



# Florida State University Environmental Health and Safety **LAB GUARDIAN**

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University Lab Guardian

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## Accidental UV Exposure

It's been four months, two weeks, three hours, ten minutes and the answer is invisible. You watch the clock with anticipation as the purple dye creeps across a slab of carefully prepared gel bathing in an electrified pool of clear fluid toward the RED electrode. 'Run to Red', the rhyme you sang for such a long time. Tick, tick, tick, and the purple makes it across an imaginary finish line. You carry the gel and place it in the EtBr bath without electrocuting yourself, dropping the gel, or spilling the EtBr all over the shaker. You wait, knowing that the answer is right there in plain sight, but you do not have the ability to see it just yet. Ding, the timer seems very loud and your heart jumps with excitement, like the starting gate at a horserace. You run to the darkroom, praying that it's free. A "thanks" crosses your lips as you observe that the door stands open and you see that the UV light table is available.

Your heart beats faster and faster while you align the gel perfectly on the table, turn out the overhead lights and turn on the UV switch to reveal the answers to four months, two weeks, three hours, and ten minutes of frustrating questions. Getting very close to the gel you look and see your long awaited result. A smile crosses your face when you know the answer - it's right there in front of you. You are jumping up and down in your mind, screaming that you did it, you really did it, while staring, transfixed on the little pink lines that have appeared in front of you.

SUDDENLY, you can't see.

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## A Recent Lab Accident

In September of 2002, flying glass that resulted from an explosion during a routine lab procedure involving highly reactive chemicals seriously injured a Magnet Lab researcher, who was working alone at night. Fortunately, the researcher was working in a fume hood and had pulled the sash very low when the explosion occurred. Had he been working at an open lab bench or working in a fume hood with the sash open, his injuries would likely have been far more severe. After the explosion, the researcher attempted to dial 911, but could not, because of his injuries. He then exited the lab and sought help from colleagues who were working in their offices down the hall. They were able to summon medical help for the injured researcher and get assistance from the FSU police, Magnet Lab employees, and the Tallahassee Fire Department Hazmat team to contain the area and decontaminate the hazardous chemical residues in the lab.

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## UV Safety (continued from page 1)

Panicked, you reach for the overhead light while realizing that you never put the Plexiglas cover on top of the transilluminator and you had forgotten the face shield. You had no protection from UV exposure.

What would *you* do? Do you know the signs of overexposure to Ultra-Violet light?

The effects of an acute exposure can involve seeing spots, as if you had looked directly at the sun. Medical help is needed when the eyes are burning and painful, sensitive to light, or tearing. These symptoms are not usually immediate; rather they develop over several hours after being exposed. Most people are familiar with sunburns and are comfortable treating it on their own, however, open blistering of the skin is an indicator of a serious overexposure. In any case, medical help should be sought when injury is suspected. Many low-level exposures may also damage your eyesight. The use of personal

protective equipment can eliminate a potential accidental exposure. All that is needed is a UV absorbing barrier to prevent the light from reaching the skin or eyes. As we all know from living in the sunshine state, a cotton shirt is enough to protect oneself. Long sleeves, gloves, and safety glasses are essential. It might be helpful to post a sign as a reminder to take precautions while using UV light. Take time to evaluate your habits around UV lights and make sure you are protecting yourself.



***“Panicked, you reach for the overhead light while realizing that you never put the Plexiglass cover on top of the transilluminator and you had forgotten the face shield. You had no protection from UV exposure.”***

## Lab accident (continued from page 1)

This incident illustrates the danger of performing hazardous procedures when working alone. If the injured researcher's colleagues had not been nearby to call for help, the accident may have resulted in even more serious medical consequences. Principal Investigators and employees must work together to ensure that no researcher is performing hazardous operations while alone.

This incident also underscores the need for well-established guidelines regarding laboratory protocols. The researcher prevented more serious injury by working in a fume hood with the sash pulled very low. He was knowledgeable regarding the hazardous nature of the chemical reaction and took precautionary measures appropriately. Despite normal precautions, a laboratory accident occurred.

All researchers should be trained to recognize risks and to take appropriate emergency action. Phone numbers for emergency contact personnel should be posted and kept up-to-date. Protocols should be regularly reviewed for safety issues. Principal Investigators and lab managers should train students and staff in safety protocols, and should insist that safety measures are always taken. Students and staff are responsible for reviewing MSDS's, following lab protocols, understanding hazards and risks, and knowing how to protect themselves and other lab workers.

Lab safety requires constant vigilance. For assistance with training, safety protocols, risks of hazardous agents, disposal issues, personal protection, and emergency plans, please contact EH&S at 644-8800 or NHFML Safety at 644-0233.

## Eating in the labs...what's the big deal?

In many laboratories at FSU, researchers work with chemicals, radiological materials and biological agents that may be harmful if ingested. This fact is well known by all researchers. Logically, safe laboratory practices would require removal of eating activities from research areas. In fact, for many research areas and in many labs, this policy is the rule: not even a cup of coffee is permitted in the lab area. Students, post-docs, technicians and PI's must park their sodas outside the labs or go to break rooms or separate offices to enjoy an apple.

Unfortunately, some researchers at FSU have no office, and break room facilities are in short supply. The prohibition of eating and drinking in the labs for some researchers would result in pushing those individuals into the hallways or outside the building for the consumption of lunches or snacks. Further, there is a long history of combining eating and drinking activities with benign lab activities such as monitoring equipment, timing incubations, compiling data, reading protocols, reviewing results and just thinking. Additionally, some protocols do not include a block of time sufficient for removing oneself from the lab for a lunch break.

EH&S has always taken the position that eating activities should be separated from lab activities. However, EH&S staff have also recognized the difficulty of this policy for individuals who have no office or convenient breakroom. Recently, EH&S was asked to Review FSU's eating and drinking policy during a site visit by the AAALAC committee, which was evaluating FSU's Animal Care and Use Program for accreditation. The accreditation committee members toured some animal research labs on campus and observed eating and drinking in the labs. This is considered a potential danger to researchers.



To address the concerns of the accreditation committee, EH&S was asked to formalize FSU's eating and drinking policy. Toward that goal, a letter was sent to all researchers by Provost Abele, outlining the FSU policy on eating and drinking in the labs. The policy states that eating and lab activities

are not safely compatible—eating and drinking should not occur in research areas. In laboratories where researchers have no access to separate offices or break rooms, eating and drinking areas must be removed from harmful lab activities by partitioning, or separated sufficiently by distance that no contamination of food and drink is possible. Additionally, eating and drinking areas must be clearly posted.

Please contact EH&S for help in evaluating your lab space and determining if areas within the lab may be used for eating and drinking. Obtain eating and drinking signs from our website at [www.safety.fsu.edu/forms](http://www.safety.fsu.edu/forms).



## Gloves: which gloves...when to wear them

**Choosing the right material:** Disposable (examination) gloves are commonly available in latex, vinyl or nitrile. Although these three glove materials are appropriate for handling most biological solutions, they are permeable to chemicals in varying degrees. In general, nitrile gloves are more resistant to chemical penetration, but because there are some notable exceptions, each chemical should be evaluated for the best choice of glove impermeability. The following websites provide information related to the selection of the most effective glove with respect to a particular chemical exposure:

<http://www.ansell-edmont.com/us/html/home.asp>

<http://www.mapaglove.com/ce/ChemicalSearch.asp>

<http://www.bestglove.com/>

**When should you wear gloves?** Gloves are generally worn for one of two reasons: to protect the *workers* from the materials they are handling or to protect the *materials* from contamination by the worker. Gloves should be changed frequently to avoid contamination of either the worker or the sample.

When *gloves are worn to protect the worker*, by implication the material being handled has some associated hazard. Once the gloves have made contact with the hazardous material, we must assume that the gloves themselves now harbor particles of the hazardous material the worker has touched. So while the worker is protected, indirect transfer from the hazardous material source will contaminate everything that the gloved hand of the worker touches. This includes doorknobs, notebooks, equipment lids, refrigerator doors, handles, beakers, test tubes, computer keyboards and other research equipment. The next ungloved hand that touches any of these secondary sources can pick up the hazardous material and spread the contamination.

Always discard your gloves following contact with the hazardous material. Always discard your gloves at your work area before moving to other areas of the lab or moving outside the lab. If the hazardous material is a biohazard, the gloves must be discarded into special Biohazard Waste containers.

### Recommendations:

**Disposable gloves are designed for single use.** Change gloves between tasks.

**Do not wear gloves outside of your laboratory.** If you wear your gloves while punching elevator buttons, answering the phone, typing on computer keyboards or handing in your time sheet, your fellow employees will not know whether you have handled dangerous materials, and they will be extremely concerned for their safety.

Remove your gloves before touching common use supplies, equipment and furniture. **Discard gloves before leaving your immediate work area.**

When your intention is to protect your product, change gloves after touching potentially contaminated materials. Discard gloves frequently.

Choose the appropriate type of glove for your work. Check the MSDS, manufacturer's recommendations, or go to the suggested websites for information regarding glove selection. Call the EH&S Chemical Safety section at 644-7682 if you cannot determine which glove to use for a particular chemical hazard.

## Lab Safety Reminders

**Glass Sharps disposal:** Sharps comprised of Pasteur pipettes, broken beakers, glass tubes, and any glass, should be disposed of into a sturdy cardboard box that has been lined with a trash bag and labeled “Sharps.” Before the box becomes overfilled, it should be taped closed, boldly labeled “Sharps” on the top, and placed in the hallways for removal. Custodial staff will discard these sharps into the dumpsters.



**Biohazardous sharps disposal:** Needles, razor blades, scalpels and syringes should be deposited into the red sharps boxes for disposal as biohazardous waste, even if they have not been contaminated by biohazardous substances. When full, tape the lid shut, write your lab name and date on the box, and contact EH&S at 644-5374 or 644-8916 for pickup and to request a new box. Biology researchers may take biohazardous sharps to the Biology stockroom to exchange for a new box. Pipets or other glass sharps that have been contaminated with biohazardous materials should be disposed of as biohazardous waste.

**Discarding plastic pipets and disposable pipet tips:** Non-glass pipets and tips may be discarded into regular trash provided they were not used for pipetting harmful chemicals or biological substances. Pipets that were used for growth media should be rinsed before disposal. In departments where custodians have expressed concern about plastic pipets in the trash, these pipets may be discarded into the glass sharps box.

**Ethidium Bromide disposal:** Gels and waste solutions containing ethidium bromide or other mutagens should be stored in appropriate, labeled containers for pickup by EH&S. Call 644-7682 to obtain collection containers or to arrange for pickup. Methods used to adsorb EtBr prior to disposal are discouraged, as they may increase the risk of exposure.

**Acrylamide disposal:** Acrylamide is a suspected carcinogen and neurotoxin, and the monomer is highly toxic by inhalation and via skin contact. During weighing, powdered acrylamide is easily made airborne, creating a high risk of exposure. Latex or nitrile gloves, face masks, safety glasses and lab coats should be worn when handling acrylamide. EH&S recommends that, when possible, labs purchase ready-to-mix solutions rather than risk inhalation exposure from the weighing of powdered acrylamide. All acrylamide residues and solutions must be carefully collected in a labeled container for EH&S pickup. The polymer is generally considered less toxic, however gels should also be collected for EH&S pickup.



**Before you surplus equipment...**if you have laboratory refrigerators or freezers that have been used for the storage of radioactive materials, please make note that whenever these units are to be declared surplus property, they should not be defrosted until Radiation Safety has checked them for residual radioactive

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## Lab Safety Reminders

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contamination. If they are internally contaminated, defrosting can cause the contamination to be uncontrollably deposited onto the floor. If the unit fails and defrosts itself, please call so we can check for contamination. If the unit is replaced, the new unit should have a "Caution - Radioactive Materials" label affixed to it, which are provided by Radiation Safety. Our telephone number is 644-8801.

### Lab Safety Support

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## U.S. Patriot Act and Select Agent Registration

All researchers should now be aware that Florida State University and other research institutions have been asked to take certain actions related to security. Among these is the recent survey directed by the CDC and the USDA to compile data from research and clinical laboratories for possession of dangerous agents that could be used as terrorist weapons.

EVERY researcher, regardless of what agents he/she may have in his/her possession, should have filled out the *Florida State University Select Agents Registration Form*, from which information was compiled by EH&S onto official CDC/USDA registration forms and submitted for the entire FSU community. If any researcher has not submitted the form to EH&S or if dangerous agents have been acquired since the original submission, a new submission may be made by downloading the FSU's *Select Agent Registration Form* from [www.safety.fsu.edu/bio.html](http://www.safety.fsu.edu/bio.html) and faxing it to EH&S at 644-2754.

In order to secure information from all possible sources, the CDC/USDA also sent the official survey registration forms directly to many individual PI's and even to some graduate students, whose names were collected from grant submissions and other materials. These individuals, however, are instructed to send any official forms to EH&S, the Biological Safety Office, for inclusion in the institutional submission or addendum.

In addition, any researchers who are contacted directly by the CDC or the USDA regarding possession of select agents or any dangerous agents should notify Environmental Health and Safety at 644-5374 that they have been contacted.

As might be expected, interest in the issue of laboratory security has generated concern in a number of areas. Since the deadline for the CDC/USDA Select Agents survey registration, EH&S has learned that the University will most likely be asked to separately register the possession of poliovirus and agricultural pathogens. Further, particular uses of certain agents that were at first designated "exempt" from registration now may be no longer exempt. Because of this evolving view regarding the danger of certain agents, it would be best to contact EH&S to advise us of any possession of any quantity of dangerous substances or hazardous materials, regardless of use.