

Environmental Health & Safety

SafetyMatters

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National Biosafety Stewardship Initiative

by Aderemi Dosunmu, Biological Safety Officer

Recent troubling events including the discovery of 50 year old smallpox vials at the National Institutes of Health (NIH), and additional infectious pathogens and toxins found improperly stored in other Federal facilities, have elicited a flurry of news stories and calls for changes in U.S. biosafety oversight programs. This has prompted the NIH to create the National Biosafety Stewardship Initiative. Columbia University is joining other laboratories around the country in promoting biosafety stewardship as well as enhancement of biosecurity in research.



- o REVIEW: Re-examine your laboratory protocols, policies and procedures; ensure they accurately reflect the best safety practices when performing work
- o TRAIN: Ensure that all of your staff are trained in safety practices.
- o INVENTORY: Perform a thorough review of your laboratory's cold storage; inventory your stock; dispose of unknown and unneeded infectious material.

This is an opportunity for researchers to REVIEW, TRAIN, and INVENTORY!

EH&S requests that stewardship activities be concluded by December 31, 2014. Field visits from the Biosafety Team will take place throughout the winter to offer assistance and promote completion.

Additional information, including a fillable attestation form is available online: <http://www.ehs.columbia.edu/BioStewardship.html>. If assistance is needed, please consult EH&S at biosafety@columbia.edu. Enhanced stewardship protects not only you and your colleagues, but also the public at large. Your laboratory may even free up valuable freezer space!

Train the Trainer

by Christina Clark, Research Safety Specialist and Shane Son, Hazardous Materials Specialist

EH&S has a longstanding partnership with the School of the Arts (SoA), focusing on safety and environmental performance (no pun intended) in the myriad Arts operations, from painting and print making, to film developing and set design. Recently, EH&S and SoA joined together in a train-the-trainer program to prepare SoA staff to train SoA students in the essential components of safety and environmental management, plus provide SoA staff with the tools necessary to measure performance to ensure the program achieves its benchmarks.

EH&S greatly appreciates the collaboration from the SoA team and we look forward to growing this program, and hopefully expanding it to other University operations.



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When working in the laboratory, eating, drinking or applying cosmetics is prohibited.

Proper work attire (long pants, closed toe shoes) and PPE (e.g., laboratory coat, gloves and eye protection) must be worn when working in the laboratory.

[On-line
Chemical Waste
Pick-up
Request Form
http://
vesta.cumc.columbia.edu/
ehs/wastepickup](http://ehs.columbia.edu/ehs/wastepickup)

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)

Electrical Extension Cords by Harry J. Oster, Senior Fire Safety Specialist

Extension cords are safe for use, when used properly, and when listed/approved by Underwriters Laboratories (look for the “UL” mark) or Intertek (“ETL” logo). Extension cords are intended for use on a temporary basis only, and are designed for use with computers, certain small laboratory equipment, home workshop tools and portable appliances. Electrical extension cords are to be directly connected to a permanently installed electrical outlet only, not through a power strip or other non-permanent receptacle, and they must be polarized or grounded.

*Electrical extension cords are **not** to be:*

- Substituted for permanent wiring;
- Interconnected (daisy chained) with another extension cord or power strip;
- Permanently secured to any part of a building or stationary object;
- Installed through walls, windows, ceilings, or across walking areas of floors;
- Subjected to environmental or physical damage, or used on high-power loads such space heaters, microwave ovens or refrigerators.



The improper use of electrical extension cords has been cited by the Fire Department of New York (FDNY) during weekly laboratory inspections. If you have been using extension cords in place of permanent wiring please contact EH&S for an assessment of your laboratory’s wiring set-up, or place a work order with Facilities to install additional outlets in your laboratory or office area.

NOTE: Cords should not be used in a coiled position, as this can create a build-up of heat and can lead to a fire.

Sustainability by Keith Bottum, Hazardous Materials Specialist

The most successful and sustainable programs make operational, financial and environmental sense. This is why the University’s solvent recycling initiative continues to thrive almost 15 years after its inception in the Departments of Pathology and Dermatopathology. With the subsequent establishment of solvent recycling at the Morningside campus in 2008, the University continues to recycle and reuse thousands of gallons of waste xylene, ethanol and acetone annually, which diverts these wastes from incineration, saves money on purchase and disposal, and improves operational efficiency. Many solvents can be recycled multiple times, saving valuable research funds and maximizing environmental gains.

Solvent recycling is the cornerstone of the University’s sustainable laboratory initiative. EH&S hopes more laboratories will take advantage of the many benefits of solvent recycling. CBG Biotech, the University’s supplier of solvent recycling equipment, now offers a compact, bench-top recycling system to allow laboratories with smaller quantities of waste solvents to participate in the program, typically providing a very attractive return on investment. Any laboratory interested in turning solvent waste (e.g., acetone, hexane, xylene, ethanol and ethyl acetate) into re-useable product - and saving time, money and the environment in the process - should contact a Hazardous Materials Specialist at hazmat@columbia.edu.

Improving Your Ergonomic Health Starts with You!

by Yuseph Sleem, University Industrial Hygienist

The goal of ergonomics is to make work more comfortable and to improve both health and productivity. To meet these goals, the capabilities and limitations of personnel and their tools, equipment, workstations and furniture are considered in conjunction with the work and tasks being performed.

Individuals working from their desks or a computer workstation for the majority of their workday may experience discomfort ranging from back pain, to numbness in the wrist or fingers, to eye strain and headaches. These symptoms often manifest after working in a static position for prolonged periods. Discomfort can be more pronounced in individuals who tend to work in an awkward position, who use a great deal of force during specific duties, or who generally have a poorly configured workstation.

Improving your workstation ergonomics starts with you; the key is to take the necessary steps to make your workstation more ergonomically suitable to your specific needs. There are generally four main points of contact for proper ergonomic configuration of computer workstations, as follows (see illustration):

1. Viewing Height: Top of the monitor should be aligned with user's eye level to avoid constant bending of head and neck.
2. Back Position: The chair seat should be adjusted so that the user is able to maintain the neutral S-shaped curvature of the back, and to avoid sitting in an awkward position that may cause strain.
3. Arm Position: The keyboard and mouse should be adjacent and at the level of the user's elbows. Wrists should only be bent slightly, and kept in a neutral position.
4. Leg Position: The user's thighs should be parallel to the ground when seated, with the feet flat on the ground or resting on a foot rest.



Spill Preparedness and Response by Chris Pettinato, Executive Director

When handling biological, chemical and radioactive materials, it is important to be both careful in your handling techniques to avoid spills and be well-prepared in the event a spill does occur. When it comes to spill preparedness and response, knowing your capabilities and limitations is critical, as is timely notification of a spill. EH&S provides spill guidance during Laboratory Safety training and provides spill response instruction on our website @ <http://www.ehs.columbia.edu/chemspill.html>. Do not wait until you have a spill to become familiar with spill procedures.

It is essential to become knowledgeable about the hazards of a material BEFORE attempting to handle it. Review the Safety Data Sheet (SDS), review Standard Operating Procedures (SOPs) and inquire with experienced laboratory mates, or EH&S, if questions remain. Know where your spill response equipment and emergency equipment (eyewash, overhead shower, fire extinguisher) are located, ensure they are readily accessible and functional, and be thoroughly familiar with their use and limitations. This is particularly important when working with hazardous materials "after hours" when EH&S may not be available for an immediate spill response. Regardless of time of day, day of week or size of spill, ALWAYS contact EH&S and Public Safety to report an incident. Contact information is readily accessible in your "EH&S Emergency Response and Waste Disposal Guide" posted in your laboratory. EH&S encourages everyone to program these phone numbers into a personal cell phone for ready access in an emergency.

Keep Calm and Go Hg Free by Greg Kwolek, Senior Research Safety Specialist

Elemental mercury (Hg), a liquid metal at room temperature with a silvery appearance, is a neurotoxic chemical that bio-accumulates in the environment. Mercury sometimes seems to have a singular fate in the laboratory, however, and that is to be inadvertently released, especially from a broken thermometer. These releases are difficult, time consuming, and expensive to clean-up. In an effort to reduce the number of mercury-containing devices at Columbia and prevent future inadvertent releases of mercury in the laboratory, EH&S has engaged the research community in a free mercury thermometer exchange program over the past 10+ years.

Throughout the life of the program, EH&S has offered National Institute of Standards (NIST) traceable, 12" partial immersion organic liquid-in-glass thermometers with a range of -20°C to +110°C and a $\pm 1^\circ\text{C}$ accuracy, in exchange for an intact mercury thermometer. EH&S also recognizes that some laboratory applications require the measurement of temperatures outside of that range, and now offers non-mercury alternatives with a maximum temperature range of +260°C, including jointed models, to promote the exchange of additional thermometers.

Throughout fall, 2014, EH&S personnel have been visiting laboratories on the Morningside and Medical Center campuses and have exchanged over 50 thermometers for non-mercury containing alternatives, many of which were exchanged as a result of the new offerings with extended temperature ranges. EH&S would like to thank the research community for being partners in reducing the amount of mercury on campus and protecting our environment.

If you would like to exchange a mercury thermometer for a non-mercury alternative please contact your Research Safety Specialist at labsafety@columbia.edu or by calling (212) 854-8749 (Morningside) or (212) 305-6780 (Medical Center). Still not sure? If EH&S does not currently stock a thermometer suitable for exchange, just let us know and we will investigate non-mercury alternatives on a case-by-case basis. Mercury-free devices are available through University-preferred laboratory supply vendors, as well - <http://finance.columbia.edu/purchasing-guide>.



Have You Labeled It? by Augustine Ogbonnaya, Research Safety Specialist

Laboratory operations often require transfer of hazardous materials from the manufacturer's original container into another container for easier handling and use, such as a beaker, flask, or squeeze bottle. The transfer, however, doesn't end with that of the material. In most cases, information from the original container must also be transferred to the new, or secondary container, by applying a label.

The original container label is likely to contain a great deal of information which would be impractical to duplicate and transfer to the secondary container. To simplify the required labeling process for secondary containers, only the name of the hazardous material and a description of the hazard(s) - which can be displayed using pictograms or text - need to be applied to the secondary container. This helps to ensure that everyone in the laboratory, not only the person who made the transfer, knows which hazardous material is in the secondary container and understands what the hazards are. Unlabeled containers can contribute to a serious incident in the laboratory or result in non-compliance during a regulatory inspection.

To make labeling your containers quick and easy, EH&S has developed label templates that can be printed through *ChemWatch*, the University's online source for chemical safety information. For more information, and to start printing your own labels today, please visit the EH&S website at <http://ehs.columbia.edu/labels.html>.

EH&S Promotes and Recognizes Safe Tissue Culture Practices

by Vichelle Filoteo, Biological Safety Casual Staff

The EH&S Biosafety Team recently conducted an outreach program promoting safe tissue culture practices at Columbia University. Summer interns visited laboratories to provide educational material to researchers and reinforce proper practices related to tissue culture waste decontamination, hand hygiene, and effective use of biological safety cabinets (BSCs). Areas of focus included BSCs in need of annual re-certification, HEPA filters not attached to vacuum lines, and observation of pink aspiration fluid in flasks, indicating an insufficient volume/concentration of bleach for decontamination.

After visiting over 450 tissue culture work locations on the CUMC and Morningside campuses, the team noted that the laboratory of Peter D. Canoll, MD, Ph.D., exhibited exemplary safe tissue culture practices. The Canoll Laboratory has two safety champions: Postdoctoral Researcher Jennifer Sims and Technician Jorge Samanamud, who manage a shared tissue culture room. They acknowledge the hazards of working with potentially infectious materials, such as pseudotyped viral vectors and human tissue, and they communicate the risks and associated controls to other staff, accordingly. Jennifer stated, “We have a level of safety consciousness that has to be cultivated by the whole laboratory in order to be passed down through training.”

When asked why their laboratory is outstanding when it comes to biosafety and tissue culture practices, Dr. Canoll (pictured with biological safety intern Vichelle Filoteo) responded, “It is mainly due to our laboratory members and our relationship with EH&S that has been instrumental to our success. Also, when we have inexperienced research students and technicians come through our laboratory, we place a high importance on safety and training to keep them and us safe.”



EH&S would like to thank Dr. Canoll, the Canoll Laboratory staff, and all who engaged with Biosafety personnel during the outreach program. Please keep up the great work, and as always, please contact biosafety@columbia.edu with any questions

Inspection Ready by Hazardous Materials Team

An unannounced recent hazardous waste inspection at the Morningside campus by the New York State Department of Environmental Conservation (NYSDEC), serves as another reminder of the importance of being inspection ready at all times. For laboratories and other operations where chemical waste is generated, this means constant vigilance in adhering to the [Columbia University 5 Ls of Hazardous Waste Management](http://www.ehs.columbia.edu/5Ls.pdf) (<http://www.ehs.columbia.edu/5Ls.pdf>). The 5Ls is a mnemonic device developed by EH&S to simplify the complex regulations for the proper collection, storage and management of hazardous waste. The 5 Ls stand for: CoLLect, LLabel, LId, LLocate, and LLeaks.

- ◆ CoLLect all chemical waste - never treat waste in the laboratory or drain dispose.
- ◆ LLabel all chemical waste containers with the Columbia University orange hazardous waste label and clearly list ALL the chemical contents on the label.
- ◆ Close all containers with a tight-fitting LId, at all times; open containers allow waste to evaporate (which is not legal) and could allow waste to spill if knocked over.
- ◆ Chemical waste containers must remain LLocated in the room where the waste was generated, not moved to other areas for convenience.
- ◆ Check waste containers for LLeaks, at least weekly, and evidence of leaks should be referred to EH&S immediately.

For more information, visit <http://www.ehs.columbia.edu/HazardousWaste.html> or contact a Hazardous Materials Specialist at hazmat@columbia.edu.

Worry more about the Influenza Virus than Ebola by Kathleen Crowley, PA-C, MPH, DrPH

According to the Centers for Disease Control and Prevention (CDC), 3,000 to 48,000 lives in the United States are lost each year due to influenza (flu). The CDC also reported that approximately 60% of adults and 43% of children were not vaccinated in the most recent reporting year. As fatal as the flu can be, Americans are more on edge about the potential spread of Ebola, perhaps because it is easy to overlook a virus to which we have long been accustomed. Influenza is a respiratory pathogen, easily transmitted, unlike Ebola which requires direct contact with blood or bodily fluids. Influenza infection is vaccine-preventable, and in fact, 92% of NYPH personnel received the flu vaccine in 2013/14. The vaccine is available at no cost to University personnel through Workforce Health & Safety (CUMC) or Columbia Health (Morningside) and it is also important to note that one can not catch the flu from a flu shot because the virus in the vaccine is killed. Flu viruses are constantly changing and it is not unusual for new flu viruses to appear each year, so the CDC recommends a *yearly flu vaccine* (<http://www.cdc.gov/flu/protect/vaccine/index.htm>) for everyone 6 months of age and older as the first and most important step in protecting against this serious disease. The seasonal flu vaccine is designed to protect against the main flu viruses that research suggests will cause the most illness during the upcoming flu season. However it usually takes up to two weeks before the influenza vaccine is effective, so get vaccinated as soon as possible before others around you are sick. *Knockout the flu before it knocks out you, get vaccinated!*

Stay Away from the Light by Max Amurao, Clinical Radiation Safety Officer

Do you use a Class 3B or Class 4 laser in your laboratory? If so, stay away from the light (even if you can't see it)! When working with high-power lasers, one must be mindful of both beam and non-beam hazards.

It is important to use eye and skin protection from beam hazards at all times. Eye protection must be worn, and must match the wavelength of the laser used. It must have a sufficient optical density rating to reduce the incident laser beam intensity. Skin protection - although sometimes overlooked - is also an important consideration when using a high-power laser. Cover as much exposed skin as practical to minimize the possibility of inadvertent skin burns; loose clothing that can drop into the beam path should be avoided.

Some non-beam hazards to be mindful of include electric shock, fire (ignition), as well as smoke and fumes. Lasers typically operate at a high voltage, directly translating to the potential for serious electrical injury. Do not use a laser when electronic components and instrument leads are exposed! In addition, intense lasers can easily ignite combustible materials and start a fire. Be careful not to put anything in the beam path that can catch on fire. Materials can also be vaporized if intense light is impinging on them. Biohazardous materials, metals, and chemicals are some of the typical agents in a research laboratory that can become airborne as part of a laser plume. Plan on having appropriate air suction devices available, and ensure that the beam is used in a well-ventilated area.

Work with lasers can be safe and worry-free, but can be dangerous if approached haphazardly. If you are working with powerful lasers, stay away from the light. As a reminder, register all lasers with EH&S by submitting Appendix D <http://www.ehs.columbia.edu/LaserRegistrationForm.pdf>, and contact lasersafety@columbia.edu with any questions.



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