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ENVIRONMENTAL HEALTH & RADIATION SAFETY
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Going Green…Safely!

As world leaders continue to develop long-range strategies for alternative fuels and for weaning us from our fossil fuel dependency, we are encouraged to "Go Green" on a personal level and to modify our individual energy consumption to reduce our own "carbon footprints". Simple steps such as turning off a light in an unoccupied room, unplugging idle equipment, adjusting the thermostat a few degrees, or exchanging an incandescent lamp for a more energy efficient compact fluorescent lamp (CFL) can significantly reduce energy use and positively affect the environment. For some, Going Green may mean taking the pledge to participate in Cool Columbia http://cool.columbia.edu

It is generally accepted that for a given light output, CFLs use between one-fifth and one-quarter of the power of an equivalent incandescent lamp and that modern CFLs typically have a lifespan of 6,000-15,000 hours, compared to 750-1,000 hours for incandescent lamps. This means a reduced demand for electricity and less burning of fossil fuel to create that electricity. The highly touted energy savings of CFLs has prompted lawmakers around the globe to draft legislation for the eventual ban on production/sale of incandescent lamps. – Continued Page 2

Laboratory Initiates Expansion of Chemical Tracking System

The initial goal of the Chemical Tracking System (CTS) is to comply with EPA mandates at Morningside and LDEO regarding chemical inventory management and reporting; however, it also promotes waste minimization through sharing of chemicals and inventory reduction by making all existing stocks available. Chemicals are tracked using a bar-code system; the bar code can be scanned or typed in to obtain information about that chemical.

The CTS currently tracks chemicals entering the campus, but does not account for stocks received prior to February 2006. As a result, some labs are taking advantage of the CTS by bar-coding old inventory themselves.

Dr. Nuckolls' group, on the 6th floor of the Chandler building, is reaping the benefits of this system. Noah Tremblay, lab manager of the group, has been appointed to be in charge of this process. EH&RS/EH&S interviewed Noah concerning his experience with the bar-coding system. He said that the idea originated with Dr. Nuckolls as a way to avoid purchasing a chemical already present in the lab's inventory – something that had previously occurred. Noah would "definitely" recommend the system to other groups, despite the fact that it time-consuming, noting that "it makes things easier in the long haul". He also expressed his thanks to Jean Lee, EH&RS/EH&S's director of IT programs for always being available to provide technical assistance. Bar coding is available on all Columbia campuses to any researchers wishing to implement it to enhance their lab's inventory management (contact Jean Lee, 854-8883 or jl2402@columbia.edu).

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Banning energy inefficient incandescent lamps is viewed as a sure fire way to reduce energy consumption, but if not done in concert with programs to educate consumers to the potential danger of improper handling and disposal of CFLs, unprepared users could be facing other dangers. CFLs, like all fluorescent lamps, are gas-discharge lamps that use electricity to excite mercury vapor in argon or neon gas, resulting in the production of short-wave ultraviolet light that then causes a phosphor in the lamp to fluoresce producing visible light. Why is this important? The "mercury" buried in all that jargon is present in ALL fluorescent lamps and can pose a health and environmental hazard if released. The typical 4 foot fluorescent lamp in your office contains 12–15 mg of mercury and a CFL contains 5-6 mg of mercury (http://www.nema.org/media/pr/20070313a.cfm). While this might not seem like a lot, we must also remember that we are exposed to mercury from a variety of other sources (http://www.who.int/phe/news/Mercury-flyer.pdf), and following some basic practices when handling mercury-containing lamps is prudent (and in some cases required by law).

Businesses are required to manage discarded fluorescent lamps as hazardous materials; they are not permitted to dispose of fluorescent lamps in the trash, but rather must have them recycled or treated as hazardous waste. Fluorescent lamps generated by households are exempt from these laws, but mercury is mercury and does not discriminate by its point of entry into the environment. That said, all households are encouraged to recycle their mercury-containing lamps. Many municipalities host household hazardous waste collection days where homeowners can bring all of their hazardous materials for no cost, safe disposal; another option is to contact your building manager or superintendent. If you live in Columbia University housing, your mercury-containing lamps will be accepted for recycling through the University's lamp recycling program (FYI ... Columbia recycled roughly 300,000 linear feet, or 56 miles, of fluorescent lamps in the past 3 years from our all of our buildings).

Contact your building superintendent for handling/disposal instructions.

Since all fluorescent lamps contain mercury, if you accidentally break a fluorescent lamp in your home, certain instructions should be followed to avoid personal exposure and spread of mercury contamination (http://www.energystar.gov/ia/partners/promotions/change_light/downloads/Fact_Sheet_Mercury.pdf).

Warning Signs and Safety

EH&RS/EH&S staff recently encountered two situations in which highly visible warning signs were ignored by laboratory personnel, resulting in potentially dangerous situations.

First, a researcher ignored a "No Flammables" sign on the lab refrigerator, storing a 250 mL bottle of ethanol. Luckily, an EH&RS/EH&S inspection discovered the bottle, averting the risk of flammable vapors being ignited by a spark from the refrigerator's motor. Had the discovery occurred during the weekly Fire Department inspection, the laboratory would have received a Notice of Violation.

In the second situation, EH&RS/EH&S personnel sealed off a tissue culture room contaminated by a chemical spill and posted caution tape across the door and a "Do Not Enter" sign over the door handle. A researcher (concerned for his experiment) displaced the warning signs and entered the room. Upon exiting the room, the researcher tracked hazardous waste into the corridor, necessitating further clean up by EH&RS/EH&S. The researcher was unharmed.

Warning signs and labels, whether on chemical bottles, laboratory equipment, or in no-access areas of the facility, must be heeded at all times. If you have any questions about any of the signage in your area, please feel free to contact EH&RS/EH&S.

Thank you

Thanks to the cooperation of researchers on all campuses, EH&RS/EH&S is pleased to report that Columbia University has complied with Department of Homeland Security (DHS) reporting requirements regarding "chemicals of interest" (COIs). Hundreds of inventory submissions and inquiries allowed EH&RS/EH&S to compile the data needed for on-time reporting to the federal government. Thank you to all who contributed to this effort.

Personal Protective Equipment – Using the Right Tool for the Job

A recent New York Times article illustrated, quite graphically, how workers at a Minnesota pork processing plant became exposed to a mysterious immunogenic material. Workers performing or stationed near a particular task developed muscle weakness, fatigue, and other neurological symptoms. Most workers were found to be properly wearing hard hats, gloves, lab coats, and eye protection; but many did not wear face masks, and some had bare, unprotected extremities while on the job. The primary barrier designed to contain the materials from the pork plant process was later discovered to be inadequate, allowing aerosolized tissue to come into contact with workers' exposed mouth, nose, and skin on their arms.

While researchers, including CUMC's W. Ian Lipkin, MD, are working on the epidemiological puzzle of the workers' symptoms, the lesson as it relates to personal protective equipment (PPE) is clear. Selection of PPE to protect against the hazards associated with the activities and materials of one's job is essential. In the event of a failure of a primary control barrier or engineering control such as a fume hood, PPE can offer limited but critical protection. Researchers and workers in biomedical and laboratory settings must conduct risk assessments, based on the materials and activities associated with a particular task, to evaluate their needs and select and properly use the appropriate PPE. When selecting PPE, keep in mind these considerations:
– Not all gloves are suitable for use with all materials; latex for example, is an ineffective barrier against formaldehyde;
– Safety glasses provide less protection than tight-fitting goggles; use goggles when there is increased risk of splash during a particular task;
– Lab coats can effectively protect clothing from small (research-quantity) splashes; consider an impermeable apron when handling larger quantities or any amount of high-hazard materials;
– Respiratory protection cannot be self-selected and worn without consultation by EH&RS/EH&S.

Please feel free to contact EH&RS/EH&S with questions or concerns about selecting and using appropriate PPE for your job.

Fire Safety - Why So Many "False Alarms"?

This is a question that is often asked of Fire Safety. Fire alarm systems are made up of smoke detectors, duct detectors, water flow switches, sprinkler heads, and pull stations, which, when activated for any reason, will transmit an alarm throughout the building and to the NYC Fire Department. A typical building will have several hundred of these devices monitoring air and water flow to detect a fire. These, and other parts of the system (tamper switches, strobes, horns, and speakers), are all connected to a fire alarm panel that is usually located in the lobby of the building.

All of these fire alarm devices are very sensitive and sometimes go into alarm for reasons other than a fire. Dust is the most common cause for smoke and duct detector activations due to building construction/renovation projects. While smoke and duct detectors in the immediate work area are disabled during the construction, due to the unpredictable movement of the air, especially by elevators, detectors in remote areas are sometimes activated. With construction there is also welding, vibrations, and the accidental broken pipe or sprinkler head that can also set off an alarm. Other "false alarm" causes are steam, electrical power surges or dips, loss of water pressure, and even the occasional pull box activation.As you can see, there are many causes for fire alarm activations other than a fire. Even though a nuisance at times, these devices are necessary and required by fire code for your protection. Smoke detectors are required by code to be cleaned semi-annually; fire alarm vendors are present on campus performing this cleaning along with other required maintenance to ensure that the fire alarm systems are working properly. For any questions about fire safety either at work or at home please email Fire Safety at: cumcfire@columbia.edu.

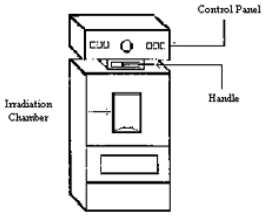
Heavy Metal

Not Metallica or Ozzy or Marilyn Manson. We're talking about the elemental metal, silver – not noise-induced hearing loss metal. EH&RS/EH&S is particularly interested in the silver generated from film and photo processing operations. Although most of us view silver as a precious metal, the EPA regulates it as an environmental pollutant and a Hazardous Waste. In accordance with the agency's regulations Columbia operates a Silver Recovery Program designed to keep silver out of our wastewater and landfills. The program is simple, hands-free for the user, and is initiated when a laboratory informs EH&RS/EH&S that they intend to perform film or photo processing. EH&RS/EH&S provides and maintains, at no cost to the laboratory, a metallic recovery unit (MRC) for each effluent fixer line. During processing, silver is removed from the film in the fixer solution revealing the image of the photo. The silver-rich fixer solution is discharged from the processor into the MRC. Inside the MRC is steel wool which contains iron; in an ion exchange reaction, the silver replaces the iron in the steel wool. Once the silver is exchanged in the MRC, the remaining fluid, known as iron media, is safe for discharge. The MRC works with gravity and has no mechanical parts. The MRC WILL NOT interfere with the operation of the processing equipment. However, it needs to be tested and typically replaced every 3 months. This service is part of the Silver Recovery Program provided through EH&RS/EH&S.

If your photo processor backs up or clogs, please contact the manufacturer for repair and ensure that the service provider reinstalls the MRC after repairs are complete. To maintain the integrity of the MRC, EH&RS/EH&S has outfitted the dark rooms with "Dark Room Log Sheets". They must be completed prior to each use and are audited quarterly by EH&RS/EH&S. Now that we've covered the environmental aspect of silver, let's get back to the precious metal value that we are all much more familiar with. Currently, silver is trading at about $14.00 per ounce. CU collects approximately 5.5 pounds per annum and uses the credit to offset a portion of the Silver Recovery Program's costs…no more money down the drain, as they say.
For more information or to download a dark room log sheet, visit our website: http://www.ehrs.columbia.edu/

Irradiation Anyone?

A Cesium-137 irradiator that delivers 700 Rad/minute in a uniform fashion is available for research purposes to University personnel. The samples can vary from microorganisms to fruit flies or from simple chemical compounds to polymers. The sample should fit in a cylinder 3 inches in diameter and 7 inches high. If you would like to utilize this service free of charge or have any questions, please contact the Radiation Safety Officer for details: (gh81@columbia.edu).



Another important component of the Chemical Tracking System (CTS)

is CTS's ability to reconcile incoming chemicals with discarded empty containers. A recent audit at Morningside revealed that many empty chemical containers were not scanned out, likely because they were not discarded in the yellow bins. Please help the CTS inventory work and ensure ALL empty chemical containers are discarded in the yellow bins located on each floor.

EH&RS/EH&S welcomes New staff members:
Terrence "Jai" Jaimungal, Industrial Hygienist, 854-2213, tsj2107@columbia.edu
James Kaznosky, Environmental Safety Officer, 305-6780, jk852@columbia.edu
Ilona Szigethy, Laboratory Safety Officer @ CUMC, 305-6780, is2300@columbia.edu