



WEEKLY ES&H TOOLBOX TALK

COMMUNICATIONS

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MINIMIZING EXPOSURE TO RF/EME RADIATION

What is RF/EME?

RF is the abbreviation for *Radio Frequency* and EME for *Electromagnetic Energy*. "RF" is any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, it creates an electromagnetic field that is then able to propagate through space. Radio Frequency waves are the means by which all wireless communications (e.g., television, radio, cellular phones, two-way radios) operate.



Where can RF/EME be hazardous?

Elevated levels of RF energy are present on structures wherever active antennas are mounted. Exposure occurs where antennas are at the same vertical elevation as personnel or where personnel can physically touch the antennas. In the telecommunications industry, work on rooftops has the most potential for RF exposure. Multiple TV and radio antennas can create a hazardous working environment. RF can reflect off of parapets and metal surfaces, intensifying the RF exposure.

What are the health effects of overexposure?

Overexposure symptoms may occur at RF power density levels that exceed 10 to 50 times the federal Maximum Permissible Exposure (MPE) limits. Symptoms include:

- Confusion
- Vertigo
- Headache
- Blurred vision
- Overall nauseous feeling
- Body heating
- Shocks and burns
- Bad or metallic taste in mouth

How can I Prevent Over-Exposure?

Any employee who has the potential to be exposed to RF levels in excess of the general public limits must be provided RF/EME awareness training. There is potential RF exposure in the process of technology cutovers and maintenance activities. Prior to any sector shut-down and turn-up, the energy isolation and lockout/tagout requirements detailed in the Sub-contractor ES&H Program. This must be reviewed and implemented as a part of the site Job Safety Analysis.

Contractors are required to provide personal monitors if EME overexposure can-

not be prevented by general precautionary measures, such as not stopping in front of antennas and assuming all antennas are active. The use of an RF personal protection monitor, such as the recommended Nardalert A8862, will determine the level of RF exposure in an area. (These monitors are available to Bechtel personnel from the market Designated Safety Representative.)

Protective Equipment (PPE) as defined by NFPA 70E to protect the individual from the hazard.

It is imperative that workers

are qualified to work on or near energized systems and understand the requirements associated with 5.7 - Energy Isolation Lockout/Tagout, 5.25 - Electrical Safety, and 5.25.5 Working On or Near Energized Circuits.

Follow these guidelines when using an RF monitor:

When arriving at an RF equipment room, sweep the equipment room with the monitor to determine if there are any RF leaks or hot spots. When arriving at a rooftop RF site, survey the area with the monitor to detect any areas with

excessive emissions and note those areas for future access. In general, a 10 foot radius of protection is needed around live cellular antenna, but this radius should be much greater around radio and TV antennas. Avoid touching metallic objects in the presence of broadcast antennas. If you experience any of the symptoms described in this bulletin, leave the area and notify your supervisor immediately. If the symptoms don't diminish after an hour, seek medical help.