EMORY

The Lab Rat NEWS

January 2012

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Eye Injury: A Lesson Learned

This past September, a graduate student in the Chemistry department was attempting to align a 1064 nanometer Class IV laser (near IR region) into a vacuum chamber; a standard procedure. The light in this wavelength is invisible to the human eye, so to see the light, the student has routinely used a normal sheet of notebook paper to see the flash of light from the laser. To align the laser through a window into the vacuum chamber, a mirror is used to reflect it at a 90 degree angle and then focus it with a lens. When aligned correctly, the laser hits a metal rod inside the chamber which produces a visible flash of light. By tilting one's head close to the path of the laser, the flash can be seen through the chamber window.

The day prior to the incident, the student and a lab partner removed the optics to open the chamber. The next morning, the student closed the chamber and reinstalled the optics coarsely, with the laser off. Without donning laser protective eyewear, the student turned the laser on and leaned toward the path of the laser to look for the flash of the laser in the chamber window. Instantly, a **"grey circle"** appeared in the center of vision along with a "blurry red dot" that appeared to flow like blood. It was known immediately that the reflection from the window had entered the eye and damaged it. The student immediately notified the PI, and was taken to the Emory Eye Center where it was determined that there was a swollen burn on the retina. The physician advised that the swelling would go down, and was hopeful that the student's eye would almost fully recover. While waiting for a follow-up appointment, the student observed that vision was affected daily by the gray spot. It was difficult to see objects and faces at long distances, and anytime the uninjured eye was closed, or an object blocked its vision, it was virtually impossible to see anything 20 feet and further away.

After two follow-up appointments with the physician, it was discovered that the tissue in the affected area of the eye had detached from the retina, leaving a hole. The doctor recommended surgery to close the hole, but offered no guarantee that it would be successful in restoring vision. In addition to the surgery, the recovery time would involve lying face down for two weeks! Fortunately, during the most recent follow-up appointment, the images of the eye showed spontaneous closure of the hole, which is very rare. Its progress is currently being monitored, but it appears that surgery will no longer be necessary.

Lessons Learned

What was different from this incident and all the other times when safety goggles were not worn? To quote the student: "The real mistake leading to the accident was the *thought* of safety. Since it appeared that goggles were not needed before, it seemed like they were never needed. This is never the case. I, and everyone in my lab, always wear safety goggles now because the tiny effort to use them greatly outweighs the possibility of losing your vision. If the hole completely closes and my vision is even partially improved, I am an example of an extremely lucky case."

Comment on this article

NEW

- EHSO has recently published a guidelines document to establish minimum standards for the safe operation of High Speed Cell Sorters on campus, find it here.
- Also, a detailed index of all past Lab Rat Newsletter articles is on the News tab of our webpage. It gives a brief synopsis of all the past individual articles and separates them by month, find it here.

Ultraviolet Radiation in Laboratories

Ultraviolet light is a form of non-ionizing radiation that is commonly used in some research laboratories. UV light covers the 100 nanometer – 400 nanometer portion of the electromagnetic spectrum, and is divided into 3 main regions:

- UVA – Black Light – 320-400
- UVB – Erythermal – 290-320, and
- UVC – Germicidal – 100-290

Training

Most of EHSO's Trainings are available online in Blackboard. www.ehso.emory.edu for registration information.

Shipping Training
February 23rd

Radiation Safety Training
2nd Tuesdays at 9:00 am

Laboratory Safety Training
3rd Thursdays at 10:00 am

Eye Wash Testing
Someone in your lab should test the eyewash station once a month.

Bio-safety Cabinets/Chemical Fume Hoods Certification required annually.

Chemical/Radioactive Waste Pick-up Schedule:

Monday Pick-up
RRC
Whitehead
1462 Clifton Road
School of Public Health

Tuesday Pick-up
Math & Science

Tuesday & Friday Pick-up
Atwood and Emerson

Wednesday Pick-up
Emory Children's Center
Clinic Building A & B
Winship Cancer Institute
Yerkes Main Station

Thursday Pick-up
Woodruff Memorial Research Building
EUH (Clifton)

Friday Pick-up
All others on Atlanta campus

All **chemical** waste pick up should be requested by emailing **chemwaste@emory.edu**

All **radioactive** waste pick up should be requested via EHS Assist pick-up.

Chemical waste disposal inventory form and/or **radioactive** waste inventory form should accompany all waste containers at the time of pick-up.

Everyone is exposed to UV radiation, mainly from direct sunlight. The source of this exposure is primarily from the UVA region, since Earth's atmosphere shields us from most UVB and UVC radiation. However, the use of more concentrated UV radiation in research brings about more serious exposure concerns. The adverse affects from overexposure could be acute or chronic, but the biggest issue with UV radiation is that there are no instant warning signs to indicate over-exposure. It could take hours, days, or sometimes years for the manifestation of the effects. UV radiation has a low penetrating potential; therefore, the adverse effects can be seen mostly in the eyes and skin. The effects produced depend on both the wavelength and length of exposure. Some of these effects include the following:

- Erythema – burning of the skin or "sunburn"
- Skin Cancer
- Accelerated aging of the skin
- Photokeratitis – burning of the cornea; causes the feeling of "sand in the eye" or aversion to bright light.
- Conjunctivitis – swelling of the membranes in and around the eye; causes the feeling of "sand in the eye."

Sources of UV radiation in research labs include but are not limited to transilluminators, crosslinkers, lasers, and UV bulbs inside Biosafety cabinets. Some are used to illuminate nucleic acids or other agents, while others are used for surface decontamination. Regardless of function, each source must have the appropriate warning labels, and use words or phrases such as **"Caution," "UV Radiation Hazard," and "Protect Eyes and Skin from Exposure."**

Ideally, sources of UV radiation would be shielded or completely enclosed to eliminate the risk of overexposure. However, this is not always possible. Therefore, it is important to always remember to wear PPE whenever working with unenclosed sources of UV radiation. Consider the following:

Comment on this article

Always wear long sleeved lab coats, long pants, and closed toe shoes. Allow no skin to be exposed (including around the neck area).	Wear nitrile gloves to protect your hands. Be sure that there is no space between the top of the glove and the bottom of the sleeve.	Protect your face and eyes by wearing a UV protective face shield. UV protective glasses will protect your eyes, but will leave your face exposed.	For lasers, be sure to wear the appropriate laser eyewear. Eyewear must protect against the appropriate wavelength and optical density.

Building Liaisons

Dionna Thomas 404-727-4673
Woodruff, Woodruff Extension, & Winship (Clinics B & C)

Meagan Parrott 404-712-9480
Dental, Medical Office Tower, Emory Midtown, School of Public Health (CNR/GCR), & Rollins

Steve Arehart 404-727-4171
Clinic B-Eye Center, Pediatrics. North Decatur, Carlos Museum, Yerkes, Hope Clinic, Wesley Woods, Briarcliff Campus, & Anthropology

Rodrick Esaw 404-727-1348
Whitehead, Math & Science, Emerson, Oxford College, & Atwood

- This newsletter is a tool to help fulfill a legal requirement for ongoing safety training.
- Supervisors are responsible for ensuring that individuals in their area have read and understood the information that applies to their area.
- The signed newsletter should be placed into the PIs EHSO Binder.

Signature indicates: I have read and I understand the information in this issue of Lab Rat Newsletter. Use an additional sheet of paper for more signatures, if needed and attach to this document.

1. _____
2. _____
3. _____
4. _____
5. _____

PPE

Personal Protective Equipment

Choice to be based on potential exposures involved:

Eye: Glasses, goggles & face shields

Gloves: Appropriate for the type of procedure

Clothing: Gowns, lab coats, aprons, coveralls

Respirators: Appropriate for the type of procedure

Fire Extinguishers

Check fire extinguishers in your lab:

A. Is it present and mounted in its proper location?

B. Is it readily accessible?

If it appears to need servicing contact the Maintenance HELP line at 7-7463

Contact Employee Health Services / Emory Healthcare Corporate regarding immunization information at (404-728-6437)

Lab Rat NEWS January 2012

We would like to hear from you!

What do you like most about the Lab Rat?

What do you like least about the Lab Rat?

Which article was most helpful to you?

What topics would you like to be featured in upcoming issues?

Do you have an article you would like to contribute?

Feel free to send your answers to biosafe@emory.edu. We look forward to reading your ideas and comments!

Read EHSO BLOG

Comment on articles!

More achieved articles