Weekly Safety Briefings

Week 36 – Monday, August 31 - Friday, September 4, 2026

Fatal Four – Part Four - Electrocution

Introduction - Fatal Four - Part Four: Electrocution

Introduction for Leaders:

We have covered falls, struck-by, and caught-in or between. This week we close out the Fatal Four with electrocution, the fourth leading cause of workplace fatality in construction and one of the most serious electrical hazards across manufacturing, maintenance, and industrial environments. Electrocution is the word used specifically for a fatal electrical shock, but this week we are covering the full spectrum of electrical hazards, from non-fatal shocks and arc flash events to the conditions that lead to electrocution, because the same situations that produce one can produce the other depending on variables the worker often cannot see or control.

What makes electrical hazards different from most of what we have covered in this series is that you cannot always see them. A fall hazard is visible. A pinch point is visible. Electrical current in a wire, in a panel, in a piece of equipment is invisible until it finds a path. And when it does, the consequences arrive faster than any person can respond to them.

How to Frame This Week:

- Keep it grounded in your facility. Walk through the electrical exposure your team actually has: the panels they work near, the equipment they maintain, the extension cords they use, the environments where water and electricity share the same space.
- Monday carries the weekly challenge. Revisit it mid-week and bring it back on Friday.
- Be direct about what electricity does to the body. A lot of team members carry a vague sense that electrical hazards are serious without understanding the specific mechanisms. This week is a chance to make that concrete.

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Monday - What Electricity Does to the Human Body

Discussion:

Most people understand that electricity is dangerous in a general way. What is understood is how electrical contact injures and kills people, and why the outcome can depend on factors the person often cannot see in the moment. Understanding the mechanism is not a technical exercise. It is the foundation for understanding why the controls we have exist and why they are non-negotiable.

When a person becomes part of an electrical circuit, current flows through the body along the path of least resistance between the point of contact and the ground. That path almost always passes through the chest cavity. The heart and respiratory muscles are both vulnerable to disruption by electrical current. Respiratory arrest can occur when muscles controlling breathing are paralyzed by the current. Both can be fatal without immediate intervention.

What determines the severity of an electrical injury:

Path through the body. Current traveling from one hand to the other passes directly through the chest and heart. Current traveling from a hand to a foot may miss the heart but still cause severe muscle damage along the entire path. The path is determined by where contact is made and where the ground connection is.

Duration of contact. Longer contact at a given current level produces more severe injury. The inability to release grip due to muscle spasms, where the current causes the muscles to contract and hold, means that a person who contacts an energized source may not be able to pull away even if they are conscious and trying to.

Skin resistance and moisture. Dry skin has relatively high resistance and limits current flow. Wet skin has dramatically lower resistance and allows much higher current to flow for the same voltage. Working in wet conditions or with sweaty hands near energized equipment is significantly more dangerous than working in dry conditions.

Weekly Challenge:

This week, each person walks through their work area and identifies every electrical exposure they can find: panels, junction boxes, extension cords, damaged insulation, equipment with open wiring, and any situation where water and electricity share the same space. Note the condition of each. We will hear what people found on Friday.

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Tuesday – The Electrical Hazards Most Common in Manufacturing

Discussion:

Electrical hazards in a manufacturing environment takes many forms and understanding them matters because the response and protection are different for each. Treating all electrical hazards the same way, or assuming that being careful is sufficient protection for all of them, is a significant gap in how team members typically approach electrical safety.

Electrical shock occurs when a person contacts an energized conductor and current flows through the body. In a manufacturing setting, this most commonly happens during equipment maintenance, troubleshooting, or when damaged wiring or equipment creates an unexpected, energized surface. The severity ranges from a startling but non-injurious contact to a fatal electrocution, depending on the factors we covered yesterday.

Arc flash is a release of energy caused by an electrical arc between conductors or between a conductor and ground. Arc flash produces an intense flash of light, a pressure wave, a blast of superheated air and vaporized metal, and radiant heat that can cause severe burns at distances of several feet from the arc source. Working on or near energized electrical panels, performing switching operations, and troubleshooting live circuits all carry arc flash risk. Arc flash is not the same as electrical shock. A worker does not need to touch an energized conductor to be injured by arc flash.

Electrical fires are caused by overloaded circuits, damaged wiring, poor connections, and equipment faults. Extension cords used as permanent wiring, circuits loaded beyond their rated capacity, and damaged insulation that allows arcing between conductors are the most common causes in manufacturing environments.

Damaged and improvised wiring creates energized surfaces in unexpected locations. A cord with damaged insulation exposes live conductors. An improvised connection made with non-rated materials bypasses the protection built into listed equipment. Both create shock hazards that are invisible until contact is made.

A real-world example:

A maintenance technician at a food processing facility was troubleshooting an intermittent fault on a conveyor control panel. The panel was energized because the fault only appeared during operation. He was not wearing arc-rated PPE because the task felt like observation, not hands-on electrical work. When he opened the panel door to inspect the wiring, an arc flash occurred at a loose terminal connection inside the panel. He sustained second and third-degree burns to his face, neck, and forearms and required multiple surgeries and months of recovery. He had not touched any conductor. He had only opened the door. The arc flash reached him from inside the panel.

Team member engagement:

"In our facility, what electrical tasks does our team perform or is present for? Does everyone know which of those tasks carry arc flash risk in addition to shock risk?"

"Where in this facility have you seen damaged cords, open junction boxes, or improvised wiring? Is any of it still there?"

Workplace Learning System

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Wednesday – The Controls That Actually Protect You

Discussion:

We have covered what electricity does to the body and the specific hazard types present in a manufacturing environment. Today we are talking about the control hierarchy that protects team members from those hazards and the specific points in that hierarchy where protection most commonly fails.

Elimination and de-energization. The most effective protection is removing the hazard entirely. Whenever work can be performed on de-energized equipment, it must be. LOTO procedures, which we covered in the caught-in week in the context of mechanical energy, apply equally to electrical energy. De-energize, lock out, verify de-energization with a properly rated meter, and then work. The verification step is the one most often skipped, and it is the one that matters most.

Insulation and guarding. Electrical insulation on wiring, equipment, and tools provides the barrier between energized conductors and the worker. Damaged insulation is not a cosmetic issue. It is a missing safety barrier. Tools rated for electrical work have insulation rated for specific voltage levels. Using an unrated tool near energized conductors removes that protection.

Ground fault circuit interrupters. GFCIs detect current leakage and interrupt the circuit in roughly 1/40 of a second, fast enough to prevent electrocution in most contact scenarios. They are required wherever electricity and water share the same environment. They are one of the most effective shock prevention technologies available and one of the most frequently bypassed or omitted.

Qualified people and written procedures. OSHA defines a qualified person as someone who has been trained to avoid electrical hazards and is knowledgeable about the construction and operation of the equipment being worked on. Electrical work in a manufacturing environment is not a task that can be safely improvised. It requires training, appropriate PPE, written procedures, and for high-voltage work, a second person present.

A real-world example:

A maintenance technician was cleaning a spill near a floor-mounted control panel using a shop vac plugged into a standard outlet not a GFCI-protected one. The vacuum's cord had a small crack in the insulation, invisible under a layer of grime. As he worked near the wet floor, the exposed wire contacted the damp concrete and, through it, with him. Without a GFCI to catch the leakage current, the circuit stayed live. He was knocked down and held in muscle contraction for several seconds before a coworker saw what was happening and pulled the plug at the wall. He survived but spent two days in the hospital being monitored for cardiac effects. A GFCI outlet required anywhere electricity and water meet would have tripped in about 1/40th of a second, long before real harm occurred. Instead, a damaged cord and a missing GFCI turned a routine cleanup into a near-fatality.

Team member engagement:

"Does our facility have an electrical safety program that specifies who is qualified to perform electrical work and what PPE is required for which tasks? Does everyone here know what that program says about their role?"

"Have you ever verified de-energization with a meter before working on a circuit, or do you typically rely on the switch or breaker position? What is the standard practice here?"

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Thursday – The Situations Where Electrical Incidents Happen

Discussion:

Just as we identified the highest-risk task categories for caught-in incidents last week, today we are identifying the specific situations where electrical incidents are most likely to happen in a manufacturing environment. Knowing the pattern helps the team recognize the setup before the incident occurs.

Working on or near energized equipment. The highest-risk electrical situation in any facility is performing maintenance, troubleshooting, or adjustment on equipment that has not been de-energized and locked out. This includes panel work, wiring connections, sensor replacements, and any task that requires accessing electrical components. The justification is almost always speed. The consequence when it goes wrong is almost always severe.

Using damaged or improvised electrical equipment. Extension cords with damaged insulation, equipment with open junction boxes, cords run under rugs or through doorways where insulation gets abraded, and improvised connections made with non-rated materials all create energized surfaces in unexpected locations. Damaged equipment does not always fail immediately. It fails at some point, and the worker present at that point is the one who absorbs the consequence.

Overloaded circuits and temporary wiring. Extension cords used as permanent wiring, multi-outlet adapters stacked on circuits, and temporary power runs that become permanent create fire and overheating hazards. Electrical fires in manufacturing facilities frequently trace back to wiring arrangements that started as temporary solutions and never got resolved.

Unqualified team members performing electrical tasks. When electrical work is performed by someone without the training, tools, and PPE required for the task, the risk multiplies significantly. This includes non-electricians making wiring repairs, operators resetting tripped equipment by accessing electrical components, and anyone working inside an energized panel without arc-rated PPE and a verified understanding of what is inside.

A real-world example:

A production operator at a plastics manufacturing facility noticed that a piece of equipment had stopped running and the circuit breaker had tripped. Rather than calling maintenance, he reset the breaker himself, the equipment did not restart, and he opened the equipment's electrical enclosure to see what was inside. He was not a qualified electrical worker, was not wearing any electrical PPE, and did not verify that the internal components were de-energized. He contacted a capacitor that had retained its charge after the breaker was reset. The discharge caused a flash and threw him backward. He sustained burns to his hand and arm and lost consciousness briefly. He recovered but required skin grafting on two fingers. The repair that maintenance would have took eleven minutes. The decision to open the enclosure himself took less than two.

Team member engagement:

"Are there tasks in our area where non-qualified workers regularly interact with electrical components, reset breakers, access enclosures, or adjust wiring? What does that look like?"

"What is the actual practice on this floor when a machine trips a breaker or stops unexpectedly? Who responds and what do they do?"

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Friday – Week Wrap-Up

Discussion:

This week we closed out Fatal Four with electrocution, the hazard that is most invisible and most unforgiving of contact.

Weekly Challenge Report-Back:

At the start of the week, each person was asked to walk their area and identify every electrical exposure they could find: panels, junction boxes, extension cords, damaged insulation, and anywhere electricity and water share the same space. Let's hear what people found.

"What did you find? Walk us through one thing you noticed that you had not specifically thought about before this week."

"Did anything you found need to be reported or addressed? Has that happened yet?"

"Is there a damaged cord, an open enclosure, or a wet area near electrical equipment in this facility that is still sitting unaddressed? Name it now.

Fatal Four Questions:

"Looking across all four weeks, falls, struck-by, caught-in, and electrocution, which one do you think is most underestimated in our specific environment? Why?"

"What is one change to how this team operates that came out of this four-week series that we are actually going to make?"

"If you had to identify the single biggest gap between the controls we have on paper and how work actually gets done in this facility, what would it be?"