

# EH&S Safety Matters

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Environmental Health & Safety  
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## First Zone Crew Meeting Rated A Success

On December 19, 2003 the first annual meeting of the **Z**one Crew members was held. Over 135 zone captains, building coordinators, floor wardens, suite representatives and invited guests gathered in Physical Science Lecture Hall to hear Chancellor Cicerone's remarks on emergency preparedness and the valuable contribution the Zone Crew makes to the campus community. Rounding out the agenda for the meeting was an overview of 2003 emergency management activities, a review of the recently implemented Shelter in Place



program, and an introduction to the new CSAR – Campus Search and Rescue program.

All Zone Crew members in attendance received a coupon good for \$6.00 off lunch at BC's Cavern on the Green, redeemable during the month of January. For more information on the meeting, or to view the PowerPoint presentations delivered, go to: <http://www.ehs.uci.edu/emerg.html>.

## UCI Campus Passes State and Federal Safety Inspections With Flying Colors!

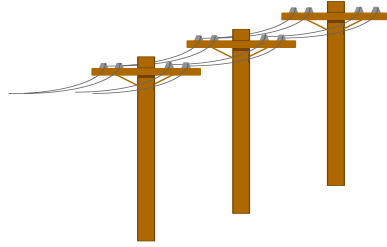
In December 2003, the California Department of Health Services and U.S. Nuclear Regulatory Commission were on campus to perform separate inspections of UC Irvine's use of radioactive materials in education and research, special facilities in the School of Physical Sciences, the Radiation Safety and Environmental Management Divisions of Environmental Health & Safety and the operations of the Radiation Safety Committee.



This year's visits resulted in no violations of State and Federal regulations or any requirements of our state radioactive materials licenses. Issues such as sign postings, training of radioisotope users, radiation shielding, contamination monitoring, radioactive waste storage and radiation safety record-keeping were reviewed in EH&S and in the labs of more than 15 research groups on campus in the Schools of Biological Sciences, Physical Sciences, the Henry Samueli School of Engineering and the College of Medicine. Our thanks go to all researchers whose labs were in compliance and to those individuals interviewed by the inspectors. Your time, efforts and cooperation contributed greatly to this outstanding performance.

Although the inspectors observed no violations, they did make a few recommendations regarding how we can even further improve radiation safety compliance level. Some of these may impact laboratory procedures and we hope to make the implementation of these minor changes as smooth and painless as possible.

Remember that the Radiation Safety staff is always available to assist you with questions regarding radiation protection requirements and guidelines. Please visit our website at [www.ehs.uci.edu/radsafe](http://www.ehs.uci.edu/radsafe). Again, thanks to all of you who helped EH&S ensure that radioactive materials are used in a safe manner on our campus.



## HEALTH EFFECTS OF ELECTROMAGNETIC FIELDS (EMFs)

### **WHAT ARE EMFs?**

Electrical power lines, electrical wiring, and electrical appliances (computers, coffee makers, shavers, radios, etc.) all generate electric and magnetic fields (**EMFs**) around them. EMFs are invisible lines of force that surround **any** electrical device. Both types of fields weaken rapidly with increasing distance from the source of the fields.

### **CAN I AVOID EXPOSURE TO EMFs?**

This would be nearly impossible. Even if you moved as far away as you can from electric appliances and power lines, you would still be exposed to EMFs from cellular telephones, computer monitors, radio and television signal transmissions.

### **WHAT TYPES OF APPLIANCES PRODUCE LARGE EMF EXPOSURES?**

Electric shavers, blenders, hair dryers and other electrical devices which have motors that rotate or contain oscillating components can produce high EMFs immediately adjacent to them. The field strengths are normally reduced considerably at 1 foot from the appliances. Fortunately, the amount of time spent using any of these types of appliances tends to be minimal.

### **DO EMFs CAUSE SERIOUS HEALTH EFFECTS?**

Electric fields that are commonly found in work and home environments have not been shown to cause any detectable health effects. Several studies have demonstrated very weak links between exposures to magnetic fields and a slightly increased likelihood of childhood leukemia and brain cancer when houses are located very near to electrical power transmission lines. *It is important to note that most recent reviews have concluded that existing evidence is not sufficient to show that EMFs cause cancer, or any other detrimental health effects.*

### **CAN I REDUCE MY EXPOSURE TO EMFs?**

*Yes, but most scientists do not think that this is necessary to preserve your health.* Increase the distance between yourself and EMF sources; for example, sit at arm's length from your computer. Avoid unnecessary proximity to high-intensity EMF sources (electrical power lines, power transformers, etc.). Reduce the amount time you spend in elevated EMF fields -- turn off computers and other electrical appliances when you are not using them.



If you have any additional questions or concerns regarding EMFs, please contact Rick Mannix at x46098.

## GOOD ERGONOMICS IN THE LABORATORY

Belinda Manalac

At UC Irvine, we are proactive in promoting good ergonomics practices for student, faculty and staff. Ergonomic hazards or risk factors are common, not only in offices but also in laboratory settings. The following is a list of laboratory activities and recommendations on how to reduce the risks.

- **Pipetting**

- Select pipettes that are lightweight and fit comfortably in your hand to reduce excessive force and awkward posture.
- Use magnetic assist, latch-mode, or electronic pipettes. These pipettes reduce repetition and excessive thumb force.
- Use special tools to open the micro vials.



- **Microscopy**

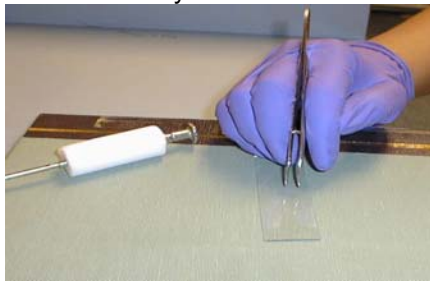
- Take frequent stretch breaks and rotate tasks as often as possible to reduce repetition and to vary body positions.
- To reduce eyestrain, blink often, closing the eyelids completely, to keep your eye moist.
- Use forearm rests to support your forearms while using adjustment knobs or hand tools to work with specimens under the microscope. This helps relieve fatigue and strain.

- **Microtome or Cryostat Work**

- Use only an adjustable chair or stool. Use a sit-stand stool in areas where there is limited legroom.
- Protect wrists and forearms from contact pressure. Pad sharp edges.
- If economically feasible, replace manual rotary microtome with an automatic one. Consider the use of an automatic foot operated cryostat when frequent cryosectioning is performed.

- **Micromanipulation and Dissection**

- Enlarge your small hand tools such as forceps and dissecting needles by placing cylindrical foam around them. This helps reduce the pinch force.
- Practice using the forceps between the 1<sup>st</sup> and 2<sup>nd</sup> digits instead of using the thumb and 1<sup>st</sup> digit. Then try alternating between the two positions to reduce the use of the thumb. The thumb is used repetitively with almost every job task performed in the laboratory.



- **Using the Biosafety/Chemical Hood**

- Avoid resting forearms on sharp edges. Use desk-edge padding and/or elbow pads to minimize pressure. Avoid interference with airflow at the laboratory hoods.
- Use adjustable chairs or ergo task-tools with a footrest. Leaning or resting on the foot rings can cut off circulation in the back of your thighs.
- Use anti-fatigue mats when standing for long periods of time.



Additional ergonomic information is available from EH&S. You may register for an Ergonomics-Laboratory training workshop at [www.ehs.uci.edu](http://www.ehs.uci.edu). Please send requests for ergonomic evaluations of your work area to [safety@uci.edu](mailto:safety@uci.edu).

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### **Eye Injury Prevention and Safety Eyewear**

Chris Younghans-Haug

Wearing correct eye protection is one of the most important work practices. One recent incident involved a nitric acid splash to the face. In this instance, the researcher was wearing splash goggles so there was no injury to the eyes.

Persons working in locations where there is a risk of receiving eye injuries such as punctures, abrasions, contusions or burns as a result of contact with flying particles, hazardous substances or injurious light need to wear face or eye protection. Suitable barriers or shields isolating the hazardous exposure usually provide adequate protection for nearby employees.

**Safety glasses** provide impact protection but offer very limited protection against chemicals. In laboratories which do not use chemicals, but do have the potential for mechanical injuries, safety glasses are acceptable. Side shields are highly recommended.

**Chemical splash goggles** provide both chemical and impact protection. This is the correct choice for eye protection where there is the potential for hazardous chemical splashes, such as during the pouring of hazardous chemicals. The close fit to the face and the head strap provide good stability against lateral impacts which might knock ordinary safety glasses off.

**UV-filtering face shields** must be worn to protect from face and eye burns in cases in which the UV radiation is not completely enclosed. For more information on UV protection, please read the [UV Lamp Safety Factsheet](#).

**Laser safety eyewear** must be worn by anyone who has a reasonable likelihood of being exposed to direct or reflected laser radiation. This eyewear must be selected to match the wavelength of the laser and the power of the beam.

**Infrared-exposure-protective eyewear** must be worn by anyone welding, cutting or brazing. Selection of specific products is determined by the specifics of the work you perform.

**Face shields** are used to supplement protective eyewear under high risk conditions such as when working with strong tissue corrosives or when the possibility of a vigorous chemical reaction appears to be substantial. These increase protection to the face and neck area. Basic eyewear must be worn under face shields for full protection.

**Contact lenses** are never a substitute for wearing the right eye protection and should be avoided when welding and when working with or around hazardous chemicals.

There are numerous styles and fits for safety spectacles and chemical splash goggles. Pick a style and fit that is comfortable for you and still protects you adequately. If it is comfortable to wear, you will be more apt to use eye protection routinely when in the lab setting. For assistance in selecting the proper protective eyewear, contact EH&S at 824-6200.