

MARCH 2017

SAFETYZONE MAGAZINE

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It's Getting Very Serious



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Marijuana and Workplace Safety:

It's Getting Very Serious

The train had only left the station 18 minutes prior to striking a backhoe, killing two track workers, derailing, and hospitalizing 41 individuals. Nearly a year later the investigation is ongoing and causes are still under debate. But a report released in early 2017 reveals that all three individuals involved in the crash in Pennsylvania, the engineer and the two track workers, all tested positive for drug use. While drug use is not believed to have been the primary cause of the accident, any positive drug test is an immediate red flag in such a safety-sensitive industry. Amongst oxycodone and cocaine, one of the individuals tested positive for marijuana.

Such stories are still rare and still cause us to pause. Fortunately, in this incident, although there were many injuries, no passengers died. Unfortunately, it was not the first time and may not be the last time that impaired workers are on the job. Drug use is on the rise in the United States. As popular opinion has shifted from “War on Drugs” to “Everybody’s Doing It” it is no wonder that accidents are on the rise. The pro-marijuana movement has surged to new heights of success since the turn of the millennium. Before 2000, only four states and the District of Columbia had medical marijuana laws. Today that number has reached 28 and that is not counting those states that have marijuana oil laws like in Georgia. And in just four years, eight states and DC have legalized marijuana for recreational purposes.

Marijuana Use On the Rise... And So Are the Consequences

Concurrently, more Americans are trying marijuana than ever before. Taboos and inhibitions surrounding drug use are on

the decline. The National Survey on Drug Use and Health indicates that drug use is on the rise for all age groups, including for marijuana. In 2008, 8.1 percent of those 12 and older were current marijuana users. By 2014, that percentage had risen to 10.2 percent. While that may only be a couple of percentage points difference, it represents approximately 22 million people who use marijuana on a regular basis (at least once in the past 30 days).¹ This is backed up by a recent Gallup poll that showed that in 2016 about 1 in 8 American adults say they smoke marijuana. That’s nearly double the number who said the same thing in 2013 (7 percent in 2013 and 13 percent in 2016).² Also, according to Gallup, support for marijuana legalization is the highest it has been in the 47 years that it has been conducting surveys on the topic. In their late 2016 survey, 60 percent of Americans said they support legalizing marijuana.³

And these are not the only statistics on the rise. From 2007 to 2014, the number of nighttime weekend drivers with marijuana in their system in the U.S. increased nearly 50% (from roughly 8 percent to 13 percent).⁴ In the state of Washington, the percentage of drivers involved in fatal crashes who had recently used marijuana more than doubled from 2013 to 2014 (from approximately 1 in 12 to 1 in 6).⁵ And while some may argue that marijuana-impaired driving is not as big a deal as alcohol-impaired driving, the facts do not change: impaired driving is more dangerous than non-impaired driving.

And as we saw in last year’s train accident in Pennsylvania, as attitudes relax and drug use increases, workplace safety and public safety suffer.

Medical or Recreational, Marijuana Poses a Safety Risk

There are 483 known compounds in marijuana. Of those compounds, 65 are cannabinoids – chemical compounds that alter neurotransmission in the brain. Tetrahydrocannabinol (THC) is the principal psychoactive compound (cannabinoid) in marijuana and is responsible for all the classic “high” effects of marijuana use. This includes feelings of euphoria, sleepiness, anxiety, and psychosis. Another important cannabinoid is cannabidiol (CBD). Unlike THC, CBD provides no feelings of being “high” or “stoned.” It doesn’t provide feelings of euphoria. In fact, it counteracts the sleepiness, anxiety, and psychosis caused by THC.

These two substances represent two very different approaches to marijuana legalization: marijuana as medicine (CBD) and marijuana as “good fun” (THC). Either way, there are risks involved. Whether someone is honestly sick and seeking relief or bored and seeking escape, marijuana in the workplace is dangerous. This is supported by the documented effects of THC and CBD, as well as by the fact that an unregulated market leads to sick people getting THC strains when they really should be using CBD strains. Before showing how this impacts the workplace, let us look at the science behind these two compounds.

THC: Supposed Benefits and Established Risks

While one may reasonably conclude that a medicine that causes anxiety and psychosis is not worth trying, others may argue that the benefits outweigh the negatives. THC imitates a neurotransmitter that occurs naturally in the body

(anandamide), which regulates sleep, hunger, and pain perception. As such, there is evidence that THC can be used to reduce nausea, vomiting, and pain while increasing appetite. This would be beneficial to counteract some of the side-effects of chemotherapy or the symptoms of HIV/AIDS.

But THC isn't a benign substance. THC triggers the release of dopamine, creating feelings of euphoria. This effect of THC is the key reason that marijuana is one of the most widely abused drugs in the world. But, like any other drug, repeated and excessive amounts of dopamine may cause a dependency. This could lead users to rely on marijuana to stabilize and feel "normal." Additionally, THC interferes with the hippocampus, the part of the brain responsible for forming new memories. This leads to forgetfulness, which in turn interferes with work, school, and family life. Not to mention the possibility of psychosis, anxiety, and depression. According to the National Institute on Drug Abuse, THC can trigger a relapse in schizophrenic symptoms. Finally, THC can impair motor skills, making tasks like riding a bike or driving a car more difficult and dangerous for marijuana users and those around them.

CBD: Supposed Benefits and Potential Risks

CBD and THC have the same chemical formula, but because the atoms are arranged differently, CBD does not produce the same psychoactive effects or "high" that THC does. CBD can decrease pain, while stimulating appetite, just like THC, but without causing sleepiness, memory loss, and many of the other negative side-effects of THC. In fact, CBD can counteract the psychoactive effects of THC, making it potentially useful for individuals suffering from schizophrenia, social anxiety, and depression.

While CBD is often considered less harmful than THC, it is not completely risk-free. CBD can affect the way the body metabolizes other medicines, since it neutralizes certain enzymes in the liver. Interestingly, it is because of this neutralizing effect that CBD can counteract THC when taken concurrently. It can also cause low blood pressure, light-headedness, and drowsiness. While these effects may not be as severe as those seen with THC, they can easily contribute to workplace accidents and injuries. CBD can also lead to dryness of the mouth or "cotton-mouth." This is because the re-

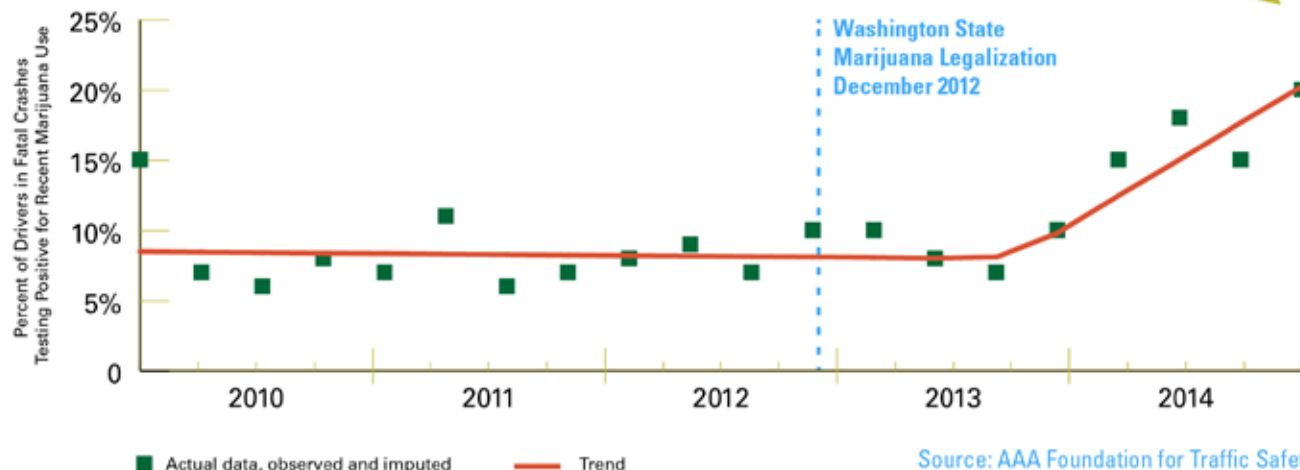
ceptors in the mouth that accept CBD are linked to saliva production. As well, there are conflicting studies concerning the effect of CBD on sufferers of Parkinson's disease. Some studies suggest that it may worsen tremors and muscle movement associated with the disease, while others suggest there is no risk.

THC and CBD: A Distinction Lost On Many

Since marijuana is a Schedule I controlled substance under federal law (meaning there is no legally recognized medical application for the drug), both THC and CBD are illegal substances. Because of this, research and information are limited. As well, regulations are non-existent. This lack of oversight often leads to high-THC strains being marketed and sold to medical patients. Even when medical marijuana shops carry both high-THC and high-CBD strains, untrained or unaware store clerks sometimes sell the wrong strain to patients. While being high on THC may bring temporary "relief" (due to being out one's mind so to speak), this kind of "relief" may create more problems than it temporarily distracts its users from. No matter which way you look at it, medical marijuana initiatives have managed to

Fatal Road Crashes Involving Marijuana Double After State Legalizes Drug

FATAL CRASHES INVOLVING DRIVERS WHO RECENTLY USED MARIJUANA DOUBLED IN WASHINGTON AFTER THE STATE LEGALIZED THE DRUG IN 2012.



Source: AAA Foundation for Traffic Safety

put a dangerous substance into the hands of those who are sick, desperate, and willing to try anything to feel relief. And while compassion and understanding are welcome and valued traits, forgetfulness, anxiety, depression, psychosis, and reduced motor skills can lead to a myriad of other issues including accidents on the roads, rails, air, and in the workplace.

This lack of understanding about CBD and THC is dangerous. Of the 60% of Americans who support legalized marijuana, how many understand the different roles of CBD and THC and the dangers each may pose? Unless a medical marijuana user is very savvy, there is a distinct possibility that from week to week, his or her supply of medicine could go from relatively safe CBD to demonstrably dangerous THC. A dispensary clerk could unwittingly mix up high-THC and high-CBD strains or worse, not know the levels in each strain or have been trained on the different effects of THC and CBD. With unregulated labeling, usage and dosages of marijuana, a well-intentioned and well-informed patient could be mistakenly dosing herself with high levels of THC. And, because the laws are inconsistent, patients can sometimes grow their own marijuana. Again, unless they are aware of the differences and make sure to purchase high-CBD strains, they could be growing their own high-THC marijuana and ingesting it could cause more harm than good.

THC Concentration Rising

With the risks of high-THC strains of marijuana established, consider the following statistics. A report released in 2015 from Charas Scientific, one of the labs in Colorado certified to test marijuana potency, indicated that today marijuana potency averages around 20 percent THC (with peaks reaching 30 percent THC). That is a drastic shift since the 1980's when the average THC potency was around 4 percent.⁶ Even more unsettling is the increase in THC potency when compared to just a few years ago. According to the National Institute on Drug Abuse, in 2012 the average THC potency of marijuana confiscated by police was about 15 percent. In just three years, average

marijuana potency grew approximately 33 percent.⁷ Combined with statistics showing that marijuana use is on the rise, this not only means there are more people using marijuana than ever before, but they are getting more of the psychoactive effects of marijuana than ever before. This means more employees coming to work impaired and more impaired than they would have been a decade ago.

Safety Hazards

Substance abusing employees are not safe employees. Marijuana may not be considered as dangerous as cocaine, meth, and bath salts, but it is not a benign substance either. Substance abuse problems can begin manifesting themselves in employee safety records. Statistics prove that substance abusing employees will be involved in more accidents than other workers, even though they are often not the ones who are injured. They also tend to display carelessness in the operation and maintenance of potentially hazardous materials or dangerous equipment.

Other safety-related signs of substance abuse may include:

- Risky behavior
- Increased involvement in off-the-job accidents
- Damaging equipment or property

This problem is not exclusive to jobs that are traditionally considered safety-sensitive. It may be obvious why someone impaired by marijuana should not operate a forklift or a jackhammer, but some may not immediately realize the danger when daycare workers, physicians, regional sales managers, and cooks are lighting up. Since marijuana impairs judgement and makes users feel like everything is alright, daycare workers who are high may not realize when infants and toddlers are in danger. Physicians may misdiagnose a critical condition as something more benign or neglect to correct submit a prescription to the pharmacy. A regional sales manager who drives from store to store may cause an accident on the highway or inadvertently cause an accident

when checking in on a warehouse. Cooks may mishandle knives or hot cooking oil or ignore food-safety rules. All of these create unsafe work environments, even in workplaces that are not usually considered safety-sensitive or that are not under federal safety regulations. More accidents mean more injuries, work stoppage, increased insurance premiums, direct healthcare costs, and even litigation.

Surely Not My Employees!

A recent *Monitoring the Future* study found that most parents suspected that their teens' friends and peers were using drugs, but claimed that their own children were not possibly using drugs. But it turned out that when these researchers asked teens, many of them were indeed using drugs.⁸ Many parents were shown to be ignorant to the reality of their teen's drug use because they just cannot believe that their own children could be using drugs. The same principle may be true of some employers. Many may recognize that marijuana is a problem in other companies, but surely it is not a problem in their workplace amongst their employees. But again, statistics support that they probably do have employees using marijuana. As established earlier, taboos surrounding drug use, especially marijuana, are eroding and more employees are lighting up than ever before.

According to the federal government, the number of drug users who are employed rose from 8.28 million in 2013 to 8.98 million in 2014. That means approximately 700,000 more drug users in the workplace in a single year. Concurrently, drug users who are unemployed dropped from 2.56 million in 2013 to 2.31 million in 2014. That means 250,000 of 700,000 people mentioned above were unemployed drug users, but found employment. That leaves around 450,000 employees who were not drug users in 2013 that began using or experimenting with drugs in 2014 and managed to keep their jobs.⁹

According to the National Council on Compensation Insurance, as many as 50 percent of all workers' compensation



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Revised Ambient Air Monitoring Quality Assurance Requirements

ABSTRACT

The revised air monitoring quality assurance requirements are EPA's first comprehensive changes to the air monitoring rules since 2006. These changes formalize many changes that had been informally adopted by Agency memorandum and guidance documents. Many of the changes were driven by improved monitoring technology—such as continuous particulate matter analyzers—that were not commonly available at the time of the previous update.

The revised rules also revert to the pre-2006 structure whereby state and federal monitoring program requirements are set out in Appendix A, with industrial PSD monitoring requirements specified in Appendix B. EPA provides a summary of the changes at the following URL:

https://www3.epa.gov/ttnamti1/files/ambient/pm25/Summary_of_Appendix_A_Changes_%203_25_2016.pdf.

ARTICLE

Key Changes

The revised regulation once again separates the quality assurance requirements applicable to state and federal monitoring programs from those for industrial PSD monitoring. This change recognizes the many differences in the objectives and implementation approach between the state and industrial monitoring programs. Other significant items include:

- Increased emphasis on the role and responsibilities of the Primary Quality Assurance Organization (PQAO)
- Requirement that EPA be provided a courtesy copy of an organization's Quality Assurance Project Plan (QAPP), even if that PQAO has been delegated QAPP review authority by EPA.
- Clarification of the applicable system and performance audits and required frequency for each type of monitoring program
- Updated calibration and audit ranges for gaseous analyzers

Impacts On Existing Monitoring Monitoring Programs

claims are related to the abuse of alcohol or drugs in the workplace. Drug users, as a group, use medical benefits at a rate eight times higher than non-users. Substance abusing employees also are absent from work more often than their non-substance abusing co-workers, often resulting in increased workloads for co-workers and decreased employee morale.

Conclusion

Employers have an obligation to provide safe work environments for their employees and customers. Marijuana is simply incompatible with this imperative. While it may be increasingly unpopular for employers to have drug-free workplace policies, facts do not shift with popular opinion. As marijuana use increases, so do accidents and injuries. This is not a problem that restricts itself to impaired driving. It affects workplaces and their bottom lines too. It is not a problem that is limited to Washington, Colorado, and other states that have legalized the drug

for recreational purposes. It is an issue that touches every corner of the nation and the world.

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The High Cost of Exposing Workers to Chemicals at Point of Use

The tip-and-pour method, as well as poorly designed pumps, can expose workers to injury and companies to significant financial losses

Every day industrial workers transfer potentially hazardous chemicals, such as solvents, acetones, lubricants, cleansers, and acids, from large drums into smaller containers, or into machinery. This transfer of chemicals at the point of use, however, can have serious consequences when manual “tip-and-pour” techniques or poorly designed pumps are used.

Whether the chemicals are toxic, corrosive, reactive, flammable, emit volatile organic compounds (VOCs), or are even potentially explosive, the danger of accidental contact, even for short periods, can pose a severe hazard to workers.

In addition to the potential for injury, there can also be serious financial ramifications for the facility involved. The risks include cost to treat injuries or perform cleanup, as well as workers’ compensation claims, potential liability, OSHA fines, loss of expensive chemicals and even facility/production shutdown.

“It can be catastrophic to a company if toxic or highly flammable material is accidentally released at the point of use,” says Deborah Grubbe, PE, CEng, and founder of Operations and Safety Solutions, a consulting firm specializing in industrial safety. “Companies have to assume that if something can go wrong during chemical transfer, it will, and take appropriate precautions to prevent what could be significant consequences.”

Spiraling Costs of Loss of Containment

Grubbe, who has 40 years of experience working in the chemical, oil and gas industries, including at DuPont, NASA, and for the U.S. military, says “Any time you lose containment; you have an issue that can spiral out of control.”



Corrosive chemicals, for example, can burn skin or flesh. Some chemicals are toxic when touched or inhaled. Cyanotic agents, for instance, can be particularly dangerous or even fatal, since they rob the body of oxygen.

Many chemicals are flammable as well and can be ignited by even the smallest spark from nearby motors or other mechanical equipment. “There is no such thing as a small fire in my business,” says Grubbe.

In addition to cost of cleanup or treating injuries, there are also indirect costs that can be incurred. These include supervisors’ time to document the incident and respond to any added government inspection or scrutiny, as well as the

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potential for temporary shutdown of the facility.

“The indirect costs can be as much as 2-4 times the direct costs,” says Grubbe. “Not to mention potential liability, workers’ compensation issues, regulatory fines or potential actions from OSHA or the EPA.”

Chemical Transfer Techniques

Traditional practices of transferring liquid chemicals suffer from a number of drawbacks.

Manual techniques, such as the tip-and-pour method, are still common today. Tipping heavy barrels, however, can lead to overpouring or the barrel toppling.

“Some companies choose to transfer of chemicals manually, but it is extremely difficult to control heavy drums,” cautions Grubbe. “I’d recommend against it because of the probability of a spill is so high.”

Although a number of pump types exist for chemical transfer (rotary, siphon, lever-action, piston and electric), most are not engineered as a sealed, contained system. In addition, these pumps can have seals that leak, are known to wear out quickly, and can be difficult to operate, making precise volume control and dispensing difficult.

In contrast, sealed pump systems can dramatically improve the safety and efficiency of chemical transfer.

“A sealed, contained system is ideal when dealing with a toxic, flammable, or corrosive liquid,” says Grubbe. “With sealed devices, like GoatThroat pumps, you can maintain a controlled containment from one vessel to another.”

Small, versatile, hand-operated pressure pumps, such as those manufactured by GoatThroat Pumps, are engineered to work as a sealed system. The pumps can be used for the safe transfer of over 1400 industrial chemicals, including the most aggressive acids, caustics and solvents.

These pumps function essentially like a beer tap. The operator attaches the pump, presses the plunger several times to build up a low amount of internal pressure, and then dispenses the liquid. The tap is configured to provide precise control over the fluid delivery, from slow (1ML/ 1 oz.) up to 4.5 gallons per minute, depending on viscosity.

Because such pumps use very low pressure (<6 PSI) to transfer fluids through the line and contain automatic pressure relief valves, they are safe to use with virtually any container from 2-gallon jugs to 55-gallon drums.





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Adoption of Sealed Pump Systems

Although Design Mark Industries keeps its chemicals in a vented, explosion-proof room, the supplier of membrane switches, keypads, and touchscreens sought to further improve the safety and efficiency of transferring acetone and acetate-based chemicals from 55-gallon drums into quart and 5-gallon containers. The chemicals are used in the screen printing process of printed circuitry and graphic overlays.

Production Supervisor Vincent Francisco ruled out manual pouring because of the potential of injury and lack of control in dispensing. Instead, he utilized a variety of traditional pumps including rotary, siphon, and lever-action, but found them all unsatisfactory.

"I was replacing the pumps once or twice a year because they kept breaking down, delivered imprecise amounts, and were not designed as completely self-contained, sealed systems," says Francisco.

After considerable research online, Francisco decided to utilize a sealed chemical pump system from GoatThroat.

"I consider using [GoatThroat] pumps a 'best practice' technique because the barrels remain upright and the entire system is sealed so there is never an issue with exposure or VOCs when transferring chemicals," says Francisco.

According to Francisco, the sealed pump system is intuitive to use because it operates like a beer tap. "Just pump the plunger a few times, open the spigot and dispense. You have full control over how much is dispensed – even the tiniest amounts – or you can leave it open for a continuous flow. It delivers the precise amount needed."

Francisco adds that the pumps are built for longevity. Over the past 11 years, he estimates that his company has saved thousands of dollars by eliminating the cost of replacement pumps. "I've only replaced one of our three pumps over that time due to constant use, and we could have used it longer," says Francisco.

Allergy Laboratories Inc., a FDA licensed pharmaceutical manufacturer of biological extracts for the diagnostic testing and therapeutic treatment of allergies, also uses a sealed pump system to transfer acetone from 55 gallon drums to 1 gallon containers for a variety of processes.

According to Charles Cheek, facility manager for Allergy Laboratories, the pharmaceutical chemical delivery process must be very clean and no foreign material can be introduced into the acetone.

Because acetone is highly flammable, he was concerned about using an electric pump that could potentially create a spark. As a result, he decided to purchase a pump that had no electrical or moving parts that could create a hazard.

"We've found GoatThroat pumps to be a much safer way to transport chemical liquids," says Cheek, who utilizes a pneumatic adaptor accessory to supply pressure via in-house compressed air. "There is no spillage, splatter, overpouring, leaking, or VOCs because the system is self-contained. There is no sprayback and we do not get chemicals on our hands. It is a nice, clean delivery system."

Besides enhancing safety, Cheek says a sealed system can prevent loss of expensive chemicals like acetone. "I haven't lost any product due to the pumps. They eliminate evaporation, do not leak or drip and I can adjust the flow to get the exact amount I need without spilling or overflow."

Cheek says he also utilizes a GoatThroat pump to transfer comprehensive boiler water treatment solution to mitigate scale and corrosion of the boiler system.

Previously, he had to fill a glass beaker with the chemical, climb a ladder and pour the chemicals into the top of the tank.

Now, that work is performed with the help of the pump and 6' extension hose accessory to efficiently deliver the cleaning chemicals.

"Every time inspectors come in, they say we have the cleanest boiler they have seen," says Cheek. "With this chemical transfer system, I'm able to transfer exactly what I need to get the job done."

By Del Williams

Del Williams is a technical writer based in Torrance, California.

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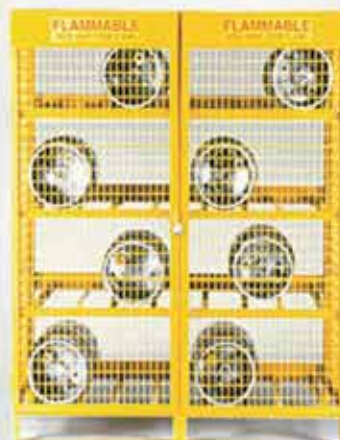
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Educational Resources

Webinars

RegScan understands that staying in compliance is critical. But it doesn't have to be complicated. That is why we host webinars several times throughout the

year that help our clients tackle ever-evolving problems in the EHS industry. Prior topics covered included regulatory overviews, the Changing Role of the EHS Manager, and ISO 14001:2015. Such topics specifically address the newest industry standards while banishing compliance confusion, provide necessary tools to manage today's EHS challenges and reduce time and money spent on compliance activities.

Tutorials

RegScan also produces a number of helpful videos for our users. They answer most commonly asked questions on using the RegScan One interface. You may wish to visit our Informational & Tutorial Videos Page prior to submitting a ticket to see if your question can be answered with the assistance of one of these videos.

Conference

And now RegScan has gone beyond the computer screen to bring partners and clients their first ever Inaugural Regulatory Conference. Government officials, regulatory experts and executives from Fortune 1000 companies will gather on Capitol Hill in Washington D.C. on May 24th-25th, and be among the first to learn what the Environmental Protection Agency has planned for 2017 and beyond. And with RegScan, sometimes it is all fun and games. We're taking everyone out to the ballgame with box seats for the Washington Nationals as they host the National League Champion New York Mets.

Tracking Regulatory Change

Strikethrough

Strikethrough allows you to effortlessly see the amendment history of a regulation by comparing the current regulation with an earlier or future version. Changes are easily identified by color-coding. Anything that has been added will appear in green, while anything that has been deleted will appear in red.

My WatchList

My WatchList is a custom regulatory change management tool that allows you to monitor change at various levels of detail. It gives you quick access to only the information you need, while providing a clear record of what you have and haven't reviewed. My WatchList is the easiest way for a Web Services user to build a custom regulatory register, which RegScan will automatically export to your online environmental management system.

LookOut Email Alert

By defining specific keywords or phrases, LookOut allows you receive daily Email alerts on State or Federal regulatory changes.

RegScan Customer Support

As part of our ongoing commitment to improve the RegScan user experience, we use a ticketing system for customer support inquiries. This allows us to streamline requests and better serve you. Available 24/7, the ticketing system

allows you to immediately report an issue and track the support team's response to it. Every support request is assigned a unique ticket number. For your reference, we provide complete archives and history of all your support requests. A valid email address is required to submit a ticket.

Schedule a Demonstration

The RegScan team will gladly demonstrate any of our products or services for free. Our online demonstration sessions can accommodate up to 25 people, and we will schedule a meeting whenever it's convenient for you. During these interactive demonstrations, our experienced staff will go through whatever products or services interest you. You'll also have the opportunity to ask questions, and discuss licensing options that are tailored to your needs. If you decide to purchase, we can take of your training and support needs too. We frequently update our library of training videos, and we'll be happy to arrange online or in-person training sessions. Furthermore, our in-house technical support team is always available on weekdays (except for holidays) between 8 a.m. and 8 p.m. Eastern time, and online 24/7.

To learn more about RegScan, please call +1 570-323-1010, or Email info@regscan.com.

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About Us

Malta Dynamics is a full-service manufacturing company specializing in mobile fall arrest solutions – we design, engineer and manufacture an ever increasing product line to serve the general industry and construction.

We offer high quality safety equipment that exceed OSHA requirements; rent/sell custom engineered and off the shelf solutions; and provide dependable services and reliable equipment backed by an experienced management team and a competent sales force.

Our Mission

Our customers are at the heart of our priorities – we take great pride in offering an innovative portfolio of high quality products paired with an unmatched service.

Every day, a team of seasoned individuals helps bring the right products into the market at the fairest prices while constantly working to create, fine-tune and expand our solutions.

A great example of this is the innovative Grabber® Mobile Fall Protection System – an award winning solution praised by critics and loved by our clients.

But our mission doesn't stop there. We back our products with a 100% guarantee and assure that all of them are ISO 17025 third-party tested as required by ANSI, and that they undergo a thorough Quality Control process.

Our Vision

We are part of the reputed Watertown Enterprises group of companies, as a relatively new business, Malta Dynamics is a fast growing company in boundless expansion thanks to a seasoned management team with over 30 decades of experience in the industry, the work of our professionals and the excellence of our products.

Our vision is to become the preferred supplier of fall protection equipment and engineered services, and the leading innovator when it comes to mobile fall arrest systems – always keeping our clients at the heart of our priorities.

The Malta Dynamics Difference

- The customer will always come first
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Delta to Reveal Anti-Microbial Cooling Tower at AHR Expo

The risk of propagation of deadly cooling tower-borne pathogens, such as Legionnaire's Disease, can be minimized through the use of towers made of anti-microbial HDPE

Delta Cooling Towers (deltacooling.com) will display the World's first anti-microbial cooling tower at this month's AHR Expo in Las Vegas (Booth #N7406).

Legionella, the bacteria that causes potentially fatal Legionnaire's Disease, and other strains of deadly pathogens that are hosted by some cooling towers, have been substantially reduced by the development of a unique anti-microbial HDPE material designed by Delta Cooling.

Delta, which pioneered the HDPE (high-density polyethylene) plastic cooling tower in the 1970s, has just launched a line of towers constructed of anti-microbial resin, which is fully compounded into the base cooling tower material. The anti-mi-

crobial resin contains additives that operate on a cellular level to continuously disrupt and prevent uncontrolled growth of microorganisms and biofilm within the cooling tower. Efficacy tests were performed by Special Pathogens Laboratory, The Legionella Experts®.

Although the public concern about Legionnaire's Disease was paramount during the outbreaks of the mid-1970s, there have been many occurrences since then, including over a dozen cases in the U.S. this year, as well as several in Europe and Australia.

According to the CDC, in many of these cases Legionella is incubated and spread through water systems, including the cooling towers that are essential items in commercial building HVAC

systems and industrial process cooling.

It has been well established that, under certain common conditions, cooling towers can propagate Legionella, a virulent bacteria that can produce severe lung infections. This has recently led ANSI/ASHRAE to publish its Standard 188, Legionellosis: Risk Management for Building Water Systems, which documents new risk standards and requirements for engineers that design new buildings and renovations to existing structures.

John Flaherty, president of Delta Cooling Towers, points out that the aforementioned standards and requirements do not significantly detail the maintenance practices necessary to keep water systems, such as cooling towers, healthy. He says that competent maintenance; consistent, top quality water treatment and accurate monitoring are essential to that effort.

"Without consistent, competent water treatment, the legionella risk is not completely eliminated, even with the new antimicrobial cooling tower," Flaherty explains. "While cooling tower conditions are often managed by water treatment chemicals, such treatment is sometimes inadequate and poor piping designs, lead to 'dead legs,' creating an environment in which pathogens – including Legionella – can thrive."

Flaherty adds that cooling tower design and materials can be very significant in the prevention of pathogen growth. Also, the best water treatments for Legionella prevention are oxidizing biocides which react aggressively toward metal surfaces, effectively attacking metal-clad cooling towers and shortening service life. However, because Delta's cooling tower fills and shells are constructed of anti-microbial plastic, they are virtually impervious to corrosive water treatments and also minimize the risk of microbial growth. A 20-year factory warranty provides evidence of the durability of these HDPE cooling towers.

The design of many cooling towers creates pockets where water may stagnate, another condition that can lead to microorganism development. The stagnant water areas are prime breeding grounds for Legionella to grow. To avoid such problems, Delta's cooling tower designs feature a sloped basin and/or basin sweeper system.

While other cooling tower manufacturers may market a tower with an anti-microbial fill (the medium over which the hot water is distributed as it is being cooled), no company other than Delta has engineered a cooling tower featuring both the fill and structural casing composed of anti-microbial material.

For more information, contact Delta Cooling Towers, Inc., 185 US HWY 206, Roxbury Twp., NJ 07836; Phone: 800-289.3358; Fax: 973.586.2243; E-mail: sales@deltacooling.com.

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Taking the Pain Out of Regulatory Compliance





Properly designed continuous emission monitoring systems (CEMS) can simplify regulatory compliance while reducing costs

Petrochemical refineries are increasingly being called on to install continuous emission monitoring systems (CEMS) to collect, record and report data to comply with air emission standards outlined by the Environmental Protection Agency (EPA) as well as local and state air quality districts.

Spurring this requirement are stricter regulations, often stimulated by air quality districts, which expand the types and capacities of equipment, as well as the addition of chemical compounds, that must be monitored. In addition, facilities with decades-old monitoring systems are now facing the need to retrofit or replace obsolete components.

This is putting a spotlight on CEMS, as refineries eager to keep costs down wrestle with how to meet compliance requirements as inexpensively and efficiently as possible, while still protecting the facility against regulatory fines. Also at top-of-mind is keeping plant personnel on higher revenue generating priorities and off of maintenance and operational duties.

“CEMS are used for environmental compliance only. They do not make the refinery money,” says Bill Deutschlander of Eichleay, a full service, multi-discipline facilities design and engineering firm for petrochemical and other industries. “So the least amount of money you can spend on the system and remain compliant is in the refinery’s best interest.”

As a member of the instrumentation and controls group, Deutschlander has decades of experience working with laboratory and inline process analyzers, including CEM systems.

The difficulty with that concept, says Deutschlander, is that a poorly designed CEM system with the least expensive



components can cost much more in the long run in ongoing upkeep and maintenance.

“A lot of [CEMS] providers want to purchase the lowest-priced equipment to install in their system,” adds Deutschlandler. “That might get you a lower installed cost, but you want quality system components so you minimize the amount of maintenance required.”

In addition, if the system fails to record data, even for short periods of time or is not properly validated every 24 hours, regulators can levy significant penalties against the facility that can range from \$50,000 for a single notice, up to multiple hundreds of thousands of dollars over time.

CEMS Integration

Housed in shelters in close proximity to each piece of equipment monitored, CEM systems continuously transport samples of exhaust gases that have been conditioned to a rack of analyzers. Reporting software is also included, and the entire system is often tied into the refinery’s network.

To accomplish this task, CEMS involve probes, analyzers, pumps, chillers and other components available on the open market. As such creating these types of systems is a matter of integrating a variety of products from different manufacturers.

Once integrated, by EPA rule, CEMS must be validated once every 24 hours to ensure the analyzer has not drifted off its calibrated accuracy by more than typically 10%. CEMS operate 24 hours a day, 365 days a year and must also have an uptime of 95% to stay in compliance and avoid fines.

For these reasons, ongoing maintenance is unavoidable for facilities that expect to remain in compliance.

Stricter Regulations Spur Installations

For one west coast refinery, new regulations necessitated the installation of CEM systems on four mid-sized process boilers previously monitored by more basic oxygen monitors. The new guidelines from the local air quality district addressed emissions of nitrogen oxide (NO_x) and

carbon dioxide (CO₂) from boilers, steam generators, and process heaters.

"We used to have different type of measurements on these process heaters, but that was no longer acceptable to the Bay Area and we had to install a full-blown CEMS," says Ken Sullivan, an engineer for analyzers and instrumentation at the refinery.

According to Sullivan, the project was put out to bid and was ultimately awarded to Cemtek Environmental, a leading supplier of custom engineered CEMS.

Cemtek is a system integrator of extractive, dilution and mercury CEMS designed to monitor compound such as NO_x, CO₂, oxygen, sulfur and others. The refinery was already familiar with Cemtek, having worked with the company on several past projects.

"They came in with the best proposal," says Sullivan. "In our experience, they really try and do the right thing for us. If you put a spec together and they have a better idea, they will point it out based on their past experience."

Sullivan adds that Cemtek was able to install and complete initial testing of the system prior to the deadline and within cost.

Reducing Maintenance Requirements

There is routine maintenance that has to be done on these systems. Many plants find they must assign additional man hours to take care of the equipment.

"If plant personnel have to spend more and more time on the CEMS, usually what that means is it's going to take them away from working on profit generating equipment," says Deutschlander. "So properly designed process analyzers will help them ultimately have a much higher return on the dollar by making the process more efficient."

Exacerbating the situation is the continuing exodus of experienced personnel to retirement, leaving a younger generation of engineers with limited training on existing systems.

"You're seeing more outsourcing now because refineries don't have enough personnel to do the maintenance," says

Deutschlander.

To address this, integrators like Cemtek provide field service maintenance services. These can range from yearly visits to tune-up the system prior to annual re-certification, quarterly visits to maintain the system on a more regular basis, or even on-site services with daily technician visits.

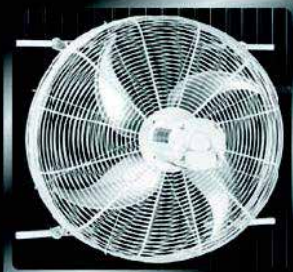
Technology will also play a key role in reducing maintenance requirements. Today's emission systems now deliver remote diagnostics that allow technicians to review how the system is operating and conduct preventative diagnostics through a web browser, removing the need for regular or unnecessary on-site visits.

"You can maintain more [process analyzer] systems with fewer personnel using remote diagnostics," explains Deutschlander. "The more information you can view remotely will lower the total overall cost of maintenance."

For more information about Cemtek Environmental, call: (714) 437-7100; e-mail: sales@cemteks.com.

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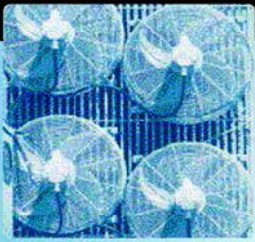
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