5. Using outdated or defective test equipment to troubleshoot.

When the leads are frayed or the meter's doggy, it's time to replace it. I worked with a technician who used the same Wiggy (solenoid tester) for seven years. You couldn't read the faceplate, the coil was so weak that it didn't even vibrate and the leads had been pulled loose from the bottom. Almost every time he used it, he got nailed! One day, right after he was shocked (for the kazillionth time) I said, "Hey, let me see your Wiggy." He handed it down and I twirled it around my head and smacked a concrete column with it. The coil came springing out and he charged down the ladder like an enraged bull! I handed him my new Wiggy and said, "Take this new one—that one's going to get you killed", to which he said, "I've had that since I was an apprentice!" Don't get emotionally attached to inanimate objects. If you really love your old voltage tester, take it home and make a little shrine to it—just don't bring it to work.

The NFPA committee was concerned enough to put two different requirements for using only portable electric tools and test equipment that were properly rated.

110.9(A)(1) Use of Equipment, Rating states, *"Test instruments, equipment and their accessories shall be rated for the circuits to which they will be connected".*

120.1(5) states, *"Use an adequately rated voltage detector to test each phase conductor ..... Before and after each test, determine that the voltage tester is operating satisfactorily."*

Each of these statements are followed by a reference to ANSI/ISA 61010-1, Safety Requirements for Measurement, Control and Laboratory Use – Part 1: General Requirements for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 V and below."

6. Not wearing the right PPE.

No, I'm not repeating myself. Some people think that if they wear anything by way of PPE, that should be enough. While it is true that the injuries that you sustain probably won't be quite as severe as if you didn't wear any PPE, there's a high probability that if the right PPE was worn, you'd have no injury.

This could also probably go under number 4, because if you aren't paying attention during safety training, you probably can't choose the right PPE, either. Do you know how to interpret arc flash labels? What do you do if there's no arc flash label on electrical power equipment? Do you know how to use the tables in the NFPA 70E? Do you refer to the notes when you use the tables? If you answer "no" to any of these questions, you aren't choosing the right PPE. As a matter of fact, you probably would not be considered qualified by OSHA. Your company has the responsibility to provide training so you meet OSHA's definition of a qualified electrical worker, but you have the exposure to the hazard. It's your biscuits that'll get burned; you need to do the homework to protect yourself!

7. Trusting someone else for your safety.

An OSHA compliance officer I know investigated an arc flash incident where two electricians had been working together for years. The one who was injured asked his buddy if the circuit had been checked and was dead, to which his buddy replied, "Yeah". He really didn't think that it had been done, but he didn't want to offend his partner, so he didn't pursue the question. When he started working on it, the circuit blew up, causing severe arc flash burns. He stated, "If I had to do it over again, I would have checked it myself and not worried about so-and-so's feelings." Actually, those weren't his words, but they won't allow me to print what he really did say. You get the idea, though.

Sometimes relationships cause us to not follow through when we should. Either we don't want to offend someone, like the above example, or we don't want to look less than manly to our coworkers. "Nothing personal, I'd just like to make sure I don't get my face blown off." However you want to put it, don't neglect to prove systems dead personally.

8. Not performing required maintenance of power system equipment.

Too often companies look at maintenance costs as an overhead expense. Nothing could be further from the truth. The problem is, it's difficult to put a savings on things that don't happen. Unscheduled outages, loss of production, buying equipment at premium pricing, overtime, disposing of the cratered equipment, etc. Those of us who've been through the maintenance wars have seen the costs associated with neglect, but for newer managers and accounting types, it's really difficult to appreciate. Liken it to automobile maintenance. You go out and buy that new ZR1 and then do no maintenance for 100,000 miles. What condition do you think it will be in?

9. Not carrying your gloves with you.

During my safety training classes, I like to ask how many people actually carry their rubber insulating gloves with them. Maybe one or two will raise their hands. Well, guess what, if you don't carry them, you aren't using them. This might go along with thinking low voltage won't hurt you. We get buzzed and it's no big deal. At the beginning of 2008 in Athens, Texas, three TXU workers were working on a 120/208 volt transformer. One of the workers stood and said, "Well, boys.