

Course ID  
**RFSAFETY**  
Course Duration  
**½-1 day**

Course Title  
**RF Safety for the Wireless Industry (including Real-Estate) Professionals**

**Related Courses**

- RF Safety for Corporate Management and Environmental Health Professionals (RFSAFETY-EXEC, 1 day)

**Aimed At**

Engineers, technicians, real-estate professionals and others who work near, visit, or climb rooftop antenna sites and cell towers. Also, executives and managers responsible for the health and safety of their employees, including managers in engineering, site development, operations, human resources, and occupational health and safety.

**Group Size**

5-25

**Prerequisites**

None.

**Course in a Nutshell**

If you are a wireless industry professional, including many in real-estate, who works at or near antenna installations, visits rooftop with antennas, or climbs cell towers, you may be aware that you are at risk of exposure to significant levels of RF radiation but may be unaware of the magnitude of the problem and how to mitigate your RF exposure risk. For example, those who just visit rooftops may not realize that they often risk exposure to higher levels of RF energy than may be encountered when actually climbing a tower.

In this course, we will help you understand what RF radiation is, the two types of radiation as related to its biological effects, and how to protect yourself from those effects. You will begin by learning the difference between ionizing and non-ionizing radiation, how the human body is affected by them, and the basics of the FCC regulations. You will then learn, using a combination of graphics and photographs, about the level of RF energy that may be presented by a variety of antennas, especially the types of antennas used for wireless services. You will learn safe distances for these antennas under worst-case conditions, guidelines designed to minimize your exposure, and how to use RF personal monitors when you must get closer to the antennas than the prescribed worst-case safe distances.

**Customize It!**

- *Half-day web-live version:* Upon request, we can schedule a half-day version of this course taught live on the World Wide Web, with two-way interactivity provided by teleconference. The half-day version is also periodically available as a public offering (P-RFSAFETY). Check out our Public Classes and Webinars pages for the upcoming RF safety classes.
- *Full-day onsite version:* An expanded full-day version, with additional coverage of technical and policy issues related to RF Safety, is available for onsite presentation at the client site. The course can be optionally taught as a hands-on workshop at no added cost.

Whether you attend the half- or full-day version, you will receive a certificate of completion. If you pass an optional examination, which is given at no added cost, your certificate will carry the notation that you possess competency in RF safety issues in accordance with the United States ANSI/ASSE Z490.1-2001 guidelines for Accepted Practices for Safety, Health, and Environmental and the pertinent FCC regulations and OSHA requirements.

**Learn How To**

- Recognize the biological effects of RF radiation and how they differ from those of the ionizing radiation from X-rays and radioactive materials.
- Identify the potential for exposure to excessive levels of RF energy.
- Minimize your exposure to RF radiation through safe work practices.
- Use personal RF monitors effectively.

**Course Outline**

- Overview of the RF Safety Issue for the Wireless Industry
- Biology
  - Ionizing radiation versus non-ionizing radiation
  - How your body functions as an antenna
  - What parameters are important in determining your exposure
  - Biological effects of excessive exposure to RF energy
- Regulations and Standards
  - FCC (or your equivalent national entity) regulations
  - OSHA (or your equivalent national entity) requirements
- Sources of RF energy
- Propagation Characteristics of Antennas
  - Omni-directional wireless antennas
  - Directional or sector wireless antennas
  - Point-to-point microwave antennas
  - FM and TV antennas (some wireless sites are co-located with radio and

television broadcast antennas)

- Safe Work Practices
  - Using distance and time averaging while tower climbing and working on rooftops
  - Avoiding eye damage from waveguide leaks
- RF Personal Monitors
  - RF personal monitors: Options, features, use, and limitations
  - Making effective use of RF safety monitors
- Course Recap and Q/A

### **How You Will Learn**

- An FCC-recommended RF safety expert will present this course in interactive lecture format.
- Along with the lecture, we will use discussion and exercises to communicate the important points.
- If you already know something about RF, we will build on that knowledge. If your background is less technical, we will make use of interesting and meaningful examples and analogies to reduce the topic's complexity.
- You will receive a printed or PDF copy of the instructor's presentation for reference back on your job.

*Revised*

*Aug. 25, 2008f*