Electrical Power Fact Check

All-too-common myths that hurt businesses and risk lives

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MYTH

“120 volts is a household outlet, that’s not dangerous!”

It’s easy to see why this myth is still around. 120 volts could cause a little tingle, or it could cause death. Why such a huge difference? Different conditions change how resistant your body is, drawing more or less current from the same voltage. Under dry conditions, your body is fairly resistant, and 120 volts hits you with 1 milliamp. That’s just enough to feel it. Myth confirmed! But wait – add a little sweat, or a break in your skin, and those ideal, dry conditions are gone. Now your body can draw 120 milliamps. That’s 6 times the amount needed to stop your breathing. Worse, it’s more than enough to cause ventricular fibrillation. That’s a life-threatening problem with your heart’s rhythm, and it’s a very common reason why electric shocks kill.

It’s the Current That Hurts You

1 milliamp (mA)	5 milliamp (mA)	20 milliamp (mA)	100 milliamp (mA)
Light Tingle	Max Harmless Current	Respiratory Paralysis	Ventricular Fibrillation

Remember, electricity is normally invisible. The results of unsafe work aren’t.

https://www.cdc.gov/niosh/docs/98-131/pdfs/98-131.pdf

THE TRUTH

120 volts can kill you. Just because it's the basic AC voltage in the outlets all around your house, doesn't mean it's safe.

MYTH

“If it’s off, it’s safe.”

Control of hazardous energy regularly makes OSHA’s top ten violation list, and failing to turn it off isn’t the only reason why. You also need a procedure to make sure the electricity isn’t turned back on while you’re working. With an actual physical lock on a switch, a “good Samaritan” can’t come along and “fix” the off condition to disastrous results. A good lockout/tagout procedure does that and more. For instance, everyone working on a system should have their own lock or tag, so there’s no chance of one worker believing everything is ready to re-energize while someone else is finishing up. Safety training is necessary to make procedures like lockout/tagout second nature, and technical expertise is needed to thoroughly analyze a system and verify the electrically safe work condition.

THE TRUTH

“Turning it off is just one step in creating an electrically safe work condition.”

MYTH

“It’s okay to work live if you’re wearing PPE.”

Protecting workers through PPE is important, but wearing it doesn’t negate all the other rules and regulations in place. Notice the OSHA rule text doesn’t say it’s okay to work live if people are sufficiently protected. It says there has to be another hazard, infeasibility, or operational limitation.

If energized work is going to be justified, a qualified person will have to help you follow NFPA 130.2 (B)(2)(9), which requires written approvals and a thorough risk analysis.

Remember that Personal Protective Equipment won’t stop an incident from happening. It just makes you less likely to sustain life-altering injury if it does.

OSHA 1910.333(a)(1)

"Deenergized parts." Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

THE TRUTH

No amount of Personal Protective Equipment, or PPE, justifies working live. You need to follow the process for an Energized Electrical Work Permit.

MYTH 4

“If it’s not broke, don’t fix it.”

It’s as easy as flicking a switch, right? The ease of electrical power has become cliché. Most of us never see a problem because of a lot of good work by a lot of great technicians. But with electrical power, complacency leads to catastrophe. Running to fail might lose you power for a day or cause a serious electrical incident. Many building owners and businesses don’t know they are responsible for maintaining their electrical assets and face increased liability when they don’t meet those responsibilities. Electrical incidents regularly lead to fines, medical bills, and costly litigation. And if any agency or injured party can show you knew maintenance wasn’t performed, you can be exposed to willful violation fines and even criminal charges.

Did you know? NFPA 70E requires maintenance on electrical power assets.

Maintaining your system is required, but maintaining it well is smart. It clearly mitigates liability and risk to life and limb, but good maintenance also extends your equipment life and avoids productivity hits from repairs and downtime. The question is, do you know what kind of maintenance your facility needs?

THE TRUTH

If you wait for it to break, you may be liable for what happens when it does.

MYTH

“We’re fine because we’ve never had a problem…”

Field technicians often report that critical safety systems, including ground fault protection, deteriorate without anyone noticing that anything’s gone wrong. They’ve simply been lucky enough not to need their safety system to work.

Safety systems keep electrical incidents from destroying property and harming people. If you wait for your electrical system to fail, and the safety system doesn’t work, that could be the difference between a little repair bill and a fatal injury.

THE TRUTH

If your system has never tripped, how do you know that key safety element is working?”

MYTH

6

“What’s an arc flash study? That sounds like something I don’t need…”

This one is easy. If the person maintaining your electrical distribution system says you don’t need an arc flash study, ask them why. The only acceptable answer is that you’ve already had one within the last five years, and have no cause to redo it, such as changes to the system.

In case you’ve never heard of an arc flash, it’s a destructive electrical system failure. Searing heat from an arc flash reaches over three times the temperature of the Sun and can deliver fatal burns 10 feet away from the arc flash point. Non-compliance with the critical industry standards for arc flash studies, including proper labeling of hazards in the workplace, opens your business to severe liability.

THE TRUTH

If you own the electrical distribution equipment, you need an arc flash study.

MYTH

“Maintenance is all cost and no upside.”

We’ve already covered maintenance as a compliance and safety issue. This myth is about seeing that maintenance only as some unavoidable cost. Proactive maintenance can also extend the life of your equipment. Predictive maintenance can trend the lifecycle of your equipment, advising you on the ideal replacement schedule. Both strategies work together to maximize your return on capital investments in electrical distribution assets. If you have to maintain equipment (and you do), seeing it only as a cost could keep you from considering a more rewarding strategy.

Of course, well-maintained equipment supports productivity, and ensures safety and backup systems work properly when needed. An asset management program takes all of it a step further by managing the system as a whole. That maximizes your returns and meets your safety and compliance needs, all in one package.

THE TRUTH

Maintenance
is all upside.

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Don't let myths keep you from real savings and safety.

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