

RF Safety Compliance

The FCC has served notice that it is very serious about maximum permissible exposure (MPE) limits. Implementing an effective RF safety program will minimize your risk of liability.

Published in *MissionCritical Communications*, June 2003

Introduction

RF safety means different things to different people. For some, it is an annoyance that they deal with by doing the least amount that they believe will satisfy the government. For those that take safety issues more seriously, it is an issue of concern that can be confusing. Regardless of your viewpoint on RF safety, recent actions by the FCC and some states are making it increasingly apparent that the subject cannot be ignored.

Recent Government Activity

The FCC announced an “exponential” ramp-up of enforcement of RF safety issues in March 2002. In July, FCC inspectors made a surprise inspection of the large Mt. Wilson antenna farm outside Los Angeles, taking the unprecedented action of making each licensee shut down during the middle of the day. This investigation is ongoing. In August Linda Blair, Deputy Chief of the FCC's Enforcement Bureau, announced that enforcement of RF safety standards was one of her three main goals. Blair stated that the way the FCC intends to achieve compliance is with large fines. On November 18, 2002, the FCC issued a historic first fine for an RF safety violation: An FM radio station received a Notice of Apparent Liability and Forfeiture (NAL) and a \$10,000 fine. Four days later, the second NAL was issued to a different FM station, along with another \$10,000 fine. Insiders say that many more fines will follow.

Two years ago, RF safety issues were not even on the checklist for FCC inspectors. Today every inspector has a fourteen-point RF safety checklist to follow for every site that they visit. Current plans for inspectors include implementing a comprehensive training program and equipping them with survey instruments.

At the same time that the FCC has been stepping up its enforcement of RF safety issues, there have been developments at the state level. Two states have passed legislation that requires any company operating antenna systems on towers to have an RF safety program. These new regulations are being challenged so their future is uncertain. While these new regulations may yet be rescinded, some authorities believe that these requirements will evolve into national requirements. And although OSHA activity has been limited, their position has been made clear regarding the need for RF safety programs.

FCC Requirements

FCC Regulations include two tiers of MPE limits: occupational/controlled and general population/uncontrolled. There is a great deal of confusion over what constitutes one type of exposure over the other. According to regulators, general population/uncontrolled limits are five times more restrictive at all frequencies above 1.7 MHz. While the higher occupational/controlled limits are based on fairly well established biological concerns, adding an additional safety factor of 5:1 does not *directly* improve safety when the concern (RF heating) is a threshold effect. The rationale for the tighter limits can be described as an “administrative” buffer.

The FCC now requires that an organization must comply with the exposure limits for general population/uncontrolled exposure unless it is operating under an RF safety program. Not only are these limits only one-fifth of the limits for occupational/controlled exposure, they do not allow for time averaging! It is all very logical when you consider the following: The term “controlled environment”, when used by environmental health and safety professionals for almost every hazard, refers to an environment that is controlled by a health and safety program for that particular hazard. Therefore, in the eyes of the FCC, an organization that is functioning without an RF safety program has no control over what happens and therefore is not able to determine or control exposure time. Take Mt. Wilson, for example.

Broadcasters have known for years that parts of the public roads have field levels that clearly exceed the limits for General Population/Uncontrolled exposure. The logic used in the past is that there was no place for a car to stop on the roadway so time averaging could be used. The FCC's position in situations like this is that there is no way to determine what the public might do; somebody could decide to picnic in one of these hot spots and there is nothing in place to prevent this from happening.

Risks and Solutions

The best ways to minimize liability risk are to keep people from getting hurt and to be fully compliant with all regulations. An essential component of compliance is the implementation of an effective RF safety program. The essential elements of an RF safety program, including the proper implementation, would easily fill a separate article. Here are four of the most important elements:

- The safety program must be written and distributed to all personnel that may work in or supervise the work of personnel that work in RF radiation “sites”.
- The workers involved need to be educated to make a safety program effective.
- RF protective equipment is often required to achieve compliance at an RFR site.
- The selection and proper use of RF hazard control equipment is essential to maintaining a safe work environment, complying with all regulations, and minimizing liability risk. Both the selection and the use of RF hazard control equipment require education.

The FCC focuses on two areas to determine if an effective RF safety program is in place. The phrase “fully aware” refers to workers that:

- have received both written and verbal information regarding RF radiation.
- have received training that includes how to control or mitigate RF radiation exposure.

The phrase “exercise control” refers to workers that:

- understand how to use administrative controls to reduce their exposure level. Administrative controls include time averaging.
- understand how to use engineering controls to reduce their exposure level. Engineering controls include RF hazard control equipment, specifically RF personal monitors and RF protective clothing.

Conclusion

FCC Enforcement Bureau Chief David Solomon told attendees at the NAB show in April that it is stepping up enforcement action of RF radiation rules. And he said don't tell the FCC “I'm too small”. Notice has been served. The next step is yours but if you do not take it the FCC may come calling.

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