Workplace inspection
Cheaters never Prosper.

On your next inspection, why not look for cheater plugs, octopuses, reversed polarity, damaged cords, defective power tools and other common electrical hazards.

True story. Summer of 1972. A student on his first day of a summer job in the maintenance department of a high school was sent to the mechanical shop. One wall was covered with large sheets of plywood with holes to hold pegs on which to organize tool storage. The young man's supervisor asked him to drill holes for several new tools and handed him a power drill.

As soon as be pulled the trigger on the drill, the student received a mild shock that tingled his hand and arm. He dropped the drill with a shout of surprise and instantly became aware that all his new coworkers were standing around, watching and laughing. It was an initiation prank. Harmless fun. He took the ribbing and went back to work with another drill, the defective one was put away, perhaps to await another victim.

But what his co-workers presumably didn't realize was how serious this prank really was. The young man had been wearing brand new safety boots and standing on a dry, tiled floor, which is what saved his life. If he had used the same defective drill outside, on wet ground, or if he had reached out to steady himself against a drain pipe that ran through a corner of the shop, the current flowing to the metal cover of the drill would have run through his body, through his heart, and could very easily have struck him dead on the spot.

There is more than enough current in a standard, 110-volt, 15amp circuit to electrocute a person; what saves people most of the time, if you've ever felt a "tingle" or shock from an electrical cord, tool or outlet, you've had a brush with death - is the lack of ground. But if you happen to be grounded, if you're standing on a moist surface, holding onto a metal ladder, touching a metal pipe or in contact with any other ground, much more current will flow through your body.

This, in fact, is how many electrical accidents in the workplace happen. A small fault or defect that no one thinks is terribly serious. A small fault that can be deadly under the wrong circumstances.
The law in most jurisdictions says you have to perform an inspection of "all or a part of the workplace" on a regular basis. So, if you're tired of doing just the general, walk-around-and-chat routine, you can inspect the electrical systems and equipment in the workplace. Not the things you need a qualified electrician or electrical engineer for, but all the "little" things that tend to fall through the cracks. (Of course, while we're checking out the electrical things, we can still keep an eye out for all the usual stuff, too.) There are lots of things that a non-electrician can usefully inspect.

Extension cords
People tend-to be rough on extension cords. First, ferret out all the extension cords, wherever you

go through the workplace, to find them all.

- The most common damage is separation of the insulation from the wires at the point where the plugs are attached. (This happens when people unplug them by yanking on the wire rather than grasping the plug itself.) People have been killed by touching the exposed, live wire while they were well grounded - standing on wet ground, for example.
- Look for "repaired" cords. A new plug, for example, may have been attached incorrectly. The "third prong" ground wire may not be attached at all. A more common mistake consists of reversing the ground and the live wires. Use a polarity tester to check that it is properly attached.

The same problem sometimes happens when broken or cut wires are spliced (look for taped-up sections). When the broken wires are reattached in a repair job, they may get mismatched.

- Look for crushed sections (where they have been run over by lift truck, for example). The cord may still work, but internal damage may be waiting for just a little rougher handling to create a short circuit.
- Look for plugs with the third prong cut off.
- Look for three-wire cords plugged into two-wire extension cords. Some plugs will admit three-prong plugs with the third prong fitting outside the plug.

If the cords are not actually in use when you inspect them, and if you find damage, confiscate them on the spot. List them on your inspection report as "A" hazards capable of causing fatality or serious injury. If they are in use, mention the problem to the person using them (they tend to get upset if you unplug things) and report the suspected problem to the person in charge, as well as recording it on your inspection report.

Cheater plugs

A cheater plug is an adapter of sorts used to make it possible to plug a three-prong cord into a two-prong electrical outlet. It has two prongs to plug into a two-prong outlet on one side, but a socket for a three prong plug in the other side. Some cheater plugs have a separate wire with a connector designed to be attached to the screw that holds the electrical outlet cover in place, thus allegedly providing grounding for the third-prong wire. But, as the name "cheater plug" implies, these devices are much frowned upon and range from "not recommended" to outright illegal, depending on the application and jurisdiction.

Any cord or tool that has a three-prong cord must be plugged in only to a properly- connected, three-prong outlet. Cheaters never prosper. Have the user unplug the device so that you can "inspect" the plug. When he or she does so, confiscate the cheater plug and submit it, perhaps with a photocopy of the relevant page from the electrical code, as part of your report.

Outlets

Examine all the outlets or wall plugs. Look for cracked, missing, or damaged covers. Then look for discoloration: Any heat-damage or smoke stain is a sure sign that something is amiss. If you have an analyzer, use it to make sure that the three-prong outlet really is a three-prong outlet. (People have been known to replace a two-prong outlet with a three-pronged to allow three-prong cords to be plugged in; but, if there's no third wire, it's effectively a fake. Or the third wire may not be connected. Grounding to the box doesn't help unless the box itself is also grounded.)

Octopuses

An octopus is a tangle of many cords all plugged into a single outlet by means of multiplex adapters. There are two possible prolems. First, too many power demands on a single outlet can overload the

circuit and trip a breaker or blow a fuse. (This sometimes leads to a much more serious prob lem: People, tired of fuses blowing or breakers tripping, install a higher amperage fuse or tape the breaker down. Both of these "fixes" are both hazardous and illegal.) Second, a tangle of cords and adapters often gets too heavy to stay in the outlet properly, pulls out halfway and can result in a poor connection; this can lead t sparks, arcing and fire.

GFCIs

These are "ground fault circuit interrupters". The thing to look for is whether or not your workplace has them for electric; work outside or in damp conditions. GF (look like normal outlets, except that th have a built-in breaker with a push-button reset on the face of the outlet. The reset button often has a built-in light to show whether or not the circuit has been trip If the GFCI detects a fault in the electric circuit - such as a short circuit in a tool or ~ "leakage" of current from a poor connection, it will trip and turn the power off. (If the defective drill described at the start of this article had been plugged into a GFCI, it would have tripped the circuit.)

Electrical rooms

Many workplaces have a separate electrical room. Check that it's locked, and that it a big, clear warning sign on the door (Electrical Room. Keep Out.) Next, arrange for the qualified person in charge of the room to come and open the door so you can look around inside. There should be no "temporary wiring", unless there is construction or repair underway the room should not be used for any kind of storage - except for electrical parts and equipment. Electrical boxes should not have any un-plugged holes. There are "blanks" that can be fitted into holes for wiring when they are not in use.

All boxes should be closed. There should be no bare wires visible. Boxes should clearly label. There should be provision for lockout.

Outside wires

Next, take a walk outside and find the electrical wires leading into the building or onto the site. Also look for the hydro poles at the driveway. Then do a "what if' brainstorming session. What equipment do you have at this work site that is high enough to contact these wires? Are there ladders or poles that someone could touch a wire with? Are there outbuildings near the wires! If someone climbed onto the roof to set up a satellite dish, for example, could he or she touch a wire! If someone decides to put up Christmas lights along the roof, could they come too close to wires? If the air conditioning system needs replacing, will the boom truck that lifts it from the roof come close to wires! If the metal silo in the yard is ever moved, could it come too close!

If the power to the site is underground, look for the markers that locate the position of the service. Are any of them damaged or missing! Is any digging likely to be done along the line!

Finally, as you make your inspection rounds, ask everyone, "Do you know of any electrical hazards, things that don't look right, switches or connections that have thrown sparks, or places you can get a shock?" And, of course, record and follow up on any problems that are reported.

This kind of inspection - next month you can change the theme to guarding, fall protection or any or subject—can be highly effective in that it gives you specific things to look for. It may not make you popular to start confiscating cords and reporting problems that don't seem serious. But, if anyone questions you, tell them the story of the summer student and the defective drill.

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