Volume 9 Issue 4 COLUMBIA UNIVERSITY EH&S Fall 2015

# Environmental Health & Safety

# SafetyMatters

**Inside this issue:**




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## Environmental Rooms: Not Always So Friendly

by Greg Kwolek, Senior Research Safety Specialist

Environmental rooms, known more colloquially as cold and warm rooms, are designed for storing or handling laboratory materials in a constant-temperature environment. On the surface the majority of these spaces are essentially walk-in refrigerators, but have you ever considered how environmental rooms maintain their constant temperature? Or wondered about the potential hazards that could be found inside?

Environmental rooms regulate their temperature by heating or cooling recirculated air. Less energy is used to condition recirculated air than to heat and cool the fresh air that is supplied to traditional laboratory spaces. While recirculating the air has energy savings benefits, it also means that fresh air is only introduced into the room during brief moments when the door is opened and closed. If a hazardous material were to be released into the room, which has happened) the atmosphere could quickly become explosive, toxic, or deficient of oxygen.

To help ensure environmental rooms at Columbia University are safe spaces to work, EH&S set out to visit each space and conduct a survey for potential hazards during Spring, 2015. After surveying 116 environmental rooms, EH&S found that 15% contained food and beverages, another 11% contained potential asphyxiation hazards, 83% contained mold substrates, and finally, 81% of all environmental rooms contained potential chemical hazards. This does not mean that walking into an environmental room is inherently hazardous, but the potential is certainly there. Where possible, these hazards were addressed with laboratory staff at the time of the survey to remove the potential hazard or correct the unsafe condition. After the surveys, EH&S setup outreach tables at the Morningside and Medical Center campuses to share these findings with the research community and to raise awareness about environmental room safety, an approach that EH&S will be continuing throughout the year for a variety of research safety topics.

Eating and drinking are strictly prohibited in all laboratory spaces, and cold rooms are not suitable for the storage of food and drink. To ensure that environmental rooms are safe for you and your colleagues, if you need to store or use a flammable or toxic chemical below room temperature, use an approved chemical storage refrigerator for storage, or an ice bath in the main laboratory to cool it down prior to use. Preventing mold growth in an environmental room is easy too, and starts with eliminating materials containing cellulose, such as cardboard or paper, from being stored in the room. Already see signs of mold growth? For minor contamination, wipe down surfaces such as walls, floors, or benches with a dilute bleach solution (1 part bleach to 10 parts water). For assistance with remediating more extensive contamination, contact the Facilities department at your respective campus to arrange for vendor services. To avoid creating an asphyxiation hazard, never store or use dry ice, cryogenics, or compressed gases in an environmental room. An inadvertent release of these materials can quickly result in an oxygen deficient atmosphere, and result in someone becoming incapacitated. For more detailed information about keeping your environmental room safe, please visit the EH&S website at http://ehs.columbia.edu and search for "environmental room safety". If your research needs require you to use these materials in an environmental room, please contact EH&S for further assistance.

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 help prevent odors 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

# Calling In Your Air Quality Concerns

by Katie Bolger, Associate Health & Safety Specialist

During any given year, Environmental Health & Safety receives calls from across all of Columbia's campuses regarding indoor air quality (IAQ) concerns. These calls typically involve chemical odors, suspected gas leaks, excessive dust, poor air circulation or similar matters. While many of these are quickly resolved, some may take significant time and involve other University departments, such as Facilities. When contacting EH&S (or Facilities) with an IAQ concern, the information detailed below is most useful in helping to identify and resolve the issue.

Location: In addition to building, floor, and room number(s), it is helpful to also advise if the issue is isolated to a specific area within a room, whether it is affecting the corridors or neighboring rooms, and any other relevant information about the physical location of the concern. This additional information will help EH&S identify possible sources and solutions. Often times activities on the above or below floors or on a nearby loading dock can cause odors in adjacent spaces, so knowing the exact location will help guide responders in the right direction.

Type of Odor or IAQ Issue: This information is important because it can help the responder decide how best to investigate the cause of the issue. For example, a response to a chemical odor would be different than to a suspected gas leak. Please try to be as specific as possible in describing the issue when placing an IAQ call.

Time of Occurrence: Each air quality issue is different. Some may seem constant while others may behave transiently. It is important to note in the call when the odor was noticed and how long it lasted or if it is still persisting. If this is a repeated occurrence, it is important to create a log. This log should show what time the odor occurred, type of odor, and where it was strongest. Logs such as these can help track the ongoing issues and help responders discover their source.

Contact Information: When calling EH&S or Facilities with an IAQ concern, please provide your full name, UNI, and a telephone number where you can be reached. Responders may use this information to pursue follow-up questions or recommendations to help solve the issue.

Finally, it is important to call EH&S as soon as an IAQ concern manifests. A timely report yields the greatest chance of having the issue identified and resolved quickly.

## Hazardous Waste Undercover

by Dan Condon, Hazardous Materials Specialist

One of Columbia University's 5Ls of Hazardous Waste Management, "Lid", refers to the EPA requirement for keeping hazardous waste containers closed. Under the "Lid" requirement, containers holding hazardous waste must be "kept closed, except when necessary to add or remove hazardous wastes" [40 CFR 264.173(a)]. The regulation further states that the containers "must not be opened, handled or stored in a manner which may rupture the container or cause it to leak" [40 CFR 264.173(b)]. To help hazardous waste generators better understand the intent of the closed container rules, EPA's most recent guidance document on the issue attempts to clarify the conditions of the "Lid" requirement.

According to the EPA, "Management of liquid hazardous wastes in containers poses three potential problems: risks from inhalation, risks from the potential buildup of vapors, and risk from an accidental spill." Keeping containers closed can help protect against all three of these concerns. Containers storing hazardous wastes in Satellite Accumulation Areas (i.e., areas within a laboratory where chemical waste is collected and managed prior to removal) are considered to be closed when, "all openings or lids are properly and securely affixed."

Keeping containers properly closed "is simply a matter of good operating practice," the EPA explains, and compliance with this standard will help make your workplace cleaner and safer. Funnels with locking lids on hazardous waste containers are a useful tool to help protect against these hazards, however, some simple precautions are advised. For example, the act of opening and closing a funnel's locking lid could cause the container to topple over due to an imbalance in the configuration. This instability could be rectified by securing the hazardous waste container in a wide base stand (see photo; one such option is available from www.calpaclab.com). A properly selected stand would have an added benefit of being a secondary container. Clearly, not all hazardous waste containers need funnels with locking lids and base stands. However, these devices may benefit laboratories whose procedures require frequent usage of a hazardous waste container.


For assistance in reviewing your laboratory's waste collection and storage practices, please contact hazmat@columbia.edu

## Laboratory Relocation Guide Update

by Corey Wintamute, Senior Research Safety Specialist

The *Columbia University Laboratory Relocation Guide* is now available on the EH&S website @ http://ehs.columbia.edu/LabRelocationGuide.html. This Guide is a helpful tool for anyone involved with relocating a laboratory. Whether the move is to another campus building, within the building, or to another institution, this Guide provides all of the necessary information to help ensure a safe and compliant move.

For more information about laboratory moves, please contact labsafety@columbia.edu.

## Revised Policy on Inter-campus Transport of Biological Materials

by Christopher Aston, Manager of Biological Safety Programs

EH&S and the Office of Risk Management recently revised the University policy for the inter-campus transport of biological materials by researchers. With the opening of the Jerome L. Green Science Center fast approaching and the nature of its extensive collaborations with investigators on the Morningside and Medical Center campuses, there was a recognized need to offer a pragmatic approach to investigator-mediated inter-campus transport. The policy revisions aim to support these collaborations with enhanced transport options.

The revised policy permits certain specific classifications of biological materials with low or no risk that are NOT classified as hazardous materials/dangerous goods by the Department of Transportation to be transported in University-owned or contracted vehicles/shuttle buses, licensed taxi cabs or personal vehicles (but NOT on public transport such as MTA buses and subways).

The policy requires that the same practices apply to preparing a package for inter-campus transport as one prepared for transport by a professional courier such as FedEx. This includes the requirement that biological materials are triple performance packaged and pose no hazard to other passengers even if the package should break open in transit. Dry ice should be enclosed in a Styrofoam container, and never in airtight vessels. Furthermore, a training and certification course must be taken prior to transporting any materials between campuses. The applicable RASCAL training center course is TC0076 - Shipping with Dry Ice, Exempt Specimens and Excepted Quantities of Dangerous Goods.

For a full description of the policy visit http://www.ehs.columbia.edu/Intercampus.html. Our Biological Materials Shipping Manual is also a valuable resource (http://ehs.columbia.edu/BiologicalMaterialsShippingManual.pdf). If you have any questions, please contact a biosafety officer (biosafety@columbia.edu).

## Using an Open Flame? Be Careful!

by Andrew J. Patterson, Associate Fire Safety Officer

When working with an open flame, whether a torch or a Bunsen burner, it is important to exercise extreme caution. Careless use of open flames can quickly lead to a fire resulting in serious personal and property damage, and untold consequences to a laboratory's research operations. There are some simple precautions that you can take to help prevent these events from occurring. Here are just a few:

- Secure loose clothing and long hair;
- Remove flammable or combustible liquids, gases and materials from the area of the open flame;
- Ensure that there are no combustibles or other materials that can ignite in the work area, including ABOVE the open flame;
- Be knowledgeable of the equipment you are using;
- NEVER leave an open flame unattended.

In the event that a fire does happen, remember the fire safety acronyms RACE and PASS and always call Public Safety, from a safe location, to report a fire or smoke condition.

**FIRE SAFETY**

**In Case of Fire:**
**R**escue
**A**larm
**C**onfine
**E**xtinguish / **E**vacuate

**To use Fire Extinguisher:**
**P**ull Pin
**A**im Hose
**S**queeze Handle
**S**weep From Side to Side

# Spotlight on Safety – Weekly Checklist

by Kathy Heinemann, Research Safety Specialist

Keeping up a safe and well-managed laboratory is no easy feat. In this edition of Spotlight on Safety, EH&S would like to commend the researchers in Professor Brent Stockwell's laboratory, who demonstrate an effective, collaborative approach to laboratory safety. Starting in September of 2014, the Stockwell Lab began using their own weekly checklist, based off of EH&S's NOV Prevention Measures, to prevent and correct unsafe conditions. Staff Researcher and Lab Manager Elise Jiang designated each postdoc to be in charge of different areas of the lab. Each week they survey their section to maintain compliance with EH&S and FDNY regulations. Members of the lab, including postdoctoral research scientist Jennifer Chambers, have seen the benefits and buy-in. The following is an interview with Jennifer about the Stockwell Lab's system:

**Kathy: How did the Stockwell Laboratory come up with this approach?**
Jennifer: Elise realized that having a designated person for each area would be an efficient approach. We all know that everyone should be aware of safety issues and report them as necessary, but now there were particular people in charge of a given area. This gave me and the other postdocs more room to enact changes that we saw fit to avoid citations.

**Kathy: How did you choose who would be responsible for each room?**
Jennifer: Postdocs were assigned based on their relative area of expertise-chemists in the synthesis rooms, biologists in the biology areas.

**Kathy: It's great that the designee for each area is a senior researcher or postdoc. With more experience and also authority, they are ideal for internal checks.**
**What happens if you or another postdoc discover an unsafe or noncompliant condition?**
Jennifer: They are to immediately report the situation to the postdoc in charge of the area and fix the issue if it is safe and prudent to do so (e.g. take a glass bottle off the floor), or alert others in the lab, then report it to the postdoc in charge, if it is unsafe for them to attend to (e.g. a hazardous waste spill). No matter what, the postdoc in charge of the area should know about all issues that have occurred in a timely manner so that they can work on prevention systems for the future.

**Kathy: How does the rest of the laboratory find this system?**
Jennifer: Everyone has found it works smoothly and avoids assuming someone else has taken care of an issue.

**Kathy: How does the laboratory's day-to-day safety today compare to before using the weekly checklist?**
Jennifer: Having a systematic approach to safety has improved the conditions in our lab and made being compliant with regulations less work (and involve fewer surprises) for everyone. Everyone is responsible for safety in the lab, but having one person in charge of each area eliminated the guess work of who to report things to and ensuring regular check ins were being done.

Many thanks to Professor Stockwell and staff for sharing their experience and insights!

## 2015: The International Year of Light

by Eugenio Silvestrini, Senior Health Physicist

Did you know that in December, 2013, the UN General Assembly proclaimed 2015 as the **International Year of Light and Light-based Technologies?**

IYL 2015 is focusing on raising global awareness about light-based technologies, promoting "sustainable development and provid[ing] solutions to global challenges in energy, education, agriculture and health." Light–based technology has revolutionized medicine, communication, economics and the global society.

At Columbia University, light-based technology is used every day to advance these aims. Columbia researchers and clinicians use laser technology for crystallization of silicon films, photoacoustic imaging, cutting and bending materials, in scattering studies and glass scrubbing. To help support the evolving applications of laser and light-based technology and the potential safety challenges each application presents, EH&S has grown its Laser Safety Program to include enhanced audits, new guidance materials and additional resources to help ensure lasers are always used in a safe manner. Please check back soon for access to these items and other information.

So, the next time you turn ON a switch, surf the internet on your mobile device or gaze at the stars, take a moment to think about how light has changed your life and celebrate the International Year of Light!

## Fire Prevention Week is October 4-10, 2015


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

## Vision Statement

*Environmental Health & Safety (EH&S) provides expert guidance and timely service to the University Community through our commitment to health and safety. Employing best practices and collaboration, and by building long term relationships, we promote a productive and safety conscious work environment.*