FLAME RESISTANT INSIGHTS™ The source for arc flash and flash fire news

Seeing is Believing
at the University of Alberta’s flash fire facility

PLUS:
Combustible dust: an update on OSHA’s rule and a look at China’s recent fatal dust tragedy
Keeping everyone safe: working together for safety management systems
Does one size fit all when it comes to PPE?

WHEN IT COMES TO FR SAFETY | WE ARE ALL IN
The story behind the Westex by Milliken commitment
TABLE OF CONTENTS

3  Letter from Westex by Milliken
   Mike Enright, Vice President, Westex by Milliken

4  Seeing is believing at the University of Alberta’s flash fire facility
   Greg Kelly, Regional Market Manager, Western Canada, Westex by Milliken

8  We are all in: the story behind the Westex by Milliken commitment

12 Does one size fit all when it comes to PPE?
    Wesley Wheeler, Director of Safety, NECA

15 Back to work, injury free: camera captures arc flash in Brazil

16 Combustible dust: an update on OSHA’s rule and a look at China’s recent fatal dust tragedy
    Scott Margolin, International Technical Director, Westex by Milliken

20 Keeping everyone safe: working together for safety management systems
    Michael J. Johnston, Executive Director Standards and Safety, NECA

24 Integrity matters at Milliken

25 Ask Westex by Milliken

28 Westex by Milliken Events

Letter from Westex by Milliken

Last year’s acquisition of Westex, Inc. by Milliken & Company combined two organizations into one with a singular focus: to provide innovative flame resistant fabrics to the industry that deliver on our commitment to create innovations that do good. Westex by Milliken is committed to engineering the most innovative FR fabrics in the industry to help keep workers safe around the world.

This fifth edition of Flame Resistant Insights eZine will help you understand why, “When it Comes to FR Safety, We Are All In.” Our dedication to the FR industry is highlighted in three key areas:

+ We are FR innovators who develop game-changing solutions. We invest in research that leads to innovative FR technology, keeping workers safe and comfortable. Read more about the science behind the safety.

+ We are FR educators who dedicate time and resources to groundbreaking, real-world testing. We inform the industry and people using our fabric to help protect those who trust it with their lives. Read more about why it’s important to specify your FR fabric first in order to build an effective FR program.

+ We are FR engineers who produce market-proven products that perform well beyond simply meeting industry standards in laboratory conditions. Read about our proprietary engineering techniques which enable better performance and continuous improvement.

We go beyond the bottom line and are fully committed to the global FR marketplace. In this eZine, you will see why Westex by Milliken is your trusted connection — from FR fabric technology to the value-chain — and all the way to the end-user.

To echo this, the first article provides end-user perspective on the value of the University of Alberta’s flash fire testing program. This article explains how witnessing these tests first-hand increases end-users’ understanding of a product’s overall protective value and how this experience can shape a flame resistant clothing program.

Thank you for reading Flame Resistant Insights and please feel free to reach out to us at Westex by Milliken if you have any questions.

Sincerely,

Mike Enright
Vice President, Westex by Milliken
### TABLE OF CONTENTS

#### 3 Letter from Westex by Milliken
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#### 12 Does one size fit all when it comes to PPE?
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### FLAME RESISTANT INSIGHTS

Volume 05 | June 2015 | 3
Seeing is Believing

at the University of Alberta’s flash fire facility

By Greg Kelly
Regional Market Manager,
Western Canada,
Westex by Milliken

The University of Alberta flash fire manikin test chamber has been in service since 1988. In 2002, the University created its Protective Clothing and Equipment Research Facility (PCERF) with the goal of broadening the scope of thermal protective testing and research capabilities. PCERF collaborates with industry, military and government in the testing and evaluation of innovative protective materials, test protocols and equipment.

Westex by Milliken tests extensively at PCERF and annually opens testing to the public to help educate companies and workers on the need for flame resistant (FR) clothing and to further the understanding of flash fire hazards. Attendees witness live flash fire manikin testing of a variety of different FR fabrics to illustrate the extent, severity and location of bodily burns and how FR fabrics perform; there is a huge variance in protection among otherwise compliant products.

Variation in fabric performance
FR coveralls, shirts and pants afford workers a few extra seconds of escape time when faced with a flash fire and aim to dramatically reduce or eliminate body burn. The University of Alberta has tested virtually all types of flame resistant garments and fabrics over the years. One of the key learnings from this testing is that performance differs not just between fabric categories (such as meta-aramid vs. FR cotton) but also between brands within each fabric category (such as one “88/12” vs. another “88/12”).

The NFPA 2112 standard calls for flash fire testing to be conducted at three seconds and less than 50 percent total body burn passes. Unfortunately, because NFPA 2112 is a pass/fail standard, many fabric manufacturers will report only “pass” and many end-users only require compliance. Standards are generally written to be inclusive, not exclusive, and as such, provide minimum parameters which most fabrics easily pass. However, as the University’s testing shows, passing grades can and do vary greatly depending on the fabric type and brand. A fabric can pass with 7 percent body burn (7 percent is the minimum body burn due to the head and hands) up to 49 percent body burn — an enormous difference!

Passing grades can and do vary greatly depending on the fabric type and brand.

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“Seeing is Believing,” continued

Data from different labs can vary marginally, but data should not vary significantly when testing is performed at independent labs in full compliance with ASTM F1930 standards.

Issues of data variability and test duration have caused confusion and disagreement about who is correct and what data is relevant. It has also fostered significant leeway in the marketing of performance comparisons. Some product marketers choose to show end-users a particular point in the performance spectrum because that is the only place they record an advantage, even if that point differs from the official test. The University of Alberta aims to cut through the marketing to prove what performs in a hydrocarbon flash fire event — and what doesn’t.

Since it’s the FR fabric which largely determines the level of protection offered by a protective garment (arc ratings and flash fire performance test results are based on fabric brand and weight), it is critical for safety managers, and other decision-makers, to not only understand the real differences among fabrics, but also how these distinctions impact performance.

Flash Fire Testing Overview

People who have attended flash fire testing at PCERF have walked away with a new understanding of hydrocarbon events. This testing has proved invaluable for end-users who have had the opportunity to witness firsthand just how dangerous this hazard is and actually see the performance of different brands that exist in the marketplace. Having the opportunity to observe garments being tested has ultimately helped attendees understand the differences between fabrics and has shaped their FR clothing programs. Shown here are a few testimonials from safety managers that have had the opportunity to attend a testing event at the University of Alberta.

Below, watch a video of flash fire testing at the University of Alberta — one of the best testing facilities in the world. This video demonstrates side-by-side comparisons of different FR fabrics exposed to flash fires, illustrating the extent, severity and location of burns. See the results and learn how complying with NFPA 2112 and ASTM F1930 can make your workers and company safer.

For future flash fire testing events or information on these sessions, please contact Greg Kelly at greg.kelly@milliken.com

The University of Alberta Protective Clothing Research Facility has been critical to increasing the oil and gas industry’s knowledge base specific to hydrocarbon flash fire and liquid burn hazards. This facility has played a key role in assisting safety professionals with understanding legislation, test standards, certifications and garment limitations in an effort to determine the appropriate PPE. The testing really opened my eyes to the extent, severity and location of burns. See the results and learn how complying with NFPA 2112 and ASTM F1930 can make your workers and company safer.

Martin Mudryk
CRSP CSP PPF EP Team Leader
Safety & Loss Management
Refining & Marketing
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I have attended the Coverall Burning Demonstration a few times over the past 3 years and each time, I am blown away by the visual representation of what happens in a flash fire. While I enjoy the stunning visuals and the opportunity to see and feel the different types of garments afterwards, the true value in this presentation is the information. The University of Alberta is entirely transparent regarding the testing and its protocols. They answer any and all questions participants may have.

The experience and valuable information delivered during these sessions is the reason I come back each year.

Viewing the demonstration really set in my mind what truly happens to not only the garment, but the person during these types of incidents. The amount of heat generated and the results speak for themselves. The testing really opened my eyes to the extent, severity and location of burns. See the results and learn how complying with NFPA 2112 and ASTM F1930 can make your workers and company safer.

Gregory Kelly
Senior Health, Safety, Environment & Quality Manager
Weir Energy

The University of Alberta has done an incredible job of showing the performance differences between the types of materials used in these garments. The information they dispense before the testing, and afterwards is not only interesting, it is extremely valuable in selecting a Fire Resistant material for your workers. Hearing the factors that affect the performance and then seeing it in action is immensely valuable and educational.

Overall, the value of the testing done at the University of Alberta is immeasurable. I would not completely understand the difference in materials if I wasn’t invited to this testing to see it firsthand, and receive this fabric education. This may seem like a small thing, but without this knowledge, I could have unknowingly selected material that is not suitable to protect my workers. At the end of the day, the message is Fire Resistant can mean many things—not all fabrics are created equal, and the University of Alberta is leading the charge to educate the industry in this respect.

Justin Panasuik
Regional HSEQ Manager
Air Liquide Canada
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Viewing the demonstration really set in my mind what truly happens to not only the garment, but the person during these types of incidents. The amount of heat generated and the results speak for themselves. The testing really opened my eyes and I learned that not all Fire Resistant materials are made the same. The type of Fire Resistant clothing you decide to equip your workers with can mean the difference between walking away from a flash fire unscathed, or having a lifelong condition.

The University of Alberta Protective Clothing Research Facility has been critical to increasing the oil and gas industry’s knowledge base specific to hydrocarbon flash fire and liquid burn hazards. This facility has played a key role in assisting safety professionals with understanding legislation, test standards, certifications and garment limitations in an effort to determine the appropriate PPE advantage of observing the testing first hand while having direct access to the University’s knowledgeable staff. It is exciting for our safety teams, employees and contractors to witness construction, laundry, layering and various assessment protocols can influence a product’s overall protective value. Having the opportunity to visualize the garments being tested in this type of environment is an extremely impactful learning experience and one that I highly recommend.

Martin Mudryk
CRSP CSP RPF EP Team Leader
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Westex by Milliken has always provided much more than high-performing FR fabric. For decades, we’ve taken a big picture approach to FR safety, and we have worked harder and gone further than any of our competitors to bring better products and meaningful change to the industry. We think of it as being “all in,” an unmatched dedication to FR safety across the industry.

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Get to Know Westex by Milliken

When it comes to the science of being safe — of caring — we are all in. Check out our video above to learn how Westex by Milliken is your partner in FR safety.
And that’s just part of being “all in.” Unlike many of our competitors, we partner directly with NECA, IBEW, the Electrical Training Alliance, ASSE and standards committees — organizations that have a far-reaching effect on workers’ lives. We’ve also invested in on-site research at companies like Con Ed to develop case studies that benefit the entire industry. These activities aren’t about marketing. As you read through this eZine or when you visit our online resource center, you’ll see that our educational content is largely non-commercial and created with academic and industry experts outside of Westex by Milliken. Our goal is to break down myths, clarify standards and ensure that safety managers and workers make informed decisions — regardless of what brand they choose.

**Informed workers are safer workers**
At Westex by Milliken, being “all in” also means we don’t just focus on creating new products. For many years, our educational outreach has been helping those out in the field or on the shop floor to understand hazards and what the national safety standards really mean. We are the only company that has created innovative, real-world flash fire and arc flash tests to show the dangers of non-FR and minimally compliant FR fabric and bring home the true risks to workers. Our seminars and educational CDs have become standard training tools, and we’ve provided them — at no cost — to thousands of companies around the world.

**How innovation happens**
Westex by Milliken has a long history of innovation, one that combines Milliken’s deep scientific background and the FR expertise of Westex. We lead the industry in creating more comfortable FR fabrics through our innovative softening technology and with advanced fabrics such as Westex UltraSoft AC® and, more recently, Westex UltraSoft® ANSI 107-certified, high-visibility fabric — products no one thought were possible.

Our innovation begins with significant investment in research and development and the skills of our organic chemists and textile engineers; eight Ph.D experts are dedicated solely to FR fabrics. They work on cross-functional teams that collaborate with sales and our manufacturing partners to capture front-line, end-user feedback. Our innovators bring together textile design, raw material expertise and FR engineering to continue making fabrics that perform well beyond industry standards.

**Custom engineering matters**
Advanced, proprietary engineering is at the heart of our bold commitment to go “all in” for FR safety. More than 50 years ago, before FR safety standards even existed, we were the first to engineer fabric with a guarantee of flame resistance for the life of the garment. Our focus on FR fabric, our U.S. operations, our custom-made equipment and specially trained staff gives us an unusual amount of control over our engineering process. It ensures consistency among every yard of fabric and the ability to perform under real-world conditions.

Today’s safety standards have helped save lives, but they simply don’t go far enough. So we remain passionate about engineering fabric that aims for quality of life, and not just survivability. Our customers are real people who risk their lives every day to get a job done. And when it comes to your FR safety, we are all in.

“At Westex by Milliken, being ‘all in’ for FR safety means that we have a passion for this business that goes beyond just making flame-resistant fabrics.”

- Mike Enright, Vice President, Westex by Milliken
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A good safety program will address each situation independently and separately to provide the best protection possible. OSHA states that PPE is a last resort, and the Hierarchy of Controls puts eliminating the hazard as the primary means of protecting workers. PPE is needed when there are no other alternatives to protect the worker. Therefore when it is determined PPE is needed, we need to address what is the proper PPE to wear and, if PPE is worn every day, what level of PPE offers the best protection.

Once it is determined that PPE is required, choosing the PPE that is best for the situation seems like a daunting task.

Working around electrical equipment ranging from 100-amp residential panels to 4,000-amp commercial and industrial switchgear offers a wide range of available fault current that could lead to injury in the event of an arc flash or electric shock. Many electrical tasks such as voltage and amperage testing require dexterity when using the hands, so wearing a glove that is too big can lead to accidents and frustration.

There are many contractors and owners in the industry who think that Personal Protective Equipment (PPE) is as easy as one-size-fits-all or that one set of PPE covers all scenarios. These are the same individuals that use PPE as the primary protection method — which should never be the case.
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Hierarchy of Controls

1. **Elimination**
   - Remove hazard
2. **Substitution**
   - Replace hazard
3. **Engineering Controls**
   - Isolate workers from hazard
4. **Administrative Controls**
   - Modify worker practices
5. **PPE**
   - Personal Protective Equipment

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By Wesley Wheeler
Director of Safety,
NECA
Too often, electricians will take off their bulky gloves and work with no protection, increasing their chance of injury.

The same goes for the false sense of security created when the electrician, thinking that he or she really doesn’t need a glove, uses a glove that is underrated just to be seen wearing PPE. This creates overconfidence that often puts the electrician too close to exposed energized components and leads to electrical arc and shock events that could be fatal.

Wearing garments that are either underrated or too bulky can also put electricians in harm’s way. Wearing minimum PPE Category 2 apparel when the incident energies can exceed 20 or 30 calories per centimeter squared (cal/cm²) could cause severe third-degree burns that may lead to infection and death — if the electrician survives the initial explosion. At the other extreme, using a PPE Category 4 suit and hood when a PPE Category 2 is recommended could make movement and visibility difficult for the electrician, possibly leading to an explosion, arc flash or electrical shock.

Some companies only want to buy XL gear, but electricians come in many sizes and shapes. If the sleeves are too long, the electrician will roll up the sleeves and may expose his or her wrist and hands to injury, since the sleeve is not buttoned and tight-fitting on the arm. Electricians that need a larger size than provided so they can close the garment securely risk injury in an arc flash event since most electricians are facing the source of the arc.

It is clear that the one-size-fits-all mentality is not appropriate when selecting PPE, especially PPE that is designed to protect workers from electric shock and arc flash. When it is required to wear this type of PPE, choosing garments that are the right size and offer the correct level of protection provides optimum safety. Choosing rubber gloves and PPE based on the proper size and voltage ratings can prevent accidents by permitting the electrician the proper dexterity needed to perform electrical tasks.

Low voltage arc flashes are often misunderstood as being low risk, but these arcs are still large enough to ignite flammable clothing. This video shows a low voltage arc that occurred in Rio de Janeiro with an incident energy calculated at ten calories. Fortunately, both workers were wearing the proper PPE, including arc-rated clothing made of Westex by Milliken fabrics. Neither worker was injured and both returned to work the next day.
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It is clear that the one-size-fits-all mentality is not appropriate when selecting PPE, especially PPE that is designed to protect workers from electric shock and arc flash. When it is required to wear this type of PPE, choosing garments that are the right size and offer the correct level of protection provides optimum safety. Choosing rubber gloves and PPE based on the proper size and voltage ratings can prevent accidents by permitting the electrician the proper dexterity needed to perform electrical tasks.

Low voltage arc flashes are often misunderstood as being low risk, but these arcs are still large enough to ignite flammable clothing. This video shows a low voltage arc that occurred in Rio de Janeiro with an incident energy calculated at ten calories. Fortunately, both workers were wearing the proper PPE, including arc-rated clothing made of Westex by Milliken fabrics. Neither worker was injured and both returned to work the next day.
Combustible dust deflagrations occur far more often and result in far more injuries and fatalities than most people realize, which is why this hazard has been getting increasing attention from OSHA and NFPA. In fact, there were 281 dust fires in the U.S. between 1982 and 2007, resulting in nearly 800 injuries and 74 deaths; the vast majority of these catastrophic injuries and fatalities were burns, and the majority of these burns involved ignition of flammable clothing. Then, on Feb. 7, 2008, the Imperial Sugar tragedy occurred in Port Wentworth, Georgia killing 14 and injuring 36, and permanently changing the combustible dust hazard debate.

COMBUSTIBLE DUST
An update on OSHA’s rule and a look at China’s recent fatal dust tragedy

By Scott Margolin
International Technical Director,
Westex by Milliken
**OSHA rule update**
After the Imperial Sugar incident, the House of Representatives passed a bill demanding a federal standard regulating protection against combustible dust hazards based on existing NFPA standards — which then stalled in the Senate. In response, OSHA reissued the National Emphasis Program (NEP) in March 2008 to aggressively inspect facilities and increase enforcement of existing regulations where frequent or catastrophic combustible dust events occur. In the seven years since then, OSHA has been progressing toward a formal Rule, which many people expected to be issued in 2014 or 2015. Progress on the Rule stopped at the SBREFA (Small Business Regulatory Enforcement Fairness Act) level due to financial impact concern; the original SBREFA was scheduled while the country was in the throes of the Great Recession. A ruling has since been rescheduled and postponed a number of times as our economy slowly recovers. The most recent postponement was December 2014, after which OSHA moved Dust to Long Term Action. Industry insiders now believe a final Rule is highly unlikely before the 2016 presidential elections.

Many companies were waiting for a final OSHA Rule to act on dust. Now, with the Rule moved to Long Term Action, there is a risk that people will view this as a further excuse not to act. However, companies that have taken a careful look at the current state of affairs see the situation in exactly the opposite light. The combustible dust hazard certainly has not gone away; in fact, the rates of dust deflagrations and fatalities have almost doubled since the Imperial Sugar incident. Companies paying close attention see the change in Rule status as the removal of the excuse not to act. Most of these companies are also familiar with and compliant to NFPA 70E (for industrial arc flash) and have been for many years. Simply stated, there is far more regulatory guidance and enforcement for combustible dust than for 70E. So why is compliance so much lower for dust? Authorities point to people waiting for the Rule.

**How obligated are we to act?**
Industrial arc flash has one NFPA standard — 70E. An OSHA letter states that if you are compliant with 70E, you are compliant with OSHA. As a result, the need to comply with NFPA 70E was understood and acted upon by most large companies within a few years. Combustible dust, on the other hand, has many NFPA standards (including not one, but two correlating standards — NFPA 654 and NFPA 652, which is expected to be approved in June 2015 and released in August), OSHA enforcement and the National Emphasis Program, which specifically and proactively targets combustible dust across a significant number of industries.

**Standards**

**Arc Flash:**
- NFPA 70E®
- OSHA interpretation

**Combustible Dust:**
- NFPA 652
- NFPA 654
- OSHA NEP CPL 03-00-008

Note that these are the correlating umbrella standards and that others do exist.
To the extent that the lack of a final Rule means people will avoid installing expensive air handling equipment and dust collectors to reduce the dust load and the hazard, more workers will be exposed more frequently to more fuel. This inevitably means more dust flash fire incidents could result in more casualties. OSHA’s General Duty Rule mandates employers provide a workplace in which workers are protected against recognized hazards. The significant majority of catastrophic injuries and fatalities are caused by the ignition of flammable clothing, so a key part of mitigating this hazard is relatively simple: provide high-quality, market-proven FR clothing.

**China’s Mass Casualty Dust Event**

A tragic illustration of just what can happen when combustible dust is allowed to accumulate and workers are not issued flame resistant protective apparel occurred recently at a supplier of a major American automobile manufacturer. The plant, just outside Shanghai, China, specializes in polishing metal wheel rims — a process that creates aluminum dust.

At 7:35 a.m. on Aug. 2, 2014, the aluminum dust ignited creating an explosion and subsequent flash fire throughout the plant. The human impact was many times worse than the Imperial Sugar tragedy, with numbers so high they are actually hard to process. Initial reports claimed 68 dead and 189 injured. The vast majority of these people suffered catastrophic burns, typically from 40% to 90% TBSA (Total Body Surface Area). About 40 people died before they could be transported to a hospital, and approximately 28 more succumbed to their burns within 24 hours. Of the 189 injured, over the next several months almost half died, generally from infections due to burns. The last report totaled fatalities at 145. This tragedy in China saw over ten times more fatalities than the next largest dust event, Imperial Sugar (14 deaths). Video, photos and eyewitness accounts are very painful to review; by far the single most obvious common factor is ignition of flammable clothing. Virtually all of the 189 workers who made it out of the building alive and under their own power can be seen standing, sitting or lying in the street wearing little or no clothing, because it had burned off their bodies.

Almost by definition, if you make it out of the building under your own power, only to die days or weeks later from burns, it wasn’t the explosion, structural collapse, smoke inhalation or sustained, fuel-fed fire that killed you. Sadly but predictably, those victims generally die on the spot. The primary or sole cause of the majority of the injuries to over 200 people who made it out of the plant alive was entirely avoidable — it was the ignition of flammable clothing, stretching what otherwise was a very brief thermal exposure into a long fire, sustained by fuel (clothing) covering virtually the entire body surface.

We’ll never know how many of the 40 deaths that occurred inside the factory were a result of a pressure wave, shrapnel in that wave, structural collapse, smoke inhalation and/or a fuel-fed fire. What we do know is that almost everyone who made it outside with their clothing burned off did not need to die… or if they lived, did not need to suffer such severe burns injuries. The vast majority of the catastrophic and fatal injuries were not a result of the dust flash fire; they were a direct result of that brief thermal exposure igniting flammable clothing, which then exposed the wearers to a far longer fire covering far more body surface.

This simple fact has been recognized by the Chinese authorities, who arrested three company executives, including the chairman, the general manager and the manager in charge of workplace safety, and charging them with criminal negligence.

The lessons here were learned at a staggering cost in lives and suffering. Exacerbating matters, this is hardly the first such event; although it is sadly the largest, it is also just one in a long line of mass casualty combustible dust deflagrations. Many of these events were avoidable, and none needed to result in the staggering number of injuries and deaths.

Many dusts are flammable. If you have one that is, do everything feasible to reduce the area and population it affects, and provide your workers with high quality, market-proven FR clothing. To learn more about combustible dust and for a list of combustible dust materials, click here.
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Kunshan China: aluminum dust explosion, 69 killed, nearly 200 injured (CCTV News)
Working Together for Safety Management Systems

By Michael J. Johnston
Executive Director Standards and Safety, NECA

Safety on the job is only achieved when there is an effective safety system in place and everyone understands how it works. A safety system is not tangible but rather a process that continuously operates to reduce hazards and prevent incidents. It includes core principles that protect the safety and health of employees. Establishing and maintaining an effective safety management system involves holding management accountable for safety by setting practical and attainable goals, defining roles and responsibilities, establishing effective performance measurements and holding individuals accountable for their responsibilities.

Shared Responsibilities

Job site safety is a shared responsibility between the employer and employee. Their philosophies on safety and health must be the same. This requires effective communication upward and downward and also with customers in some cases.

Electrical contractors depend on their employees to make decisions to keep themselves safe while performing daily tasks. This means that the employer should communicate their policies on all aspects of the company safety program. The employee needs to know the company policies so that he or she can comply with them. For example, if the company has a policy on energized electrical work, each employee must understand it in order to conform. If they don’t know the policies, employees will be more likely to take risks that compromise their individual safety. Taking risks affects not only each employee, but also his or her family and employer if the risk taken results in an incident. Don’t take risks. Know the company policy. If you don’t know, ask for it.

Safety Programs and Policies

Contractors should have a safety program that addresses all risks to their employees. The principles of the safety program should be explained to the employees and emphasized as an expectation and an integral part of an employee’s daily work. Throughout the day, workers regularly make decisions related to their assigned tasks; some are routine and some include varying levels of risk. Employees must understand and identify risks that impact their safety and health, and should fully understand company policies regarding safety-related work practices they are expected to implement. Effective safety policies drive compliance with not only mandatory safety standards and regulations but with the contractor safety programs.

Risk Reduction — Understanding the Priorities

Knowledge of the risks to workers is essential for contractors. Risks need to be understood before effective methods to reduce them can be implemented. For a safety management system to be effective, employers and employees must develop a common understanding of the hierarchy of safety controls. The six main safety controls in this hierarchy are elimination, substitution, engineering controls, awareness, administrative controls and personal protective equipment (PPE). (Notice that PPE is the last choice in the hierarchy sequence. This is as intended.) The latest edition of NFPA 70E: Standard for Electrical Safety in the Workplace incorporated this as a requirement, placing deliberate and clear emphasis that removal of shock, arc flash and arc blast hazards is and always should be the first choice.

When applying the laws, there is no choice, just a clear statement of what must happen to attain minimum compliance. But electrical safety culture must evolve to attain full compliance. Many in the electrical field have learned how to effectively apply PPE for protection and continue to work energized, even when creating an electrically safe work condition should be the first effort. As an industry we must continuously strive to improve this way of thinking.
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Training and Qualified Persons
A safety management system must also be steered by supervision and managers that know the qualifications of their workers and place them in tasks that are within their qualifications. The definition of “Qualified Person” in NFPA 70E has been revised in the 2015 edition and includes requirements that one has demonstrated the appropriate knowledge and skill set and has received safety training to identify and avoid electrical hazards. The revision aligns this defined term more closely with OSHA’s definitions. The difference is that demonstrated knowledge and skills are necessary, but to whom must the qualifications be demonstrated? In the case of electrical safety in the workplace, it is usually the employer.

The employer and employees are jointly responsible for worker safety. The employer is responsible for assigning qualified persons to perform tasks and operations within their knowledge and skill sets, as workers can be qualified in one area and unqualified in another. Qualified persons must have experience, knowledge, skills and safety training. They must understand the limits of their own qualifications, know their limitations and not be afraid to admit them. Employees therefore have a responsibility to perform tasks and operations within their knowledge and skill sets, as workers can be qualified in one area and unqualified in another.

Leadership and Management Commitment
Safety starts at the top, and safety must be seen as and treated as a core value of the organization. Leaders understand that they hold no greater responsibility than the safety of their personnel – the organization’s biggest asset. An effective safety management system requires supportive leadership that establishes a common safety vision for the entire organization.

Cultural change requires effort and persistence. Leaders must convey and support necessary changes, explain them to the team and most importantly, involve the team in the execution. Effective leadership involves more than talking the talk; the walk must be walked.

Supervision and management have a direct influence on the effectiveness of how the organization performs, productively and safely. Supervision has a critical role in a successful safety management system. Organizational safety practices and individual employee safety-related work practices must align, and there has to be a level of accountability for both employers and employees for the safety management system to work. Bad safety practices within an organization must be dealt with just the same way an infection is dealt with in the medical field – if the infection is allowed to fester, it can eventually result in failure. Leaders understand that there is no greater responsibility than the safety of their personnel. Real cultural change requires effort and persistence.

Safety System Structure — Why, How, Who
An effective safety management system is a framework of processes, policies and procedures to ensure that workers achieve organizational objectives in the safest manner. The system is comprised of administrative and management aspects, operational and technical functions, and cultural and behavioral aspects of safety and health within the company.

The leadership and management are responsible for clarifying the “why” of a safety management system. This involves commitment and communication, including documentation of audits and assessments. The operational and technical aspects address “how” safety management is accomplished. Regulatory compliance, hazard control and environmental management are some aspects dealt with through effective hazard recognition, administrative and engineering controls and quality safety programs. The cultural and behavioral aspects of the safety system involve “who” is involved in the system. In most cases, this encompasses all employees. The responsibility is shared and requires a team approach to foster employee involvement, motivation and attitudes and provide orientation training and continuing education.

Measuring Safety Performance — Individual and Organizational
To establish a safety management system, it is essential to evaluate the current state of safety compliance within the organization. The entire organization has to be part of this process for optimum results. If the company has a safety management system, it is a matter of evaluating its adequacy; here, it’s best to involve employees to determine the strengths and weaknesses of the system over baselines. Once the evaluation is complete, share the findings openly and assemble a team to work on any identified deficiencies and gaps. Measurable goals for improvement should be set against baselines with an eye on business priorities, safety being first among them.

There is an organizational responsibility and individual responsibility to support effective safety management systems. It is rare that companies discuss or even address “near misses” on the job, but it is critical in the overall safety system. Management must convey a genuine concern for employees and strive for an environment that supports employees identifying hazards and risks, and reporting near misses without fear of retaliation. Lessons learned must be openly discussed and acted on.

A safety management system can take considerable time and effort to develop, but once established there is a structure to live by. It serves as the foundation from which the safety culture of the organization is built and maintained. Maintaining the system involves continuous auditing for improvements and achieving a safer workplace for employees. With a better understanding of what constitutes a safety management system and how it works, ask yourself, “How effective and healthy is the safety management system within our organization, and is it supported by all employees?”
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Safety starts at the top, and safety must be seen as and treated as a core value of the organization. Leaders understand that they hold no greater responsibility than the safety of their personnel – the organization’s biggest asset. An effective safety management system requires supportive leadership that establishes a common safety vision for the entire organization. Cultural change requires effort and persistence. Leaders must convey and support necessary changes, explain them to the team and most importantly, involve the team in the execution. Effective leadership involves more than talking the talk; the walk must be walked. Supervision and management have a direct influence on the effectiveness of how the organization performs, productively and safely. Supervision has a critical role in a successful safety management system. Organizational safety practices and individual employee safety-related work practices must align, and there has to be a level of accountability for both employers and employees for the safety management system to work. Bad safety practices within an organization must be dealt with just the same way an infection is dealt with in the medical field – if the infection is allowed to fester, it can eventually result in failure. Leaders understand that there is no greater responsibility than the safety of their personnel. Real cultural change requires effort and persistence.

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INTEGRITY MATTERS AT MILLIKEN

For the ninth year in a row, Milliken & Company has been recognized by Ethisphere magazine as one of the World’s Most Ethical Companies. In fact, Milliken is one of only 15 companies to have earned this distinction every year since its inception in 2007. At Westex, we are excited to be a part of Milliken & Company, an American enterprise guided by three values: ethics, excellence and leadership.

By creating innovations that help solve the world’s problems by adding value to people’s lives, improving health and safety, and making the world more sustainable, Milliken advances its commitment to “Doing Good.” Listen to Milliken’s President and CEO Dr. Joe Salley explain how Milliken’s community of innovators are advancing the company’s values.

Honors

“Do Westex fabrics contain PBDEs?”
Robert, Houston, TX
Answer: No, Westex by Milliken has not and does not use PBDEs. PBDEs or Polybrominated Diphenyl Ether flame retardants were used in the past to impart flame resistant properties to certain products in various applications. Concerns about toxicity of these compounds have produced regulatory restrictions on the use of such products or outright bans. Westex does not use PBDEs to engineer our Westex-brand fabrics.
Josh Moody
Vice President Technical Services, Westex by Milliken

“Can I fix garments that tear with non-flame resistant thread?”
Andres, Sao Paulo, Brazil
Answer: Repairs on FR garments should be made with the same material as the original garment, meaning the same weight and brand of fabric as well as flame resistant thread. Contact Westex by Milliken or your garment manufacturer for more information regarding garment repairs.
Maria Chies
Regional Market Manager, Latin America, Westex by Milliken

“Where can I purchase Westex garments?”
Dan, Edmonton, Alberta
Answer: Great question! The Westex online Where to Buy page easily connects anyone looking to purchase garments made with Westex-brand fabric directly with a garment manufacturer in your region. Our interactive map allows you to hover over and select any region of the world to find a supplier in your area.
If you are a customer and want to be added to our Where to Buy page, contact us today!
Greg Kelly
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“Is it ok to use fabric softener on FRC?”
Edward, Chicago, IL
Answer: The laundering instructions for all FR and arc rated fabrics prohibit use of fabric softeners because most softeners are flammable, and will accrete (build up) on the garment over time. The fabric is still FR, but now a flammable contaminant has been added to the surface and can be ignited by a flash fire or arc flash. Unlike many other FR fabrics, one of the great things about UltraSoft® and UltraSoft AC® is that they are so soft to begin with that they don’t need fabric softeners to improve comfort.
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FIGHT THE ELEMENTS, RESIST HAZARDS

Advanced fabrics tackle extreme weather in comfort and safety

- Westex AllOut™
  - Provides enhanced water and wind resistance while maintaining breathability at 2-8 cfm
  - Eliminates the need for a non-compliant NFPA 2112 vapor barrier
  - Multi-hazard
    - NFPA 2112 UL-certified fabric with 7.4% body burn
    - ATPV = 12 cal/cm²

- Westex InsulAir™
  - UL certified to NFPA 2112 cold weather insulation system
  - Silica Rayon/Poly high loft construction provides superior NFPA 2112 thermal stability
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Westex InsulAir™

Westex AllOut™

EXTERIOR SHELL FABRIC

BATTING
Westex by Milliken Events

PSC Banff 2015
Westex by Milliken had another great year exhibiting at the Enform Petroleum Safety Conference held in Banff, Alberta! Banff is Canada’s premier oil and gas safety conference and trade show where this year, we introduced our new ANSI 107 Certified UltraSoft™ High-Vis Yellow fabric for superior protection and comfort in critical visibility environments, AllOut™ enhanced wind and water protection and new InsulAir™ insulation for winter wear. Thank you to everyone who visited our booth and attended the BBQ!

ASSE Safety 2015
Westex by Milliken is proud to be a Gold Sponsor of the American Society of Safety Engineers (ASSE). We had a great show! Thank you for attending our in-booth presentations on arc flash, flash fire and combustible dust given by Scott Margolin, International Technical Director, Westex by Milliken.

NECA Safety Professionals Conference presented by Westex by Milliken
The NECA Safety Professional Conference (NSPC) was held this year in Phoenix, Arizona. Westex is proud to be a premier partner of the National Electrical Contractors Association (NECA) and a sponsor of NSPC, the electrical industry’s premier annual safety event, held this year in conjunction with Electrical Safety Month. NSPC educates attendees on the latest safety and health information required to navigate the rapidly changing environment faced by today’s electrical industry.

National Training Institute
July 25-31 at the University of Michigan, Ann Arbor
Westex by Milliken is excited to be a part of this year’s annual National Training Institute (NTI). NTI is an annual week of training that offers a variety of educational and training opportunities to meet the rapidly changing demands of the electrical industry. Westex is a proud Platinum Training Partner of the Electrical Training Alliance and a longtime Partner in Safety of the International Brotherhood of Electrical Workers (IBEW). Learn More.

Connect With Westex by Milliken:
Have specific arc flash, flash fire or combustible dust concerns? Reach out to your regional manager for advice or email us at FRinsights@milliken.com. We may feature your question in an upcoming edition of our eZine!

Now you can connect with us on social media!

About Westex by Milliken:
Westex by Milliken is pushing the boundaries of what is possible and setting a new standard of excellence to bring unprecedented levels of innovation to the FR industry. Milliken’s extensive history of innovation and Westex’s FR expertise strengthen our capabilities to deliver the most advanced FR fabrics for the millions of industrial workers who need protection from arc flash, flash fire and other thermal hazards. Westex by Milliken offers extremely comfortable, market-proven fabrics that are specified by name by thousands of companies globally. We are dedicated to purposeful innovation, advanced engineering and an unwavering commitment to education. When it comes to FR safety, we are all in.

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Westex by Milliken Events

PSC Banff 2015
Westex by Milliken had another great year exhibiting at the Enform Petroleum Safety Conference held in Banff, Alberta! Banff is Canada’s premier oil and gas safety conference and trade show where this year, we introduced our new ANSI 107 Certified UltraSoft® High-Vis Yellow fabric for superior protection and comfort in critical visibility environments, AllOut™ enhanced wind and water protection and new InsulAir™ insulation for winter wear. Thank you to everyone who visited our booth and attended the BBQ!

ASSE Safety 2015
Westex by Milliken is proud to be a Gold Sponsor of the American Society of Safety Engineers (ASSE). We had a great show! Thank you for attending our in-booth presentations on arc flash, flash fire and combustible dust given by Scott Margolin, International Technical Director, Westex by Milliken.

NECA Safety Professionals Conference presented by Westex by Milliken
The NECA Safety Professional Conference (NSPC) was held this year in Phoenix, Arizona. Westex is proud to be a premier partner of the National Electrical Contractors Association (NECA) and a sponsor of NSPC, the electrical industry’s premier annual safety event, held this year in conjunction with Electrical Safety Month. NSPC educates attendees on the latest safety and health information required to navigate the rapidly changing environment faced by today’s electrical industry.

National Training Institute July 25-31 at the University of Michigan, Ann Arbor
Westex by Milliken is excited to be a part of this year’s annual National Training Institute (NTI). NTI is an annual week of training that offers a variety of educational and training opportunities to meet the rapidly changing demands of the electrical industry. Westex is a proud Platinum Training Partner of the Electrical Training Alliance and a longtime Partner in Safety of the International Brotherhood of Electrical Workers (IBEW). Learn More.

Connect With Westex by Milliken:
Have specific arc flash, flash fire or combustible dust concerns? Reach out to your regional manager for advice or email us at FRInsights@milliken.com. We may feature your question in an upcoming edition of our eZine!

Now you can connect with us on social media!

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