

Environmental Health & Safety

Safety Matters

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Be Prepared by Lauren Kelly

Although EH&S would never define a spill as “good”, we will say that how an individual responds in the critical moments immediately following a spill can prevent a spill from being really bad. The importance of being prepared for the types of emergencies that can happen cannot be emphasized enough. There have been several spills over the past few months which could have evolved into significant incidents had lab personnel not taken immediate action. Whether one's preparedness knowledge has developed from attendance at [Laboratory Safety training](#), regular review of the EH&S website, or the Emergency Response and Waste Disposal Guide (*aka* “EH&S Wall Guide”, which is hung in your lab near the door or phone) or a combination of sources, what is most important is that personnel become thoroughly familiar with emergency preparedness and be able to act quickly and appropriately when faced with an emergency.

One of the most critical decision points in an emergency is who to contact and when. For any incident involving biological, chemical or radioactive materials, EH&S should be at the top of your call list, along with Public Safety, and that communication should be immediate. Communication should be done verbally, not via email, and if you do not reach someone immediately, you should always proceed to the next name/number on your call list. Information regarding any injury should be the first priority so emergency medical services can be dispatched if needed, along with the location, nature of the incident (for example, fire, spill, bodily contamination), the substance involved and a telephone number where you can be reached. Remember, it is important that someone with knowledge of the incident remain at a safe location on scene to provide further information to first responders.

Your personal safety must not be left chance. Take charge of your safety and be prepared!

Laser hazards and precautions by Terrence Jaimungal

Laser is an acronym for Light Amplified by Stimulated Emission of Radiation. A Laser is a device that creates and amplifies a narrow, intense beam of coherent light. Lasers range in size from semiconductor to solid-state and gas lasers. There are many applications of lasers in basic science research, surgery and diagnostic techniques, telecommunications, entertainment, industrial applications and military and law enforcement.

Laser use can create intense concentrations of heat, ultraviolet, infrared, and reflected light radiation. Unprotected laser exposure may result in an eye injury including retinal burns, cataracts, and permanent blindness. Appropriate eye protection must be used at all times. Many laboratories at Columbia University have lasers which are used routinely for research. EH&S has developed a [Laser Safety Program](#) which involves registration of newly purchased or modified lasers, safe use guidelines, and training. All laboratory personnel using lasers at the University are required to attend training live or via RASCAL <http://www.ehs.columbia.edu/Training.html>



OSHA Modifies the Hazard Communication Standard

by Jim Kaznosky

The Occupational Safety and Health Administration (OSHA) modified the Hazard Communication Standard to align with the Globally Harmonized System (GHS) of Classification and Labeling of Chemicals. The Hazard Communication Standard serves as the foundation for chemical safety programs. OSHA believes the change will introduce more consistency in chemical classification and labeling by standardizing the information on chemical labels and on accompanying safety documents, regardless of the chemical's country of manufacture or distribution. This is expected to enhance worker comprehension of chemical hazards and result in greater hazard awareness, in turn leading to safer handling and use of chemicals.

The impact of the new GHS on Columbia's operations is not drastic, in that the general approach to chemical safety and hygiene is not changing. What we will begin to see changing are manufacturer's labels, which will now include standardized hazard communication elements specifying each hazard, accompanied by globally harmonized pictograms and signal words to effectively communicate the hazard. Also, the familiar Material Safety Data Sheet, or, "MSDS" will be renamed, simply, "Safety Data Sheet" ("SDS"), and will now be in a standardized format with 16 distinct sections. What OSHA is not changing is the requirement that a written/electronic chemical inventory be prepared by each laboratory or Facilities shop. Where an electronic chemical inventory management system for laboratory chemicals is utilized (i.e., ChemTracker at Morningside and Lamont-Doherty), this inventory requirement is essentially satisfied as long as all chemicals are included in the inventory and lab personnel are familiar with how to access the inventory and the corresponding SDSs.

Manufacturers have three years to migrate to SDS. All employees handling chemicals in the workplace will be required to be trained within 2 years to ensure recognition and understanding of the new labels and SDS. To comply with OSHA's training requirement, Columbia will begin incorporating these changes into the Laboratory Safety and Chemical Hygiene training program in late 2011, which will introduce new employees to these changes as well as to provide employees attending during biannual refresher training.

For more information please visit...<http://www.osha.gov/as/opa/facts-hcs-ghs.html>.

Regulated Medical Waste 101 by Keith Bottum

Are you choosing the correct disposal method for your lab's waste? When it comes to Regulated Medical Waste (RMW) in particular - including "red bag" and "sharps" waste - a few seconds of thoughtful decision time can go a long way toward safety and savings. Making an incorrect decision, whether unwittingly or intentionally, can create unnecessary and serious exposure hazards for both lab staff and individuals "downstream" who handle lab waste. Additionally, overuse of RMW waste containers is expensive. Did you know that RMW waste costs the University approximately 4 times, pound for pound, what it costs to dispose of municipal trash? The implications of such may not seem significant on an individual lab basis, but as a whole, with the University disposing of nearly 500,000 pounds of RMW in 2010, these are major expenditures.

Take a few moments to reacquaint your lab with RMW handling practices by reviewing the RMW section of University's Health & Safety Manual...<http://www.ehs.columbia.edu/Policy2.12.html>

OCTOBER IS
FIRE PREVENTION MONTH,
REMEMBER TO CHANGE
THE BATTERIES IN
YOUR SMOKE DETECTOR
WHEN YOU CHANGE
YOUR CLOCK WITH
DAYLIGHT SAVING TIME.
PLEASE REVIEW YOUR FIRE
SAFETY PLANS AT HOME
AS WELL AS AT WORK.
FOR MORE FIRE SAFETY
INFORMATION VISIT
THE FOLLOWING
FDNY WEBSITE: [HTTP://
WWW.NYC.GOV/HTML/
FDNY/HTML/SAFETY/
FIRE_SAFETY_DOWNLOADS.
SHTML](http://www.nyc.gov/html/fdny/html/safety/fire_safety_downloads.shtml)

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

Chemical Movement About Campus by Greg Kwolek

When was the last time you gave thought to how your chemicals are moved about campus? If you work in a lab at CUMC, Nevis or Lamont Doherty, the vast majority of chemicals are delivered directly to your lab. However, if you work at Morningside, someone from your lab typically retrieves chemicals from one of two store rooms on campus, which means the decisions made prior to and during transport are critical

Take, for instance, a recent incident involving a very large, very odorous spill of 12 liters of mixed flammable liquids near the Pupin loading dock. The spill, which sent one person to seek medical attention due to bodily exposure, closed the loading dock for an entire afternoon, and required over 50 EH&S person-hours to fully remediate, could have been prevented if one or more contributing factors had been more carefully thought out in advance. The contributing factors included far too many materials (chemicals plus dry lab supplies) being transported on a cart not designed for moving chemicals and included a route with a sloping floor. Had the employee decided to make 2 trips, or use a cart with raised sides or placed the chemical containers inside of a secondary container/tote or used an alternate route, which may not have been as direct but did not include a sloped floor, the incident would likely have been averted.

As with all incidents, it is important to put the lessons learned into action to prevent recurrence. To help establish “safer” approaches to moving chemicals around the Morningside campus, EH&S, in cooperation with BioStores and ChemStores, is creating an initiative to loan rolling carts and bottle carriers to individuals making chemical pickups at the store rooms. If you arrive at a store room and don’t have a cart or bottle carrier, you won’t be turned away. Instead, you will be able to borrow a cart or bottle carrier to move your chemicals safely back to your laboratories. All that is asked is that you return the equipment in a timely fashion so that others may take advantage.

Quick Tips:

- ◆ Transporting one bottle? Use a bottle carrier; they offer protection from breakage and an easier to grip handle.
- ◆ Moving a few bottles? Use a sturdy cart with a low center of gravity and raised sides of at least a few inches; the raised sides can keep the bottles from sliding off the cart and serve as secondary containment in the event of an unfortunate incident!
- ◆ Familiarize yourself with the route you’ll be taking; take the path of least resistance! Stay indoors, avoid ramps when possible, and use freight elevators instead of passenger elevators, if equipped.
- ◆ Avoid buying in bulk, order only what the lab will use in the near term. Smaller quantities are safer and easier to transport, and store.

For additional guidance, including the University policy, equipment purchasing advice and other information, please visit ... <http://ehs.columbia.edu/chemtrans.html>

Changes

Maria Taveras, EH&S Radiation Dosimetry Coordinator, has completed her bachelor’s degree in nursing and will be moving over to the clinical scene. Maria’s last day was August 16 – four years to the day that she joined EH&S. We are sorry to see her leave but we wish her much success in her new vocation. Assuming the Radiation Dosimetry Coordinator duties is **Cade Register**. Cade joins EH&S from Louisiana State University in Baton Rouge where he worked as a radiation safety specialist in LSU’s health physics program. Cade may be reached for all personal dosimetry needs @ 212.305-0303 or via email at badges@columbia.edu

FALL
IS THE TIME TO
GET YOUR
SEASONAL
INFLUENZA
VACCINE.
KNOCK OUT THE
FLU BEFORE IT
KNOCKS OUT YOU!

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

For Your Records by Chris Pettinato

A University researcher was recently visited by two Special Agents from the US Drug Enforcement Administration (DEA). What began as a routine, unannounced visit to verify the address listed on the researcher's registration, turned into a much more thorough, and time-consuming effort. As with all inspections, this one began with the inspector requesting to review the researcher's controlled substances records; it was here where the inspection took an abrupt turn due to the researcher's lack of awareness of the University's Policy for the Acquisition, Use and Disposal of Controlled Substances (<http://www.ehs.columbia.edu/ControlledSubstances.html>).

Following the visit, the lab contacted EH&S for assistance (an aside, if you are visited by an inspector, please contact EH&S immediately). EH&S was informed that the DEA has some difficulty interpreting the lab's records, which were being kept as entries into lab notebooks, as opposed to specific, stand-alone forms, as is typical. EH&S directed the lab to the Policy (website) which provides recordkeeping templates for researchers to use in documenting their receipt, use and biennial inventory for controlled substances, as required by DEA and New York State Department of Health Bureau of Narcotics Enforcement laws and regulations. The Policy is also supported by numerous Appendices, Resources and Reference Documents, including the recordkeeping form templates, as well as a Rascal-based training program which must be completed by all individuals involved in research (non-human) with controlled substances. Of note, the laboratory staff are now trained and are utilizing the template recordkeeping forms and we trust the DEA is satisfied with the lab's efforts.

The Policy and the Appendices, Resources and Reference Documents, including the recordkeeping forms, should be reviewed regularly as modifications, based on experience through visits from NYSDOH and DEA occur. The Policy and Appendices, Resources and Reference Documents are accessible at <http://www.ehs.columbia.edu/ControlledSubstances.html>.

Is your lab moving? We are here to help! by Tasha Hightower

*C*olumbia University is a dynamic and ever-evolving institution; at any given time a number of Researchers/PIs may be moving in and out of assigned lab space. Prior to vacating a Columbia University laboratory, whether it be for a renovation, relocation, or departure from the institution, certain procedures ([Procedures for Vacating a Laboratory](#)) must be followed to ensure the safety of all parties involved in the move, as well as the safe and efficient turnover of the space. The goal is to ensure that all staff members, outside vendors and the environment are protected and not unnecessarily exposed to biological, chemical, or radioactive material. The Vacating Procedures and Clearance process also ensures that all applicable regulations are adhered to.

During vacating, EH&S and Facilities work together with the lab to ensure a smooth transition process. Time is of the essence, so once a laboratory knows they are moving, please notify EH&S immediately so we can assist you through the process. Lab space must never be abandoned, nor reoccupied, and construction cannot commence until the lab has been inspected and "Cleared" by EH&S. In spaces where the PI is permitted by the University to use radioactive material, the lab is also required to obtain Clearance from the Radiation Safety Program. It is the responsibility of the PI to leave laboratories in a state suitable for re-occupancy or renovation.

Please refer to the Laboratory Safety Manual (<http://www.ehs.columbia.edu/Policy1.10.html>) for more information on the University's lab vacating procedures or contact your Research Safety Specialist (<http://www.ehs.columbia.edu/LabAssignment.html>) for assistance and guidance.

Machine Shop Safety Update by Muhammad Akram

Since the tragic incident at Yale University in which a student lost her life while working alone with dangerous equipment, EH&S has been working closely with Shop Supervisors from various academic departments to reinforce University-wide machine shop safety practices. The Shop Safety Work Group, established to complete this task, has formulated a broad policy that requires machine shop users to follow basic safety rules, and to complete both general shop safety and machine-specific trainings prior to using any equipment. Shop Supervisors will implement this program and ensure that each user is provided appropriate training before the use of any equipment. Access to an academic shop will be denied without completion of both trainings, or if it is found that a user has violated safety rules.

The general shop safety training is available via Rascal (<https://www.rascal.columbia.edu>) and is listed as Course TC0600, "Shop Safety Training". The presentation covers basic safety principles that must be followed while working in any shop or laboratory containing heavy machinery, information on how to use various tools safely, and what to do in case of an emergency. Following successful completion, machine specific training will be provided by the Shop Supervisor to cover specific operating procedures and safety controls for machinery that may be used.

For more information, please visit the Shop Safety web page at <http://ehs.columbia.edu/ShopSafety.html>.

You're doing what? With what? by Brian Anderson

Training is a fundamental element of a safe workplace, providing individuals the tools to identify hazards and develop proper work practices, as well as meeting regulatory requirements. Before you or a new employee starts laboratory work, ensure that you or they are properly trained. Several tools are available to help determine which training courses are needed for your research.

The Research Compliance Training Finder -

<http://www.columbia.edu/cu/compliance/docs/training/trainingfinder.html>

EH&S's Training Requirement Matrix -

<http://www.ehs.columbia.edu/DeterminingYourSafetyTrainingRequirements.pdf>.

Both allow users to determine what training courses are needed based on their job function or the materials used in their lab. Once the required courses are identified, directions on how to take the initial training and frequency requirements for when refresher trainings must be completed are also displayed.

Job Function or Activity	Required Safety Training	Initial Training Method	Refresher Training Method	Training Frequency
Working in a "laboratory" or with chemicals (Examples: PIs, research workers, post-docs, students)	Laboratory Safety & Hazardous Waste Management Training <i>Select one of the following courses based on campus affiliation: TC0053, TC0021 TC0046, or TC0054</i>	"Live" initial (RASCAL for pre-approved exceptions)	"Live" or RASCAL (individual's preference)	Initial training w/in 30 days of appointment; refresher every 2 years or sooner if determined by EH&S.

In the example above from the Training Finder & Training Matrix, after inputting various job functions and chemical-specific information, the individual is directed to attend a live session for their initial Laboratory Safety & Hazardous Waste Management Training, and to complete either a live or computer-based refresher training every two years. Please also be mindful that additional task or procedure-specific hands-on training must be provided by a PI or lab supervisor. For live training monthly schedules or additional information on safety training, please visit <http://www.ehs.columbia.edu/Training.html>.

Radiation and the Pregnant Worker by William O'Connell

There are over two million workers in the United States who are occupationally exposed to ionizing radiation. Since many of these workers are women of child-bearing age, it is not a rare occurrence for a radiation worker to become pregnant. Common sense dictates the dose to the unborn child should be maintained as low as reasonably achievable (ALARA), but it does not necessarily mean the expectant mother must be prohibited from working in an environment where occupational exposure to radiation is possible.

By statute, all U.S. workers exposed to ionizing radiation are limited to a maximum annual radiation dose to the whole body of 5 rem (50 mSv.) Although any exposure to ionizing radiation can theoretically cause undesirable biological effects, the risk of an adverse health outcome from an annual dose of 5 rem is very low. In recognition of the heightened sensitivity of the unborn child to radiation effects, however, regulatory agencies have reduced the maximum allowable in-utero dose to a pregnant worker to 0.5 rem during the gestation period – and no more than 0.05 rem in any month of the pregnancy.

Some may ask “Why don’t we just prohibit the pregnant individual from working with radiation?” The answer to that question is surprising. The United States Supreme Court has ruled (in *United Automobile Workers International Union v. Johnson Controls, Inc.*, 1991) that “Decisions about the welfare of future children must be left to the parents who conceive, bear, support, and raise them rather than to the employers who hire those parents.” The Supreme Court also ruled that your employer may not restrict you from a specific job “because of concerns about the next generation.”

The result of the *Johnson Controls* ruling and the heightened protection provided by law is only available for workers who *voluntarily* declare their pregnancy in writing ([Declaration of Pregnancy](#)). Such a declaration is the most prudent course of action and provides the maximum protection for your unborn child. Interested workers should set up a confidential consultation with a member of the EHS staff. We will review your occupational radiation exposure history and determine if your job responsibilities put you at risk for a high accidental radiation dose.

For more information, visit our website or call the EH&S Radiation Safety Program at 212-305-0303.

Recycling Laboratory Solvents at Morningside by The Environmental Safety Team

As part of the University’s commitment to Go Green, EH&S has expanded the solvent recovery program with the addition of a second solvent recycler in the Shapiro/CEPSR building. The new machine recovers waste solvents from laboratories in Fairchild, Engineering Terrace, Mudd, Shapiro/CEPSR, Pupin and Northwest Corner Buildings. The program began as a joint venture with the Chemistry Department in 2001, aimed at recycling waste acetone for glass washing purposes. Since then, the program has expanded to include methanol and ethanol and now includes laboratories across several departments campus-wide with upwards of 1,000 gallons of used solvents recycled annually.

As a result of the program’s continued success, the University is saving tens of thousands of dollars on solvent purchases and waste disposal, and has reduced its environmental footprint by diverting solvent waste from traditional incineration disposal methods. Solvent recycling also reduces energy and fuel usage from manufacturing and shipping of new product, as well as pick-up and transport of waste.

It doesn't have to stop there! EH&S is always actively pursuing recycling options for additional commonly used lab solvents, such as hexane and ethyl acetate. If your lab would like to participate in the program visit our website at: <http://ehs.columbia.edu/RecyclingLab.html> or give us a call; we look forward to working with **YOU** to expand our recycling program!

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