Interrupting Electricity

Electricity moves through a circuit (wires, cable, tools, etc.) and as it moves, it delivers energy. That energy can light our way, keep us warm, and make things move. If electricity moves outside of the regular circuit, it can also move through you and cause a shock or electrocution. The energy that it delivers to your body can cause pain, burns, neurological problems, and death. So, if the electricity leaves the regular circuit, we have to either conduct it to ground, or shut it off instantly, so that it doesn't flow through your body.

You should always inspect power tools and extension cords before using them. Since inspections may not reveal faults in internal wiring, you need to be protected from shock and electrocution by either an **AEGCP** or by **GFCIs**. An **AEGCP (or Assured Equipment Grounding Conductor Program)** is the way to ensure that electricity that leaves the regular circuit (usually called leaking current, or fault current) goes to ground. In order to conduct electricity to ground, there has to be a good, low-resistance path to an electrical ground.

An AEGCP ensures good paths to ground by requiring ground conductors (third prongs and third wires) on all electrical tools, equipment, and extension cords. The program also requires that the ground conductors be tested regularly to make sure that they will work properly. An AEGCP is a written program, and the testing has to be documented.

Using GFCIs (or Ground Fault Circuit Interrupters) will protect you from fault current by shutting off the electricity almost instantly. GFCIs work by constantly comparing the amount of current going to an electrical device with the amount of current returning from the device. If there is a difference, electricity must be leaving the regular circuit, which means it could shock you. The GFCI detects the difference and shuts off the electricity within about 25 milliseconds—fast enough so that you shouldn't get hurt. GFCIs are most commonly part of electrical outlets, but GFCI circuit breakers can also be installed in an electrical panel to protect an entire circuit.

Before you plug in a tool or a cord, take a close look at: The Outlet: If it's a GFCI outlet, use the test button to make sure it's working correctly. Look for scorch marks or damage to the plastic housing. If the outlet isn't in good shape, don't plug in. The Cord: Be sure the plug fits firmly and that it has all three prongs. Check for kinks, damaged insulation, and damage to the plug and socket housings. Don't use damaged cords. The Power Tool: Check the housing or case for cracks or missing parts. Check the trigger or switch; it should move smoothly and not stick or jam. Make sure that the cord has the right number of prongs and isn't frayed or cut.

SAFETY REMINDER

Never modify a power cord or try to make electrical repairs unless you are a qualified electrician.