Volume 6 Issue 3 COLUMBIA UNIVERSITY EH&S Summer 2012

Environmental Health & Safety

SafetyMatters

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New Trainings Linked to Protocol Approval by Christopher Aston

As research advances are made, new procedures to protect laboratory personnel from potential hazards are needed. Accordingly, EH&S is pleased to offer two new online training courses through Rascal on Viral Vector Biosafety (TC1150) and Recombinant DNA (TC0508). These courses will be associated with the relevant Rascal Appendices: Recombinant DNA (Appendix A), and Viral Vector Biosafety (Appendix B) and will be mandatory for all investigators and their staff submitting new or renewal protocols that employ recombinant DNA or viral vectors.

Researchers properly trained on these and other safety procedures are better prepared to prevent an incident in the workplace through an understanding of the need to follow standard operating procedures, and thus learn how to respond quickly if presented with a dangerous situation. An effective safety training program can reduce the number of injuries and deaths, illnesses, workers' compensation claims, and missed time from work. Safety training is *the* key element in the prevention of work-related injuries.

Summer in the City by Maytal Rand

Summer heat typically evokes thoughts of shorts and sandals. And while summer attire is fine for the beach, park or walking around campus, it is not appropriate in a laboratory setting. In following a commonsense approach to appropriate laboratory attire, Columbia University policy specifies that all exposed skin, as well as the eyes, must be protected while working with or in the proximity of hazardous materials – including chemicals (solid, liquid or gas), potentially infectious materials or radioactive materials – that could conceivably result in an accidental exposure. Protection is accomplished through a combination of personal attire and personal protective equipment (PPE), such as closed-toe shoes, long pants, lab coat, safety glasses/goggles and/or face shield, coupled with engineering controls, such as a chemical fume hood or biological safety cabinet.

Personal comfort plays a significant role in the attire we choose, but when it comes to work with or around hazardous materials, personal comfort is trumped by personal safety. That said, your attire of choice can still be worn to and from work. Simply bring or leave an extra pair of closed-toe shoes and long pants at work for you to change into each day while in the laboratory. With a little advance planning you can be ready to enjoy all that summer has to offer!

ENVIRONMENTAL HEALTH & SAFETY

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Are You Shipshape? by Christopher Aston

Did you know that dry ice, as well as certain specimens and biological materials, when offered for shipment, are classified as dangerous goods/hazardous materials? Training and certification are required for all individuals involved in any aspect of shipping hazardous materials/ dangerous goods, including packaging of these materials, labeling of packages, or preparing/ signing shipping paperwork. Columbia University offers this training for shippers of dry ice and certain biological materials; please note that shippers of chemicals and other hazardous materials must contact EH&S for assistance. The training, which must be renewed every 2 years, is available via Rascal.

In addition to training, compliance with shipping regulations requires that copies of shipping documents be retained by the shipper for two years and that they be readily accessible to Federal Aviation Administration (FAA) inspectors and EH&S staff. In fact, failure to attend training and failure to maintain shipping documents are two of the most frequently cited violations by the FAA, and these violations can carry steep penalties.

In order to optimize Columbia's shipping program, EH&S is requesting feedback from any investigators who have been trained on this topic. A short online survey, which you may have already received by email, is available: http://tinyurl.com/shipsurvey.

Please help us to understand your needs. EH&S is available to help classify your shipment, complete shipper's declaration forms, commercial invoices and FedEx airway bills, select and review your packaging, advise on dry ice quantities and assist with international shipping and permitting. Request help with your next shipment by completing our "Intent to Ship Hazardous Materials Form"
https://cumc.co1.qualtrics.com/jfe/form/SV_6nBRivDZ3CfTt6B

The FDNY Laboratory Unit performs regular, weekly inspections in all chemical laboratories across Columbia University's New York City campuses, and has the authority to issue Violation Orders or Notices of Violation for non-compliance with code requirements.

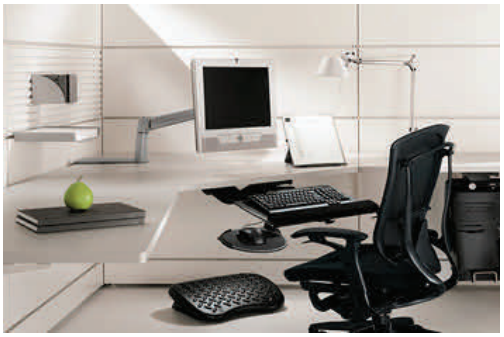
All laboratories in NYC require a FDNY permit to operate; these permits are renewed each year after the FDNY annual inspection, and will be withheld until all open violations have been corrected.

Top violations

- **Certificate of Fitness – (C-14)**
- **Chemical Stored Improperly**
- **Extension Cord Misuse**

Ergonomic Computer Workshop by Terrence Jaimungal

EH&S is enhancing its office ergonomics program and transitioning to a population-based program that will allow us to reach a broader audience at Columbia University. In partnership with the Office of Work Life, EH&S has already launched the new Ergonomic Workshop Program. The Workshop will provide helpful tips and techniques about how to set up your workstation so that you can perform your job functions in a manner that will mitigate ergonomic risk factors and allow attendees to test various workstation arrangements to feel the differences between ergonomically fit and unfit workstation designs.



Information about ergonomics, as well as a schedule for the Ergonomic Workshops, is available http://www.ehs.columbia.edu/Ergonomics.html .

For Lab Fire Safety Prevention tips, check out: FDN(wh)Y Me @ http://www.ehs.columbia.edu/FDNYMe.html

The Simple Rule of 5 by Rebecca Lonergan and Lauren Kelly

In April, EH&S with the assistance of a third-party, independent auditor, performed a University-wide safety and compliance audit of research laboratories. Under the chemical waste management portion of the audit, the audit team was tasked with evaluating how well laboratories are adhering to the University's "5 Ls of Hazardous Waste Management," a simple tool developed by EH&S to ensure compliance with complex EPA regulations regarding proper collection, storage and management of hazardous waste. The 5 L's:

CoLLect all of your hazardous chemical wastes and submit an online chemical pick-up request form for proper disposal. ***DO NOT*** dispose of hazardous waste inappropriately by neutralization, treatment, evaporation, or dilution.

Label the container as soon as the first drop of material enters the waste collection container, include all of the components and their percentage. ***DO NOT*** use chemical formulae, abbreviations, symbols or generic names (ex: "solvent", "halogenated", etc.) on Hazardous Waste Labels.

Lids must be closed *at all times*, except when actively adding waste. Use a closeable Lid that will prevent the hazardous waste from spilling. Ensure process wastes, like HPLCs, have a tight fitting cap. ***DO NOT*** leave a funnel in a hazardous waste container.

Locate hazardous waste containers at or near the point of the Hazardous Waste's generation. ***DO NOT*** move hazardous waste containers outside of the room in which the waste was generated. If the lab has a room within it, waste may not be moved to or from this room.

Leaks must be reported to EH&S immediately. Inspect Satellite Accumulation Areas *weekly* for Leaks. ***DO NOT*** allow Leaking containers to remain in Satellite Accumulation Areas.

Overall, the University performed very well during the audit. Laboratories that did not fare as well have been or will be visited by EH&S to review the 5L's (as well as other items identified during the audit). Don't forget: Unauthorized drain disposal of unwanted chemicals is strictly forbidden.

On-line Chemical Waste Pick-up Request Form.

EH&S Website: http://www.ehs.columbia.edu

Hidden Heavy Metal Waste Hazards by Courtney Drayer

Laboratories may generate some uncommon metal waste streams that may be overlooked due to their inconspicuous nature. Columbia University's hazardous waste disposal policy does not set a threshold limit for the collection of hazardous waste, including scrap metals and hazardous salts (e.g., potassium dichromate). Please take care to collect metal shavings from machine shops, lead, silver and brass soldering scraps, and any metals fused to glass (e.g.; chromates, silvers, copper) for high temperature gaseous oxidation and reduction reactions. Keeping these metals out of municipal landfills will keep them out landfill leachate and ultimately, our water supply. These wastes can be disposed of through your campus EH&S Department via the on-line Chemical Waste Pick-up Request Form.

Who You Gonna Call for Emergencies...Public Safety by John LaPerche

It is important to know to call Public Safety for all emergencies that occur in laboratories, 24 hours a day, 7 days a week. The accuracy and detail of the information provided to Public Safety can save lives. Remember to provide them with as much information as possible to help them properly respond to the emergency. Provide the following:

Who you are;
- Name, uni, phone number you can be reached at

What the emergency is;
- Fire, chemical spill, medical emergency

Where the emergency is;
- Building, Floor, Room

Severity of the situation;
- Size and type of chemical spill
- Number of people injured
- Need for medical, fire or police assistance

Contacting Public Safety during a lab emergency helps ensure first responders arrive to the proper building without delay. Columbia is a large, complex place, and first responders (FDNY, NYPD, EMS) may not be familiar with the campus, resulting in delays. Notifying Public Safety will allow them to meet arriving units in the street and guide them to the location of the emergency.

If the emergency is a fire or smoke condition, immediately pull the nearest fire alarm located by the exit stairs and once you are in a safe location, call Public Safety and provide them with the information above. For other emergencies such as chemical spills, laboratory accidents or injuries during normal working hours, a call to **Environmental Health and Safety** must also be made. Our trained staff in chemical, biological, radioactive, and hazardous materials will respond immediately to assist as necessary. The Public Safety Office also has emergency contact phone numbers for EH&S staff for off-hour emergencies in laboratories.

EH&S – Morningside – 212-854-8749	Public Safety Morningside – 212-854-5555
EH&S – Medical Center – 212-305-6780	Public Safety Medical Center – 212-305-7979
Public Safety NYSPI – 212-543-5555	NYPH Security – 212-305-2222

ChemTracker System Integration with Laboratories by Christina Clark

Did you know that ChemTracker can be used at your Columbia University lab to enhance both safety and compliance? ChemTracker offers specific functions including inventory management by container, location, owner and department; it can also help labs locate expired chemicals, identify chemical surplus and provide information about chemical hazards. Labs can access fire code classifications, links to Safety Data Sheets and to the National Institute of Health online database. With this software labs have the ability to print inventory reports by site, regulation and facility. Students, researchers, and Principal Investigators can access the highest quality, lab specific information, while successfully tracking all incoming and outgoing materials. Used to its fullest, ChemTracker provides labs with "centralized, safe and secure off site data storage with easy, distributed access via web browser," greatly streamlining lab management and compliance.

ChemTracker is accessible via the EH&S website – http://www.ehs.columbia.edu/cms.html

The Air We Breathe by Terrence Jaimungal

Elimination of personal exposure through engineering controls (e.g., fume hoods, biological safety cabinets) and safe work practices is the best protection from airborne hazards. The use of respirators, like other items of personal protective equipment (PPE) is considered a "last line of defense" and should be relied upon only when engineering and other control methods are not effective or feasible.

A respirator is a device designed to protect the wearer from inhaling harmful dusts, fumes, vapors, microorganisms, or other airborne materials. There is a wide range of respirator types and sizes used for various purposes, but two main categories are: the *air-purifying respirator*, including the N-95 mask, which forces contaminated air through a filtering element, and the *air-supplied respirator*, in which an alternate supply of fresh air is delivered to the wearer.

Wearing a respirator in the workplace is not as simple as buying one and putting it on. In fact, there is a very specific protocol dictated by the Occupational Safety and Health Administration (OSHA) that must be followed in order to wear a respirator at work. The purpose of the protocol is to ensure the use of the respirator is necessary, appropriate for the anticipated hazards and that the additional burden on the respiratory system caused by respirator use is appropriate considering the user's health status.

To determine respirator necessity, EH&S must conduct a hazard evaluation/exposure assessment of the work activity. If the assessment indicates that that the level of airborne contaminants exceed permissible levels and cannot be reduced by a change in the activity or via engineering controls, EH&S will recommend respirator use. EH&S will then assist in selecting the respirator that is appropriate for the airborne hazard(s). This step is critical as not all respirators are designed to filter out all contaminants. Selection of the wrong respirator or filter is one of the most common errors made by people who voluntarily choose to wear a respirator. Selection must be made by a trained professional who understands the concentration of the airborne contaminant(s), the type of respirator filter that will effectively filter the contaminant(s) and the concentration of contaminant(s) that the respirator is capable of filtering. Next, before a respirator can be worn, the user must be evaluated by a medical professional and receive medical clearance to wear a respirator. Once medical clearance is granted, EH&S will need to perform a fit-test of the respirator to ensure the respirator fits properly and will not allow contaminants to leak in through gaps between the face and respirator seal. This process will require the user to be clean shaven so there is no hair between the respirator's seal and user's face. Lastly, EH&S will train the user on proper use and care of the respirator. Once the process is complete, the user will be enrolled in the University's Respiratory Protection Program, which will allow EH&S to track the user and annually validate the continued need for the respirator, repeating the above process.

If you are wearing a "mask" at work, the first thing to do is determine if the "mask" is a respirator or a simple dust mask or surgical mask (note: N95 respirators look very similar to common dust masks, but because they are technically air purifying respirators, the user is subject to the Respiratory Protection Program). If you determine that what you are wearing is a respirator, contact EH&S immediately and we will help determine the best approach to keep you protected from airborne contaminants. DO NOT put yourself at risk by taking it upon yourself to select and use a respirator. To learn more about respirators and their differences, please visit
http://www.youtube.com/watch?v=ovSLAuY8ib8&lr=1&uid=AiRVU84Si6YHoe8LCn54WA



OSHA Publishes New Hazard Communication Standard by Muhammad Akram

The Occupational Safety and Health Administration (OSHA) has finally revised the Hazard Communication Standard (HCS), 29 CFR 1910.1200, to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The revised standard will improve the quality and consistency of hazard information, making it easier for employers to communicate with employees regarding chemical hazards by providing easily understandable information on appropriate handling and safe use of hazardous chemicals. Major changes to the Hazard Communication Standard include:

- **Hazard classification**: Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.
- **Labels**: Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets (SDS):** Will replace current MSDS with a specified 16-section format.
- **Information and training:** Employers are required to train workers by December 1, 2013 on the new labels' elements and safety data sheet format to facilitate recognition and understanding.

To comply with OSHA's training requirement, EH&S has already begun incorporating these changes into the Laboratory Safety and Chemical Hygiene training program, which will introduce new employees to these changes as well as to employees attending during biannual refresher training. Laboratories should start replacing MSDS with SDS as manufacturers make them available and ensure that all their researchers have received required training. For more information please contact EH&S or visit: http://www.osha.gov/as/opa/facts-hcs-ghs.html

Radioactive Waste Detection by Geno Silvestrini

To help identify radioactive materials that may have inadvertently contaminated solid waste, the University utilizes radiation monitors that have been installed in key areas where solid waste handling occurs. The monitors are able to detect solid waste that contains radiation at higher than naturally occurring levels, i.e. background. The monitors are programmed to electronically notify Public Safety and EH&S upon alarm activation. Protocol requires that any bag or container of solid waste that activates the monitor's alarm be isolated and secured for investigation by EH&S personnel. EH&S will attempt to identify the isotope in order to establish its half-life to determine further action. Short-lived isotopes are held in secure storage to allow for the waste to decay to a level indistinguishable from background; a common practice known as decay-in-storage. Long half-life isotopes would be managed for off-site disposal as radioactive waste.

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Do you have a suggestion for a future *SafetyMatters* article? Do you have a comment on something you just read? Please share it with us at newsfeedback@columbia.edu