

As a mechanical service tech working on building rooftops, it's important to be aware of Radio Frequency Radiation (RF) emitting antennas. RF is the energy behind cell phone and other wireless telecommunications transmissions.

Risks

- RF can penetrate and overheat human tissue, including internal organs.
- Active RF antennas are extremely hot. Touching one would result in **severe burns**.
- RF can affect the **function of pacemakers**.

Identify antennas and emission patterns

Before you start work, look for antennas and their relationship to your work space. Stay safe by assuming that all antennas are active.

- **Rectangular-shaped** antennas emit RF in a single direction straight out from the antenna.
- **Cylindrical/rod-shaped** antennas emit RF all the way around 360°.
- **Parabolic/dish-shaped** antennas deliver RF in a pattern similar to a spotlight beam.
- **Stealth antennas** are made to blend into the building-scape.

Keep your distance

Stay at least **6 feet away from a single antenna that's emitting RF in your direction**.

Stay at least **10 feet away from two or more antennas emitting RF in your direction**.

If you cannot complete the work while maintaining the proper distance, try to get the antennas powered down. If that's not possible, postpone the work and talk with your supervisor to weigh other options for performing the work safely.

RF dissipates considerably, losing its potency the further it travels away from the antenna. The further you're away from an RF source, the less risk of overexposure.

Limit time to limit exposure

- Limit the amount of time you walk through or work in an RF field.
- Pre-plan work tasks and travel routes to make getting in and out efficient.
- Never stop right in front of and close to antennas without protective shielding and an electromagnetic field monitor.
- Do not take your breaks on rooftops where there is exposure.

Look for warning signs and labels

RF warning signs and labels on the building or equipment will show an electromagnetic radiation warning symbol, or somehow indicate that the area is restricted.

Try to determine typical RF levels for each applicable rooftop

It's difficult to determine exactly how much RF is being emitted at any one time unless you have an electromagnetic field meter to measure it.

Building owners and managers should maintain a current RF radiation survey. Obtaining this survey will inform you whether the typical RF levels in your work area are less than 100% of the maximum permissible exposure level.

If the RF levels in your work area are at or above the maximum permissible exposure level, you'll need to apply additional safe work practices to protect yourself from overexposure.

Wear protective clothing and a monitor

- **RF protective clothing made of Nomex is partially comprised of stainless steel fibers.** When worn correctly, it will help protect you from RF up to 1,000% of the maximum permissible exposure level.
 - **RF clothing WILL NOT protect you from electrical shock or arc flash.** In fact, the fabric is highly conductive. Anytime the work is too close to one or more working RF antennas, and requires exposure to energized electrical conductors or circuit parts at the same time, your company will have to negotiate to have the antennas powered down so you can wear your arc flash and electrical shock PPE without concern for RF exposure.
- **Electromagnetic field monitor (EMF monitor) for protection.** This should be portable and attach to the outside of your clothing. EMF monitors are calibrated and pre-set to an established exposure level. The alarm will let you know to exit immediately when levels are exceeded.