Requirement 6

1. **Explain the safety precautions for working with radio gear, including the concept of grounding for direct current circuits, power outlets, and antenna systems.**

**Electrical Safety Summary**

- Electric shock can kill if enough current flows through a person’s body! Lower amounts of electric current can injure a person and be very painful. Be sure to disconnect the power from a radio or any other electronic device before doing any work on it.
- After a radio is unpowered, the *capacitors* inside can still store a strong electric charge, as described in requirement 5. Be sure that capacitors have plenty of time to discharge before doing any work on the radio, or get help in discharging them properly.
- Grounding a circuit means that a path to electrically neutral “ground voltage” or zero voltage is provided. The earth provides a good electric ground for radio stations since it can absorb large amounts of electricity. Radio stations will usually have a large wire or metal strap path to a metal rod driven deeply into the earth in order to provide an easy path for electric currents to go to ground (0) voltage.
- Alternating current power outlets should be used with a three-prong plug that includes a safety ground wire on the third prong of the plug. The safety ground wire of such a plug is usually attached to a grounding point on the radio chassis, or housing enclosure. This third part of the power outlet is usually connected to the earth ground of your home’s electrical system, so the radio housing is grounded through the 3-pronged power cable to earth ground when the radio is plugged in. Any accidental or stray currents that flow to the radio housing have a direct route into the earth to reduce electrical shock hazards.
- Make sure that any radio antennas cannot come close to overhead power lines, even if they fall accidentally. Keep antennas far away from power lines! If your antenna touches a power line while you are in contact with it or with the radio to which it is connected, you could receive a deadly electric shock.

**Tower and Antenna Safety Summary**

- If you climb an antenna tower, always wear proper safety equipment including a climbing harness properly attached to the tower, safety glasses, and a hardhat.
- Never climb an antenna tower without another person to help and to observe for safety problems. This second person on the ground should also have a hardhat and safety glasses in case objects are accidentally dropped from above.
- Lightning can directly hit, or indirectly flow into antennas and feedlines. Do not operate your radio with an external antenna during lightning activity in your area or you could receive a severe or deadly shock.
- Make sure that your external antenna is well grounded to an earth grounding rod. If lightning energy surges into the antenna system, the ground connection will help to send much of the lightning energy directly into the earth instead of into your house and radio.

**Radio Emission Safety Summary**

- Never touch a radio antenna when the radio is transmitting. Strong radio signals can cause deep and painful burns if you are touching an antenna while it transmits.
- Radio frequencies are absorbed by the human body where they are turned into heat. Strong radio emissions can cause dangerous heating of your body tissues. Do not remain close to a powerful transmitting antenna.
You can learn more about safety related to radio operations in the HamRadioSchool.com Technician License Course book Chapter 13!