

RADIATION SAFETY GUIDELINE FOR FACILITIES MANAGEMENT

Introduction

This guideline provides basic radiation safety hazard awareness training for all facilities management personnel who, through their normal course of work, are required to enter areas where ionizing and non-ionizing radiation is used. The Radiation Safety Division oversees the use of all radiation sources on campus. Typical sources of radiation include radioactive materials, x-ray generating machines, lasers, ultraviolet light lamps, microwaves, and RF towers. Also included in this guideline are high powered magnets.

In order to ensure all facilities management personnel are safe, warning signs and postings are placed on all equipment and entrances to radiation hazard areas. Below are examples of each of the discussed hazards along with minimal precautions that must be adhered to when entering these hazard areas.

I. Radioactive Material



- ❖ The doors to all rooms on campus in which radioactive materials are used or stored have these signs posted.
- ❖ It is safe to enter rooms posted with these signs but **do not touch anything with a radioactive material caution sign or label**, or with yellow radioactive material caution tape like shown below. This includes radioactive waste containers, which should always be well labeled.



- ❖ In nearly all cases on campus, the radiation dose rate in radioactive material labs is very low due to the small amounts of radioisotopes used and because of the usage of radiation shielding. *You do not need to wear radiation dosimeters to work in most of these rooms.* In fact, dose rates are so low that most radioactive materials users on campus do not need to wear dosimeters.

EH&S SITE VISIT LOG
Radiation Safety Division

Date: _____ Time: _____
Site Location/ID: _____
EH&S Personnel: _____
Contact Information: X 4-6200

Purpose of Visit:

- Inspection/Assessment
- Permanent Decommission
- Temporary Clearance or "OK to Move"
- Other

Monitoring Result:

- PASS**
- FAIL**

Cleared for:
 Radioactivity

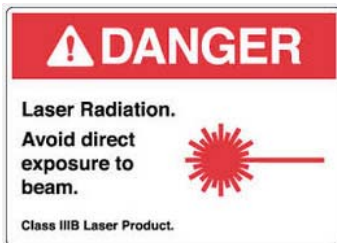
- ❖ If you need to work on a fume hood posted for radioactive material work, or move an item (like a freezer) that is posted with a radioactive material caution sign or label, make sure that EH&S has determined that it is safe to do so – a no contamination flyer will be posted by EH&S to confirm this. Call EH&S Radiation Safety at 949-824-6200 with any questions regarding clearances of labeled items.

II. X-ray Machines



- ❖ The doors to all rooms containing x-ray generating machines are posted with these signs.
- ❖ Although the radiation dose rate is generally very low around x-ray machines even when they are operating, it would be best to make sure that the machines are off before entering x-ray rooms. Contact lab personnel to determine this.

III. Laser Labs



- ❖ The doors to all rooms in which hazardous lasers are operated are posted with one of these signs.
- ❖ Personnel who work in laser labs are instructed to never leave a laser operating and unattended. However, occasionally it does happen.
- ❖ Always ask lab personnel to turn off lasers before you enter a laser lab. If nobody is present to ask about this, then do not enter the lab. *Many of the lasers used on campus have invisible beams so not seeing laser light does not mean that a laser is off!!*

- ❖ If a temporary laser warning sign like these below are hanging from the *doorknob* to the laser lab, it definitely implies hazardous conditions inside for persons not wearing eye protection. Other versions of this sign say “**Laser Alignment – Do Not Enter**” and “**Laser In Use – Do Not Enter**”. Never enter a laser lab with one of these doorknob signs posted!



- ❖ If you have any doubts about safety in a laser lab, do not enter and contact the UCI Laser Safety Officer, at 949-824-6200.

IV. Ultraviolet Radiation



- ❖ Several rooms on campus have overhead ultraviolet lights to irradiate and disinfect lab spaces. These rooms should always be posted with signs similar to these. The ultraviolet bulbs generally emit a *characteristic blue or purple light* that looks a lot different from the normal white light emitted by standard light bulbs. The switches used to turn on the overhead ultraviolet lights should be labeled so that those lights are not accidentally turned on instead of the room lights. If you have any doubts about which switches to turn on, seek advice from lab personnel.
- ❖ Some lab equipment (solar simulators, transilluminators, etc.) and hoods also have ultraviolet bulbs inside of them. Always ask lab personnel for assistance to make sure it is safe to work on these items. The equipment will often be posted with a signs like those above.

V. High Magnetic Fields

- ❖ Areas containing high magnetic fields are posted with signs similar to those below. This includes several Magnetic Resonance Imaging (MRI) facilities and a few Nuclear Magnetic Resonance (NMR) facilities on campus.



- ❖ The magnetic fields inside these areas are strong enough to affect heart pacemakers, pull metal tools and other metal objects right out of your hands, erase credit cards, etc.
- ❖ ***Never enter a high magnetic field area without permission and an escort by persons who work in the facilities and who are knowledgeable about the hazards.***

VI. Microwave Antennas/Cell Phone Sites



- ❖ All areas with high radiofrequency (RF) radiation or microwave radiation (like cell phone site antennas) are posted with signs like these.
- ❖ There are several cell phone site antennas on campus. Some of them are on rooftops (Engineering Tower, the Science Library), and some are on high poles. It is safe to work around those antennas as long as you are not directly in front of them and within 10 feet. Off to the side is okay.





- ❖ One cell phone site antenna on the roof of Engineering Tower has been turned off since it was directed at UCI ventilation equipment (blowers).
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Cell phone service providers (e.g., Sprint, AT&T, Verizon) will power down antennas if UCI personnel need to enter areas with elevated radiofrequency or microwave radiation. Contact those providers with any questions or concerns.



Keep in mind that radiation warning signs are posted for a good reason – there is the potential for dangerous levels of radiation in the areas posted. **Therefore, never ignore such a sign. If lab personnel cannot be located to verify that the area which you intend to enter is safe, then come back at another time!**

 *Contact the Radiation Safety Division of EH&S with any questions or concerns about radiation safety! We are always willing to help you.* 

949-824-6200; radsafety@uci.edu

Related Radiation Safety Web Sites of Interest:

<http://www.ehs.uci.edu/radsafe.html>

http://www.processedfreeamerica.org/index.php?option=com_content&view=article&id=464:dee-mccaffrey-cdc&catid=37:health-news&Itemid=72

<http://transition.fcc.gov/oet/rfsafety/>

<http://www.osha.gov/SLTC/radiation/>

<http://www.ehs.uci.edu/programs/radiation/STATIC%20MAGNETIC%20FIELD%20SAFETY.pdf>

<http://www.ehs.uci.edu/programs/radiation/UV%20Lamp%20Safety%20Factsheet.pdf>

<http://www.ehs.uci.edu/programs/radiation/Interactions%20with%20Spanish%20Housekeepers.pdf>