



IN CASE YOU HAVEN'T “HERD”



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Stephen R. Larson, M.S., CSP, CIH, RBP Director of Environmental Health and Safety

The Department of Public and Environmental Safety is pleased to announce the appointment of Mr. Stephen R. Larson as the new Director of Environmental Health & Safety for Tufts University. Steve served as the Senior Manager of Environmental Health & Safety Services at The Jackson Laboratory in Bar Harbor, ME, and was responsible for Radiation Safety, Biosafety, Chemical Hygiene and Emergency Preparedness. For the past 15 years, Steve has served as the Principal Industrial Hygiene Instructor at the New England OSHA Training Institute, Keene State College in Manchester, NH.

Steve is an experienced professional with a broad employment, educational and teaching background in the safety profession. He has achieved recognition as a Certified Safety Professional, Certified Industrial Hygienist and a Registered Biosafety Professional, and is a member of numerous professional associations. He has a broad background in the safety

profession and many highlights to his career. Among these are: previously serving as the Director of Occupational & Environmental Health at the University of New Hampshire, and the Director of Environmental Health & Safety at Northeastern University. Earlier in his career, Steve held positions with the Massachusetts Department of Public Health as a Radiation Control Officer and as a Technical Advisor/Liaison for Chemical, Nuclear & Radiological Emergency Preparedness.

Steve received his M.S. in Environmental Health (Industrial Hygiene), from the University of Iowa, College of Medicine, and his B.A. in Microbiology from the University of New Hampshire, Department of Microbiology. He previously completed all required coursework towards a Master's in Education, specializing in Training and Human Resources Development, at the University of Massachusetts, College of Education.

Steve joined the Tufts EH&S Team on March 23, 2009, and his

primary office location is on the Boston campus at Posner Hall. His first impression of Tufts was that “everyone in the Tufts community that I have met in person, by telephone or email has been welcoming, supportive, energetic, competent and demanding. In this case, demanding is good because the customers of our services want those services delivered in a thorough, accurate, timely and positive manner.” When asked about his vision for the department he said, “EHS will continue to be an important contributor to both determining and achieving the mission and values of Tufts University. EHS staff can assist each employee, student, visitor and neighbor of Tufts University in returning to their families each day as healthy as or healthier than when they arrive. Similarly, EHS staff can assist each employee, student and visitor in performing their activities while protecting the environment of the campuses and the surrounding communities. The EHS Office is a resource for the entire Tufts community”

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Before there were fume hoods...there was Carl Scheele

By Stephen Larson, EH&S Director

Few recognize the name Scheele as a founder of chemistry in the 1700s. Carl Scheele (Sweden) (b.1742) was a self taught pharmacist and experimentalist. Isaac Asimov called him “hard luck Scheele” because others often took credit for his discoveries. He purified and processed such elements and compounds as oxygen, arsenic, chlorine, cyanide, hydrogen sulfide and hydrogen fluoride.

He also developed a habit of tasting his reactants and products. He died from the inhalation and ingestion of these materials at the age of 43. He, his family, science and humanity would have benefited if he followed good laboratory practices:

1. use a fume hood when handling highly toxic chemicals;

2. work in areas where there are 8 to 10 air changes per hour;
3. do not eat or drink in the laboratory;
4. do not ingest toxic or corrosive chemicals



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Hard Luck Scheele

Laboratory Hood Safety

By Peter J. Nowak, Industrial Hygiene Occupational Safety



Chemical Fume Hood

One of the most important pieces of equipment in any lab is the hood. Laboratory hoods serve a variety of functions, but none is more significant than providing a safer work environment for the individuals working in the labs. Hoods function by creating airflow through a blower that draws air through the hood and its vents where it will do no harm. The air that moves near the open front of the hood is known as face velocity.

Face velocity is the primary test used to determine the efficiency of a hood. Many hoods have a sash or door which will allow the user to access the hood. Raising or lowering this sash will change the face velocity of the hood.

There are several different types of hoods some of which are very specialized. The two most common kinds on all 3 campuses are the Fume hood and the Biological Safety Cabinet. These hoods come in a wide range of shapes and sizes and manufacturers. Fume hoods are designed to prevent exposure to chemicals, vapors and particulate matter that lab personnel may be subjected to during routine work. Fume hoods are generally exhausted to the outside.

Biological Safety Cabinets on the other hand serve a more specific function. They protect a user from being contaminated by microorganisms which may be harmful. Biological Safety

Cabinets have more controls on filters, face velocity, and exhaust than any other type of hoods to prohibit release of

possibly dangerous microbes to the environment. Biosafety Cabinets pass air through Hepa filters and re-circulate air into the room. As result, they should never be used for hazardous chemicals.

At Tufts all hoods are tested on annual basis. There are over 450 Fume hoods and over 250 Biosafety Cabinets. Though the Environmental Health and Safety Office (EH&S) oversees the annual certification inspection of all hoods, it is the responsibility of lab personnel to assure that the hood has been certified. This is accomplished by locating the dated certification sticker on the front of the hood. *Please notify Environmental Health and Safety if you find any fume hood or Biosafety Cabinet that has not been tested.*

Minor repairs can often be made by facilities staff members, but more serious repairs are the responsibility of individual departments in which the hoods are found. Those repairs have to be contracted to companies certified to make such repairs.

As Tufts renovates or builds new laboratories, energy conservation has become a major factor in the design, purchase and installation of new hoods. Many if not all new Fume hoods are installed with Phoenix Controls which regulate air flow, these controls can sense when the hoods are being used and will raise and lower the amount of air passing through depending on usage. These controls are helping reduce energy expenses throughout Tufts research community. In addition new hood designs are reducing costs even more by building in the controls directly to the hoods.

Good Practices:

1. Do not store chemical containers or equipment in the fume hood; it is a ventilated lab bench and should be open to use by anyone in the lab as needed;
2. Make sure equipment is raised at least 1" above the floor of the hood to all adequate airflow around the piece of equipment;
3. Do not evaporate volatile liquids in a chemical hood as a means of disposal-call EHS to collect the waste and ship off site;
4. Place all equipment at least 6" in from the sash of the hood to ensure that the air contaminants stay in the hood;
5. Check the airflow through the hood opening to make sure it meets the 90-110 ft/min requirement; some hoods are equipped with velo-meters which read out directly in feet per minute; an inexpensive airflow indicator can be installed on any hood
6. Do not use flammable liquids or gases in biological safety cabinets-the electrical system is not explosion proof!

Maintaining Biosafety Cabinets

By Kimberly Parker, Biosafety Manager

Biosafety Cabinets (BSCs) are an essential component for the safe use of biohazardous agents. Maintaining the proper functioning of BSCs is critical. This includes annual certification, decontamination prior to relocating, HEPA filter replacement, and overall general maintenance. Tufts University has recently renewed contracts with service providers to maintain this equipment. Covino Inc. will be providing these services to the Medford and Boston campuses. B&V, Inc. will be providing these services to the Grafton campus.

Technicians will begin visiting the laboratories during the month of October to perform the annual certifications. If you have a need for any of the above services, please contact Kim Parker, Biosafety Manager, at 617-636-2919, for assistance.



Biosafety Cabinet

“...it is the responsibility of laboratory personnel to assure that the hood has been certified .”

Chemical Inventories

By Thomas Kelley, Laboratory Safety Coordinator

An updated chemical inventory serves a multitude of important functions in keeping in compliance with environmental regulations and in improving the health and safety of employees at Tufts University.

Chemical inventories are needed to fulfill Boston Fire Department regulations in determining National Fire Protection Association ratings. The NFPA diamond serves as a warning system for firefighters entering a laboratory. The ratings of protection are in the areas of health, flammability, and self-reactivity, as well as special information associated with the hazards.

Numbers from 0 through 4 are placed in the three upper squares of the diamond to show the degree of hazard present for each of the three hazards. The 0 indicates the lowest degree of hazards; the 4, the highest. The fourth square, at the bottom, is used for special information.

The National Fire Protection Association diamonds must be updated on an annual basis. In 2006, the Environmental Health and Safety Office established a chemical inventory form that can be downloaded from the Public Safety website. Principal Investi-

gators can use this form to submit their chemical inventories in an electronic format.

An updated chemical inventory is also required to meet the regulations put forward under the OSHA Laboratory Standard. The OSHA law states that there must be a material safety data sheet present for every chemical in the laboratory. A material safety data

sheet may be secured from the manufacturer by giving the corresponding catalog number. Material safety data sheets may also be secured from different chemical databases for old chemicals whose manufacturer has gone out of business.

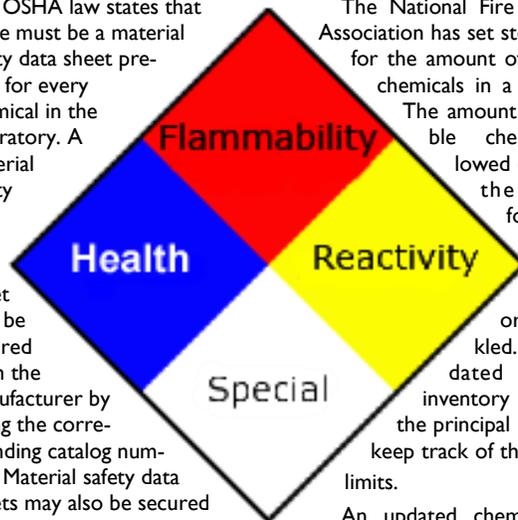
The Environmental Protection Agency has set reportable quantity limits for certain chemicals under SARA Title III. The Environmental Health and Safety Office is responsible for report-

ing any violations of these limits to the local fire department. An accounting system in which all laboratories have maintained current chemical inventories will allow the EH&S office to stay within these prescribed limits.

The National Fire Protection Association has set storage limits for the amount of flammable chemicals in a laboratory.

The amount of flammable chemicals allowed depends on the square footage and whether the lab is sprinkled or unsprinkled. An updated chemical inventory will help the principal investigator keep track of these storage limits.

An updated chemical inventory is proven valuable in the area of environmental health and safety. When the inventory is kept updated, the researcher will be able to track the quantity and age of peroxide-forming chemicals. The four most commonly found in laboratories are ethyl ether, tetrahydrofuran, isopropyl ether, and 1, 4 dioxane. These



“The NFPA diamond serves as a warning system for firefighters entering a laboratory.”

chemicals must be dated upon purchase, and when opened. The storage guidelines for peroxide-forming chemicals can be found in the Tufts Laboratory Safety Manual.

Proper segregation of chemicals in the laboratory is an important component of environmental health and safety. Chemicals must be arranged by compatibility and then can be arranged alphabetically.

Laboratory researchers may also make use of a segregation system that was developed by the Boston Fire Department. This classification system may also be obtained through the EH&S Office.

A computerized inventory with such fields as chemical, catalog number, container size, MSDS-yes/no and NFPA rating would help the researcher as well as the Environmental Health and Safety Office meet the legal requirements of different regulatory agencies and help improve the health and safety of students and staff at Tufts University.

Radioactive Waste Reduction

By Agnes Barlow, Radiation Safety Officer

Waste disposal is highly regulated and also very costly for disposal by the University. It is important that all disposable items that are contaminated with radioisotopes are properly disposed of in a well labeled, approved radioactive waste container. We must know the isotope, activity and date for all such containers. For liquid wastes, we must also know the chemical components.

There is a lot that each individual isotope user in the lab can do to help keep disposal costs to a minimum. For example, any item that clearly has not come in contact with radioactive material should not be placed into a radioactive waste container. That pair of gloves that you had on and removed before you used radioactive material is one example. The paper towel you used when you washed your hands after removal of your

gloves, outer wrappers from disposable items -all of these are examples of materials that often find their way into radioactive waste containers.

If there is any question whether an item is contaminated, please put it in the radioactive waste container. But each unnecessary item in the waste container has to be carried, stored, and handled by Safety personnel. If it is in a container with radioisotopes with half lives over 120



days, the material cannot be decayed in storage at Tufts. Instead Tufts must pay for proper disposal at a limited number of radioactive waste disposal sites. So please, if an item is clearly not contaminated, take the time to place it in the appropriate bio or regular waste container.



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Highlights in Future Issues
(We welcome your input)

- Shipping Radioactive Materials
- Laser Eye Injuries
- Sink Disposal Restrictions for Mercury

<http://publicsafety.tufts.edu/ehs/>

Environmental Health & Safety Office Directory

Environmental Health & Safety Director

Stephen Larson 617-636-2193

Radiation Safety Officer

Agnes Barlow 617-636-3450

Biosafety Officer (Grafton)

Julien Farland 508-887-4483

Biosafety Officer (Boston)

Kathleen Joseph 617-636-0964

Laboratory Safety Coordinator

Thomas Kelley 617-636-0477

Industrial Hygiene Technician

Peter Nowak 617-627-3246

Biosafety Manager

Kimberly Parker 617-636-2919

Laboratory Support & Compliance Specialist

Shaun Savage 617-636-0397

Administrative Assistant

Natalie Viernes 617-636-3615

Announcements and Upcoming Trainings

As an additional service to the Tufts University community, EH&S is now offering the option to submit Chemical Waste Pickup Requests online. Please note that this service is not provided for the HNRCA (Boston) and the Medford Campus. To submit all Chemical Waste Pickup Requests, please go to the following link:

<http://publicsafety.tufts.edu/ehs/?pid=82>

Boston Trainings

10-07-09: IATA/DOT Shipping Training for Dangerous Goods; 10:00-12:30pm

10-20-09: Bloodborne Pathogens (BBP) Training; 10:00-11:00am

11-17-09: Biosafety in Research Laboratories Training; 1:00-3:00pm

12-10-09: Bloodborne Pathogens (BBP) Training; 10:00-11:00am

12-15-09: Biosafety in Research Laboratories Training; 10:00-12:00pm

01-19-10: Biosafety in Research Laboratories Training; 10:00-12:00pm

Grafton Trainings

10-06-09: Biosafety in Research Laboratories Training; 10:00-12:00pm

10-15-09: Bloodborne Pathogens (BBP) Training; 10:00-11:00am

11-17-09: IATA/DOT Shipping Training for Dangerous Goods; 10:00-12:30pm

12-17-09: Biosafety in Research Laboratories Training; 1:00-3:00pm

Medford Trainings

10-20-09: Biosafety in Research Laboratories Training; 1:00-3:00pm

11-12-09: Bloodborne Pathogens (BBP) Training; 10:00-11:00am

Class size is limited; Registration is required. Please contact the Environmental Health & Safety Office (ehs-training@tufts.edu), to reserve your spot.

