IEEE Standard C95.7 sections 4.5.4 and 4.5.5 provide the following guidance for medical issues related to exposure to non-ionizing radiation (NIR) in the radio frequency (RF) range.  

Note The following information is verbatim from the standard with the exception of replacing generic language with SLAC-specific contact information.

**Medical Devices and Implants**

Radio frequency safety programs (RFSPs) should make sure that personnel are informed of the potential RF susceptibility of medical devices, and personnel should be encouraged to discuss the device manufacturer’s information with appropriate occupational medical personnel to resolve any questions concerning compatibility with the work environment. Personnel should also be encouraged to inform the NIR program manager or SLAC Medical Department of their reliance on electronic devices so that additional guidance may be provided regarding their potential for RF exposure and the possibility that strong RF fields may interfere with electronic medical devices. This process is best accomplished as part of a job safety analysis that includes a fitness-for-work health assessment.

Note  In addition to the job hazard analysis and mitigation (JHAM) process, the Environment, Safety and Health (ES&H) Chemical and General Safety Department (CGS) NIR program manager or the project manager can provide information on the types and intensity of RF radiation for the treating physician to consider.

Consultation with the employee’s medical advisor is also recommended. Useful information that addresses possible RF interference issues may also be available from the RF source manufacturer.

Some medical devices, such as cardiac pacemakers, defibrillators, and drug delivery systems can exhibit improper operation when subjected to strong RF fields. Devices and systems that are used external to the body can be substantially more susceptible to
interference. For personnel who use electronic medical devices or systems and may need access to areas near RF sources, a request for an evaluation of the potential interference can be referred to the manufacturer for the manufacturer’s own evaluation and guidance on electromagnetic compatibility (EMC). This may require contact with the device manufacturer and/or appropriate regulatory authorities and an evaluation of the RF fields where the subject employee may need access. It is important to note that device interference may occur at RF field strengths that are substantially less than human exposure limits.

**Over-exposure Incident Response**

Any person suffering harm from an RF over-exposure incident should receive medical treatment. Personnel should be instructed to inform their supervisor and the SLAC Medical Department of suspected and/or actual RF over-exposure or incidents of interference with a medical device, as soon as practicable. Symptoms such as pain, reddening of the skin, unusually elevated body temperature, or any other evidence of tissue burning, are possible indications of overexposure.

Without physical evidence of an over exposure, it can be very difficult to ascertain the severity of the exposure. However, the mere belief such an exposure has occurred can lead to heightened anxiety manifested in actual physiological reactions (such as headaches and nausea). Information about the exposure incident should be used to make an administrative determination of whether an actual over-exposure took place. Technical information should be gathered for evaluation by a knowledgeable person (such as the NIR program manager and the project manager), including location, frequency, source power levels, source description, and exposure duration.

In some cases, reconstruction of the exposure may prove effective in determining exposure levels during the incident. The exposure reconstruction may include RF field measurements and should be carried out under the guidance of the Non-ionizing Radiation Safety Committee (NIRSC)\(^3\) and the NIR program manager.

Following an assessment of potential exposure and medical evaluation, where applicable, details of the incident should be documented in the records of the RFSP. A formal investigation to ascertain the cause of an over-exposure, and to develop appropriate strategies to reduce the likelihood of subsequent incidents, should be performed whenever the exposure exceeds the limit by a factor of 5 or more. Remedial options that could be considered include

- Improving the awareness of any person(s) who contributed to the occurrence of the over exposure incident through counseling or retraining
- Reviewing the adequacy of local controls implemented at the exposure site
- Reviewing the adequacy of the corporate procedures for the RFSP

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\(^3\) “Non-Ionizing Radiation Safety Committee - Charter”, [https://www.-internal.slac.stanford.edu/esh/committees/nrsc/charter.htm](https://www.-internal.slac.stanford.edu/esh/committees/nrsc/charter.htm)