



Avoiding Uncommon Mistakes on Job Sites

How to keep workers safe by avoiding unlikely scenarios

By Mark Lamendola

Safety experts often focus on educating people against making common mistakes. They identify the mistake and tell you what to do instead. That's good because those mistakes have a disproportionate effect on workplace safety compared to uncommon mistakes. But this focus has a downside — namely that uncommon mistakes may be just as deadly, injurious, debilitating, or disfiguring when they occur.

The so-called “freak accident” comes as a surprise, but a skilled observer watching the safety mistakes leading up to it would likely say it was predictable. Consider the

following four examples of uncommon safety mistakes during this motor installation:

1. «Tim and Brad failed to obtain the correct lifting device for the space they were working in, so their “cherry picker” didn't have quite enough reach.
2. «Brad failed to ensure the lifting strap was secure within the lifting eye and the load was balanced.
3. «Tim stood with his left foot directly under the motor.
4. «Tim and Brad jostled the motor manually to make up for the lack of reach.



Each mistake is fairly uncommon. But these added up to a “freak accident” that sent Tim to the hospital, where most of his left foot was amputated.

Would it have helped for Tim or Brad to have memorized a list of uncommon safety mistakes? Or do you think the problem is something else? If so, what do you think that might be? Consider these three characteristics, which you will find in NFPA 70E:

1. «Awareness
2. «Self-discipline
3. «Being a qualified person

It appears that neither Tim nor Brad received the proper training for using the lifting device, and therefore, neither fit the definition of a “qualified person” [NFPA 70E Sec. 110.6(A)(1)]. Both should have been aware of this when the “cherry picker” didn’t reach as far as they needed it to — and they should have had the self-discipline to ask their supervisor about the situation.

Consider this confined entry case. Jake filled out the permit using the information the operators gave him, plus what was on the work order and electrical drawings. He knew there was a possibility that the O₂ reading might quickly drop below the minimum level, so he wore extraction gear, and the operations department assigned him an attendant. What he didn’t foresee is the space contains bracing upon which his clothes or the extraction gear can snag. So there was a “freak accident” resulting from the inability of the attendant, who is half Jake’s weight, to pull him out. There is a solution to this, we’ll get to it in a moment.

A “freak accident” is a kind of safety failure that can occur even when safety training does a great job with the expected (e.g., common mistakes), yet does not also address the unexpected (e.g., uncommon mistakes). It’s unrealistic to expect people to memorize long lists of potential mistakes or unexpected safety problems. So what is the alternative?

Training for the unexpected

You can train for the unexpected without defining or even naming the possible dangers during training. Workers must develop a mindset of methodically looking for mistakes, potential dangers, and unexpected problems.

They must apply this mindset in specific ways so they can protect themselves. Here are four ways people can apply that mindset.

Assess the area. Teach people to pause and assess the area before proceeding into it. A commonly taught method is the “look, listen, smell” method. You pause to visually scan left to right, top to bottom, and ask, “What are the dangers here, and how do I protect myself?” You also listen for unusual sounds (e.g., the hiss of steam) and sniff the air for “red flag” odors (e.g., smoldering plastic, odd chemical smell, smoke).

In Jake’s case, he should have noticed those snag points and then promptly exited the confined space upon entering. Some discussion should have ensued as to how to deal with those. Cover them with cardboard temporarily? Perhaps a tarp? And why the size difference between Jake and his attendant, isn’t that dangerous?

Use gear correctly. Improperly used safety gear is another cause of uncommon mistakes. Stepping outside the electrical industry for a moment, consider what happened to Marty Hoey, a professional climber, in 1982. She had made thousands of climbs, but on her last one, she didn’t go through the normal safety check climbers perform. She leaned back in her harness, and it opened, allowing her to fall 6,000 feet. Her body was never recovered.

One aspect of using extraction gear correctly is to ensure the extractor has the physical strength to extract the other person. Using the example of Jake, can you think of other mistakes people can make when using the gear required for confined entry? How, for example, do you know your O₂ meter is functioning? Do you check the calibration sticker on it and take a reference reading outside the confined space? Or do you just wait until you’re inside before looking at it?

The term “gear” is more inclusive than just personal protective equipment (PPE) or safety gear in general. It includes tools, test equipment, and things like ladders. Never use any gear in a manner that is outside its design parameters or intended purpose. Many people have “saved time” by using a ratchet extension where a punch is required, only to have tool steel shatter in their face (that shaft is hardened for tensile strength, not for impact resistance).

When it comes to test equipment, pay attention to the CAT rating. As a general rule, for example, factory maintenance personnel should use only CAT III or CAT IV test equipment to service production equipment.

Have rote rituals. A ritual is rote when you do it the same way every time. This eliminates a potential source of



errors. A rote ritual climbers used for many years was that before each ascent the climber and belayer (person operating the rope) would check the harness “D” clips in an exact sequence to ensure they were fastened. This ritual was rendered obsolete when harness manufacturers eliminated the D clips. But the climber and belayer still check other things. Had Marty performed the simple D clip-checking ritual, she’d probably be alive today.

You’ve never heard a commercial airline pilot say, “Welcome aboard flight 317 to New York. I’ve got 20 years of experience, so we aren’t doing the pre-flight checks before taking off.” But you may have heard an electrician say, “I’ve done lockout/tagout on this circuit many times. I don’t need to use my meter to check that it’s de-energized.” Maybe you have skipped this step when changing a switch or receptacle in your home. Going back to Marty and also to the pilot, now what do you think about skipping this step under any circumstances?

The tool check is another ritual that people might skip to “save time.” They might get away with this for years or even decades, until a “freak accident” occurs when there’s a metallic path between two phases at the time power is restored.

It’s not enough that you don’t skip these safety check rituals. You should also do them the same way every time. If you vary a safety check ritual, you introduce the potential for error. If you always do your voltage check the same way, you don’t have that extra error factor working against you. Tool count, do the same thing.

Don’t be there. Going back to the motor example, what if Tim and Brad had been joined by Gary? He’d have been a person who didn’t have to be there for that job to get done. Had Tim and Brad been “qualified persons” and thus correctly used the correct lifting device, then nobody would have “been there” on the business end of the lifting device.

Once the lifting device acquires the load, human hands and feet have no business being near the load. A similar thing applies when setting the new motor in place. Tim could have used a metal bar or similar tool to nudge the motor an inch or so this way or that, but there was no reason for his foot to be under the motor. And he should have stood well away until the motor was almost done being lowered onto its base.

Often, a thermographer is outsourced and an in-house electrician takes him from panel to panel. When a thermographer is working in an open panel, there is no need for the in-house person to be standing in front of the open panel. Only one person needs to be exposed to that energy.

Mistakes cannot be completely eliminated

Ideally, your company’s safety culture would produce a situation in which safety mistakes don’t happen. However, mistakes are inevitable. The trick is to catch them before they catch you. By adopting the mindset of looking for those mistakes, no matter how uncommon or unlikely, and adopting rote safety checks to identify them, you can prevent the “freak accidents” that uncommon mistakes eventually produce.

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