The Misunderstood (Fume) Hood
By Stephen Larson

The origin of the fume hood is the fireplace of the Alchemists (600-1600AD).

In the early 20th century, Thomas Edison used the natural draft caused by fire to exhaust the air contaminants from his experiments. However, in the summer, he mounted a shelf outside a window and worked through the open window, shutting the sash to prevent entry of toxic, odorous or explosive air contaminants.

In 1790, Joseph Priestley designed a chemical exhaust hood for his chemical laboratory in Pennsylvania operated by a large man-powered bellows. However, it was not until the invention of electricity, the electric motor and the electric blower did the first fume hood appear. The earliest six-sided laboratory fume hood with a front moveable sash appeared at the University of Leeds, UK in 1923.

The US National Research Council (1993) defines a laboratory fume hood as: A fire and chemical resistant enclosure with an opening in the front fitted with a movable sash. They continue, The laboratory fume hood is the most important component used to protect laboratory workers from exposure to hazardous chemicals used in the laboratory.

Despite 90 years of use that have passed since the first fume cupboard (UK) was installed, there continues to be both misunderstandings and arguments as to how to use a laboratory fume hood:

1. Laboratory fume hoods should be kept clear at all times, free of unnecessary materials and equipment except that required for a specific experiment or operation;
2. Chemicals should not be stored in laboratory fume hoods, rather they should be stored in ventilated chemical storage cabinets. Separate cabinets for the storage of corrosive acids and bases and flammables are available;
3. The sash should be used as eye and face protection by lowering it to a height that permits entry of hands and arms only; some fume hoods have horizontal sliding sashes which can also be used for face and eye protection;
4. Small amounts of low volatility, low powder chemicals can be handled on the open bench however volatile toxic and flammable chemicals should be handled in a fume hood;
5. Place chemicals and equipment at least 6" behind the sash opening to ensure that emissions are contained in the fume hood;
6. Check the airflow monitor located on the front of the fume hood to ensure that the fan is operating and the airflow is safe; a sash height label may be placed to indicate when airflow is 100 feet per minute with a range of 80-120feet per minute;
7. Elevate all large pieces of equipment 2" above the floor of the fume hood to permit airflow around the object e.g. water baths should raised up at least 2".
8. All electrical devices should be plugged into outlets mounted outside the fume hood usually on the side of the opening; electrical outlets below the sash opening are subject to damage from spilled chemicals that leak out the front of the cabinet;
9. Sinks in fume hoods are not recommended because of the risk of spilled chemicals entering the sewer system resulting in a reportable chemical release to the environment;
10. Sashes are made of safety glass to prevent flying objects from penetrating and breaking the glass as well as containing fires within the fume hood. Damaged sash glass should be replaced when cracked or otherwise damaged.

There are over 300 laboratory fume hoods of different ages and conditions at Tufts which are tested annually to ensure that the airflow meets recommended airflow rates to prevent air contaminants from entering the laboratory. However, laboratory workers should be aware that fast walking in front of the hood, supply air vents near the sash opening, and local fans can cause contaminated air to be drawn out into the room resulting in loss of containment.

In summary, a laboratory fume hood should be available at all times for any individual that needs to prepare or use or dispose of a hazardous chemical. For more advice, go to the Tufts Research and Laboratory Safety Guide Section 2.4 Laboratory ventilation and fume hoods.
Satellite Accumulation Area (SAA) Hazardous Waste Containers
By Chris Rock

Satellite Accumulation Area (SAA) Hazardous Waste Containers must have only compatible chemicals in them to be secure, have secondary containers in the event of a spill, and be clearly labeled. Once full, containers must be moved to the Main Accumulation Area (MAA). Tufts Environmental Health and Safety inspectors, during their SAA laboratory inspections, will typically cite laboratories for the following conditions, be sure you’re not one of them – Listed in order of frequency:

1. Open Container Violations: Caps loose or not present, funnel in use or, if the lockable type, not closed. Containers must be closed tightly at all times to prevent it spilling the waste contents should the waste container tip over.

2. Container Date Violations: Date when the container is full is not noted on the waste label. Massachusetts Department of Environmental Protection allows up to three days for full containers to be moved to the MAA. This includes containers that are 80-85% full.

3. Container Labeling Violations: The waste containers must have full chemical names; abbreviations and chemical formulas are not allowed and the hazard not identified on the label. The ignitable, corrosive, toxic or reactive should be identified on the label.

4. Failures to Make a HW Determination: Incomplete information as to what is in the waste container. If “Unknown,” the laboratory must make every effort to identify the material(s) within. If not, you must call Tufts Environmental Health and Safety for guidance and assistance.

Equipment Hazard Clearance Tags
By Shaun Savage

It is not uncommon for the Tufts Facilities Services Department to receive a request to repair, relocate, or dispose of equipment. While most equipment presents minimal hazards, some, especially those found in a laboratory or clinical setting often present a higher risk. Such hazards include but are not limited to, electrical shock from stored energy sources, spills from interior containers or vessels, or contact exposure from exterior contamination. As a result, to assure the safety of Tufts Facilities Services personnel and Custodial Contractors, TEHS has developed an Equipment Hazard Clearance Tag.

The Equipment Hazard Clearance Tag should be completed and clearly affixed to all equipment in labs and clinical settings needing repair, relocation, and disposal. In addition, equipment in other settings such as offices, dorms, and classrooms that could present a hazard must also have a completed tag clearly affixed. Specific decontamination procedures are located on the backside of the tag. If there is uncertainty about equipment, the equipment manual or contacting the manufacturer is often a good resource for identifying hazards. In addition, TEHS can also provide assistance with hazard identification and mitigation.

While TEHS is more than willing to assist, it is the responsibility of the individual(s) requesting service to assure that hazards have been addressed and that equipment is clearly tagged. Equipment Hazard Clearance Tags can be obtained through your Department Office or by contacting TEHS.
OSHA Revises the Hazard Communication Standard
By Kathryn Craig

OSHA’s Hazard Communication Standard (HCS), enacted in 1983, is often referred to as “the employee right to know” act. All employers that store and process hazardous chemicals in their workplace are required to have a hazard communication program, including container labels, material safety data sheets, and employee training. All employers with employees exposed to hazardous chemicals must operate a hazard communication program and ensure that exposed employees are provided with labels, access to MSDSs, and training on the hazardous chemicals in their workplace. Tufts University has had a written Hazard Communication Program in place for over 20 years. All new employees at Tufts receive training during orientation.

In the spring of 2012 OSHA finalized changes to the HCS is an attempt to bring the United States into alignment with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). GHS is an internationally agreed upon system created by the United Nations. It is designed to replace the various classification and labeling standards used in different countries.

GHS provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheets. GHS offers consistent criteria for classification and labeling on a global level.

Hazard pictograms are one of the key elements for the labeling of containers under the GHS. There are 9 standard pictograms to depict if the chemical is a physical, health or environmental hazard. These pictograms must have a red border. Along with the pictograms, other requirements are:

• an identification of the product;  
• a signal word – either DANGER or WARNING - where necessary  
• hazard statements, indicating the nature and degree of the risks posed by the product  
• precautionary statements, indicating how the product should be handled to minimize risks to the user (as well as to other people and the general environment)  
• the identity of the supplier (who might be a manufacturer or importer)

The GHS labeling requirements are intended to replace older systems of hazard pictograms or labeling systems, such as the National Fire Protection Association’s (NFPA) labeling system. However, NFPA didn’t agree with all these changes and is keeping their own labeling criteria.

The NFPA identifies the hazard of a chemical in terms of three principal categories: health hazard (blue diamond), fire hazard (red diamond) and reactivity (yellow diamond). Within each category the chemical is ranked and placed into a class. There are 4 classes, with 4 being the most toxic or hazardous and 0 being nontoxic or least hazardous.

The NFPA is a private business, not a government agency. Although the NFPA has no regulatory authority, many fire departments and local ordinances require that laboratories post the NFPA 704 red-yellow-blue symbol on the door to alert emergency responders to the hazards found in the laboratory. Therefore, for the three Tufts campuses, complying with NFPA’s labeling and classification system will remain a requirement. The problem is, under the GHS system the highest hazard is given a rating of 1. Therefore, the highly hazardous chemicals will be assigned a rating of 1 under GHS and a 4 under NFPA. So now there are two required and contradictory labeling requirements for chemicals.

The new SDSs produced by Sigma Aldrich contain both rating systems. One way to remember it is; GHS is a global system, we have one planet so our no.1 hazards are assigned a 1. MSDS will now be called Safety Data Sheets (SDS) and the format has changed. The new SDSs have 16 sections, but only sections 1-11 of the SDS are mandatory. Sections 12-16 are non-mandatory since they contain information not related to worker health protection. Other than the name change and the order in which information is given, not much has changed. Below is a summary of the major changes to the Hazard Communication Standard:

• Labels: Chemical manufacturers and importers must provide a label that includes a signal word, a standard pictogram (9 to choose from and they must have red border), hazard statement, and precautionary statement for each hazard class and category.
• Safety Data Sheets: Previously called Material Safety Data Sheets or MSDS. The new format requires 11 specific sections, ensuring consistency in presentation of important protection information.
• Information and training: To facilitate understanding of this new system, employers are required to train workers by December 1, 2013 on the new label elements and safety data sheet format. This is in addition to the current training requirements.
• OSHA is requiring compliance with all of the provisions for preparation of new labels and SDSs by 6/1/2015. Employers will be given an additional year (6/1/2016) to update their hazard communication programs or any other workplace signs if applicable.
• Tufts will have to review the written hazard communication program by December 1, 2013. Chemical users at Tufts should start to update Safety Data Sheets as the new format becomes available. Also, the new regulation implies that all chemicals must have the new
The Effects of Laser Light on the Eye
By Geoffrey C. Sirr

Laser light of sufficient intensity and exposure time can cause irreversible damage to the eye. Laser effects are thermal or photochemical and dictated by the laser photon wavelength, exposure time and mode of operation (i.e. whether the laser is functioning in pulsed or continuous wave mode).

Lasers may interfere with vision either temporarily or permanently in one or both eyes. At low-power levels, lasers may produce a temporary reduction in visual performance. For high-power lasers, where outputs are greatly exceeding maximum permissible exposure limits, the effect can result in long term visual loss or permanent blindness.

The principal thermal and photochemical effects of laser exposure depend upon the following factors:
1. Absorption and scattering coefficients of the tissue or media of concern (e.g. cornea, lens, vitreous fluid, blood, retina)
2. Vascular flow
3. Irradiance (W/cm²) or radiant exposure (J/cm²) of the laser beam
4. Duration of the exposure
5. Area of exposure

Figure 1 shows a laser beam striking the corneal surface. What percentage of the laser beam intensity is absorbed, transmitted or scattered? This really depends on the impinging photon wavelength and the material or medium that is impacted.

The Eye and Wavelength Relationship
Figure 2 is a simple schematic of the eye. The following parts of the eye are important with regard to laser effects:
- The Cornea, a transparent front part of the eye, and transmits most laser wavelengths except < 300nm, or > 3000nm.
- The Lens, a transparent structure located behind the pupil, which focuses light on the retina, allows visible and near-infrared energy to pass through while absorbing near-ultraviolet radiation (absorbs 300-400nm, 1400-3000nm).
- The Retina, the back of the eye where images are formed, has a high concentration of photoreceptor cells. Wavelengths not absorbed by the lens (400 – 1400 nm) are deposited on the retina and known as the retinal hazard region.

Laser Wavelength and the Eye’s Response
- Ultraviolet: Lasers operating in the ultraviolet spectrum (below 400 nm) are absorbed in the anterior segments of the eye, primarily by the cornea, as well as by the lens.
- Visible: Laser radiation in the visible region of the spectrum (400-780 nm) is absorbed primarily within the retina. An ideal eye can focus a collimated visible beam by as much as 100,000 times.
- Near Infrared: Laser radiation in the near-infrared region of the spectrum (700-1400 nm) is absorbed primarily within the retina. An ideal eye can focus a collimated near-infrared beam by as much as 100,000 times. This portion of the spectrum is a very dangerous area. The eye will focus the energy, but it is not visible and thus creates a very dangerous situation.
- Far Infrared: Laser radiation in the far-infrared region of the spectrum (1400+ nm) primarily affects the cornea.

Sitting At Your Desk- Tips to a Healthy Workstation
By Peter Nowak

A significant percentage of employees at Tufts may spend a large portion of their days sitting at the workstation they got when they first arrived at the University. One of my responsibilities in my position is to conduct New Employee Orientation on a bi-weekly basis on the Medford Campus. I usually ask a couple of questions to the participants when I begin “How many of you will be on a computer for more than 4-6 hours per day?” Usually at least a few people respond by raising their hands; if it’s a larger group it’s not uncommon to have 10-12 people admit that they will. The next question, “Has anyone ever had an ergonomic concern in the past?” Again, a couple people will almost always raise their hands. I do not do this to single the new employees out. I bring this up to show that these kinds of issues can be fairly common. The issues that can arise from sitting at a computer workstation may occur in several different ways. Improper seating, desk height, lighting, keyboard placement and height, and size of the monitor can all contribute to ergonomic concerns. The biggest factor that contributes to individuals developing problems in their office space is being stationary for too long. Sitting for hours on end without getting up and stretching can lead to joint stiffness, lower back pain and other symptoms. If you know you will need to be working for over 2 hours in the same spot, get in the habit of standing up and move around on a regular basis, even if it’s only for a few minutes. This will allow your muscles and tendons a chance to relax and reduce the risk of getting some kind of injury.

Another concern for working safely at your workstation has to do with eye strain. Our eyes all function at varying degrees of efficiency. Some people need corrective lenses, some have nearly perfect vision. One thing we all have in common is that if we spend too much time looking at something our eyes can become tired, maybe dry out, and potentially lead to headaches. This is very much true of computer work. Just as it holds for sitting too long, resting your eyes is very much a part of your overall health working for hours at a time. Simply closing your eyes and covering them with your hands for 2 minutes can reduce eye strain. Turn off an over head light and use task lighting if possible. If outside light is coming in from behind your workstation, it is often a good idea to use shades or blinds to dim or reduce the amount. Frequent eye strain can also cause your vision to worsen. If you have problems while working at a computer and they continue for a while in addition to the steps I have outlined, it would be very prudent to seek advice from an eye doctor.

In previous TEHS newsletter articles, as well as on our website, I have discussed the

Protecting the Public Health at Tufts
By Stephen Larson

For many students and some faculty and staff, Tufts University is a place to live. For these individuals, the term Tufts community means a place to sleep, eat, engage in recreational activities and in general be part of neighborhood. Like any town, the Tufts town has a public health program to protect the health of its citizens and promote good health. The Tufts public health program includes the services and activities of many professionals share the common goal of protecting the health of all Tufts citizens. These professionals may be found in many departments at Tufts: Facilities Services, Dining Services, Office of Residential Life and Learning, Health Services, Physical Education, Student Services, Public and Environmental Safety. The staffs of Public and Environmental Safety and Student Health Services constantly monitor the overall health of the student population and are alert to unusual patterns of illness and injury. Potential threats to health are anticipated, investigated and where necessary actions taken to minimize or where possible eliminate the threat. However, most protective actions require the participation of all students. For example, pests such as cockroaches and bedbugs are a constant threat in an urban environment but can be effectively controlled if everyone follows simple cleaning and disposal practices. Hence a significant part of the public health program distributing useful information to all in a timely way to alert everyone of a potential or developing problem and actions that can be taken to control that problem. For example, the campus community was recently alerted to West Nile Virus disease and how it is spread and controlled.

The Tufts public health program monitors the following factors that contribute to a safe and healthful campus—providing safe drinking water

- encouraging the operation of safe recreational facilities
- monitoring the community noise levels
- providing safe food
- providing safety and health education services to students
- implementing coordinated and effective actions in the event of a public health emergency
- partnering with Medford, Somerville, Boston and Grafton public health departments before and during public health incidents

At Tufts, providing a safe and healthful living environment is the product of the efforts of many individuals on a daily basis collaborating for the benefit of all.
In August 2012, I was honored to begin my new career as the next Fire Marshal/Fire Prevention Officer for Tufts University. In preparing a ‘game plan’ for (my vision) of the direction of the university’s fire safety program, I set out on a quest to learn: (a) where we (Tufts Fire Safety Office [FSO]) currently are in our programs and policies; (b) where we need to be – at a minimum (to satisfy mandates and standards); and (c) where we should strive to be – in terms of seeking excellence beyond ‘minimum requirements’ in the world of fire and life safety.

Navigating the waters between the points of “where we are” to “where we strive to be…” has become my personal mission. As the “Captain of the ship” (of the Fire Safety Office) it is my duty to steer a course heading that makes sense for our organization…and to make course corrections as needed. This is a very diverse university community with hundreds of buildings, thousands of people, and three very different campus environments that present all types of challenges to fire safety. The Tufts University Department of Public and Environmental Safety (DPES), Tufts Environmental Health and Safety (TEHS) and the Fire Safety Office (FSO) each have a duty and relationship connected to all buildings and each person who attends, live, works, or visits the university. That is a very broad horizon with many navigational hazards to consider – on a 24/7/365 basis.

The Tufts University Department of Public and Environmental Safety describes the DPES mission and vision as:

“Developing a safe and secure environment in an academic institution is the responsibility of the entire community. Within our community, the Department of Public Safety is assigned the primary responsibility to identify programs, methods, and approaches to assist the institution toward achieving a reasonably safe and secure environment. Therefore, the Department is expected to be the leader in this area. The Department exists for one main purpose and that is to support the goals of the higher education community. It exists to assist those who seek and those who impart knowledge, as well as those who provide support to the mission of the institution. The Department endeavors to preserve an environment where diverse social, cultural, and academic values are allowed to develop and prosper. All members of the Department are expected to actively participate in the achievement of our goals and in the service of the university. For it is only through our collective efforts that our mission will be accomplished.”

Tufts Environmental Health and Safety (TEHS) complements and contributes to the DPES mission. The TEHS mission (in part) is described as:

TEHS provides leadership in developing and supporting high quality programs that allow students, faculty and staff to protect themselves from potential health hazards they encounter at the University.

In summary, the goal of TEHS is to provide guidance to every manager, supervisor, employee, and student of Tufts University so that a safe, healthful and environmentally sustainable learning environment is achieved and maintained.
The proposed systems, we support each and by enhancing life safety minimizing occurrences of fire, serve the Tufts community. By and life safety programs that improvement in all aspects of fire Safety Office

- We shall provide guidance in developing and supporting high quality programs that allow students, faculty, staff and visitors to live, work, and visit in a safe campus environment, and to protect themselves from potential fire and life safety hazards.

- We shall provide guidance to all stakeholders of Tufts University on all matters related to fire and life safety concerns.

The proposed vision of the Fire Safety Office is continual improvement in all aspects of fire and life safety programs that serve the Tufts community. By minimizing occurrences of fire, and by enhancing life safety systems, we support each stakeholder in his or her personal mission as related to their role within the university environment. We proudly serve as advocates and guardians in all matters of fire and life safety for the entire Tufts community.

The foundation of the Fire Safety Program at Tufts.

The Fire Safety Program is based upon three foundational blocks that contribute to an effective fire and life safety program. The foundational blocks are:

- **Engineering**
  - Properly designed and installed fire protection components
  - Fire alarm systems
  - Fire sprinkler systems
  - Fire suppression systems (range hoods, etc…)
  - Emergency lighting
  - Exit signage
  - Fire extinguishers

- **Education**
  - Fire / evacuation drills
  - Fire extinguisher training
  - Fire safety awareness training for faculty, staff, and students
  - Self-guided instruction via website
  - Professional development for FSO staff

- **Enforcement**
  - Annual and quarterly testing of systems
  - Regulatory compliance
  - Site inspections
  - Investigations
  - Disciplinary (forwarded to appropriate Tufts office) follow up (if warranted)

The Fire Safety Program is based upon three foundational blocks that contribute to an effective fire and life safety program. The foundational blocks are:

Tufts University Fire Safety Program: foundational blocks

“The whole is greater than the sum of its parts.” Aristotle

**Staffing the FSO.**

The FSO staff is currently comprised of active or retired fire service professionals who bring to the university a combined experience level of more than 100 years of fire service background. This combination of public sector experiences and Tufts institutional knowledge provides added value and resources that contribute to the excellence of the university.

The Fire Safety Office is currently staffed by:

- Fire Marshal/Fire Prevention Officer – John Walsh**
- Assistant Fire Marshal – Richard Mullane**
- Inspector (part time) – Edward O’Brien**
- Inspector (part time) – Sean Mullane*
- Student Fire Inspectors (5) during the academic year
  - **retired professional firefighters
  - *active professional firefighter

**Long term goals:**
- Maintain standards identified in short term goal list
- Improvements in ‘service request’ tracking and documentation
- Improvements in systems design (in house) for prioritizing fire alarm replacement plans university-wide
- Seek efficiencies in FSO processes via use of technology and/or methodology
- Increase effectiveness in public (university-wide) fire and life-safety education and outreach
- Maintain readiness to adapt to sudden needs of the Tufts University community as circumstance dictate
- Create workable solutions to fire and life-safety challenges as they emerge

**Future plans for the FSO.**

**Short term goals:**
- Maintain inspection schedule for all academic and residential buildings
- Maintain inspection schedule for all sprinkler systems
- Respond to urgent needs as they occur. This includes fire alarm repair issues, active alarms, fire code violations that pose immediate dangerous conditions, etc...
- Respond to requests for services from internal and external stakeholders
- Provide fire safety related training based on target needs
- Enhance and update the website to provide newest information and resources... especially increasing internet links to video training resources

**Fire sprinkler inspection**

1 The FSO approach to educational and training program design and delivery has been enhanced by applying the “Start with Why” philosophy to such activity. As trainers, I include this information as a potential re-source you may be interested in. http://www.startwithwhy.com/ (once on the site, be sure to click on the TED link).
What do you think of *In Case You Haven’t “HERD”*?
Do you have ideas for future topics? How to make it better? We want to know!
Contact Natalie Tumbridge at natalie.tumbridge@tufts.edu

**Upcoming Trainings**

**Boston**

- 10-01-12: NEO & BBP; 12:30-1:30
- 10-15-12: NEO & BBP; 12:30-1:30
- 10-16-12: Intro Rad. Safety; 9:00-11:00
- 10-29-12: NEO & BBP; 12:30-1:30
- 10-30-12: BRL Training; 1:00-3:00
- 10-03-12: BRL Training; 1:00-3:00
- 11-12-12: NEO & BBP; 12:30-1:30
- 11-16-12: BRL Training; 10:00-12:00
- 11-20-12: Intro Rad. Safety; 9:00-11:00
- 11-26-12: NEO & BBP; 12:30-1:30
- 11-29-12: Biologicals Shipping; 9:30-12:00
- 12-10-12: NEO & BBP; 12:30-1:30
- 12-18-12: Intro Rad. Safety; 9:00-11:00
- 12-26-12: NEO & BBP; 12:30-1:30
- 01-15-13: Intro Rad. Safety; 9:00-11:00
- 01-17-13: Intro Laser Safety; 9:30-11:00
- 01-31-13: Biologicals Shipping; 9:30-12:00
- 02-19-13: Intro Rad. Safety; 9:00-11:00
- 03-19-13: Intro Rad. Safety; 9:00-11:00
- 03-28-13: Chemicals Shipping; 9:30-12:00
- 04-16-13: Intro Rad. Safety; 9:00-11:00
- **Dates subject to change based on attendance**
  - 10-01-12: Intro Rad. Safety; 9:00-11:00
  - 10-04-12: Chemicals Shipping; 9:30-12:00
  - 10-04-12: Biologicals Shipping; 12:30-3:00
  - 10-10-12: BRL Training; 1:00-3:00
  - 10-12-12: NEO & BBP; 10:30-12:00
  - 10-17-12: BBP; 1:00-2:00
  - 10-26-12: NEO & BBP; 10:30-12:00
  - 11-08-12: BRL Training; 10:00-12:00
  - 11-09-12: NEO & BBP; 10:30-12:00
  - 11-14-12: BBP; 1:00-2:00
  - 11-29-12: Intro Laser Safety; 9:30-11:00
  - 12-02-13: Intro Rad. Safety; 9:00-11:00
  - 12-03-12: Intro Rad. Safety; 9:00-11:00
  - 12-07-12: NEO & BBP; 10:30-12:00
  - 12-12-12: BBP; 1:00-2:00
  - 12-19-12: BRL Training; 1:00-3:00
  - 02-04-13: Intro Rad. Safety; 9:00-11:00
  - 03-21-13: Intro Laser Safety; 9:30-11:00
  - 04-01-13: Intro Rad. Safety; 9:00-11:00
  - 04-04-13: Biologicals Shipping; 9:30-12:00

**Grafton**

- 10-09-12: NEO; 10:50-11:25
- 10-17-12: BRL Training; 10:00-12:00
- 10-18-12: Intro Laser Safety; 9:30-11:00
- 10-22-12: NEO; 10:50-11:25
- 11-01-12: Intro Rad. Safety; 12:00-1:30
- 11-05-12: NEO; 10:50-11:25
- 11-07-12: BBP; 12:00-1:00
- 11-19-12: NEO; 10:50-11:25
- 12-03-12: NEO; 10:50-11:25
- 12-05-12: BRL Training; 1:00-3:00
- 12-06-12: Biologicals Shipping; 9:30-12:00
- 12-17-12: NEO; 10:50-11:25
- 12-20-12: Intro Laser Safety; 9:30-11:00
- 01-03-13: Intro Rad. Safety; 12:00-1:30
- 02-21-13: Intro Laser Safety; 9:30-11:00
- 02-28-13: Biologicals Shipping; 9:30-12:00
- 03-07-13: Intro Rad. Safety; 12:00-1:30

**Medford**

- 10-09-12: NEO; 10:50-11:25
- 10-17-12: BRL Training; 10:00-12:00
- 10-18-12: Intro Laser Safety; 9:30-11:00
- 10-22-12: NEO; 10:50-11:25
- 11-01-12: Intro Rad. Safety; 12:00-1:30
- 11-05-12: NEO; 10:50-11:25
- 11-07-12: BBP; 12:00-1:00
- 11-19-12: NEO; 10:50-11:25
- 12-03-12: NEO; 10:50-11:25
- 12-05-12: BRL Training; 1:00-3:00
- 12-06-12: Biologicals Shipping; 9:30-12:00
- 12-17-12: NEO; 10:50-11:25
- 12-20-12: Intro Laser Safety; 9:30-11:00
- 01-03-13: Intro Rad. Safety; 12:00-1:30
- 02-21-13: Intro Laser Safety; 9:30-11:00
- 02-28-13: Biologicals Shipping; 9:30-12:00
- 03-07-13: Intro Rad. Safety; 12:00-1:30

*Please contact Tufts EHS (ehs-training@tufts.edu) for more information*