industry. They should also remind staff that their drug and alcohol policy remains in effect during any WFH period. It should be extremely clear to employees what the company policy is, as well as the consequences for non-compliance.

DOT DRUG TESTING DURING COVID-19

Fortunately, companies that test their employees according to governmental regulations aren't navigating this alone. Government agencies like the Department of Transportation have recently put out updated guidelines for DOT drug testing during COVID-19.

DOT guidance advises companies, employees and service agents about what to do if random drug and alcohol testing is unable to take place, as well as the protocol for how to document situations where a test has been delayed or refused because of health concerns related to COVID-19.

It is not unreasonable to imagine that an employee that has a chronic disease or is in a higher risk category for COVID-19 may be unwilling to go to a lab or break social distance guidelines in order to submit a breathalyzer or urine sample. If this happens, it is a good idea for employers—even non-DOT companies—to refer to these well-thought out protocols to guide their response.

Determining whether an employee refuses a test or simply leaves a collection site for valid reasons is always a tricky area for employers, and the pandemic only makes it more complicated. DOT's guidance with respect to refusals, however, is substantially unchanged: "It is the employer's responsibility to evaluate the circumstances of the employee's refusal to test and determine whether or not the employee's actions should be considered a refusal."

Keep in mind that staff who are laid off for a period of more than three weeks may be required to get a pre-employment DOT drug test when returning to work, as if they were a new hire.

DRUG TESTING FURLOUGHED EMPLOYEES

Employees who are put on furlough cannot be tested by the employer while they are not working. However, when employees are brought back after being furloughed for a month or more, they are often treated like new hires. Most companies, in fact, ensure that their employee reinstatement process includes all of the usual onboarding requirements, pre-employment drug testing among them.

Everyone hopes that the economy returns to normal in a rapid fashion. Nevertheless, it is important that companies—and the people they hire—understand what is at stake. Despite the fact that vastly more people are working remotely and/or being furloughed or outright laid off, it is clear that one thing has not changed in corporate America: Drug use is still not tolerated, and if you want a job, you are going to get tested. **EHS**

Jared Rosenthal is founder and CEO of Health Street (www.health-street.net), a provider of employment screening services and lab tests, including drug testing.

Proper PPE and Worker Safety

Go Hand-in-Hand

Hand injuries are among the most common workplace injuries, and they're also some of the most preventable.

By Zach Richman

According to the most recent data available from the Bureau of Labor Statistics, there were over 121,800 hours lost on the jobsite in 2017 due to hand injuries. For those who seek medical treatment for these types of injuries, it can cost an average of $22,384. Within these cases, 70% of the hand injuries occurred when users were not even wearing gloves to protect themselves while working.

Despite the severity of these injuries and the overwhelming statistics that highlight the necessity of hand protection, there is still a lot of confusion surrounding what needs to be considered when choosing a worker's hand protection. It is critical to understand that not all hand protection is created equal. Proper hand protection is critical, however, as standards evolve and workers often question which solution to use. In turn, this frustration often deters users from taking advantage of any sort of hand protection at all.

Understanding the differences between each type of hand protection is difficult—even for safety professionals. There are multiple factors and jobsite requirements that need to be considered when protecting workers' hands with cut-resistance, impact-resistance, or back-of-hand protection at the forefront. While hand injuries are some of the most common injuries among jobsites, they are also some of the most preventable.

MAKING THE CUT

Any type of cut is unpleasant, but the repercussions from a cut to the hand for a worker can be worse than the injury itself. According to the Bureau of Labor Statistics, a single hand injury results in six days away from work on average. For many, this translates to lost wages and diminished abilities upon returning to work. Luckily, within the world of personal protective equipment (PPE), cut-resistant gloves are available to protect workers' hands from cuts when working with sharp tools and materials.

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The American National Standards Institute (ANSI) categorizes cut resistance into nine different levels of protection; the higher the cut level, the more protection the glove provides. To ensure adequate protection, a user must choose the right glove based on the application they wish to complete. Some examples of types of applications for each cut level are listed below:

ANSI A1 (Light Cut Hazards): Light material handling, general work, small parts assembly, forestry and construction.

ANSI A2-A3 (Light/Medium Cut Hazards): Demolition, material handling, general work, small parts assembly, forestry, construction, wire stripping, pipe threading, cutting and automotive.

ANSI A4 (Medium Cut Hazards): Manufacturing, light glass handling, drywall, electrical, carpet installation, HVAC, automotive assembly and metal handling.

ANSI A5 (Medium/Heavy Cut Hazards): Metal handling, abrasive/sharp material handling, pipe threading, cutting, drywall, electrical, glass handling and duct work.

ANSI A6-A9 (High Cut Hazards): Heavy metal handling, automotive assembly, sharp metal handling and recycling.

As jobsite safety is emphasized throughout the world, users increasingly need hand protection that is comfortable yet durable. To comply with user needs, many manufacturers now offer a wide range of cut-resistant gloves.

BRACE FOR IMPACT

Fallen building materials, dropped tools and tasks that involve the risk of pinching and crushing are no strangers to a jobsite. Unfortunately, these common hazards are likely to put workers at risk for impact injuries. Like cut injuries, injuries sustained from impact can lead to lost time and wages and are often even more detrimental to a user's health. Fortunately, impact-resistant gloves incorporate protective features that can shield the hand from unexpected impact.

Up until 2019, there were no official standards or requirements in place regarding the importance of impact-resistance. In March 2019, the International Safety Equipment Association (ISEA) set a new ANSI/ISEA 138 standard. This standard provided new testing methods for impact-resistant gloves and back-of-hand protection, including a new scale testing impact rating for all finger and knuckle impact sites. With the European EN388 standard originally set up as a pass/fail test, this new standard implemented an impact scale from 1 to 3 to provide more consistency for impact resistance. For example, ANSI/ISEA 1 gloves are classified for protection from lighter weight forces, and ANSI/ISEA 3 gloves are classified for protection from heavier forces:

Level 1 (Low Impact): Allowed an average force of Impact ≤ 9kN.

Level 2 (Medium Impact): Allowed an average force of Impact ≤ 6.5kN.

Level 3 (High Impact): Allowed an average force of Impact ≤4kN.

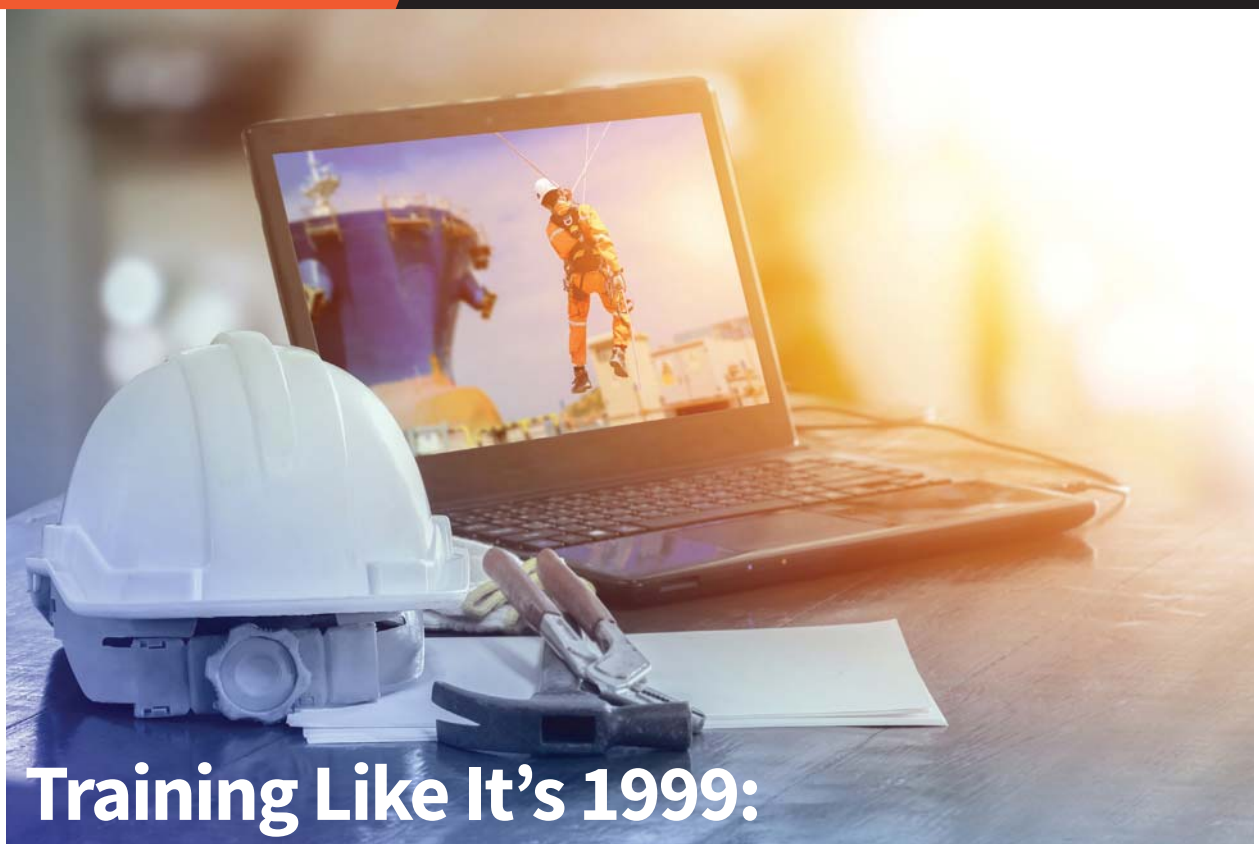
> Hand protection should not only improve safety but also overall productivity on the jobsite.

WHAT DOES THIS MEAN FOR THE INDUSTRY?

With these safety standards in place, contractors and safety managers not only need to integrate hand protection into their jobsite safety plans, but they will also need to align with OSHA requirements and select the proper solution based on the job at hand. These standards will ultimately help users stay safe and productive while minimizing hand injuries.

Hand protection should not only improve safety but also overall productivity on the jobsite. With these new standards in place, manufacturers, safety managers and contractors have an excellent opportunity to start working towards a jobsite united in hand injury prevention. **EHS**

Zach Richman is senior product manager for Milwaukee Tool (www.milwaukeetools.com), a provider of PPE, hand tools and storage products, and other solutions for the professional construction trades.



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Training Like It's 1999: Tips for More Effective Safety Training

Don't be afraid to innovate when it comes to keeping workers safe.

By Nathan Vann

Picture this: You have just been hired by the big construction outfit where all your family and friends work. You've heard for years about all the money there is to be made and let's face it, you have been worried about how you were going to pay off your student loans since you dropped out. You're offered a position as a carpenter apprentice at $15.00 an hour and can't say yes fast enough.

Your first day on the job is going to entail sitting through safety training before you can go to work. The safety manager pops in a VHS tape of some guy from 15-20 years prior with goofy-looking glasses talking about concepts that seem like common sense, and says he'll be back in 30 minutes to do your drug screen.

As the vertical lines and warbled audio infiltrate the lesson, you think to yourself, "This is hot garbage. There's no way this info is important. If it was they would surely have updated it by now." Sure enough, the 30-minute mark rolls around and the safety manager comes in with a cup telling you to fill it up to the line. You don't remember much from the video as you walk out onto the job site, except you hope the glasses don't make you look as dorky as the guy in the video.

For decades, this has been the standard for training employees in various industries. Some organizations very likely still use VHS safety videos from yesteryear or online videos from a third-party. Other, more modern organizations have upgraded to the highly revered and super-effective (sarcasm of course!) PowerPoint presentations. I can hear you now: "My PowerPoints aren't just slideshows—we discuss everything on the slides, too."

And yes, there is great value in discussing training while utilizing visual aids as identified in an article from the University of Washington's Teaching Resources website ("Teaching with PowerPoint," 2020). The article identifies how PowerPoint can be used for discussion point prompts as well as quizzing learners. However, a Harvard study observes that participants consider verbal presentations without visual aids were equally as effective as PowerPoint presentations. Before we can look at ways we can improve training effectiveness, we must first look at how adults learn. We will do this by briefly looking at what adult learning is as well as what adult-centric training needs to be successful.

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HOW PEOPLE LEARN

Andragogy is the term used for how adults learn; this term is not directly contrasting of pedagogy (how children learn), although the core tenets are different. Malcom Knowles provides the distinction between andragogy and pedagogy as participant-directed vs. teacher-directed learning, respectively. Effective adult learning should address three fundamental concerns: acknowledge the learner's experience, establish an acceptable teacher/learner relationship, and promote self-direction and autonomy (Tennant & Pogson).

What is experiential learning, and how do we acknowledge it? Simply, experiential learning is what occurs when we take the information gained through experience and compare/contrast the information with the knowledge we previously possess. The types of experience we obtain information from can vary from interactive learning, formal classroom instruction, apprenticeships, on-the-job training (OJT), and many more.

We can acknowledge the learner's experience by surveying the individual on previous experiences with a topic and developing the learning program to build off of the learner's existing knowledge. Ignoring a learner's experience can be detrimental to the process. as identified by Merriam & Bierema: "Because adults are who they are largely due to their accumulated life experiences, rejecting or ignoring their experiences is threatening to their independent self-concept."

"Including the individual in the planning phase of learning activities can help establish more successful learning, as identified by Wilson and Cervero, "as all people who are affected by the program should be involved in the real choices of constructing the program."

INTERACTIONS BETWEEN TRAINER AND LEARNER

How should the trainer interact with the learner(s)? Depending on who the instructor and learner(s) are (i.e., employed by the same company, formal educator and students, etc.), several types of relationships may be appropriate in some circumstances. Brockett & Heimstra discuss at great length the questions educators should ask themselves when deciding the appropriate relationship between teacher and learner as well as provide a model for ethical decision making.

If the trainer/learner relationship is too casual, the learning process can suffer; however, if the relationship is too formal, adult learners may resist the learning process similar to the response when their experience is not valued. Additionally, establishing a proper relationship helps the trainer and learner understand their respective roles and how or what they are expected to do.

SELF-DIRECTED LEARNING

Finally, the importance of self-directed learning in adult learners is one of the most important attributes of adult learning. Self-directed learning (SDL) is not an idea that is easily defined—it is more of a process of learning. Caffarella does a good job of identifying four goals of SDL which can serve to help understand what it is:

- desire to gain knowledge or develop skills;
- be more self-directed (i.e., seek out new sources of information);
- incorporate transformation learning by using critical reflection;
- move beyond individual learning (i.e., acting upon new knowledge).

SDL encourages the individual to continue learning outside of the structured learning environment (i.e., reading articles, books and/or journals) without formal direction.

This seems like a lot of information and time to put into designing a training program reminding employees to wear their PPE. And truth is, it may be too much; however, we cannot expect employees to learn and participate in safety training if we do not acknowledge how adults learn and apply it to our teaching methods. Maybe slideshows and old videos work for you and your organization, but if you are training employees and finding they don't retain the information, you may need to look at reformatting your training programs. Don't be afraid to be new or different in your industry; it's not stupid if it works. **EHS**

Maybe slideshows and old videos work for you and your organization, but if you are training employees and finding they don't retain the information, you may need to look at reformatting your training programs.

Nathan Vann is safety director for Cleveland Utilities (www.clevelandutilities.com) in Cleveland, Tenn. He has over 15 years of experience in occupational health and safety, specializing in training and safety education. He is an OSHA Authorized General Industry Trainer, a Certified Safety Professional (BCSP), and currently enrolled in the Masters of Education Psychology concentration in Adult Education at The University of Tennessee-Knoxville.

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SIF Prevention

Starts with Better Investigations

Organizations then that are interested in reducing SIFs need to narrow their focus to identify precursors within events or activities.

By Sean Baldry

With our minds consumed by COVID-19 over the past few months, many people may have missed that, earlier this year, the world celebrated a grim anniversary. It was just 10 short years ago, on April 20, 2010, that an explosion rocked BP's Deepwater Horizon Macondo oil platform operating in the Gulf of Mexico, instantly claiming the lives of 11 workers, and resulting in the largest marine environmental disaster in history.

Oddly, this milestone sparked anew my interest in the incident. One of the aspects I find most intriguing about the event is that on the morning of the disaster, senior officials at BP and Transocean, the contractor operating the rig, had arrived at the platform to celebrate a safety milestone: the site had operated for seven consecutive years without a lost-time injury. And yet just 12 hours later, the platform, damaged and burning, toppled into the sea, taking 11 lives with it.

But I think the fate of Deepwater Horizon reveals a more significant truth that many organizations may have overlooked. While rates of reportable occupational incidents have been steadily declining in Western nations for nearly 20 years, the rates of serious injuries and fatalities (SIFs) have been decreasing at a much slower rate, in some cases remaining flat or even increasing over the same period, according to EU and US BLS statistics (**Figure 1**).

How is this possible? What are we collectively getting wrong in our approach to safety management that's producing this contradiction—that while workers are suffering fewer injuries at work, their chances of dying on the job are actually going up? And even most importantly: How many other organizations are, like Deepwater Horizon, currently celebrating "safety success" while, perhaps unknowingly, sitting on conditions rife for a catastrophic event to occur at any moment?

WHAT HURTS PEOPLE ISN'T THE SAME AS WHAT KILLS PEOPLE

Many of the traditional strategies employed by organizations to reduce workplace injuries were derived from Herbert Heinrich's original Safety Triangle concept. Essentially, Heinrich theorized a scale to explain the relationship between fatal and non-fatal events. The theory held that for every major injury that occurs, there are nearly 30 minor injuries and 300 non-injury events of the same nature that precede it. As a result, it was thought that by rigorously addressing the causes contributing to these lower-order events, organizations would significantly reduce the chances of those factors contributing to a fatal one.

Yet if this was the case, organizations should have seen their serious injuries and fatalities dropping at a rate comparable to that of other less-severe events. Yet they didn't.

What later research revealed was that only a subset (roughly 20%) of these lower-order, less severe incidents had the potential to result in SIFs (**Figure 2**). Consequently, this meant that for all the effort and resources organizations were pouring into programs to reduce minor incidents, it wasn't having a massive impact on reducing the major ones. It's because, as safety expert Tom Krause with Krause Bell Group argues, the underlying causes or precursors for incidents with SIF potential are different compared to those without.

FIGURE 1

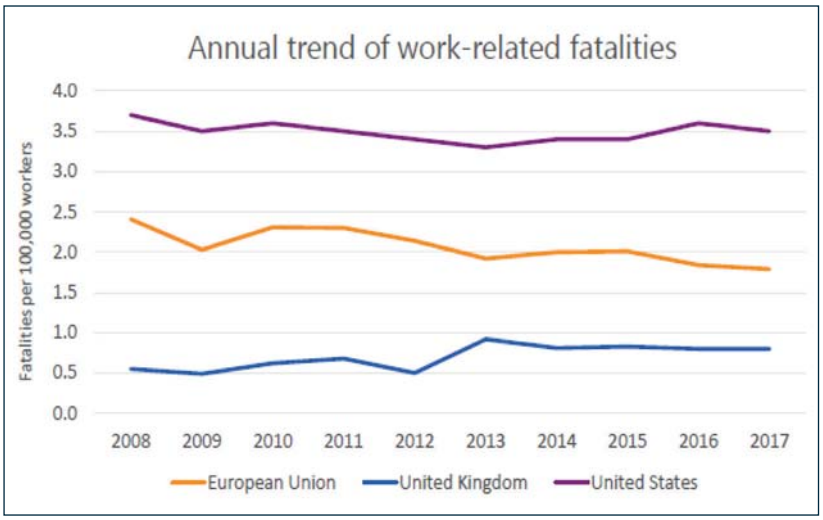
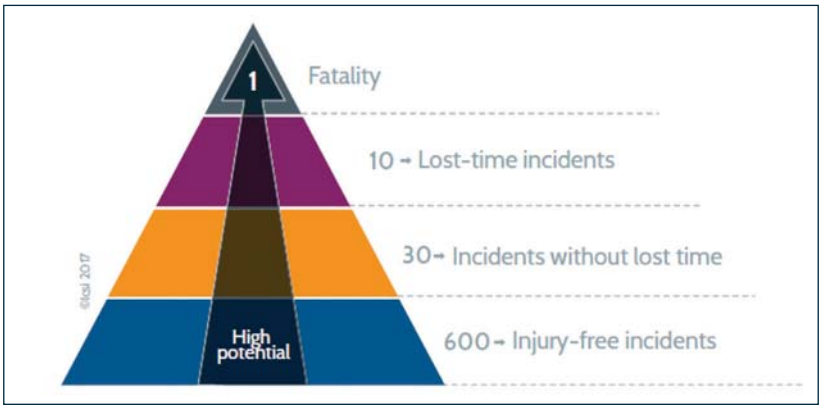


FIGURE 2



UNDERSTANDING SIF PRECURSORS

In a recent whitepaper on SIF prevention, the Campbell Institute explained that SIFs are defined as events where the following three factors, or precursors, exist:

1. It involves a high-risk situation or work activity.

2. Critical barriers or management controls required to protect workers in these situations are absent.

3. A fatality or serious injury is likely to occur if those conditions are allowed to continue.

A utility worker working in a sub-grade storm sewer would be considered engaged in a high-risk situation since the task involves a confined space entry. If that worker failed to follow proper entry protocols, such as completing atmospheric testing or lockout/tagout, and the work was permitted to continue under those conditions, then a SIF potential would exist.

Organizations then that are interested in reducing SIFs need to narrow their focus to identify the precursors within events or activities that increase SIF potential, and then analyze and reconstruct these scenarios to understand what enabled those precursors to persist. In that manner, businesses will be better able to address the underlying causes of SIFs before they can result in fatal and near-fatal outcomes.

ADJUST YOUR PROCESSES TO EXPAND YOUR DATA SOURCES

Employers looking to reduce SIFs should start by adapting their existing processes to encourage greater event reporting through a "just culture" approach. It's widely accepted that workers who perceive they'll be blamed for why an undesired event occurred will be less likely to report in the first place. Yet, our ability to grow our available dataset will provide more opportunity to understand where SIF precursors exist in our business, so we can determine what to do about them. Adopting a "just culture" approach doesn't mean that workers can't be held accountable for actions that deviate from expectations, but it acknowledges that very often, errors are simply indicators of more ingrained system-level issues.

Beyond approaching event reporting from a "just culture" perspective, employers need to adopt tools that make it easier for workers to report events directly from their working environment, without having to track down a supervisor or fill out extensive paper forms. Mobile apps that enable workers to report incidents and observations directly from the field quickly and easily will help to ensure the company has access to the data it needs to build an accurate picture of what's going on, and where it needs to focus its efforts.

Employers should adjust their existing event reporting process to include an assessment of SIF potential. This assessment would require workers to identify the presence of SIF precursors during event reporting and rank the overall risk that those precursors may pose to the development of SIFs.

Lastly, businesses should consider how they can leverage technology to expedite the aggregation and analysis of data to help them identify and prioritize SIF potential scenarios for further review and causal analysis. By employing business intelligence solutions you not only improve the efficiency of your data collection and analysis effort, but you're able to link SIF metrics to EHSQ and non-EHSQ data to build structured data sets for predictive modeling that will help detect pattens and other insights to inform your SIF prevention efforts.

ENHANCE YOUR ROOT CAUSE ANALYSIS TOOLS

Far too often, organizations aren't effective at reducing SIFs because the actions they pursue do not address the underlying causes of event precursors. Instead, incidents are frequently attributed to "something the worker did" and actions are focused on correcting worker behavior only. Consequently, while the worker takes the brunt of responsibility for why

the failure happened, the true causes of the event go unaddressed. While "blaming individuals may be emotionally more satisfying than targeting systems" (as James Reason wrote in Human Error), it is very often less effective.

While human error often triggers an incident, these errors are in turn influenced by latent conditions—inherent flaws or weaknesses that lie dormant in our systems and processes creating error traps—circumstances or conditions that increase the probability for error. So, while a worker may have done something wrong (i.e., failed to follow a procedure), the latent condition (i.e., lack of training) likely influenced why the worker did what they did.

In order to address the underlying causes of SIFs, we need to look past the superficial errors committed by workers and dig deeper to understand the real root causes that allow these error traps and error-likely scenarios to exist. And by understanding the underlying causes of system weaknesses more thoroughly, we can design systems with greater capacity to tolerate error without resulting in critical failures that can lead to serious injuries and fatality. In this sense, we're building greater system resilience.

Many software solutions offer organizations expansive capabilities to complete root cause analysis (RCA) using different methodologies to help reduce the risk of SIF. And vendors continue to expand their RCA tools, both through organic product development as well as integrating their platforms with best-of-breed RCA solutions to afford workers not only a credible RCA methodology, but enabling the business to then leverage the EHSQ software platform to manage associated workflows, from corrective action management to data analysis and benchmarking. These partnerships can prove invaluable to businesses looking to expand their skillsets to truly understand where SIFs are coming from and what they can do to resolve them.

> Employers looking to reduce SIFs should start by adapting their existing processes to encourage greater event reporting through a "just culture" approach.

In short, SIF prevention requires organizations to rethink how they approach incident reporting, root cause analysis and data management. Hopefully, we've given you some ideas to mull over, to ensure your organization isn't the one we're all thinking about 10 years from now. **EHS**

Sean Baldry is a product marketing manager at Cority (www.cority.com), where he is responsible for the company's health and safety SaaS solutions. He has over 15 years of experience working in occupational health and safety in the construction, mining and manufacturing industries. Prior to joining Cority, he was director of health and safety for LafargeHolcim's Eastern Canada division. He is a Canadian Registered Safety Professional (CRSP).

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Tearing Down Data Silos

to Enhance Workplace Safety and Operations

Manufacturers are moving to a "new normal" post-COVID-19, which includes rapid digitalization.

By Kari Terho

Data silos are typical in manufacturing. However, they are also a major hindrance to manufacturing digitalization for operations prepping for the "new normal" after COVID-19. This article will address why digitalization is critical post-COVID-19 and how manufacturers can tear down their data silos for optimum business sense and improved workplace safety.

How has COVID-19 Changed the Manufacturing World?

Due to the COVID-19 pandemic, thousands of suppliers, manufacturers and their customers have suffered material losses. Productions and shipments have slowed down and even stopped. We've seen epidemics, pandemics and other global disruptions several times before. What's so different this time around?

Earlier global disruptions have only affected some specific, typically offshored manufacturing parts of the supply chains in Asia. The damages were then signaled upstream, hit manufacturers and companies elsewhere, eventually stopped production, and canceled shipments globally. COVID-19, however, is the first pandemic which has directly and simultaneously impacted multiple parts of the supply chains globally.

The unthinkable has become a reality for many manufacturers. Their primary plants have had to be closed down, and this has impacted the alternative back-up plants and suppliers. Entire staffs have been locked down. For the first time in modern manufacturing history, demand, supply and workforce availability have been affected simultaneously.

Why is Digitalization the Answer Post-COVID-19?

According to industrial data and tech company Thomas, two-thirds of North American manufacturers are planning to bring production and sourcing back to the American continent. This is also known as reshoring. Because of the high labor costs in Europe and the US, the success of production reshoring will depend on fully-automated, robotized, and data-driven manufacturing systems. Consequently, digitalized factories with a minimum of on-site staffers are likely to trend quickly post-COVID-19.

Why did the effects of the COVID-19 pandemic drive manufacturers onto their knees? It wasn't just the halted production lines; it was the simultaneous staff lockdowns, measures of social distancing, and other employee safety procedures. Manufacturing requires people to physically be on-site. Operators keep an eye open and run machines, while maintenance staff maintains and repairs them. Many factories are not designed to be managed remotely and lack the digital tools and infrastructure that are needed to support such activities.

Consequently, according to Gartner, up to 50% of the production workforce has been unavailable during the pandemic. It is clear that the "new normal" will require smarter ways of working, and also a higher degree of digitalization in manufacturing, such as a "virtual shift"—a team of specialists who connect remotely to be available 24/7 to supervise processes, guide and support the reduced personnel present on-site.

What is the Major Hurdle to the Success of Digitalized Manufacturing?

Quite simply, it is the obstacle of data silos. Many manufacturers have first-hand experience of working in an organization packed with silos. There are several stakeholders involved: from procurement to material planning, production planning, sales, finance, fulfillment, and more. These teams are working in their own silos; they have siloed processes, databases, systems, and dashboards. While these might work individually, the systems do not commu-

nicate well across department borders.

Also, production machines generate massive amounts of valuable data. However, this data is very difficult to collect, due to the various machine-specific formats and interfaces, which has resulted in all the important data left to reside in isolated silos. The information cannot be correlated, cross-referenced, combined or harmonized to give an important end-to-end view on the manufacturing process, inventories, and material flows. These silos prevent manufacturers from efficiently advancing their digital transformation.

How Can We Break Down the Walls of Data Silos?

Start by gaining access to the data residing in the silos, i.e., production machines, systems, and other departments. This data, which is in different formats, will have to be harmonized, integrated, analyzed, and then opened for use by various applications, such as a digital twin, or a performance monitoring platform.

In practice, this will involve connecting machines and core systems such as ERP, MES, PLM, and automation systems via a purpose-built smart factory analytics layer. This will handle the continuous stream of data, generated by machines and systems. It will collect, integrate and analyze all the structured and unstructured data that has been collected from an unlimited number of sources. This will result in valuable insights and can be created simply by integrating the disparate data points.

The ERP systems will tell operators the inventory levels and delivery lead times; MESs will track and manage manufacturing information in real-time, to provide information gems about traceability and performance; and the PLM systems will include all the information, related to a specific product, from concept to production.

Once all data is merged, a manufacturer can then gain a solid foundation for optimal digitalization. Production lines can be automated and robotized; and management will have full control over the manufacturing processes, even if they are based in remote locations. Maintenance needs can be predicted and better managed.

Can the Virtual and Physical Shifts Collaborate Efficiently?

Yes, if they can see the production area, lines, and machines on a visual, online 3D digital twin. The digital twin factory is based on real-time data, and it shows what is happening in the "real" factory, either on a specific line, or a machine at any given moment—so that operators and management can make fact-based decisions. **EHS**

Kari Terho is general manager of Elisa Smart Factory (www.elisasmartfactory.com), a specialist in industrial data analytics.

Sanitizing and Disinfecting Your Business During the Pandemic

A look at the regulatory framework for sanitizing your facility.

By Neal Langerman

Opening and operating a business during this pandemic presents problems few have been trained to address. The goal of our businesses is to earn a profit while keeping our employees and customers safe. Local, state and federal public health authorities have issued guidance that covers almost every conceivable situation. All include sanitizing and disinfecting the workplace and providing for frequent hand washing (sometimes called "hand hygiene").

Few of the guidance documents tell you how to select or use disinfecting chemicals and methods. Few discuss the regulatory framework you must abide by. This article attempts to fill-in that gap.

While "sanitizing" and "disinfecting" have different definitions, the nuanced differences are irrelevant to operating a business. You want to do what is necessary to keep your employees and the public safe in as efficient a manner as possible. This article will use the word (or its derivatives) "sanitizing" to mean both sanitizing and disinfecting. It also will mean "employees and customers" when referring to "employees."

SARS-CoV-2, the virus that causes COVID-19, is spread as a bio-aerosol. Depending on the mechanism of generation—breathing, talking, coughing, sneezing, etc.—the bio-aerosols settle out of the air column in less than 6 feet (2 meters) and 15 minutes. While exceptions to these values have been documented, they provide a good frame of reference for planning. The virus is quite fragile but does seem to persist on hard (porous and non-porous) surfaces for minutes to hours. This provides an opportunity for hand to body transfer, and thus infection. The lipid coat is easy to disrupt, making the virus easy to kill. So, how do you select a sanitizing product and apply it? How often? How do you properly wash your hands? All valid questions that a business operator should not need to spend inordinate time answering.

The Centers for Disease Control (CDC) has published a guidance for Cleaning and Disinfecting Public Spaces. Many of the local and state protocols are based on this document.

Normal cleaning with hot, soapy water reduces the level of virus on surfaces. A regular janitorial program of cleaning will reduce the risk of infection.

Further cleaning of high contact surfaces, door handles, switches, countertops, etc., with U.S. Environmental Protection Agency (EPA)-approved agents further reduces the risk of infection. If possible, eliminate high contact areas by using self-opening doors and imposing controls to stop contact with countertops.

Outdoor surfaces such as sidewalks do not need sanitizing agents. Routine washing with soapy water is adequate. Railings do need sanitizing.

Here are some surfaces which are touched frequently and will need routine sanitizing (this list is not inclusive; there are many more): tables, doorknobs, keyboards, toilets, light switches, countertops, handles, desks, phones, faucets and sinks, gas pump handles, touchscreens, ATM machines.

Routine cleaning should be performed daily or once per shift. High contact area sanitizing should be done more frequently, based on the occupancy. A practical approach is to provide a sanitizing spray (aerosol) in restrooms and ask each person using the restroom to spray all surfaces touched as they leave the facility. Large public restrooms will require continual janitorial attention.

Hand washing is one of the most effective methods of reducing risk of infection. Washing with hot soapy water for at least 20 seconds is highly effective. Employees should wash their hands at least every two hours while at work. If this is not possible, frequent use of an alcohol (or alcohol-peroxide) sanitizer should be done.

Selecting a sanitizing product requires attention to its effectiveness and safety. There are many products being offered, but the EPA List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19) should be your starting point. Three classes of products are the most effective:

• Products which contain bleach (sodium hypochlorite) will usually have the shortest contact time. They tend to be highly irritating

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to skin and proper handling, so using gloves is essential. They must be kept away from products that contain acids.

• Products containing alcohol (either ethyl or isopropyl alcohol) at greater than 65% are effective. Such products often contain a second agent, such as hydrogen peroxide, which increases efficiency. Alcohol products are flammable and must be handled accordingly.

Hand-sanitizers are generally alcohol-based products. They may also contain a glycol to reduce skin irritation. There have been some fires reported associated with larger volumes than found in a personal sanitizer bottle.

• Products containing quaternary amines ("quats") are effective but require longer contact times. They tend to be less harmful to skin and usually are not flammable.

If you are using a cleaning service, review the sanitizing agents they use with them. At a minimum, obtain a Safety Data Sheet (SDS), verify the chemical composition and review the safety information.

The method of cleaning surfaces will depend on the size of the surfaces. Most can be well-cleaned using a rag or brush. Aerosol sprays from consumer-sized cans work well. Using larger aerosol or spray devices should be left to commercial custodial services. They require special training and procedures to avoid inhalation over-exposure to the agent or creating an ignitable atmosphere with a resulting fire.

Employees who use cleaning and sanitizing agents are included in the U.S. Occupational Health and Safety (OSHA) Hazard Communication Standard (29 CFR § 1910.1200) and this imposes some requirements on the employer:

• An SDS must be available for each product.

• The product must be in its original container or a labeled day-use container.

• All employees must be trained regarding the hazards of the product and how to protect themselves from those hazards. Training must be documented.

If a fire hazard exists, then appropriate fire prevention procedures must be followed.

Remember, if an employee (not a customer) becomes ill with COVID-19, the illness is recordable on OSHA Illness and Injury Recordkeeping forms. If an employee is hospitalized, the illness is reportable, following the OSHA "timeliness" rules. If the employee/patient dies from COVID-19, the death must be reported to OSHA within eight hours

Sanitizing your business should not impose an undue burden on the business. Develop a plan for re-opening and operating. Be flexible and review your plan at least weekly. Keep your employees and customers safe. It is good business. **EHS**

Neal Langerman, PhD, is CEO and principal scientist at Advanced Chemical Safety (www.chemical-safety.com), as well as a freelance chemist at Kolabtree (www.kolabtree.com).

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Considerations for Effective EHS Management during COVID-19

Safety leaders play a pivotal role in positioning their companies to deal with the changes underway due to the pandemic. **By G.C. Shah**

Amid this unprecedented pandemic, an expression comes to my mind: "It hit me like a ton of bricks." The immediate impact of COVID-19 has been, obviously, widespread and devastating, both from worker safety and economic points of view. Many industries have had to resort to severe budgetary cuts. This otherwise dismal picture has created challenges as well as opportunities for astute EHS managers. This article will present some considerations for EHS management in these difficult times.

BIG PICTURE

It is heartening to note that companies have shown remarkable resilience in the face of nearly devastating circumstances. Companies and workforces have made remarkable adjustments in work patterns. "Brick-and-mortar" tasks like face-to-face meetings, travel, personal collaboration and paper reports have been replaced by their digital counterparts, such as virtual meetings and on-line collaboration. This pandemic shall pass and eventually (say, in a couple of years), the economy will rebound. In the meantime, consider the following strategic steps:

- Resist making budgetary cuts reflexively.
- Compassion.
- Schedule turnarounds early, rather than late.
- Digitization, collaboration and document updates.
- Training.

BUDGETARY CUTS

In the face of sudden economic upheaval caused by COVID-19, it is likely that a manager may have to respond ultra-quickly to demands from top management for budgetary cuts. However, a too-quick response could hurt EHS management near-term or in the long run. This could even end up increasing overall risk to your plant.

Prioritize functional areas according their "safety criticality," or risk level. HAZOP (Hazard and Operability) would have identified and classified findings according to risk level—high risk, medium risk and low risk. Try to defer working on "low risk" items. The key is if risk is manageable, you can implement budget cuts without adverse impact on safety.

In communicating to top management, state your basis for budget cuts, e.g., take a risk-based approach.

COMPASSION

No matter how difficult times we experience, keep in mind that your workers are our strength. Encourage them. Listen to their concerns. Show empathy—not simply by words but by action as well. A number of companies have developed internal assistance for their workers.

TURNAROUND

Although traditionally, the role of the EHS manager in turnaround planning has been peripheral, today EHS managers at plant levels play a pivotal role in planning. Companies schedule turnaround to align with reliability/maintenance considerations and regulatory concerns. If a turnaround is planned for a year from now and market demand today is severely depressed, it may be worth considering taking the turnaround earlier. The reasoning is two-fold:

- You will be able to meet customers' demand for your products.
- You will be prepared with reliable equipment when the economy rebounds.

Of course, turnarounds do cost and present added risk—contract workers, their training, protocols for work and response to emergency, added equipment, and many other factors.

Turnaround scheduling is by no means a simple task—it involves combined considerations of cost and safety/environmental and market risk. Strategically, though, it might merit your consideration if you can meet your customers' demands and can manage safety/environmental risk.

DIGITIZATION

As stated earlier, digitization has been taking place throughout all industries, although the pace of digitization varies from one company to another. COVID-19 has accelerated that pace. This is not to say that digital transformation is a cake-walk. Consider the following points:

- Convert all safety documents (e.g., EHS procedures, performance indicators, HAZOP records, reports, OSHA records and others) to digital form. Of course, this conversion has to be in alignment with economic constraints.
- For multi-site or multi-nation organizations, enhance on-line collaboration, while maintaining cyber security.
- Develop performance indicators which include financial metrics or indices and share them with top management.
- Make sure documents are updated periodically and are accessible easily.
- Seek appropriate IT support.

TRAINING/TESTING

Digitization will facilitate training—the focus should be on cost effectiveness:

- If you have internal expertise, develop your own training and training. If not, seek help from seasoned professionals.
- With outside trainers, seek arrangements by which future training may be conducted at lower rates.
- Seek relevant "free" training from vendors, such as lockout/tagout, confined space entry and others.

To sum up, this pandemic has presented unprecedented challenges, as well as opportunities, for EHS managers. EHS managers play a pivotal role in positioning their companies to productively harness coming changes while minimizing risk. **EHS**

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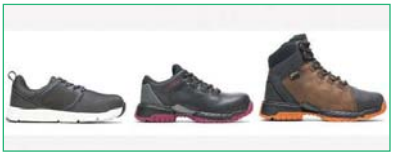
HYTEST's dual-gender Alastor Xergy Athletic (shown at left) features a moisture-wicking mesh lining, a lightweight mesh top, a massaging foam footbed, and the classic HYTEST nano toe. The women's Footrests 2.0 Pivot Shoe (middle) features a nano toe as well, along with a TecTuff collar strap, a moisture-wicking mesh lining, and a removable FootRests anti-fatigue footbed. The Footrests 2.0 Rebound Metatarsal Guard 6" Hiker, aka the MetGuard (right), features the nano toe, waterproof full-grain leather, a moisture-wicking mesh lining with a waterproof membrane, Xergy anti-fatigue foam midsole to absorb shock and return energy, and an oil and slip-resistant TPU outsole found throughout.



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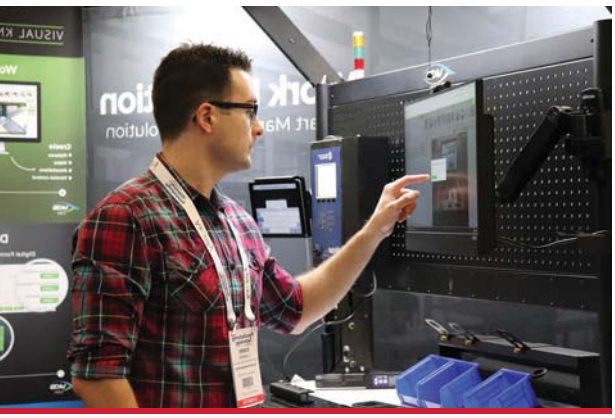

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DRUG ABUSE on the Rise Because of the Coronavirus

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EEOC addresses employer opioid addiction accommodation.

By David Sparkman

With the lockdowns and idling of a large chunk of the workforce due to the COVID-19 pandemic, reports from government experts and anecdotal evidence has been mounting for months about the psychological impact resulting in more suicides, spousal and child abuse, as well as rises in alcohol and drug use. In mid-August, the Centers for Disease Control and Prevention (CDC) revealed the results of a survey conducted in late June that opens a window into just how serious the psychological and emotional impact of the pandemic is for Americans from all walks of life.

The survey shows that reports of anxiety disorder symptoms were about three times those reported in the second quarter of 2019 (25.5% versus 8.1%), and depressive disorder was about four times that reported in Q2 2019 (24.3% versus 6.5%). CDC also said 13.3% of respondents reported starting or increasing substance abuse (including drugs and alcohol).

In addition, more than twice as many respondents reported serious consideration of suicide in the previous 30 days than did adults in the U.S. in 2018, referring to the previous 12 months (10.7% versus 4.3%).

"To reduce potential harm of increased substance use related to COVID-19, resources, including social support, comprehensive treatment options and harm reduction services, are essential and should remain accessible," the CDC researchers advised. "Periodic assessment of mental health, substance use and suicidal ideation should evaluate the prevalence of psychological distress over time."

EEOC WARNS EMPLOYERS

On Aug. 5, the Equal Employment Opportunity Commission (EEOC) issued two technical assistance documents addressing substance abuse accommodation issues under the Americans with Disabilities Act (ADA) for employees who use opioid medications or are addicted to them.

The EEOC characterized the documents as "informal guidances" and said their stated purpose is to "provide clarity to the public regarding existing requirements under the law." The commission admitted that the guidance documents do not have the force and effect of law or "bind the public in any way."

However, attorneys Kathryn Russo and Catherine Cano of the Jackson Lewis law firm warn that "employers must ensure that they do not make employment decisions that are influenced by the social stigma around substance abuse and recovery." The commission has had a long history of pursuing cases where employers made adverse employment decisions based on unsupported conclusions about an applicant's or employee's ability to perform a job due to a positive drug test result for opioids or for lawful use of opioids, they explain.

According to the commission, employees who have lawfully used prescribed opioids or who are in recovery from prior opioid use—but are not currently unlawfully using opioids—are generally protected under the ADA's non-discrimination provisions.

These employees also may be eligible for reasonable accommodations if needed because of their lawful use of the medication or underlying medical conditions requiring its use. However, employees who are currently unlawfully using opioids are not protected under the ADA.

The ADA's protections apply even if an employee is presently experiencing addiction to lawfully used opioids. The guidance further states that opioid addiction is itself a diagnosable medical condition that can be an ADA-covered disability and may require an employer to consider reasonable accommodation. This would include time away from work to attend therapy or support group sessions to avoid relapse or an extended leave of absence for treatment or recovery.

Employees seeking leave for treatment or recovery from opioid addiction also should be permitted to use sick and accrued leave the same as other employees requesting leave for medical treatment.

The guidances make clear that "an employer never has to lower production or performance standards, eliminate essential functions (fundamental duties) of a job, pay for work that is not performed, or excuse illegal drug use on the job as a reasonable accommodation." **EHS**

David Sparkman is founding editor of ACWI Advance (www.acwi.org) and contributing editor to EHS Today.

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