EHS
Summer 2011
Safety Bulletin
Yale Environmental Health & Safety

Appropriate Footwear in Yale Laboratories

Sandals and similar shoes are cool and comfortable during hot weather periods, but they have no place in a laboratory setting. Appropriate footwear in laboratories is closed at the heel and toe, and will cover your entire foot, protecting you from exposure to hazardous materials. Appropriate footwear offers protection from spilled liquids (including chemicals, biological agents, and radioisotopes) and broken glass or other sharps that may end up on the floor.

Already, a few incidents have occurred on campus this summer where the individuals involved were wearing flip-flops or sandals. This left their skin open to exposure to the hazardous materials that had been spilled and elevated their risk for potential exposure to the materials. Thankfully no one was injured, but the events serve as an important reminder for making good clothing and footwear choices in the lab.

Appropriate footwear not only needs to cover your foot completely, but it needs to be compatible with the materials you are using. As an example, some plastics may react with certain chemicals and dissolve readily. Make sure that if you are handling any hazardous chemicals that your shoes will be able to protect your feet if a spill were to happen.

Examples of What Not to Wear

- Sandals or flip flops
- Backless or sling back shoes
- Open toed shoes
- Perforated Shoes (such as Crocs ©)
- Shoes that leave a large portion of the top of your foot exposed

Be on the lookout for posters with examples of sturdy, appropriate footwear.

Safety Tip: Leave a pair of lab shoes at the lab and change into them when you arrive and change out of them when you leave. That way you can enjoy your sandals while outdoors and keep your feet safe while inside the lab!

Minors In Yale University Laboratories

There are numerous safety concerns with the presence of minors in university research laboratories. The University maintains the Policy Governing Minors in Yale Laboratories in order to comply with federal and state regulations. The minor policy and application are intended to assure compliance and optimize student laboratory research experience.

Students between the ages of 16 and 18 may enter a Yale laboratory as part of a Yale University approved educational program or individual educational mentorship with a faculty member. Applications must be reviewed and forwarded by the Chair of the FAS Department or the Dean (or designee) in self support schools to the cognizant provost (or designee) and to Environmental Health & Safety for approval. All minor students must complete required safety trainings and adhere to all restrictions imposed by EHS.

Note that youths aged 12 to 17 may only enter a Yale University research laboratory for a one-time educational or recruitment purpose. Tours must be conducted with permission of the faculty member responsible for the laboratory and the Department Chair or his/her designee. The faculty member will be responsible for proper supervision and for providing any appropriate personal protective equipment for the visitors. Tours must be supervised at all times while on the premises, and tour participants may not participate in any laboratory activities. Children under 12 years of age are prohibited from entering laboratory areas under all circumstances.

The Policy Governing Minors in Yale Laboratories and application forms can be found on the Office of the Provost's website at: http://provost.yale.edu/minors-in-labs.

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New Bicycle Safety Program

Bicycle riding has always been a regular mode of transportation around Yale and New Haven. In the past few years, there has been an increase in cycling due to a rise in popularity. It's "green" or environmentally friendly, and saves money on fuel costs and parking fees as well. Along with the increase in cycling comes the higher probability of accidents and injuries. Yale EHS has developed a Bicycle Safety course to help bicyclists understand the rules of the road. This course will make people more aware of the hazards surrounding them and to promote a safer way to traverse around Yale and New Haven.

Our new Bicycle Safety training course will cover state and local laws pertaining to bicyclists, accident avoidance including common situations where accidents occur on roadways and how to avoid them. It will also include bicycling tips, bicycle maintenance info, and the proper use and sizing of helmets. A short quiz is included at the end of this course.

To register for an upcoming class, log onto Yale's Training Management System at: http://www.yale.edu/training, then click on EHS. Join EHS in promoting bicycle Safety, and in the education on local traffic laws around the Yale Campus and in the City of New Haven.

Access to University Laboratories and Research Support Facilities

Laboratory research often involves potentially hazardous and regulated materials, such as biological and chemical agents, toxins, radioisotopes, and potentially hazardous equipment. For this reason, regular access to Yale laboratories and research support facilities is restricted to authorized laboratory personnel, including faculty, staff, postdoctoral associates and fellows, and students whose presence is part of their normal work, supervised research or coursework, or is a consequence of normal academic interaction and collaboration or other University business.

Other employees and students, as well as individuals from other academic or research institutions, business organizations, governmental agencies, and vendors, may visit Yale laboratories and research support facilities on a short term, infrequent basis provided that there is an academic, business, or educational purpose for the visit. Faculty members, laboratory managers, and their designees are responsible for making appropriate arrangements for such visits based on considerations of safety and non-disruption of research activities, and have the authority to deny access to non-authorized personnel. Certain laboratories and research support facilities have more restrictive access policies and procedures. In this regard, visitors may not enter any laboratory, animal, or clinical facility that requires specialized training and/or a Yale appointment to gain access without preapproval from all applicable entities (Environmental Health & Safety, Yale Animal Resource Center, etc.).

Visitors to Yale laboratories or research support facilities must be escorted by laboratory personnel. As relevant, a briefing should be provided regarding activities currently underway in the lab, where not to touch (keeping in mind that potential hazards may not be obvious to visitors), what to do in case of an emergency, and exit routes. Under some circumstances, visitors may be asked to wear personal protective gear appropriate for the hazards present in the laboratory or research facility.

Visitor access under the conditions described above does not constitute authorization to conduct research in a Yale laboratory or research support facility. Performing research in these facilities requires a formal Yale appointment and completion of all appropriate safety and compliance training. Minors may not visit laboratories or research support facilities except as provided by the Policy Governing Minors in Yale Laboratories.

Safety Tip

HOW TO IDENTIFY POISONOUS PLANTS

A good rule of thumb is "leaves of three, let it be." Poison oak and ivy usually are clustered in leaves of three. They contain an oil that when gets on your skin can cause an allergic reaction. You only need to be exposed to a very, very little of this poisonous oil -- less than one grain of table salt -- for it to develop a rash. If you do get it on your skin, immediately rinse skin with rubbing alcohol or a degreasing soap like dishwashing soap and lots of water. Rinse frequently so that wash solutions do not dry on the skin and further spread the urushiol. An antihistamine can be taken to help relieve itching.

Environmental Health & Safety

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Yale EHS Strategies

- Make Prevention a Priority
- Raise Our Visibility
- Build Effective Partnerships
- Optimize the Find-Fix System
- Build Our Capacity

How can we help you?

Environmental Health and Safety is a resource of highly trained safety professionals who serve the entire community. We are dedicated to reducing injuries, accidents and environmental impact, and ensuring compliance. We achieve this by providing high quality training, comprehensive workplace evaluation, managing regulatory information, emergency response and hazardous materials management from acquisition to disposal.

EVALUATION • RESPONSE • COMPLIANCE

HAZARDOUS MATERIALS MANAGEMENT • TRAINING

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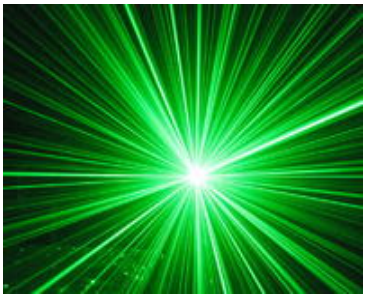
Laser Pointers: A Public Menace?



Are laser pointers a public health menace? Dr. George A. Williams, a spokesperson for the American Academy of Ophthalmology believes so. A 15 year old boy damaged his eyes while playing with a "laser pointer" purchased on the internet. This was reported in the September 2010 issue of the *New England Journal of Medicine*. There were two reports of similar incidents in June of last year. Another teenager damaged his eyes with a high powered "laser pointer." A British physician reported his vision was affected for several months after he was "zapped" by his 7 year old son.

What are the issues? Lasers, including laser pointers, are regulated by the Food and Drug Administration (FDA) and Center for Devices and Radiological Health (CDRH). A device marketed as a laser pointer is limited to a maximum of 5 mW in the visible range (400 to 700 nm). The number of laser devices sold as laser pointers is increasing in number and laser power levels. Such devices are marketed as laser pointers when in fact they are not. Many are not FDA/CDRH certified and have no labeling to indicate what the device is. Some come into the country described as toy parts with no indication that what is in the package is a laser.

Devices that are FDA/CDRH certified as laser pointers are considered to be eye safe. They are considered eye safe as our blink reflex provides protection. (We blink and turn away from bright light.) Laser devices are marketed and sold with power levels of up to 1 Watt. Anything in excess of 0.5 Watts is a class 4 laser. These lasers belong in a research or industrial setting, not in the hands of the general public or youth. The blink reflex is not adequate protection for power levels in excess of 5 mW.

The October 2010 issue of Optics and Photonics News addresses another very serious issue. Green laser pointers/laser devices are inexpensive, highly visible high powered and quite popular. The reason for concern is the way the green laser light is generated**.** There are two wavelengths used to produce the green beam. Both are invisible. Due to the process the invisible laser light can be nearly ten times the power of the green laser light, as indicated in an article published in *Optics and Photonics News* in October 2010. In an appropriately designed true laser pointer, there would have been a filter to block the invisible light. It is left out by design in many laser devices, significantly increasing the risk of injury.

Be sure your laser pointer is FDA/CDRH certified and is 5 mW or less in output. Please be certain your children are not playing with laser devices that can potentially damage their vision or that of others. If you have any questions regarding laser pointers or laser safety, please send an e-mail to lasersafety@yale.edu.

Be Safe in the Heat

EHS would like to remind you to take special precautions to avoid heat-related illness in unusually hot weather when working outdoors or in unconditioned indoor environments .

Departments with employees who normally work outdoors or in unconditioned indoor environments need to address heat stress when planning their work. Supervisors should review safety precautions and warning signs with their employees. For assistance, please contact Yale Environmental Health and Safety (EHS) at 203-785-3550. EHS can also suggest appropriate controls to reduce your risk of heat-related illness.

- Heat-related illness is preventable by following these guidelines when working outdoors in hot weather:
- Drink small amounts of water frequently, regardless of your activity level. Drink throughout the day. Don't wait until you're thirsty.
- Replace salt and minerals with beverages containing electrolytes.
- Wear appropriate clothing. Choose lightweight, light-colored, loose-fitting clothing.
- Protect yourself from the sun by wearing a wide-brimmed hat. Sunglasses and sunscreen—SPF 15 or higher—are also recommended.
- Schedule outdoor work carefully. If outdoor work must be done in hot weather, try to limit it to morning hours. Limit sun exposure during mid-day hours. Supervisors should consider rotating outdoor work schedules among employees.
- Pace yourself. Start slowly and pick up the pace gradually.
- Monitor yourself for the signs and symptoms of heat-related illness, listed below.
- Take time to cool down. Rest often in shady areas. A few hours in air conditioning can help you stay cooler later in the heat.
- Use a buddy system. When working in the heat, monitor the condition of your co-workers and have someone do the same for you.
- Monitor those at high risk. Some people are at greater risk than others, including people who are overweight, people who overexert themselves, and people with heart disease or high blood pressure, or who take certain medications.
- Take time to acclimate to heat and humidity. A heat wave is stressful to your body. You will have a greater tolerance for heat if you limit physical activity until you become accustomed to it.

Signs and symptoms of heat-related illness include headache, dizziness, lightheadedness, fainting, weakness, mood change, mental confusion, upset stomach or vomiting. An employee experiencing the above symptoms should be taken to the nearest hospital emergency department as soon as possible. Contact Yale Employee Health at 203-432-7978 if you have any questions.

Visit http://www.yale.edu/ergo for additional information on working in extreme temperatures and other ergonomic related issues.

Green Laboratories

On July 18th, Brenda Armstrong, (photo center) EHS Environmental Affairs Manager, presented certificates to the first four laboratories who completed all levels in the Yale Green Laboratories Certification program during a luncheon held in their honor. Each laboratory implemented changes in their operation and purchasing habits and successfully adopted laboratory sustainable practices. In addition to adopting required sustainable practices, each lab had to suggest supplemental write-in initiatives that they have also implemented to earn full certification.

Congratulations go out to the following:
(Accepting certificates for their labs from left to right)

Daniel Spakowicz from **Dr. Scott Strobel's** lab earned a total of 122 points with write-in initiatives including: using electronic chemical inventory and freezer maps for easy updating, bringing reusable bags to the stockroom, using autoclave glass bottles to avoid disposable filter bottles, reusing packing material, and developing a reward system to encourage non-car commuting to lab.

Caroline Weller from **Dr. Mark Saltzman's** lab earned a total of 120 points with write–in initiatives including: reusing packing materials, encouraging lab members to walk across campus instead of driving or taking the shuttle, and recycling utensils such as used pens.

Alyssa Siefert from **Dr. Tarek Fahmy's** lab earned a total of 135 points with write-in initiatives including: providing scrap paper bin next to printer for single sided paper, placing "shut the sash" stickers on fume hoods to encourage compliance, reusing ice packs and other packing supplies, encouraging lab members to walk or bike to lab, putting non-biologically contaminated pipette tips in the trash and not in biohazard bin.

Gregory Watkins-Colwell from the **Peabody Museum** Vertebrate Zoology division earned a total of 147 points for reducing hazardous waste generation by 90% by using a recycling still for solvents, strictly buying recycled products, and updating their techniques in the preservation of dried specimens.

Web: www.yale.edu/ehs/sustainability/greenlabs.htm

Incident Report

A small sampling of incidents Yale EHS responded to during the past few months…

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Description: possible exposure to hydrofluoric acid

A researcher working with concentrated acids, including hydrofluoric acid (HF), noticed a small red mark on her wrist after removing her gloves. Because she had been working with HF, she applied calcium gluconate gel and went to the Employee Health Office (EHO) at Yale Health for evaluation.

Resolution:

Employee Health sent her to Acute Care, who had her transported to YNHH. Doctors in the Emergency Room evaluated her wrist and determined that the mark was not caused by HF. EHS was contacted by EHO, and immediately visited the laboratory and verified that no chemical spill occurred.

Lessons Learned:

If chemical burn is suspected, immediately rinse area and contact Acute Care 432-0123 and Yale EHS 785-3555. Never work alone with concentrated acids. Ensure that all required personal protective equipment is properly sized and available before beginning work with hazardous chemicals.

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Description: needlestick

A researcher was injecting a chemotherapy agent into a mouse and accidently stuck himself when removing the needle from the syringe.

Resolution:

The researcher immediately removed his gloves, squeezed the small wound and washed his hands with soap and water for several minutes. He contacted EHS and went to Yale Health Acute Care for follow-up.

Lessons Learned:

This incident demonstrates the hazards of recapping or manually manipulating sharps. Always use mechanical devices when directly handling sharps.

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Description: Chemical permeation through glove

A researcher was wearing thin nitrile gloves and working with dimethylformamide. She realized that some DMF had spilled onto her gloves, but continued working and did not remove her gloves until she finished more than an hour later. After removing her gloves she noticed wrinkling and numbness of her fingers, washed her hands with soap and water, and went to Yale Health for evaluation.

Resolution:

Yale Health contacted EHS, who sent over an MSDS and information on DMF. Researcher was treated and released. EHS determined that DMF will readily penetrate nitrile gloves, and provided a sample pair of butyl gloves to the lab to use with this chemical.

Lessons Learned:

Thin exam style gloves offer limited protection from chemical exposure, and should always be removed after direct contact with chemicals. There is no one glove material that is good for all chemicals, so researchers should select the best glove using a glove selection chart. A glove selection chart was provided to the laboratory for their use.
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EHS Safety Training Information

Bicycle Safety Training

The course covers state and local laws pertaining to bicyclists, accident avoidance including common situations where accidents occur on roadways and how to avoid them. It will also include bicycling tips, bicycle maintenance info, and the proper use and sizing of helmets. A quiz is included at the end of this course. Classroom only.

Biosafety Training

Mandatory for employees prior to initiating work with agents classified at Biosafety Levels 1 and 2. Available online and classroom.

Biosafety Level 3 Initial

Mandatory for employees prior to initiating experiments with agents classified at BL2+, BL3, or BL3+. Classroom only.

Bloodborne Pathogens

Required annually for laboratory and clinic personnel working with human materials, including blood, body fluids, unfixed tissues, human cell lines or bloodborne pathogens. Available online and classroom.

Chemical Hazardous Waste Training

This is an interactive training course in chemical waste management on the proper collection, storage and labeling of chemical wastes. Available online only.

Chemical Safety for Laboratory Personnel

This required training covers the hazards of chemicals in the workplace, including information on hazard classes, exposure limits, and personal protective equipment. Available online and classroom.

Dry Ice Training

This mandatory course is designed to fulfill performance-specific training requirements for employees sending, transporting, or receiving dry ice with no other hazardous materials. Retraining is required every two (2) years.

Formaldehyde Training

Training is required for all workers who are exposed to formaldehyde. This training must be completed annually.

Office and Workplace Ergonomics

If your job requires frequent or heavy manual lifting or if you need information on the setup of a workstation and the prevention of repetitive motion injuries, review the **"Ergonomics @ Yale"** website.

Powered Industrial Vehicles

This annual training is mandatory for personnel who operate a powered industrial vehicle or PIV. Call 203-785-3211 to schedule.

Radiation Safety Training

Mandatory two (2) part training: Basic and Applied, for personnel working with radioactive material or frequenting an area where radioactive materials are stored or used. Employees must first complete the online session "Radiation Safety Basics-Part I" prior to enrolling in the classroom session.

Respiratory Protection

Respiratory protection training and fit testing is required initially and annually for all respirator wearers.

Safe Use of Biological Safety Cabinets

This training reviews the biological safety cabinets, their limitations, proper use techniques, and certification and repair procedures. This is a classroom only training.

Safety Orientation for Non-Lab Personnel

This course combines three required training classes for non-laboratory personnel: Bloodborne Pathogens, Chemical Safety, and Radiation Safety. This training fulfills the annual requirement for bloodborne pathogen training. This is a classroom only training.

Shipping Infectious Substances – Category A

This is a mandatory course designed to fulfill performance-specific training requirements for employees who do any of the following: package, label, ship, prepare shipping documents, offer packages of hazardous materials to carriers for shipment, transport and/or receive infectious substances. This also fulfills the requirement for shipping materials classified as Biological Substance, Category B, Exempt Human and Animal Specimens and Dry Ice training. Retraining is required every three (3) years.

Shipping Biological Substances – Category B

This is a mandatory course designed to fulfill performance-specific training requirements for employees who do any of the following: package or label shipping materials, prepare shipping documents, offer packages of hazardous materials to carriers for shipment, or transport and/or receive biological substances. This training fulfills the requirements for shipping dry ice. Retraining is required every three (3) years.

Tuberculosis Awareness Training

TB training is mandatory for personnel in a clinical setting with potential exposure to TB positive patients. Available online or classroom.

EHS Web Trainings

Air Emissions Training
www.yale.edu/ehs/onlinetraining/airemissions/airemissions.htm

Biosafety Training
www.yale.edu/ehs/onlinetraining/BiosafetyPartI/BiosafetyPart1.htm
www.yale.edu/ehs/onlinetraining/BiosafetyPart2/BiosafetyPart2.htm

Bloodborne Pathogens for Lab Personnel
http://info.med.yale.edu/bbp

Bloodborne Pathogens for Clinical Personnel
http://info.med.yale.edu/bbpclinical

Chemical Hazardous Waste Training
www.yale.edu/ehs/onlinetraining/hazwaste/chemicalwaste.htm

Dry Ice Shipper's Training
www.yale.edu/ehs/Documents/training/dryice.pdf

Formaldehyde Training
www.yale.edu/ehs/onlinetraining/formaldehyde/formaldehyde.htm

Laboratory Chemical Safety
http://info.med.yale.edu/chemsafe

Laser Safety Awareness
www.yale.edu/ehs/onlinetraining/laser/lasersafety.htm

Organolithium Compunds Training
www.yale.edu/ehs/onlinetraining/OrganoLithium/OrganoLithium.htm

P. I. Orientation of Yale's Biological Safety Manual, Procedure & Policies
www.yale.edu/ehs/onlinetraining/Biosafety/BioAdmin.htm

Safe Use of Biological Safety Cabinets
http://www.yale.edu/ehs/onlinetraining/safetycabinet/safetycabinet.htm

Shipping Infectious Substances – Category A
http://www.yale.edu/ehs/onlinetraining/categorya/categorya.htm

Shipping Biological Substance – Category B and Exempt Human or Animal Specimens
http://www.yale.edu/ehs/onlinetraining/categoryb/categoryb.htm

Radiation Safety Training
Radiation Safety Basics–Part I Web Training
www.yale.edu/ehs/onlinetraining/RadiationSafety/RadiationSafety.htm

Radiation Safety for X-Ray Technologists
http://www.yale.edu/ehs/powerpoint/radtechs_files/frame.htm

Tuberculosis Awareness
www.yale.edu/ehs/onlinetraining/TB/TB.htm

Universal Waste
www.yale.edu/ehs/onlinetraining/universalwaste/universalwaste.htm

Workplace and Office Ergonomics
http://www.yale.edu/ergo/

X-Ray Diffraction
www.yale.edu/ehs/onlinetraining/xraydiffraction/xraydiffraction.htm

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The EHS training room is located in the lower level, Room 15, at 135 College Street. To find out upcoming classroom session date and times, visit Yale's training website at: www.yale.edu/training or call EHS at 203-785-3211. EHS offers a wide variety of safety trainings in classroom sessions as well as online. Be sure to complete your Yale training assessment at: www.yale.edu/training to find out what type of training is required for your job duties.