

# Safety Matters

## Keeping Up with NIH Requirements for Recombinant DNA

by Paul Rubock

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The NIH's recombinant DNA Guidelines, first published almost thirty-four years ago, originated from an unprecedented instance of self-regulation. Following the Asilomar Conference in 1975, scientists declared a moratorium on research in this "new" area and then promulgated a consensus set of risk assessment and response actions that laid the groundwork for the current Guidelines. The direst possibilities entertained in the 1970's now seem very remote, but the Guidelines have always had to adapt to technological advances. For instance, synthetic nucleic acids have been deemed to be the equivalent of naturally occurring sequences in terms of risk assessment and associated notification and containment requirements. And earlier this year, the NIH raised the bar on when recombinant DNA molecules can be deemed replication deficient. The latter change was based at least partially on the potential for using synthetic DNA to mimic functional genomes with decreasing amounts genetic material. So what does this mean for laboratory research?

All laboratories must describe their use of rDNA in a submission to the University's Institutional Biosafety Committee (IBC). This can be easily accomplished by selecting [Appendix A](#) from the RASCAL Hazardous Materials Menu. Note, that "Guidelines" does NOT mean optional- they apply to all rDNA activities at an institution receiving any NIH funds for rDNA activities. In addition to *in vitro* and *in vivo* (animal) applications, human gene transfer represents the third major rDNA activity in academic research. The review of such proposals is the joint responsibility of the IBC and the Institutional Review Board (IRB). Frequently, the personnel involved in the early, administrative aspects of reviewing such a proposal are most familiar with the IRB aspects of the approval process, including the protection of human research subjects. Reviewers may not recognize that even though this is yet another investigational product, the genetic manipulations designed to produce a therapeutic outcome call for IBC review in accordance with the Guidelines. EH&S recently hosted a webinar attended by CUMC IRB and HICCC personnel where submittal requirements, along with how to distinguish a human gene transfer protocol from a 'typical' IRB submittal were discussed. In addition to receiving approval of an Appendix A, researchers must be current with safety training including annual bloodborne pathogen and tri-ennial laboratory and hazardous waste training. If you have any questions about your responsibility under the Guidelines or how to identify a human gene transfer proposal, email them to: [bsim@columbia.edu](mailto:bsim@columbia.edu).

## Catching Up With ChemTracker

by Jean Lee



In February 2006 the University deployed ChemTracker, a barcode and scanner-based system to manage chemical inventories on the Morningside Campus. The system has come a long way.

- ◆ There are currently 49,664 newly acquired chemical containers in the system.
- ◆ As of May 2010, 29,793 retro barcodes were added to existing chemical inventory (predated inception of 2006).
- ◆ A random chemical inventory audit was performed this spring and indicate that 96.24% of the campus' chemical inventory has been captured, and the missing 3.76% of chemical inventory have been subsequently added into the system.



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## Radioactive Waste – EH&S at Your Service by Lauren Kelly

EH&S' departmental Vision drives our continuous effort to “provide expert guidance and timely service.” As you may have heard, EH&S and CUMC Radiation Safety Offices merged in January 2010 and with this integration comes many positive changes and enhancements to our service offerings.

Among the most important service changes for laboratories are those related to radioactive waste handling. CUMC laboratories may be familiar with the carbon copy radioactive waste service request form that you were required to complete and hand deliver to the Radiation Safety Office come snow, sleet, rain or heat of summer to arrange a waste pick-up. Generators in the “super block buildings” (P&S, PH, VC, and Black) were not required to deliver forms to the Radiation Safety Office but had to adhere to the “can hours” schedule, to deliver their lab’s waste to the P&S can room. These burdens have now been eliminated.

Effective July 2010, all radioactive waste service or radioactive waste supply drop-off requests should be submitted via the EH&S website using the new Radioactive Waste Pick-up Request form (<http://vesta.cumc.columbia.edu/ehs/radioactivewastepickup/>). “Can hours” ceased on July 1, 2010, and all radioactive waste is now picked up directly from your laboratory by EH&S upon submission of an on-line Radioactive Waste Pick-up Request form. Please note that the chemical/hazardous waste and radioactive waste pickup requests are two **separate** forms and not to be used interchangeably. Additional enhancements to the radioactive waste program include:

- ◆ A new radioactive waste label has been created for ease of use and management.
- ◆ A laboratory guide to Radioactive Isotope Safety and Waste is being developed for later this summer.
- ◆ An enhanced Radiation Safety Training, including a new “Radioactive Waste Management” section.
- ◆ A radioactive waste brochure to guide you on proper radioactive waste management.

If you have other ideas or suggestions for improving the Radioactive waste service in the University community, please email them to [lk2292@columbia.edu](mailto:lk2292@columbia.edu).

## It is HOT - WATCH OUT!! by Harry Oster

In our part of the United States outside temperatures may rise above 100°F in Summer. Even on cooler days, high humidity can make the outdoors undesirable and unhealthy. If your job entails vigorous activity in during hot, humid weather, heat stress can be a major occupational hazard. The primary symptoms of heat stroke, a **true emergency for which medical attention must be immediately obtained**, are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and abnormally high body temperature. The symptoms of heat exhaustion are headache, nausea, vertigo, weakness, thirst, and giddiness. The following tips can help prevent adverse health effects related to summer weather:

- ◆ Stay hydrated; drink water before you feel thirsty. You may need a cup of water every fifteen minutes during intense outdoor activity.
- ◆ Work in the shade, when possible; always take rest breaks in a cool, shady spot.
- ◆ Wear light-colored, loose-fitting clothing, preferably made of cotton. Apply sunscreen and wear a hat and sunglasses (check the UV protection ratings for the glasses and sunscreen).
- ◆ If you travel to a warm area for a new job or a vacation, allow time to acclimate. Be extra careful the first 2 weeks.
- ◆ Heavy work or the need to wear personal protective equipment are additional stressors and extra allowances in terms of hydration and break times will be needed.
- ◆ If you have a medical condition check with your physician before engaging in any new stressful (heat-related or otherwise) activity.

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

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## Update: Controlled Substances in Research by Christopher Pettinato

In the winter 2010 edition of *Safety Matters*, we reviewed the University's [Policy for the Acquisition, Use and Disposal of Controlled Substances in Research](#). Since then, EH&S has received numerous inquiries from laboratories seeking guidance with issues of applications, storage, recordkeeping and disposal. As noted in the Policy, new applicants may be subject to an on-site inspection by the New York State Bureau of Narcotics Enforcement (NYSDOH BNE) before being issued a NYS license. Not knowing what to expect from an inspection, several laboratories have contacted EH&S to request our participation in their scheduled inspection. Of course, EH&S is always happy to assist. In fact, participating in such inspections affords us an opportunity to not only get better acquainted with the inspectors and the types of issues they tend to focus on, but it also gives us an opportunity to assess how these individual inspections affect the general direction of our guidance documents and compliance assistance.

Thus far, the focus of the NYSDOH BNE inspections has been to verify that the license applicant has established adequate controlled substance security/storage measures and to review the recordkeeping documents the applicant intends to use. When applicants reviewed the Policy and guidance documents in advance of the application and inspection, they had an unremarkable inspection and were informed that their application would be forwarded to the NYSDOH BNE central office for approval, as expected. Properly installing an acceptable double-door, double-lock cabinet and utilizing the recordkeeping template documents available on the EH&S website should yield a similar, positive inspection result. If your lab is planning to conduct research with controlled substances, or is currently doing so, and you have not yet reviewed the Policy and the associated [Appendices, Resources and Reference Documents](#), it is never too soon nor too late to do so. In fact, we continue to improve the reference documents and templates, so we encourage all affected parties to check back often for the most current information.

## Dress Appropriately for Work – Especially in the Lab! by Kevin McGhee

Nearly all occupations involve some form of dress code, and this is no different for laboratories. In labs, the required attire not only encourages presentable appearance, but also ensures safety for workers and students in a hazardous setting. This includes not only the special personal protective equipment that is kept in the lab, but also the regular clothes that are worn from home.

Summer can be challenging for laboratory workers, with the temptation to wear lighter clothing such as sandals and shorts. Though uncomfortable, summer weather is no excuse for wearing this type of clothing in a lab; closed toe shoes must be worn year round, and shorts are not permitted. Shorts and sandals are comfortable, but afford no protection against chemical exposures in the lab. You may want to keep your long pants and closed toe shoes in your desk drawer and change to lighter clothes for trips to and from home.

Unique hazards must also be considered when deciding what is appropriate to wear in the lab. If your experiments involve special hazards such as pyrophoric materials or operations with large amounts of flammable solvents, avoid highly flammable synthetic clothing and wear a lab coat made of a fire-resistant material such as Nomex. Failure to dress appropriately for laboratory work can lead to serious injury in the event of an accident. For specific advice on the basic attire and personal protective equipment that are appropriate for your lab, contact your Lab Safety Officer for further consultation.

## Laboratory Emergency Contact Stickers by Paul Rubock

The ability to quickly and knowledgeably respond to equipment or room alarms may be critical for the rescue of irreplaceable materials during an emergency in a way that does not jeopardize personnel safety. EH&S has developed stickers for critical equipment - especially in common or shared areas and outside of environmental rooms to provide a 24-hour contact number so that University responders can obtain hazard assessment information in the event of an emergency or other type of alarm situation. Stickers will be distributed shortly. You may click this link to download the stickers if you wish to post them now. (<http://www.ehs.columbia.edu/LabSign.pdf>)

## Have you returned your personal dosimeters? Why it's so important

by Thomas Cummings

**P**ersonal dosimeters (radiation monitoring badges) are used by employees and students to gauge the levels of radiation, if any, to which they are exposed. The badges are sent to a contracted company to be read; then, the Radiation Safety Program (RSO) evaluates the readings to verify that exposures are safely below regulatory limits. This is the most important reason for returning all badges to the RSO at the designated end of the wear period: the longer a radiation dosimeter remains unread, the less useful it becomes as a tool for evaluating an individual's radiation exposure level. Another reason is that the RSO is billed when badges are not returned in a timely manner- within 30 days - resulting in increased program cost.

The RSO must be notified in writing if your badge is lost, stolen, if you move into another department or if you are planning to leave your job. The "Employee Changes/Cancellations Form" is located on our website at <http://ehs.columbia.edu/RadiationFormsMC.html>, and must be submitted to the RSO in person or by email to [badges@columbia.edu](mailto:badges@columbia.edu). Your badge will be deactivated, and an accurate, updated list of current badge users can be maintained. You should also return dosimeters that are old or outdated, even if they are for someone who is no longer with the institution.

When wearing dosimeters:

- ◆ Report lost badges & fill out a lost badge form
- ◆ Indicate deletions on the packing list that is enclosed with the badges
- ◆ Inform RSO of badge coordinator changes
- ◆ Wear badges during procedures involving radioactivity or x-rays

Do Not:

- ◆ Share badges or discard badges
- ◆ Use your Columbia badge at another institution or wear a badge from elsewhere at Columbia
- ◆ Bring badges home - they are meant as an occupational monitor

The most recent dosimetry reports are to be posted in every department by the supervisor or badge coordinator in an area where employees can view their exposure levels. For further questions about your badges or personal dosimetry in general please email [badges@columbia.edu](mailto:badges@columbia.edu) or call the CUMC RSO at 212-305-0303 and 212-854-8749 at Morningside.

## Let's Barbecue - The Safe Way

by Terrence Jaimungal

**A**ccording to the U.S. Consumer Product Safety Commission, warm weather activities such as barbecuing lead to product-related injuries for more than 3.7 million people annually. But with just a few simple, precautionary steps, you can ensure a safe cookout, every time:

- ◆ Keep grills **at least ten** feet from any structure, or any combustible material and **NEVER** grill on a building roof. Accidental dropping of hot coals may cause a roof fire capable of spreading into the attic or top floor of the building.
- ◆ **NEVER** grill indoors. Grills generate carbon monoxide which may result in asphyxiation.
- ◆ The New York City Fire Code states that a minimum of two 2 1/2 gallon pressurized water extinguishers, a sixteen quart pail of water, or a charged water hose **must be present** during grill use.
- ◆ Columbia University policy requires the use of "Match Light" for all charcoal grill use on campus. If you use lighter fluid at home, never add it to coals that are already lit.

The safe use of gas grills requires some additional considerations:

- ◆ Propane cylinders may not be transported into New York City via tunnels or lower levels of bridges. It is illegal to carry more than one pound of propane into or through a house. Propane tanks may not be refilled within New York City limits.
- ◆ If you must transport your propane tank in a motor vehicle for any purpose, be sure you choose a relatively cool day.