



# Envir nmentally Speaking

The University of Georgia  
Environmental Safety Division

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## Eye Protection at a Glance by Wes Kolar, Environmental Safety Specialist for Laboratory Safety

According to the U.S. Department of Labor, approximately 1,000 eye injuries occur in American workplaces daily.<sup>1</sup> Of this number, 60% are attributed to workers not wearing any eye protection; four percent are attributed to workers wearing the wrong type of eye protection; and 20% result from contact with chemicals. Ninety-four percent of injuries incurred by workers who are wearing eye protection are attributed to chemicals or flying objects going around or under protective eyewear. These statistics point out the necessity of wearing appropriate eye protection in the workplace as a matter of habit.

Proper eye protection is required in UGA laboratories by both Georgia law and the Laboratory Safety Manual.<sup>2,3</sup> Georgia law states that all students, teachers, and visitors must wear appropriate industrial-quality eye protection at all times while participating in processes such as milling, sawing, kiln firing, arc welding, or vehicle repair, or when chemical hazards (particularly caustic or hot liquids), physical hazards such as flying objects, or injurious radiation are present. The requirements outlined in the Laboratory Safety Manual are similar and also re-

quire the use of goggles or eyewear with splash-proof sides when working with chemicals that are toxic (NFPA health rating of 3 or 4) or corrosive (pH greater than 12, or pH less than 2) such as acids and bases.

Impact-resistant safety glasses must be worn when performing tasks that may involve eye injuries resulting from flying objects. Seventy percent of all eye injuries in the workplace result from either flying objects, falling objects, or sparks striking the eye.<sup>1</sup> Most of the particles producing these injuries are smaller than a pin head. Impact-resistant glasses must be ANSI Z.87 rated (American National Standards Institute) and are denoted by a small logo "Z.87" which is located on either the frame or the lens. They come in many styles, including shaded models for outdoor work, and are very inexpensive, costing from \$3–10 in most safety supply catalogs.

Safety glasses that are rated to reduce the amount of radiation from a given portion of the spectrum (either UV, visible, or infrared) must be worn when working with lasers unless the light is enclosed by a curtain or other blocking device. When more than one type of laser is employed, alternate use of more than one type of laser safety glasses may be required. Additionally, laser safety glasses only protect the user from diffuse reflectance such as laser light bouncing off of a rough non-mirrored surface. They do not block out all of the light from any given portion of the spectrum, and thus do not protect the user from either direct laser light, or from specular reflectance such as light bouncing off of a smooth mirrored surface.

Due to the very sensitive nature of the eye, the principles outlined in both

Georgia law and the Laboratory Safety Manual must be observed at all times when potential eye hazards are present. Anyone who has ever rubbed salt (which is almost non-toxic) in their eyes knows just how sensitive the eye is to chemical attack. After ten seconds of chemical contact without corrective attention, the chances of full recovery become fleeting, and contact with acids and bases can alter the pH of the eye itself, leading to severe damage and blindness.<sup>4</sup> It is therefore imperative to wear safety glasses at all times while working in a laboratory setting, and to wear splash-proof goggles when working with heated or corrosive chemicals. Know where your eye washes are located as they may be difficult to find once an accident occurs. Wearing protective eyewear in the laboratory should be so common as to become second nature, and the practice of not wearing safety glasses should feel awkward.

<sup>1</sup> OSHA Fact Sheet No. 93-02.

<sup>2</sup> Georgia Law, 1974, pg 971, § 1.

<sup>3</sup> UGA Laboratory Safety Manual, Section 2.V.B, and Appendix J.I.C.

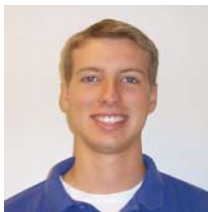
<sup>4</sup> David Roll and Ken Duffie, "Eyewash Standard and Guidelines for the Workplace," feature article: [www.StevensPublishing.com](http://www.StevensPublishing.com).

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## New ESD Employee



Heath Hardison has joined the Environmental Safety Division as an environmental safety specialist for laboratory safety.

He is from Centerville, Georgia and received an A.S. in forestry at Abraham Baldwin Agricultural College before earning his B.S.F.R. from the UGA Warnell School of Forest Resources. He formerly worked for the Georgia Environmental Protection Division as an environmental specialist in Albany, Georgia.

## Fire Safety Office Moves to the Environmental Safety Division

Russell Dukes, environmental safety coordinator and George McElhannon, fire safety inspector, joined ESD as of July 1. We are excited by the opportunity to integrate the fire safety program with other programs such as chemical and laboratory safety, emergency planning, and occupational safety. We look forward to offering better service and a team approach to departments with safety concerns. The fire safety office can be reached at 542-0113 or email Mr. Dukes at [rddukes@uga.edu](mailto:rddukes@uga.edu) and George McElhannon at [bigmac@uga.edu](mailto:bigmac@uga.edu).

## Division Highlights from FY 00-01 by Bob Wentworth, Project Coordinator

The Environmental Safety Division's (ESD) mission is to assist academic, research, and service units across the University. In support of that mission during FY 00-01, ESD has:

- Inspected every University-operated laboratory, not only on the main campus, but also at five off-campus experiment stations across the state.
- Disposed of 40 tons of hazardous waste on behalf of University laboratories.
- Disposed of an additional 11,000 containers of unusable or out-of-date chemicals disposed of in a collaborative clean-out effort with the Chemical and Laboratory Safety Committee.
- Distributed more than 15,000 Material Safety Data Sheets (MSDS), including more than 700 MSDS wall-mounted binders, to University employees.
- Distributed the University's recently completed Emergency Operations Plan to more than 500 departments.
- Conducted environmental assessments for 27 University

**“This has been a busy year and we’re looking for more ways to serve you in the future.”**

projects, clearing the way for construction of new academic and research facilities within the physical master plan.

- Tested more than 700 safety showers and nearly 900 eyewashes. Major repair and renovation funding of \$50,000 permitted the installation of 31 new showers and 62 new eyewashes in laboratories across the University.
- Coordinated the development of a phytoremediation field test as part of the Milledge Avenue landfill remediation efforts. Using natural plant enzymes to break down chemical poisons into salts and carbon dioxide, the site has been planted and results are being monitored.
- Certified an all-time high of 1,438 fume hoods.
- Trained more than 8,000 University employees on topics including right to know, chemical safety, hazardous waste management, defensive driving, ergonomics, and food handling.

This has been a busy year and we're

## Safe Operation of Autoclaves by Heath Hardison, Environmental Safety Specialist for Laboratory Safety

Autoclaves are used to sterilize instruments, media, and infectious waste and must be operated safely to prevent injury to people or damage to the machines. When using an autoclave, follow the manufacturer's instructions. Operating instructions, emergency shutdown procedures, and loading procedures, as well as a sign warning of "hot surfaces," should be posted adjacent to the autoclave and be easily visible. Make sure you are knowledgeable in the different modes of operation. Someone should be assigned responsibility to oversee safe

operation of the machine and see that routine maintenance is performed when needed.

Always wear eye protection, heat-resistant gloves, and aprons when operating an autoclave. Do not open the doors of an autoclave immediately after a run because hot fluids and noxious vapors can rush out of the machine resulting in possible injury. The seals of liquid containers placed in the autoclaves should be kept loose to prevent possible explosion. An autoclave can create enormous heat and pressure. For this reason, flammable liquids should

never be put into one. All doors and gaskets to the autoclave must be locked in place before operations, otherwise injury could occur from the sudden release of steam. The majority of autoclaves will have interlocks that keep the autoclave from operating if the door isn't shut properly. Become familiar with your autoclave—determine what safety features it has and learn about and follow other safe operating practices.

Adapted from the Centers for Disease Control and UC Berkeley web sites.

## Severe Weather Part II by Dena Roth, Program Specialist for Emergency Operations

During the last 23 years, severe weather has caused 229 deaths as well as extensive property damage in Georgia. Severe weather events can often be predicted and occur repeatedly in the same geographical locations. Severe thunderstorms, tornados, and hurricanes are the three weather occurrences most likely to affect University of Georgia facilities throughout the state.

Severe thunderstorms are weather systems that produce strong winds including straight-line winds, lightning and heavy rain. Thunderstorms result when cold upper air sinks and warm moist air rises creating a violent convection. Floods, flash floods, and tornados can develop as a result of severe thunderstorms. In 2000, straight-line winds exceeding 100 mph and heavy rains with hail caused approximately \$250,000 in crop losses in Georgia. Lightning, which always accompanies a thunderstorm, killed four people in 2000 and annually kills more people in the U.S. than tornados, floods, and hurricanes combined.

Tornados are short-lived local storms. An average of 29 per year occur in Georgia. They are composed of a violently rotating column of air that descends to the ground in the familiar funnel shape. They average 250 yards in width and 15 miles in length and always develop out of severe thunderstorms or hurricanes. Tornado strength is measured from F-0 to F-5 on the Fujita Wind Damage Scale. Unlike the

mid- and southwestern states, the Southeast typically does not have tornados that exceed F-3 because of our hilly and undulating terrain compared to the flat terrain out west.

The National Weather Service issues tornado forecasts as follows: a **tornado watch** indicates that conditions are right for a tornado to develop—be on the lookout. A **tornado warning** indicates a tornado has been sighted in the area and people should take cover. Athens-Clarke County is equipped with severe weather sirens to notify citizens if a tornado has been sighted. Tornado season is from April to June.

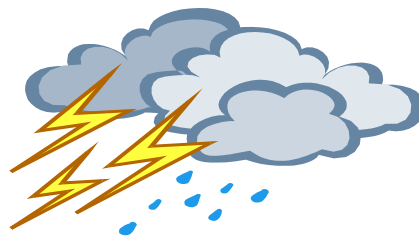
Hurricanes begin as tropical depressions and are termed hurricanes when winds reach a constant speed of 74 mph. The winds blow in a large spiral with a calm center known as the eye. The storm surge is a dome of water that floods the coastlines near the area where the eye of the hurricane makes landfall. It is the storm surge that causes the greatest damage. In addition to causing flooding inland, hurricanes can also spawn tornados.

Hurricane season is from June to November and an average of six occur each season in the U.S. Hurricanes are measured on the Saffir-Simpson Hurricane Scale, from category 1 to 5. The National Hurricane Center issues hurricane forecasts as follows: a **hurricane advisory** tells where the storm is located, the wind speed, and direction it

is moving. A **hurricane watch** is issued 24–36 hours in advance of landfall for the coastal areas it will affect. At this point, protective measures to life and property should begin. A **hurricane warning** is issued when hurricane conditions are expected in a coastal area in 24 hours or less. Final actions for protection of life and property should be completed as quickly as possible.

It is important to know evacuation shelters and routes for hurricane warnings. For severe thunderstorms and tornados, refuge areas should be identified in your home and workplace. These are areas without windows on the lowest floor possible. Keep a National Oceanographic and Atmospheric Administration (NOAA) weather radio on at all times and programmed for the area in which you live and work. Weather radios can provide you with the time you need to evacuate or take shelter.

In the next issue, Part III will cover extreme heat and drought, flooding, and winter ice storms. It will also include information on preparing a disaster supply list for work and home and other pre-planning information.



## Read to Know by Maria Kuhn, RTK Coordinator

A critical change in the UGA Right to Know Plan is the requirement that material safety data sheets (MSDS) be kept in hard copy form for all of the hazardous chemicals in your facility. MSDS should be stored in alphabetical order and be readily accessible and visible to employees during each work shift. This new requirement for MSDS will take some work for all chemical users at UGA, but don't worry—we've put a few things in place to help!

MSDS kits have been distributed to both on- and off-campus facilities. Each kit includes a 3-inch binder filled with 15 MSDS, a wall-mounting unit, information on the new requirements, and a web address for MSDS search engines. Work areas will have additional time to finish the task of adding MSDS to the new binders as laboratory safety audits will not include the new hard copy requirement until 2002.

The Right to Know web site

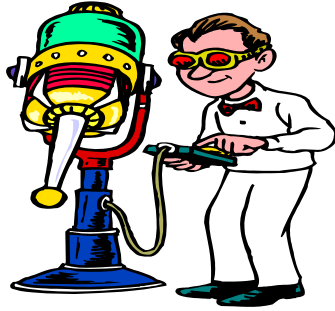
[www.esd.uga.edu/rtk/msds.html](http://www.esd.uga.edu/rtk/msds.html) has been updated, increasing electronic accessibility to MSDS. If you can't find a MSDS there, the chemical manufacturer will provide MSDS for any chemicals purchased from them. Additionally, Central Research Stores will provide MSDS for chemical purchases upon request.

If you have any questions, please contact the Right to Know coordinator at (706) 542-3571 or at [mkuhn@esd.uga.edu](mailto:mkuhn@esd.uga.edu).

## Laser Safety Program

The Environmental Safety Division will be launching a new laser safety program. Environmental health science intern Lynda Henry, who has been investigating laser usage, will develop a laser safety manual using the information gathered this summer. The manual will be posted on the ESD website as a guide for faculty, staff, and students.

Meanwhile, Lynda will continue with registration and inventory tracking of lasers as well as attending laser classes and seminars. Future aims in-



clude establishing a Laser Safety Committee, developing a laser safety course, conducting annual surveys, and addressing personal protective equipment problems and shortages. We hope to develop a program that will endure, ensure that the University is in compliance, and benefit faculty, staff, and students. Anyone with questions, comments, concerns, or those interested in becoming part of the Laser Safety Committee should call Lynda Henry at 542-0109 or e-mail her at [lhenry@esd.uga.edu](mailto:lhenry@esd.uga.edu).

## AAA Driver Improvement Program

The Environmental Safety Division will continue taking applications for the AAA Driver Improvement Program. The six-hour course will be taught in two three-hour sessions in the CCRC auditorium on Riverbend Road. The course is offered at no charge to UGA employees, however employees'

spouses and children are not eligible. Sign up on-line at [www.esd.uga.edu](http://www.esd.uga.edu) or by calling 542-0113. Classes will start at 9 a.m. and end at noon on the following dates:

**September 27 & 28**  
**November 29 & 30**

## Kudos

Congratulations to Ryan Nesbit on his appointment as associate vice president for finance and administration and budget director for the university.

Kudos to Bill Favaloro who spoke at the 19th Annual College and University Hazardous Waste Conference in Tucson, Arizona.

Thanks go to:

- Allison Webb, Campus Transit System, for providing defensive driving training to the Hazard Assessment Response Team (HART).
- Jimmy Linston, parking services, for providing permanent parking space for the HART trailer.
- Damon Evans, Charley Whittemore, Matt Brachowski, and the Athletic Association for their cooperation in the emergency operation planning.
- Dr. Duncan Krause for assisting Lynda Henry with the laser safety program.

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