

# HAZARD ALERT

CPWR  
THE CENTER FOR CONSTRUCTION  
RESEARCH AND TRAINING

# RF RADIATION

## AN INVISIBLE DANGER



## What is RF Radiation?

Radiofrequency (RF) radiation, a type of non-ionizing radiation, is the energy used to transmit wireless information. At low levels it is not considered a hazard. But at the levels produced by telecommunications equipment, including radio, television, and cellular antennas, RF radiation can “pose a considerable health risk”<sup>1</sup> for workers. As demand for cellular and wireless services grows, more of these antennas are being placed on rooftops and sides of buildings. Many are disguised to hide their presence.

## What to look for...

Antennas that generate RF radiation come in different shapes and sizes and emit RF radiation in different directions. **Rectangular panel antennas** or dish-shaped transmitting antennas\* generally send out RF radiation in one direction. **Cylindrical or rod-shaped antennas** emit RF radiation in more than one direction up to 360 degrees. **Hidden antennas** are designed to blend into their surroundings. They can be stand-alone (e.g. a flag pole) or a panel that blends into the side of a building, chimney, rooftop, or sign. These antennas are harder to identify and make it difficult to determine the RF radiation emitting direction.



PHOTO CREDIT: DENNISEN/GETTY IMAGES



Faux chimney conceals 15 panel antennas

## Are you in danger?

Do you perform work where telecommunications antennas are present? If the answer is **YES**, then you could be exposed to hazardous levels of RF radiation.

## Why it's dangerous...

- ▶ **RF radiation is invisible.**
- ▶ **Power levels vary.** The amount of RF radiation can be low when you start working and then spike to higher levels without warning.
- ▶ **Symptoms are often delayed.** By the time you feel the symptoms, such as overheating, reddening of the skin, and burns, you have already been over-exposed.
- ▶ **Your risk increases** the closer you are to the antenna and the longer you work in the RF radiation field.

RF radiation may interfere with medical devices (e.g. pacemakers), and concerns have been raised about possible non-thermal effects (e.g. nerve damage and psychological injuries).

## Find out more about construction hazards.

To receive copies of this Hazard Alert and cards on other topics

**Call 301-578-8500**

## Know the basics...

**1 Ask questions** Ask your supervisor if cellular antennas or other RF radiation generating antennas are present. At a minimum, do your own visual assessment. The building owner or property manager should have, or know whom to contact for, information on the antennas, their locations, and the RF radiation levels.

**2 Follow instructions** When RF radiation is present, warning signs should be posted that include information on the hazard and a point of contact for information on the antenna. If you need to work within the RF field, the antenna owner should move or temporarily power down the device.<sup>2</sup> Ask your supervisor to confirm it's been powered down before proceeding.



IMAGE COURTESY OF OSHA - PREVENTION, NON-IONIZING RADIATION, SIGNAGES AND REGULATIONS - SLIDE #10, OCT. 2012

**3 Keep your distance** Avoid standing right in front of or close to antennas. If there are antennas where you are working or on buildings close by, make sure the antennas are not pointed directly toward your work area. At a minimum, stay 6 feet away from a single antenna or 10 feet away from a group of antennas. A personal RF monitor and/or RF protective clothing may be needed. A monitor should sound an alarm if you are in an area where RF radiation is at a dangerous level. Protective clothing will shield you up to 1,000% of the FCC's maximum permissible exposure limit (MPE). It will not protect you from electrical shocks or arc flash.

## If you think you are in danger:

**Contact your supervisor. Contact your union.**

### Call the antenna owner

The contact information should be listed on the warning sign(s) or provided by the site owner/manager. Tell them you are a construction worker, describe the work you will be performing near the RF radiation generating antennas, and express your concern about an exposure hazard. Request a site power down for any work performed within the hazard area or written confirmation that it is safe to perform work as described without a power down. If there are multiple antennas, repeat this process with each antenna owner.

### Call the FCC – Get on the Record

**1-888-225-5322 (press 5)**

Tell them you are a construction worker performing work near RF radiation generating antennas and are concerned about an exposure hazard.

### Call OSHA 1-800-321-6742

\*Not dish-shaped TV receivers

<sup>1</sup> OSHA: Non-Ionizing Radiation [https://www.osha.gov/SLTC/radiation\\_nonionizing/](https://www.osha.gov/SLTC/radiation_nonionizing/)

<sup>2</sup> "What is the FCC's policy on radiofrequency warning signs?" <https://transition.fcc.gov/oet/rfsafety/rt-faqs.html>

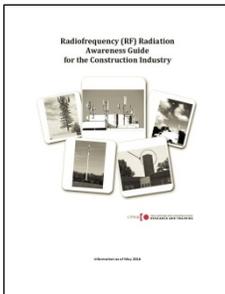
# RF Radiation Awareness Program for the Construction Industry

Workers who perform tasks on rooftops, sides of buildings, news gathering trucks, and other structures where cellular antennas and other RF (radiofrequency) generating devices are present may be at risk of exposure to hazardous levels of RF radiation.

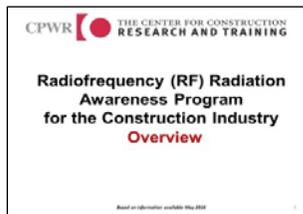
This Program was developed to raise construction contractors' and workers' awareness of the potential risk, how to identify the hazard, and steps to work safely.

## THE PROGRAM INCLUDES:

### Radiofrequency (RF) Radiation Awareness **Guide** for the Construction



Includes detailed information on the risk, regulations, online resources, and instructions for finding the location of antennas.



Summarizes the information in the Guide, and can be tailored to include the level of detail appropriate for different audiences.

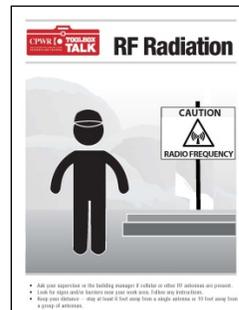
### Safe Transmission – RF Awareness for the Construction



This video\* outlines the hazard risk, and protective measures.

\*Adapted from one developed and shared by the Mechanical Contractors Association of America.

### RF Radiation **Toolbox Talk**



Available in Spanish and English, this toolbox talk\* can be used on jobsites to raise awareness of safe practices.

\*The case example is for a Roofer, but it can be adapted for other trades.

### RF Radiation – An – invisible danger – **Hazard Alert Card**



The Hazard Alert highlights regulations, online resources, and how to identify and find antenna locations. It is available in English in print and online, and in Spanish online.



## TO LEARN MORE

and access the complete program online, visit

<http://www.cpwr.com/research/rf-radiation-awareness>

