EHS Fire Safety often receives phone calls or e-mails concerning “false” fire alarms with questions regarding what to do when they go off. Some of the buildings on the UNC campus have fairly frequent false alarms, and people have the tendency to become complacent and resist evacuating for one more “false” alarm. Regardless of how often the alarms in a building are activated, everyone must evacuate every time the fire alarms activate. There is no way for building occupants to know whether the alarm indicates an actual fire, hazardous release, or other emergency requiring building evacuation. How tragic if a life was lost because someone valued a laboratory experiment over life safety!

“Public Safety has the authority to issue citations to people who remain in the building after fire alarms are activated and evacuation is in process.”

Chapter 4 of the 2009 North Carolina Fire Code states the following: “Upon activation of a fire alarm signal, employees or staff shall immediately notify the fire department and shall immediately implement their approved fire safety and evacuation plan.” To provide some clarification, the fire alarm systems in our campus buildings report to a Public Safety Communications console which notifies the Fire Department, so notification is almost immediate.

Annual Fire Alarm Testing

EHS conducts fire alarm tests annually. This is important not only for testing the mechanical systems, but also to provide training to students, staff and faculty so they know what to do in an actual fire emergency. We notify the building contacts or Emergency Coordinators the month prior to the testing, and they are given the option to post notices with the date of the testing. Sometimes, however, the Emergency Coordinators choose to treat the alarm as an actual fire drill; if you haven’t seen the notices or received an e-mail about a fire alarm test, please leave the building when the alarm sounds.

“Someone in the United States dies in a fire about every 162 minutes.”

And, deaths from fires and burns are the fifth most common cause of unintentional injury deaths in the United States. That is why fire safety at UNC is a 24/7 operation, and is a comprehensive and systematic emergency planning effort that includes inspections, engineering, enforcement, response, fire investigation, education, and training.

With more than 8500 dormitory residents, 400 buildings, 170 sprinkled buildings, 6,000 fire extinguishers, 275 alarms, 7 dining facilities, and 44 stand-alone cooking hood extinguisher systems, the Fire Safety section team works all over campus, every day, to ensure fire safety. Their daily schedules include a wide range of activities, including testing alarms, sponsoring fire test drills, and inspecting fire extinguishers, because your safety is their mission.

(See “Guidelines for a Safe Evacuation” on page 10.)
Welcome to our Summer 2009 Safety First Newsletter.

It has been little more than a year since I came to UNC and I have enjoyed every minute of it. During this time we have focused on our management system of Plan-Do-Check-Act. Our EHS management team has concentrated on evaluating internal processes, reviewing customer service efforts, and measuring efficacy. We established 2008 goals and met nearly all of them. We have added new staff to address the increased demand from biological research and our efforts in fire safety education.

This is reflected in the EHS annual report, a new effort designed to be used as an educational tool for our campus community. We have established 2009 Goals and these are located at http://www.ehs.unc.edu/ehs/goals.shtml Feedback is welcome!

There is an interdependence between our health and safety practices for all groups on campus. That interdependence was on display recently as leaders all across campus joined together to address the recent outbreak of H1N1 influenza. Our response and preparation which began more than three years ago involving every unit on campus, set the stage for informative decisions and prompt response. We activated our emergency response plan, utilized Alert Carolina and kept the campus community informed. We continue to follow and update as needed.

Another collaboration we are strongly promoting is the shared responsibility for safety in laboratory space. As lab architecture changes and new buildings come online, so does the need for attention to how one person’s experiment and risk might affect each other. We draw attention to this important matter (GOOD NEIGHBOR Lab Safety Guidelines) on pages 4, 13, and 14.

Have a safe and healthy summer, and if you have a few minutes, log on to our website and take a look at our 2008 annual report at: http://ehs.unc.edu/ehs/docs/excellence.pdf

Mary Beth

Editors Note: Mary Beth welcomes your feedback and is always looking for your suggestions on “Creating a Safety Culture.” You can contact her by phone at 843-5913, by email at mbkoza@ehs.unc.edu, or via campus mail at CB 1650.

Awards
- Montego Fearrington received the Back Office Activity – Peer Recognition award from the Employee Forum.
- Larry Daw, John Covely, and Aaron Gunsalus received Star Heels awards.
- Mike Soles received the Employee of the Year Award.

Certifications
- Conor Keeney received a certificate in “Community Preparedness and Disaster Management,” from the UNC Gillings School of Global Public Health.
- James Gilbert was certified by the National Registry of Certified Chemists as a Chemical Hygiene Officer.
- Michael Long, Environmental Specialist, was certified by the Institute of Hazardous Materials Management as a Hazardous Materials Manager.

Publications
- Bradford Taylor, Associate Radiation Safety Officer, had a paper on medical uses of radiation accepted for publication by the Health Physics Journal.

Appointments
- Constance Birden was appointed Biological Safety Specialist.
- Janet Clarke was appointed Fire Safety Inspector.
- Tony J. Deluca was appointed Fire Safety Inspector.
- Holly Hong was appointed Physician’s Assistant for the Employee Occupational Health Clinic.
- Deborah Howard was appointed manager of the department’s Biological Safety Section.
- Vanessa Wise was appointed Transcriptionist for the Employee Occupational Health Clinic.
- Daniel Vick was appointed Export Control Specialist.
- Rich Miller, Environmental Affairs manager retired after 15 years at UNC.
Maybe you have heard about the close call when Mecklenburg County State Representative Becky Carney went into cardiac arrest in her office in early April. Thanks to the quick thinking of a few CPR-trained individuals and the presence of an Automated External Defibrillators (AED) in the Legislative Building, Ms. Carney was revived, treated, and is now able to return to work. Would there be a similar success story if someone needed CPR in your workplace? Do you know if there is an AED in your building, and, if so, who is trained to use it?

Automated External Defibrillators

First of all, what is an AED? An AED is an “automated external defibrillator.” It’s a computer about the size of a lunch box, with 2 pads connected to the computer via wires. When the pads are applied to a person in distress, the AED uses voice prompts, lights, and text messages to instruct the rescuer on when and how to administer an electric shock, as well as when and how to administer CPR to the victim. The AED analyzes the victim’s heart rhythms and will only administer shocks as needed.

Statistics show that AEDs can increase a person’s chances of surviving cardiac arrest by 90% vs. using traditional CPR alone.

AEDs have grown in popularity because they are easy to use. It’s best for someone trained in CPR to use an AED, but even non-trained individuals have successfully saved lives using this simple piece of equipment.

What do you need to know before purchasing and installing an AED in your facility? They can cost between $1500 and $3000, depending on the number of extra features offered. Most models have about a 10-year shelf life, and the only expected maintenance is changing out the batteries and pads.

Also, you will need a physician’s prescription to make the purchase.

According to the American Heart Association (AHA), the prescription is for quality control, to help make sure that potential users are properly trained and that medical expertise is available. Any physician who can issue prescriptions for pharmaceuticals can also issue a prescription for an AED; if you have a departmental contact, you can start there, or contact EHS and we’ll help you locate a physician who will work with you.

What is UNC’s policy on AED’s? For a complete review of the policy, follow this link to Chapter 3 of the EHS Manual: http://ehs.unc.edu/manuals/ehsmanual/3-12.html For more information, call EHS Fire Safety at 962-5708.

AED “Responsible Person” Needed

EHS is looking for volunteers to assist in our AED Program. Your help might make the difference in someone’s life.

Responsibilities include:
- Be a point of contact for each AED to EHS.
- Inspects the AED per manufacturer’s instructions.
- Replaces pads and batteries as needed.
- Coordinates and tracks CPR/AED training within his or her department.

Please contact Janet Clarke, EHS Fire Safety Inspector at 962-0360.
You may have seen these headlines.

At UNC and all across the world the pursuit of knowledge in the biomedical sciences laboratories makes these headlines possible—and UNC is at the forefront of this biomedical research. According to the UNC General Alumni Association, UNC ranked 15th overall among U.S. private and public universities in attracting funding from the National Institutes of Health, the principal biomedical research arm of the federal government. In the last five years, the number of designated Biosafety Level-2 (BSL-2) laboratories at UNC has risen more than ten fold, and the square footage of high containment biosafety laboratory space has more than doubled, reflecting the commitment the university has to biomedical research. When research activity increases, so too does the responsibility of assuring biological safety and security to make this research possible—and the discoveries that result from it. The University’s Institutional Biosafety Committee (IBC) and the Biological Safety Section of EHS have this responsibility. In 2008, the University’s IBC, reviewed 306 registrations, an 81% increase over 2007 registrations.

Along with this increased research and increased laboratory space, comes a new adjustment: shared space. According to Deborah Howard, Biological Safety section manager,

“Shared space issues in our new labs is something that is relatively new and researchers are learning how to adjust to the new safety issues.”

Often a new style of laboratory design seeks to maximize the use of the space and equipment, causing people to work in communal areas. Now lab personnel have to be more mindful that their experiment can affect more people, and that there are many more people using a single piece of research equipment, with different levels of attention to safety.

(See Shared Space Safety article on page 11.)

Common cold: Shown above is the structure of the protein shell of the human rhinovirus. Credit: J. Y. Sgro, American Association of the Advancement of Science

Vaccine for stomach flu possible (UNC News, 2/13/08)

DNA research could lead to cure for common cold (U.S News and World Report 2/12/2009)

The Biological Safety Section also provides guidance and assistance with programs such as Recombinant DNA, Bloodborne Pathogens, Biohazard Waste Management, and laboratory safety audits. These programs not only support research in medical applications, but also support research in agricultural, industrial, and environmental applications.

Ensuring research safety and national security.

Additionally, the section provides guidance and support for shipping biological materials to ensure national security and safe transportation of potentially hazardous materials.

As biological research has ramped up over the years, so too has the need of researchers to import and export materials to support that research. And, that need, with the corresponding national security concerns about terrorism has spawned a whole new world of guidance and regulation about shipping research materials.

In recent years, a handful of professors from universities across the country have been prosecuted for breaking U.S. export control laws.

There are serious consequences for not adhering to the guidelines. In most of the cases, the violations occurred due to ignorance of the law but their actions created a potential threat to national security. Carrying a laptop containing controlled information out of the country or sending controlled materials to a foreign entity without permission is a violation of export control law, and punishments for violations can be severe. Actual punishments have included a 160-year prison sentence with a 1.5 million dollar fine. In addition to the threat of legal punishment, exporting materials can be potentially life threatening if not handled properly. In 1996, ValuJet flight 592 crashed in south Florida. The crash was caused by an improperly packaged and labeled hazardous material catching fire in the cargo hold.

(Continued on next page.)
Thanks to the diligence of EHS officers, primary investigators, and lab workers, UNC has avoided severe violation by implementing the export control management plan, and by acknowledging that the controls are not intended to be punitive, but positive efforts to protect us all.

Hazardous Materials

Some biological material and chemicals are classified as hazardous and must follow special shipping guidelines. The Dept. of Transportation (DOT) and the International Air Transport Association (IATA) have established procedures that must be followed when shipping Hazardous Materials. These materials must be properly identified, packaged, and documented. Failure to comply with any of these three steps can result in shipment delay, additional charges and fines, or harsher penalties like criminal charges.

Hazardous Materials Shipping Training

EHS Biological Safety provides compliance training for shipping hazardous materials and diagnostic specimens.

Export Control Shipping Guidelines

* Identify any government controls on your item.
* Apply for licenses or permits, if needed.
* Obtain import permits for your destination, if necessary.
* Notify recipient that shipment has begun.
* You will both need to monitor its progress to act quickly on any delays.
* Identify potential hazards of your item.
* Classify item according to IATA and DOT Guidelines.
* Pack your item according to IATA or DOT Guidelines.
* Account for Hazardous materials in shipping documentation (waybills, bills of lading, manifests, etc.)
* Notify carrier that your shipment is hazardous prior to the actual pick-up.

Training Programs for shipping

hazardous material and diagnostic specimens

EHS Biological Safety provides compliance training for shipping hazardous materials and diagnostic specimens. Learn how to identify the item you are shipping and how to package and document it to comply with DOT and IATA regulations as well as determine if your item must comply with export control laws.

We also offer support with import permits if one is required. We are always available for individual consultation if there is a question regarding the items you are shipping. Call Daniel Vick at 962-5708.
UNC has more than 30 laboratories that use lasers. Within these labs, there are approximately 125 lasers ranging from confocal microscope systems to powerful class IV lasers. The word laser is an acronym for Light Amplification of Stimulated Emission Radiation. Sometimes though, due to the high cost of a laser system, Laser could stand for Lucrative Acquisition Scheme for Expensive Research. Just kidding!

The UNC Laser Safety Program was reviewed, modified and endorsed by the UNC Laser Safety Committee in May 2003. The program is based on the ANSI Standard Z136.1. This standard is the principal U.S. Safety standard and provides recommendations and guidance for the safe use of lasers. It categorizes lasers into four hazard classes and identifies relative hazards and associated controls for each. There are four classifications of lasers.

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
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<tbody>
<tr>
<td>Lasers are safe to view with the naked eye. A common example is the laser scanning system at a grocery store checkout.</td>
<td>Lasers only emit laser radiation within the visible light spectrum (light that you can see). They are incapable of causing eye injury with the eye’s normal aversion response to bright light.</td>
<td>Lasers are divided into two categories: Class 3a and 3b. Most laser pointers are Class 3. These lasers present potential eye injury resulting from looking directly into the beam.</td>
<td>Lasers are high-powered lasers that pose eye, skin and fire hazards. All control and safety measures should be carefully followed for Class 4 lasers.</td>
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**Laser Safety**

Laser accidents from exposure to the laser beam can range from temporary to permanent eye injury and skin burns. Non-beam hazards include electrocution, shock and fire hazard. In addition to being trained on use of their specific laser system, all laser operators must complete online laser safety training.

**Basic safety measures for high power laser systems**

- Never aim a laser at a person’s eye including your own.
- Wear protective eyewear.
- Only trained persons should operate the laser.
- Post entrances to laser labs with appropriate signs.
- Only operate lasers in a well-controlled area.

If you are already using a laser or are considering using a laser in your laboratory, please contact:

Mark Brueckner, Laser Safety Officer, at 962-5715, or by email: mlbrueckner@ehs.unc.edu
In the mid-1970’s, a 0.2 acre site near the Horace Williams Airport was used by N.C. Memorial Hospital and the University’s research laboratories to dispose of chemical waste using accepted legal disposal methods of that era. In 2004, the University entered into a voluntarily agreement with the North Carolina Department of Environment and Natural Resources (DENR) to clean up the site. During the 6-month cleanup conducted in 2008, nearly 22,000 bottles buried at the site were individually evaluated and lab packed, generating 99,000 pounds of hazardous waste. More than 4,000 tons of contaminated soil were excavated and shipped off site for disposal. Throughout the project, the University worked closely with the Town of Chapel Hill, the Orange County Emergency Response team and DENR to conduct the work safely.

More than 30,000 work-hours were spent on this extensive project to remove the buried material using methods similar to an archeological dig. The remediation was completed without a single lost time accident by workers wearing chemical protective clothing and supplied air respirators.

While this major project attracted media attention, it was only one part of a very proactive everyday effort to keep our environment clean and healthy. Another example — among many — was the restoration of Chapel Creek.

This small creek that runs from the UNC Outdoor Education Center through Finley Golf Course is critical to the water quality of Jordan Lake. By restoring the creek’s historical flow and native plants, water quality and habitat for wildlife will be dramatically improved — a smaller but important example of how we care for the environment as if it were, well, ours!
A primer for those who want to know more about EHS:

**If you work in a research lab, you probably know EHS for lab safety, but you may not know that in 2008 the department managed the clean-up of a major waste site. Or, you may know us for seasonal flu vaccinations if you are one of the 4,500 employees that got their flu shot through us last year, but you may not know that the department has developed emergency plans for dozens of potential threats, whether it is influenza or a hazardous waste spills. Or, you may not know that we work with construction contractors and facilities personnel every day, to ensure that dust, noise, mold and other things do not interfere with you how you breathe, hear, see, or smell! So here is a primer of what we do every single day of the year, for the health and safety of all.**

### Biological Safety

“In 2008, UNC recognized the Biological Safety section as a separate support division within the EHS Department. Biological Safety provides guidance, assistance, and surveillance over research activities involving biohazardous agents, recombinant DNA, bloodborne pathogens, and biohazardous waste management. Biological Safety monitors and reviews the performance and maintenance of laboratory containment systems, and provides technical support to EHS incident responders.”

![Deborah Howard](image)

Deborah Howard is the University’s Biological Safety Officer and section manager.

### Chemical Safety

“The main function of the Chemical Safety section is to manage the process of improving EHS through education, compliance, and the constant task of identifying and evaluating potential safety hazards in order to reach the destination of a safe research laboratory environment. Because the breadth and depth of UNC research is always expanding, the process of safety improvement is ongoing and ever-changing, providing daily challenges to support the research process.”

![Cathy Brennan](image)

Cathy Brennan is the University’s Chemical Hygiene Safety Officer.

### Environmental Affairs

The Environmental Affairs section was created in 1994 to proactively manage the environmental permitting of the campus and to ensure compliance with the increasing number of permits required by state and federal agencies. The section has responsibility for oversight of underground/above ground storage tank management, air quality permits, water quality permits, surface water quality, storm water management, wetland issues, environmental assessments at inactive waste sites, collection of radioactive and hazardous materials/wastes from campus, and operation of the Hazardous Materials Facility, and the storage-for-decay program for short-lived radioactive wastes.

Due to a recent retirement, this position is not currently filled.
**Fire Safety and Emergency Response**

“Fire safety management includes six functions: inspections, enforcement, education, engineering, fire investigation, and response. The sheer number of buildings on campus and the wide range of potential fire safety risks means that EHS personnel are constantly checking fire related equipment, running test alarms, and assessing egress risks. The section provide as much student and employee fire education as possible, so that fire safety becomes a collaborative effort, and a fire safety culture becomes the norm.”

**Occupational and Environmental Hygiene**

EH is responsible for ensuring that indoor campus environments are conducive to good health and wellbeing by recognizing, evaluating, and controlling health and safety hazards, with knowledge and experience in industrial hygiene, asbestos management, air and water quality, and safety engineering. Assessing potential safety hazards, possible instances of exposure, and suitability of protective equipment, OEH works with facilities engineering and facilities services personnel to find ways to keep historical buildings functional, while protecting employee health, and works with planning, construction, and startup of new and renovated buildings to anticipate and eliminate building related health issues.”

**Radiation Safety**

“Radiation Safety integrates education, oversight, compliance, service, and consultation to protect the students, staff, faculty, members of the general public, and the environment from the effects of both ionizing and non-ionizing radiation. Implicit in all aspects of radiation safety is security. Safety and security are accomplished through training, inspection, licensing, registration, and controlled access to certain materials.”

**Workplace Safety & Employee Occupational Health Clinic**

“The Workplace Safety Section provides services in the areas of ergonomics, respiratory protection, industrial maintenance and construction safety, clinical safety, medical surveillance, Workers’ Compensation, and the Safety Management Information System. Additionally, Workplace Safety is responsible for most workplace safety training. In 2008, 6,298 research, clinic, and other affected employees were trained on bloodborne pathogen safety, 4,646 employees on tuberculosis safety, and 2,364 healthcare workers on healthcare safety.”
Guidelines for a safe evacuation

- Use an established exit to leave the building.
- Take only personal valuables that will not impede egress time.
- Close doors behind you.
- Do not encourage delivery trucks personnel to leave their packages during a fire alarm.
- Meet at a well-known assembly point at least 25 feet from the building.
- Don’t cross the road during an evacuation.
- The Fire Code requires that occupants must wait until an Emergency Coordinator, Fire Official, or staff member notifies that it is ok to return to the building.
- It is unlawful to pull a fire alarm or to activate a kitchen cooking hood fire suppression system until there is a known fire.

EHS Mission Statement

The University of North Carolina at Chapel Hill Department of Environment, Health & Safety supports the University’s core mission of teaching, research, and service by providing comprehensive environmental, health, and safety services to the University community. This includes education through training and consultation, maintaining a safe environment through recognizing and controlling health and safety hazards, ensuring a process of regulatory compliance, and minimizing future potential liabilities.

Mission of the Organization

- Provide a safe workplace.
- Ensure a process of compliance.
- Minimize future potential liabilities.

Values of the EHS Organization

The organization will:

- Use time efficiently.
- Be a resource for new ideas.
- Connect to us relationally.
- Stay with us on the journey through all twists and turns.
- Establish state of the art safety and environmental protocols and procedures.
- Enable us to be all we can be.

EHS Mottos

- Be All You Can Be.
- Striving Towards Excellence
For years, primary investigators were assigned their own research labs. However, trends in laboratory design have moved towards shared space at laboratories all across the country, and at UNC. With the renovation of existing lab space and construction of new research buildings at UNC, labs have increased in size, requiring the shared use of lab space by multiple principal investigators and research personnel.

While this new type of lab architecture results in greater adaptability and efficient use of space and equipment, it also creates a safety concern. There can be a breakdown in safety culture, because there is less awareness of what others are doing; less feeling of responsibility for those you do not know; and less definition of the area for which the researcher is responsible, as the research equipment is used by everyone. And, as in most cases in our society, communal spaces that are supposed to be the responsibility of everyone, can wind up being the responsibility of no one. In general, such open spaces can foster the following safety problems:

- Lack of awareness of other risks generated by neighbors.
- Food and personal items too close to the experimental areas.
- Incompatible storage of chemicals.
- Blocked aisles, hallways and exit routes.
- Inadequate labeling of chemicals.
- Excessive storage of combustible material.
- Opportunities for loss of containment/cross contamination.

In order to improve the safety culture of these shared labs, EHS is putting increased emphasis on this issue. If you would like to assist us in this effort, please contact Catherine Brennan at the Department of Environment, Health and Safety at 843-5331, or by email at crbrennan@ehs.unc.edu

Print the Good Neighbor poster on the reverse side of this page and post in your laboratory to improve the safety of your lab!
# Good Neighbor

## Waste Disposal
- To ensure timely radioactive and chemical waste removal, schedule pick up when containers are 75% full.
- Biohazardous waste containers including sharps containers should be removed at 75% full and taken to be autoclaved.
- Each chemical waste container must have an associated inventory sheet of its contents. Do not use abbreviations. Use full chemical names.
- Double containment of liquid waste containers is even more important in a shared lab.
- Do not share chemical waste containers with other lab groups as dangerous unexpected chemical reactions could occur.
- Label all hazardous material and equipment. Use warning signs to designate particular hazards.

## Emergency Response
- Do not block aisles, hallways and exit routes. Placement of small portable file cabinets and mobile carts are prohibited.
- Know the location of your eye wash and safety shower before you need to use them. Keep these areas clear and unobstructed.
- Notify neighbors immediately in the event of a spill. Ask for help from your immediate neighbors and have a communication plan for emergencies.
- Notify neighboring groups that you are conducting experiments using hazardous materials. Consider the worst possible scenario and have a plan for when things go wrong.

## Work Practices
- 18 inch clearance from the ceiling is required for storage. Fume Hoods shall not be used to store chemicals.
- Organize with your neighbors into floor groups and meet regularly to discuss safety concerns. Required Environment, Health, and Safety annual training can be conducted during these meetings.
- Cross contamination risks are greater in a shared lab space. Use care in performing experiments.
- Notify collaborators of routine maintenance on shared equipment and potential problems from any laboratory devices.
- Practice good housekeeping and universal precautions always. Universal precautions means wearing appropriate PPE even when you think it may not be necessary.

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For more information about Shared Space Lab Safety, contact Catherine Brennan at the Department of Environment, Health and Safety – 843-5331.