

# Electrical Safety

When operating or working on amateur radio equipment, it's possible to come into contact with dangerous voltages and currents. People have died working on high-voltage circuits or putting up antenna.

Because it would be a shame to lose a single person, it's important to know how to be safe when working with electricity. Having said that, 30 volts is the commonly accepted value for the lowest voltage that can cause a dangerous electric shock and 100 mA is the lowest amount of electrical current flowing through the body that is likely to cause death. These are not very large values.

All of these choices are correct when considering how current flowing through the body can cause a health hazard (T0A02):

- By heating tissue
- It disrupts the electrical functions of cells
- It causes involuntary muscle contractions

When properly wired, three-wire electrical outlets and plugs are safer than two-wire outlets and plugs, and you should use three-wire plugs for all of your amateur radio equipment. The third wire provides an independent, or safety ground. Safety ground is connected to the green wire in a three-wire electrical AC plug. (T0A03)

All of these choices are correct when choosing a good way to guard against electrical shock at your station (T0A06):

- Use three-wire cords and plugs for all AC powered equipment
- Connect all AC powered station equipment to a common safety ground
- Use a circuit protected by a ground-fault interrupter

Individual pieces of equipment may have their own fuses to protect that piece of equipment should something happen that causes that equipment to draw excessive current. The purpose of a fuse in an electrical circuit is to interrupt power in case of overload. (T0A04) When replacing a fuse, always replace the blown fuse with a fuse of the same type and value. It is, for example, unwise to install a 20-ampere fuse in the place of a 5-ampere fuse because excessive current could cause a fire. (T0A05)

If you plan to build your own equipment, be sure to include fuses in your designs. A fuse or circuit breaker in series with the AC "hot" conductor should always be included in home-built equipment that is powered from 120V AC power circuits. (T0A08)

Whenever you're working on equipment, be sure to disconnect it from the power lines, and even then be careful working around a power supply's capacitors. If a power supply is turned off and disconnected, you might receive an electric shock from stored charge in large capacitors. (T0A11)

It is necessary to take precautions when using batteries to power your amateur radio station. Conventional 12-volt storage batteries present several safety hazards.

Shorting the terminals can cause burns, fire, or an explosion (T0A01), explosive gas can collect if not properly vented (T0A09), and, if a lead-acid storage battery is charged or discharged too quickly, the battery could overheat and give off flammable gas or explode. (T0A10)

QUESTION POOL: (10)

T0A02	T0A03	T0A06	T0A04	T0A05
T0A08	T0A11	T0A01	T0A09	T0A10

**QUESTION POOL: (12)**

T0C01	T0C12	T0C03	T0C06	T0C11	T0C10
T0C13	T0C05	T0C02	T0C04	T0C08	T0C09