

Environmental Health & Safety

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LAUREN KELLY RECOGNIZED BY PUBLIC SAFETY

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June is National Safety Month by Chris Pettinato, Executive Director

Each June, the National Safety Council (www.nsc.org) celebrates National Safety Month as a time to bring attention to key safety issues. Columbia University will be celebrating this year with the launch of a multi-faceted Research Safety Campaign.

Academic Research Safety has generated significant attention over the past several years, particularly following the release of the Chemical Safety Board's video entitled [Experimenting with Danger](#) and their associated report on a laboratory accident at Texas Tech University. Nationally, the college and university EH&S community has been working diligently to improve the perception of safety in research laboratories, but more importantly, to enhance safe work practices of research laboratory personnel by broadening their safety knowledge base, establishing expectations regarding safe work practices, modeling safe behavior, providing support for safe behaviors and practices and providing a transparent mechanism for feedback and reinforcement of safety in the laboratory.

While EH&S has been working with partners in the research community, both within and beyond Columbia, we are poised to elevate the visibility of these efforts with the launch of a June 2014 Research Safety Campaign and reinforce a motto of SAFETY ALWAYS in research operations at Columbia. The campaign will place a significant focus on engaging the University research community in safety. This will be accomplished through various tabling events in research buildings throughout the University, joined by laboratory supply vendor partners, focused assessments on various research safety program elements, such as [availability, selection and use of Personal Protective Equipment \(PPE\)](#), and presence/consumption of food and beverages in the laboratory, an independent laboratory assessment (see "Calling All Volunteers" in this edition of *SafetyMatters*) and an interactive dialogue about what safety means to Columbia University and its expansive community of researchers, staff and students.

Although National Safety Month is limited to June, Columbia's campaign will continue well beyond as we continue to foster collaborations with the research community. EH&S looks forward to engaging with you throughout this campaign. Information about the 2014 Safety Campaign will be available @ <http://ehs.columbia.edu/SafetyCulture.html>. EH&S will also be communicating Safety Campaign activities via [Twitter @ColumbiaEHS](#), our website, www.ehs.columbia.edu and by email.

Follow EH&S on Twitter

For the most up-to-date environmental, health and safety information, both from within and outside of Columbia University, follow EH&S on Twitter@ColumbiaEHS or through the easy access link on our homepage @ www.ehs.columbia.edu.



EH&S has a redesigned website offering new features and enhanced navigation
<http://ehs.columbia.edu>

No eating, drinking or applying cosmetics when working in the Laboratory.

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

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

Calling All Volunteers by Chris Pitoscia, Manager of Research Safety Programs

Is your laboratory inspection ready? Care to find out? In conjunction with the 2014 Research Safety Campaign, EH&S has engaged an independent, third-party consulting firm, to assist in assessing the “health” of the University’s research safety program. The consultant that will accompany EH&S on the laboratory assessments has successfully completed numerous safety and environmental audits at the University over the past decade, both inside and outside of the laboratories, and their independent observations have proven helpful to Columbia in continuing to build strong safety and environmental programs. . The scope of the assessment will include the [University’s Chemical Hygiene Plan](#), the laboratories’ [LATCH](#), [availability, selection and use of Personal Protective Equipment \(PPE\)](#), the storage and use of hazardous gases, [academic machine shop safety](#), and other laboratory safety program elements.

If you wish to volunteer your laboratory for an assessment, please email labsafety@columbia.edu Subject: Volunteer Lab Audit. EH&S will attempt to integrate as many volunteer laboratories into the overall selection of laboratories, and yes, EH&S may randomly select your laboratory for an assessment even if you do not volunteer.

Environmentally Preferable Waste Management Practices

by Shane Son, Hazardous Materials Specialist

EH&S’ Hazardous Materials Team has initiated a University-wide initiative to examine environmentally preferable laboratory waste management practices. This strategy will include the traditional assessment of laboratory Satellite Accumulation Areas (SAAs) for conformance with the University’s [5 Ls of Hazardous Waste Management](#), as well as [Regulated Medical Waste \(RMW\) regulations](#), to ensure that laboratory wastes do not pose a health or environmental hazard. Additionally, EH&S will be inquiring about laboratory waste reduction and recycling practices and seeking feedback on, as well as offering suggestions for, possible enhancements to further reduce the University’s environmental footprint.

To help prepare your laboratory for our visit, please ensure that chemical waste, regulated medical waste and radioactive waste are managed in accordance with University guidelines. Additionally, please give thought to your laboratory’s overall purchasing and waste disposal practices, specifically, whether you are doing everything feasible to be environmentally responsible in your purchasing and disposal habits. EH&S will be following up on your answers to these questions as we continue to pursue opportunities to become an even more environmentally sustainable institution.

For more information, please visit ehs.columbia.edu and click on the [Waste Management and Recycling](#) section or contact the Hazardous Materials team at hazmat@columbia.edu.

Summer Students and Interns

As summer break approaches, EH&S would like to remind the research community to review the University’s Guidelines for Short-term Visitors in Research-Related Activities, with emphasis on the presence of minors and interns in laboratories. The full policy can be viewed @http://evpr.columbia.edu/files/evpr/imce_shared/Guidelines_for_Short-term_Visitors_0.pdf.

Dust Mask or Respirator? Single Use Respiratory Protection at a Glance

by Jim Kaznosky, Senior Environmental & Occupational Safety Specialist

In the Spring 2014 issue of *SafetyMatters*, EH&S introduced some occupational exposure related theory on the use of respiratory protection equipment in an article titled “Minimizing Chemical Exposures in Laboratories: A Hierarchy of Controls” The article presented PPE as the “last line of defense” against exposure hazards and demonstrated that with the proper use of engineering controls, such as chemical fume hoods, and the employment of correct work practices, the need to use respiratory protection in a laboratory setting is minimal. There may come a time, however, when either personnel might feel more comfortable wearing some form of respiratory protection or may even be required to do so while performing a specific job task. In this article, we focus on the differences between two commonly used types of single-use respiratory protection devices – nuisance dust masks (“dust masks”), and N-95 respirators - and the requirements for wearing such a device while working at Columbia.

At first glance, dust masks (Fig 1) and N95 [or N99, P95, or P99 (Fig 2)] respirators look very similar, physically, but are in fact different in use and in other requirements for users.

Fig 1



Fig 2



A dust mask is typically worn for activities during which nuisance dust may be generated, thus its use should be limited to non-hazardous environments. It is meant for single use and offers a general protective barrier between the user and the environment. No fit testing or notification to EH&S is required prior to use. The user should be aware of the general hazards in the environment they plan on working in to ensure the dust mask is appropriate for use.

Dust masks are often confused or incorrectly considered synonymous with N95-rated *single use respirators* (aka *filtering face piece respirators*). These respirators are differentiated from dust masks by a NIOSH approval rating stamped on the mask certifying a filtration efficiency of at least 95% against solid and liquid particles tested using NIOSH criteria.

The NIOSH certification distinguishes the nuisance dust mask from the N95 respirator. This is a critical factor, in that the use of an N95 respirator activates a host of OSHA requirements to be met by the user and the employer, including:

- ◆ undergoing medical surveillance to ensure the user is medically qualified to wear the respirator;
- ◆ training the user in the respirator’s use and limitations of use;
- ◆ fit-testing the user to the specific respirator to be used; and,
- ◆ having a risk assessment, performed by EH&S prior to the above, to determine if there are other hazard controls that can effectively reduce the hazard before the use of PPE is warranted. Again, PPE is the last choice for minimizing workplace hazards, particularly as it relates to respirator use for minimizing inhalation hazards.

It is important to note that N95 respirators may also be voluntarily worn, but only if no actual hazard exists that requires use of a respirator. Additionally, the use of the respirator should not produce any additional hazard to the user.

More information on respirator use at Columbia University is available on the Respiratory Protection Program webpage @ <http://ehs.columbia.edu/RespiratoryProtectionProgram.html> .

Announcement: Rascal Controlled Substance Appendix

by Kevin McGhee, Biological Safety Officer

EH&S and IACUC have partnered with CUIT's RASCAL team to develop a hazardous materials appendix for tracking the use of controlled substances in the course of research involving animal models. Principal Investigators using controlled substances for their animal care protocols will now be prompted to complete Appendix I to describe the use and management of these materials (see www.rascal.columbia.edu). This new appendix allows oversight to ensure the appropriate use and management of controlled substances, with assistance by EH&S as necessary. The appendix functions in the same way as each of the existing RASCAL appendices for documenting the use of hazardous materials. Users must visit the Hazardous Materials section of the RASCAL site to create an appendix, which will then be attached to the applicable animal care protocol. If assistance is required, please contact the EH&S Biosafety team at biosafety@columbia.edu.

Principal Investigators working with controlled substances, along with any authorized users operating under their respective licenses, are required to adhere to the University's Policy for the Acquisition, Use, and Disposal of Controlled Substances in Research (<http://ehs.columbia.edu/ControlledSubstances.html>) and must complete RASCAL course TC0502 – *Controlled Substances Use and Management in Research*. Principal Investigators working with these materials must be individually licensed by NYSDOH and USDOJ DEA and are accountable to both agencies for the use of controlled substances in their activities. EH&S is available for consultation, if necessary by emailing controlled@columbia.edu.

Once More into the Bleach; Aspiration and Expectation in Tissue Culture

by Christopher Aston, Senior Biological Safety Officer

This is the second of a two-part series on performing effective bleach decontamination in laboratories (see *SafetyMatters*, Winter 2014).

Aspiration of tissue culture media into a collection flask, under vacuum, is one of the most commonly performed laboratory procedures. University Policy, outlined in the Biological Safety Manual, requires that such media be decontaminated prior to disposal in the municipal sewer system.

Effective decontamination is simple, following these instructions. Before aspiration, add undiluted bleach to fill 10% of the final volume of the collection flask. Bleach is an effective decontaminant with the added advantage that its strong oxidizing properties will turn the phenol red indicator in tissue culture media from pink to yellow/clear. Aspiration flasks containing pink liquid indicate insufficient bleach concentration, and should be topped off with fresh bleach until a yellow/clear color is achieved prior to additional aspiration or disposal. Empty the collection flasks when they are 3/4 full, or at least weekly. EH&S will be distributing magnets this summer depicting tissue culture disinfection practices, making this information available at researcher's fingertips.

Since the oxidizing properties of bleach break down over time, stock bottles should be labeled with a receipt date upon arrival and used, or discarded, within six months to ensure potency. Bleach used for routine decontamination must be diluted one part bleach to nine parts water and prepared fresh daily. Vacuum lines must be protected with an in-line HEPA filter. Closing the valve on the vacuum line when not in use will prevent collection flasks from drying out.

The University's Biological Safety Manual (<http://ehs.columbia.edu/Policy2.7.html>) is a valuable resource for investigators and describes in detail how to appropriately dispose of tissue culture materials.

Natural Gas Leak Emergency? by Harry J. Oster, Fire/Life Safety Specialist

In light of a recent major natural gas leak in NYC, the following are reminders of how to recognize gas and what to do in the event you smell, see, hear or are informed of a natural gas leak at work or at home.

Signatures of a leak: a distinctive odor, similar to sulfur or rotten eggs; seeing a white cloud, mist or fog; bubbles pushing out of standing water, or hearing a roaring, hissing or whistling sound. Note, natural gas is actually colorless and odorless. A harmless substance called “mercaptan,” which has an odor similar to rotten eggs, is added to the natural gas so it is quickly recognizable in the event of a leak.

Actions to take: immediately turn off all ignition sources, if safe to do so. If the odor is faint, try locating the source of the leak. If a valve is suspected, ensure the handle is turned off completely; handle valves should be perpendicular to their piping (Fig. 1). Although labs typically have adequate air exchange rates, open any windows or doors and if a fume hood is present, ensure the sash is at the proper height of 12 – 18 inches to help dissipate the odor. If the odor is strong, immediately notify other persons in the lab or area and evacuate. In any event, DO NOT ignite any flame-producing device (match, lighter, burner, etc.), turn on any appliance, room lights or use the telephone with a gas odor present.

Notify: immediately call Public Safety and Facilities Operations to report the gas leak.

In the event of any emergency, personnel are asked that when instructed to take action, including evacuation, either by way of voice announcement, Public Safety /Fire Safety Staff instruction, or from an electronic communication, to please do so immediately. Please also inform all in the immediate area who may have not heard the instructions of the proper actions to take.



Fig. 1

Spotlight on Safety

Spotlight on Safety, a new *SafetyMatters* item, will feature a member of the Columbia University community sharing their perspective on safety. Professor Gerard Parkin, current Chairperson of the Department of Chemistry Safety Committee and member of the University’s Environmental Management System Research Working Group, shares his insights on safety in this inaugural feature. Several quotes from Professor Parkin’s video are highlighted below and the full video can be viewed @ <http://ehs.columbia.edu/SafetyCulture.html>.

SM: Based on your experience, what is the most important safety advice you can offer?

Professor Parkin: “Ask an experienced person before conducting an experiment. Don’t let pride get in the way. Don’t be afraid to ask someone in the lab before you do the experiment, especially if it relates to safety.

“Find out as much as you can about what you are going to do, before doing it, by asking experienced people for their advice. Be completely vigilant about what you are doing. Pay attention to what is going on around you, and make sure that others are also being safe. The culture in the lab has to be one in which people are willing to ask and answer safety questions of this type without there being any judgment.”

Radioactive Material Spills in the Laboratory by Corey Wintamute, Research Safety Specialist

While no one plans to have a spill or accident in their laboratory, they do still occur. When a spill happens it can be very stressful, but if handled properly, can be nothing more than a minor nuisance. Whether working with radioactive materials, hazardous chemicals, or biological materials, it is important to know the proper procedures for dealing with a spill in your laboratory.

When working with radioactive materials in the laboratory, using safe work practices can help reduce the chance of a spill happening. Some simple safe work practices include:

- ♦ Always wear appropriate PPE, including proper laboratory work attire, and keep an extra set of clothes available in the event of contamination
- ♦ Keep workstations clean and free of clutter
- ♦ Protect bench tops with bench paper/absorbent pads
- ♦ Store liquid waste containers in secondary containment
- ♦ Check waste containers often; ensure that waste containers are not full before starting work
- ♦ Keep containers (waste, stock, etc.) closed at all times when not in use

In the event your laboratory does have a radioactive material spill, would you know what to do? While spill response is covered in Radiation Safety Training, when a spill actually occurs, many people find themselves uncertain of how to act. Initial efforts should be directed at minimizing personnel exposure and containing the spread of contamination. The following procedures will be useful in the event of a spill in the laboratory:

- ♦ Stop all work. Notify personnel in the area that a spill has occurred
- ♦ Contact EH&S and notify the Radiation Safety Officer of the spill
- ♦ Prevent the spread of contamination by covering the spill with absorbent paper
- ♦ Remove all personnel from immediate spill area to safe meeting area in or near the lab
- ♦ Check all personnel for skin and clothing contamination with an operable survey instrument; remove contaminated clothing and decontaminate personnel

For more information about spill procedures, contact labsafety@columbia.edu.

Lauren Kelly Recognized by Public Safety

Congratulations to Lauren Kelly, EH&S's Hazardous Materials Program Manager, on receiving the Exceptional Service Award from Columbia University Public Safety. Lauren received the award on February 20, 2014 at the Public Safety Annual Promotion, Awards and Recognition Ceremony. The award was presented to Lauren for collaboration and leadership, on behalf of EH&S, over the past 8 years assisting Public Safety in preparing for emergency incidents and hazardous materials events through the development and delivery of a comprehensive training program. Her partnership with Public Safety led to a presentation at a national conference, where she was joined by Patrick Danville, Public Safety's Assistant Director of Training and Development, highlighting the benefits of a close collaboration between university EH&S and Public Safety departments. Well done Lauren!

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