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Environmental Health & Safety

SafetyMatters

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ENVIRONMENTAL HEALTH & SAFETY

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EH&S is Expanding to Manhattanville

by Corey Wintamute, Senior Research Safety Specialist

With the opening of the Jerome L. Greene Science Center (JLGSC) fast approaching, EH&S is looking forward to expanding its programs to Manhattanville. EH&S's JLGSC office, located on the mezzanine level, will be the Manhattanville home base from which we will provide full support for research operations at the Zuckerman Institute (ZI).

EH&S's involvement with Columbia's Manhattanville operations began over a decade ago in the early phases of the campus' development. From community meetings and building demolitions to soil sample analysis, EH&S worked with the Manhattanville Development Group (MDG) every step of the way to provide health and safety guidance for the project. EH&S will continue to serve in this role into the next phases of the Manhattanville campus' evolution.

In addition to working with the MDG, EH&S has worked closely with ZI Operations on developing best practices, policies and procedures for safety. EH&S is an active member of the Relocation Team, planning the moves of numerous existing Columbia laboratories to JLGSC. The campus will feature a chemical tracking system using radio frequency identification (RFID) technology, laboratory recycling, enhanced hazard communication, and centralized spill kits for every laboratory, all to ensure safety standards are met and exceeded in the University's newest research spaces.

EH&S will continue to ensure the highest level of client focused safety programs at Manhattanville and with the ZI .

What Are "Print & Go" Sheets?

by Christopher Aston, Manager of Biological Safety Programs

EH&S has compiled a series of "Print & Go" guidance sheets that are a valuable resource following a potential occupational exposure to a hazardous biological or chemical material. Sheets are available for general bloodborne pathogens, macacine herpes virus 1, lentiviral vectors, diphtheria toxin, pertussis toxin and recombinant DNA, as well as a variety of hazardous chemicals including cyanide, formaldehyde and hydrofluoric acid.

In the event of a potential exposure, the Print & Go sheet should be printed and taken to the medical provider. Each Print & Go sheet identifies the immediate "first aid" actions that should be taken. A medical evaluation should be sought immediately following the exposure at the respective campus provider or hospital emergency room. Once in the care of a medical provider, the guidance sheet contains information that can be quickly referenced. Also, remember to display your Columbia University ID card while visiting the treatment location. Sheets are available on the EH&S website: http://ehs.columbia.edu/PrintAndGo.html.

Are you working with a hazardous material that you think warrants a "Print & Go" sheet? Contact an EH&S safety professional to discuss at biosafety@columbia.edu.

EH&S website offers enhanced navigation http://ehs.columbia.edu

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.

Remember to periodically flush your laboratory cup sinks and floor drains with water to prevent sewer gases from migrating into your laboratory.

On-line Chemical Waste Pick-up Request Form http://vesta.cumc.columbia.edu/

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

Behind the Scenes of Radioactive Waste Management

by Nicholas Craig, Hazardous Materials Specialist – Radioactive Waste

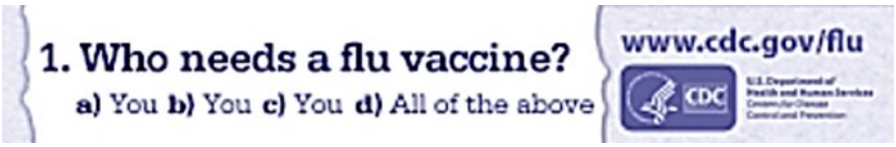
A researcher runs an experiment using a radioactive tracer, waste is generated, a pickup request is completed, and the waste is spirited away, never to be seen by laboratory personnel again. What actually happens to radioactive waste collected from research laboratories at Columbia University? The simple answer is that it goes to Utah to live out its days, but the actual process is slightly more detailed.

When a radioactive waste container is removed from a Columbia University laboratory by EH&S, it is taken to one of several storage and staging areas on campus, depending on the type of waste and the location where it was generated. Waste containers are logged into a database for tracking, then segregated based on contents to facilitate final disposal. If the half-life of the isotope is less than 90 days, the waste will be held in storage until radioactivity can no longer be detected above the local naturally occurring level of background radiation, and then appropriately disposed of as non-radioactive material. If the material must be disposed of as radioactive waste, either because its half-life is greater than 90 days or otherwise cannot be determined to be below background, another journey begins that takes the waste across the country to Utah.

After considerations are made for waste type, chemical compatibility, pricing schedule, and transport regulations, Columbia EH&S staff consolidate radioactive waste in a storage area into containers for shipment. When the materials have been prepared to ship, a final inventory is sent to the University's approved radioactive waste disposal contractor who prepares the relevant Department of Transportation and Nuclear Regulatory Commission paperwork. On a pre-determined date, the radioactive waste is removed from Columbia University by the disposal contractor and heads westward.

Once shipped from the University, most radioactive waste makes a stop at a processing facility where it is treated to remove any hazardous characteristics (if applicable) and then burned or compacted to reduce volume. After processing, regulatory restrictions mandate that the only destination where waste from New York State can be sent without prior approval is to an internment facility in Utah. There, drums of residual material left over from processing are placed into specially constructed, lined storage cells, and inventoried to mark place of origin. When each cell is full, the waste is interred, where it will remain for the foreseeable future, in keeping with the "cradle to grave" philosophy of hazardous waste management.

It's Not Too Late, Get Your Flu Shot Today!

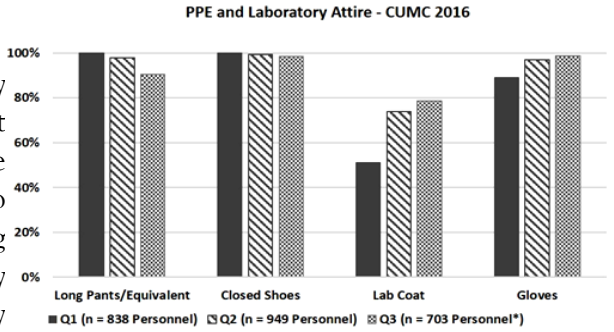


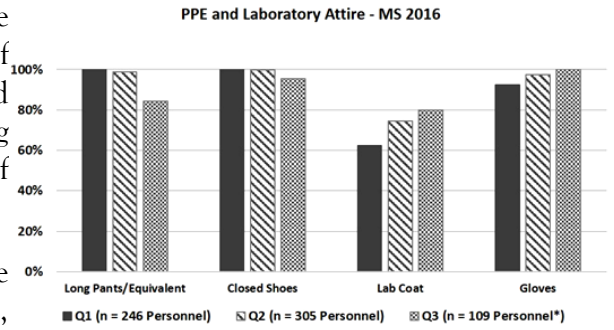
Laboratory Safety Surveys

by Ahmed Fathalla, Research Safety Specialist

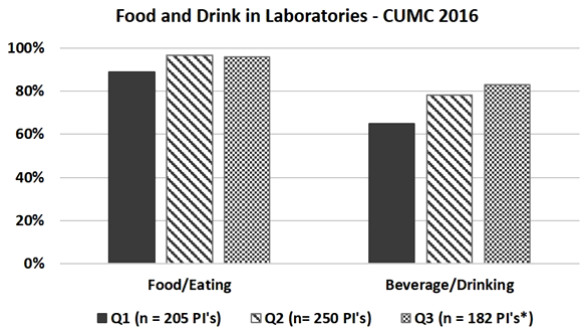
EH&S is responsible for supporting all aspects of safety in the laboratory. A safe laboratory environment is achieved through the application of engineering and administrative controls, the conscious use of personal protective equipment, and a practical and supportive laboratory survey program that seeks to identify and address laboratory hazards.

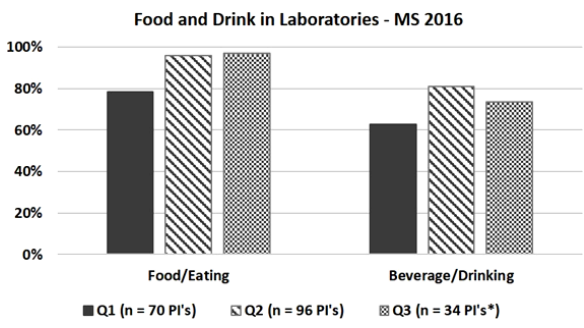
Laboratory safety surveys, performed by EH&S's Research Safety team, take place on a quarterly basis and are a fundamental part of EH&S's overall mission to promote a healthy and productive work environment. These comprehensive surveys are designed to establish a safety culture as well as to foster strong working relationships between EH&S and the research community through discussion of laboratory activities and conditions. Survey topics include, but are not limited to, personal protective equipment (PPE) and laboratory appropriate attire, the presence of food and drink in laboratories, the proper use of fume hoods and completion of required training. After surveying a building completely, EH&S hosts a tabling session to share the progress of the surveys with each building's researchers.





The data in the charts above capture partial results of the surveys completed through the first three quarters of 2016, including PPE and laboratory attire use in both CUMC and Morningside (MS) laboratories. Additionally, the data in the charts below represent compliance with the University's food and drink policy at both campuses.

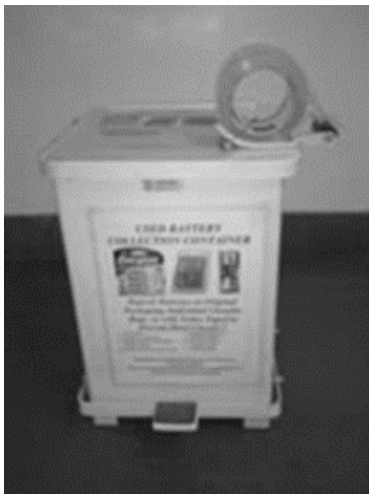




From the commencement of these quarterly surveys, the Research Safety team has utilized a conversational approach in laboratories to reinforce the importance of proper attire, PPE, and food and drink. And the approach has paid off. Compliance at CUMC and MS laboratories has successfully risen in the areas of lab coat and glove usage, as well as the elimination of food and drink in labs. Compliance with laboratory attire, specifically long pants and closed shoes, continues to be an ongoing challenge in the warmer months of the year but EH&S is committed to raising the bar in this area, and we are asking for your commitment as well! EH&S recognizes the efforts of the research community and we deeply appreciate your collaboration and commitment to safety as demonstrated in the results of our quarterly surveys. We look forward to continuing to develop collaborative, long term relationships with each laboratory, and we are available at labsafety@columbia.edu, to address any questions, comments or concerns.

Consolidating Power

by Andrew Chin-Sang, Hazardous Materials Specialist



Batteries are a ubiquitous part of numerous everyday items, and today many different types of batteries power everything from cell phones, laptops, and calculators to cars, toys, and tools. In the United States, about 3 billion batteries are purchased each year. As essential as batteries are, they do come with risks and can be an environmental and/or physical hazard if they are disposed of improperly. Batteries can contain hazardous materials such as lead, mercury, cadmium, lithium and/or sulfuric acid. Proper disposal is necessary to prevent environmental contamination.

Columbia University has many ways in which students, staff, and faculty can recycle and the University has been recycling batteries on our campuses since 2001. Approximately 10,000 pounds of batteries are collected for recycling from the Columbia community each year. Columbia University works with battery recycling vendor, *Call 2 Recycle* (http://www.call2recycle.org/), to reclaim and reuse rechargeable batteries.

To recycle used batteries, one can place them in the battery collection cans that can be seen around campus (see above). Each battery recycling receptacle comes equipped with a tape dispenser. When depositing a battery in a container for recycling, please use the tape to cover the batteries' terminals to prevent short circuiting inside of the container. Alkaline batteries are an exception and do not need to have the terminals taped.

Battery collection containers are emptied quarterly and the contents are segregated based on battery type. Lead acid, alkaline, lithium ion, lithium metal, and nickel cadmium are examples of the different types of batteries recycled through the program. Small lead acid batteries, nickel cadmium, and lithium ion batteries are shipped to *Call 2 Recycle*, after which they are converted into new items, including other batteries, stainless steel alloys, and cement additives.

You can protect the environment and ensure that batteries do not end up in landfills by simply placing used batteries in the recycling receptacles. Please ensure that only intact batteries are placed in the receptacles. Other items such as trash, lightbulbs, and empty toner cartridges can cause the batteries to be rejected by the recycling facility, resulting in batteries being diverted to a landfill.

Follow this link for more information on batteries and the location of Columbia University's battery collection units: http://ehs.columbia.edu/RecycleBattery.html.

If there are any question or if you would like to report a full battery container contact hazmat@columbia.edu.

Ergonomics and Musculoskeletal Disorders

by Delaney Jones, Associate Health & Safety Specialist

Musculoskeletal disorders, or MSDs, are injuries that affect the muscles, tendons, ligaments, bones, nerves, connective tissue and blood vessels of the body, potentially impacting movement and activity. In the workplace, two of the most common MSDs are neck tension and carpal tunnel syndrome, and workplace MSDs are often associated with repetitive motion, awkward posture, and static loading. These risk factors usually have a cumulative effect and contribute to injury over time. To prevent injury, it is important to identify activities that are straining to the body and make adjustments to workstations and work practices. EH&S can help identify work tasks that involve MSD risk factors and propose solutions to reduce the risks.

Ergonomics is the applied science of equipment design and workplace adjustment in order to maximize productivity by reducing operator fatigue and discomfort. In other words, ergonomics is designing the job to fit the worker, rather than fitting the worker to the job. EH&S's goal is to reduce the occurrence of MSDs through education that prepares individuals to identify and address ergonomic stressors they face at work, as well as outside, through workstation adjustments and selection and use of equipment to facilitate an ergonomically-fit environment. EH&S's experience with workstation ergonomics indicates that slight adjustment to a desk chair and body posture, for example, can significantly reduce discomfort.

Interested in learning more? EH&S offers a monthly Ergonomics Workshop (Schedule: http://www.ehs.columbia.edu/TrainingSchedule.html) that provides tips and techniques to adjust your workstation to reduce bodily discomfort and strain. Prior to attending a workshop, EH&S encourages the use of the Ergonomic Self-Evaluation Tool (http://www.ehs.columbia.edu/ErgoEvaluateTool.html) to identify risk factors and making initial workstation adjustments for a more ergonomic fit. Please contact occusafety@columbia.edu if you have additional questions.

Fire & Life Safety: The Big Picture

by Jon Paul Aponte, Associate Fire Safety Officer

Many people do not realize the fire and life safety precautions that are continuously in place around them in order to make their lives safer, especially in the event of a fire or emergency.

Small things like smoke detectors can save lives, but only if properly located and regularly maintained. Likewise, fire extinguishers are a capable means of fire suppression, yet without regular inspection and maintenance, they may be useless in their time of greatest need. Similarly, automatic sprinklers will only work at full capacity if the required clearance around each sprinkler head is maintained – which is 18 inches in many cases.

EH&S' team of health and safety professionals is constantly considering the safety landscape of the University. For instance, team members may perform impromptu visual inspections of fire and life safety equipment when walking through buildings on and off campus, with the understanding that finding an unsafe condition could mean the difference between a favorable outcome and a catastrophe in an emergency.

We all lead busy lives, and there may be a hundred reasons to not pause for a moment and remember safety, but no reason will be good enough in the event of a fire or emergency – especially if the situation was preventable. So please, be aware of your surroundings whether on or off campus. Check the fire extinguisher in your lab. Has it been discharged? Is it missing? Is it obstructed? Has the pin been pulled? And how about at home? Does anything seem unsafe? Are the doors or corridors obstructed or blocked? Is there at least 18 inches of clearance for all sprinklers?

Even if all seems right, you may still have some questions pertaining to fire, life or lab safety, and we are here to help! Give us a call, email or stop by our office for a conversation: fire-life@columbia.edu.

Spotlight on Safety – Laser Cutting Emissions

by Rob Velez, Health & Safety Specialist

Laser cutting technology is an accurate, efficient tool for creating shapes in various media, and is widely used in Columbia's academic shops and studios. One drawback to this technology is that the process generates Ultrafine Particle (UFP) emissions, which can expose the operator and others in the work area to airborne particles that should be avoided. Since there are no current UFP exposure limits to establish a threshold concentration below which exposure is considered "safe," current and future laser cutter users are advised to install dedicated exhaust systems that remove UFP emissions at the point where the laser contacts the material being cut so the resulting emissions can be captured and removed before becoming airborne. Ventilation, via an efficient extraction system, is recognized as the most effective way to prevent user exposure to UFP emissions. In this edition of Spotlight on Safety, Frank Heath, Safety Manager with the Columbia University School of the Arts, provides some background on the laser cutter used at Prentis Hall and its extraction system.

Rob: How did you select this type of fume extractor for use with the laser cutter in Prentis?
Frank: During the selection process for our laser cutter, I looked into different air filtration systems. Other Columbia shops, including the Graduate School of Architecture, Planning and Preservation (GSAPP), were running their operations with good, practical air filtration options. I finally went with the manufacturer's recommended fume extraction system and purchased it together with the laser cutter. I'm happy to say that the laser cutter at Prentis was never used without the filtration system.

Rob: How have the students responded to the use of this air filtration system?
Frank: The students' response to the fume extractor was initially mixed. While many students are enthusiastic about this safety feature, some individuals have concerns about possible emissions from cutting acrylic and particle board. In these cases I explain that the unit features an effective two-step filter designed to capture particulates, as well as chemical vapors. Additionally, EH&S performed a UFP emissions assessment on the laser cutter at Prentis. This set of test runs demonstrated the effectiveness of the fume extractor – and showed the dramatic reduction in UFP counts achieved by the filter. This information has provided confidence to users of the laser cutter.

Rob: Have you ever experienced any technical difficulties related the fume extraction system?
Frank: Most of the technical issues I've experienced at Prentis have been related to some combination of the material being cut and the software for the laser cutter. In one case, cutting particle board generated fumes which seemed to overwhelm the filtration unit and resulted in odors. Upon further investigation, I found that the material contained a certain type of adhesive which was responsible for the undesired odors. That type of particle board was banned for use with the laser cutter. Otherwise the fume extractor is very reliable – I have only had to change the chemical filter once. I currently have replacement filters on hand, and the unit's display indicates when the filters need changing.

Rob: What is your general take on laser cutting? Are there currently any plans for expanding this operation?
Frank: Although there aren't any plans for additional units in the School of the Arts, I'm quite happy with this purchase. The laser cutter opens up a world of possibilities for cutting intricate shapes in acrylic, plywood and particle board in a fraction of the time that would be needed using other tools. This particular unit was chosen for its high powered cutting capability as well as its larger size – which can accommodate the larger pieces of artwork often fabricated at Prentis.

EH&S would like to thank Frank Heath for his partnership and commitment to safe art making operations at the School of the Arts.

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Please share questions or comments with us at newsfeedback@columbia.edu