

Don't Be Shocked, But...

By Dan West (7/2000)

Electricity is one of our most useful helpers on the farm, but, as with any source of energy, it is important to maintain its infrastructure for safety and efficiency. Easily corrected electrical hazards on farms are responsible for a range of costly problems from decreased production to worker fatality.

The solution isn't shocking. The answer is to keep the electricity contained where it belongs, and not allow it to be anywhere else. It is the nature of electricity to flow to the ground the easiest way possible. On a typical farm there may be many avenues for electricity to escape the confines of its insulation and find another path to the ground. When it does, tragedy is imminent.

Power tools are a good example. If an internal wire or connection gets worn or loose, the electricity may find the easiest path to ground to be through the person holding the tool. The electricity used by a 7.5 watt Christmas tree bulb can kill you almost instantly if it passes through your chest. Certainly it would cause a serious burn, or a dangerous fall.

Eliminating this threat is fairly simple. Make sure your barn and shop wiring is the grounding type with three-prong outlets. The third prong provides an easy path to carry electrical leakage to the ground without it passing through you. Make sure all your power tools, extension cords, electric motors and lead-lights have the third prong on the plug. (Some power tools are made with an insulated housing – or are “double insulated” – and do not require the third prong.) Do not operate corded power tools in wet areas.

The GFCI is made to greatly reduce the chance of shock. The Ground Fault Circuit Interrupter (GFCI), whether built into a circuit breaker or an outlet, will sense a minuscule leakage of electricity and shut off the circuit instantly. GFCI's are required in all new construction where moisture may be present like basements, kitchens, bathrooms, ground-floor garages and milk houses. They could be a lifesaver in your barn and shop, too.

Of course the condition of the insulation on the wire is important, too. If the insulation of the tool's cord is separated from the plug or is cracked, this can provide an irresistible path for electricity to travel through you. Check your lead cord's insulation. Grasp the plug to unplug them, not the cord. Keep them hung up where you won't trip on them or run over them.

Lockout/tagout any electrically powered equipment you might be working on so someone else can't turn the power on by accident. Keep power tools clean and dry. Be sure lead cords are heavy enough to handle the load of the equipment plugged into them, and be sure the ground prong is in place.

Many overhead wires carrying electricity from the pole to your buildings are not insulated. Every year farmers are electrocuted when a hay elevator, grain auger an

irrigation pipe or an aluminum ladder touches one of these wires. If you can't have them put underground, post bright warning signs nearby at eye level to warn visitors and remind yourself. Your power company may be able to make the lines more visible, too.

You can prevent electrical fires as well. Barns that were wired more than 20 years ago may have wiring that is inadequate for today's loads. When too much electricity is being drawn through a wire that is too small, it can get hot enough to melt the insulation. If wire connections get loose or if aluminum wire is joined to copper, heat and possibly sparks can be produced. Have a qualified electrician check your electrical system if there is any question that it might not measure up to the demands of safety and performance you require of it. Your power company will help you determine if your electrical equipment is appropriate and safe. Call them if you have any questions.