



September 2004 Volume 8, Number 3

ENVIRONMENTAL HEALTH & SAFETY



EH&S MISSION STATEMENT

The Medical College of Georgia Environmental Health and Safety Division (EH&S) provides environmental safety services to staff, patients, students, and visitors.

The six sections of EH&S, Administration, Environmental Health & Occupational Safety, Biological Safety, Chemical Safety, Fire Safety, and Radiation Safety help to ensure full compliance with all local, state and federal laws.

We strive to continually improve the level and quality of services provided through creativity, teamwork and innovation.

THIS ISSUE:

Page 1:

- The Director's Corner

Page 2:

- How Safe Is Safe?
- Is It Really Biomedical Waste?

Page 3

- Radiation Safety Lab of the Quarter
- Chemical Safety Lab of the Quarter
- EH & S Welcomes New Chemical Safety Officer

Page 4:

- Georgia Highway Safety Facts
- Thermometer Disposal
- 2004 Training for Shipping Infectious Substances, Diagnostic Specimens and/or Dangerous Goods
- RTK On-line Training

The Director's Corner

USG Institutions Reducing Mercury Use

This spring and summer, five USG institutions are implementing programs to identify and reduce the amount of mercury in their laboratories. With funding assistance and support from EPA through the Pollution Prevention Assistance Division (P2AD) and the Board of Regents, each institution will promote and operate a "thermometer exchange" program. Through these programs, laboratory personnel will be educated on the hazards of mercury and will be encouraged to exchange their mercury-containing thermometers for equivalent non-mercury thermometers at no charge. Mercury is a toxic metal that accumulates in the environment and can cause serious health and ecological problems. Human exposure to mercury occurs primarily through inhalation of inorganic mercury vapor after a spill, or ingestion of methylmercury from contaminated fish. If not properly cleaned up, mercury spilled from a broken thermometer will slowly volatilize at room temperature, exposing laboratory personnel to toxic mercury vapors. When released to the environment through waste disposal, inorganic mercury is transformed into methylmercury, which is highly toxic and accumulates in living tissue. Thermometers are not a huge source of mercury in the environment – accounting for about 1% of total mercury use – yet they are a meaningful small source that can be easily reduced. Reducing mercury use on campus is consistent with our overall mission to promote environmental stewardship, safety, and health at all USG institutions. The participating institutions ultimately hope to eliminate over 1,500 mercury thermometers. The program results, educational materials, and "lessons learned" will be distributed to all USG institutions in the fall, and other institutions will be encouraged to pursue similar mercury reduction programs.

The participating institutions are:

- Medical College of Georgia
- Georgia State University
- Medical College of Georgia
- North Georgia College & State University
- State University of West Georgia
- University of Georgia

Submitted by James S. Davis, Ph.D., CHP, Director, EH&S

Source Beyond Compliance Spring 2004



PLACE
MAILING LABEL HERE

How Safe Is Safe?

At the Medical College of Georgia there are approximately 1500 individuals who work in close proximity to radiation. They may be exposed to radioactive material or devices, such as X-ray machines, that produce radiation. The Radiation Safety Office has the responsibility of helping radiation workers maintain their exposure at levels as low as are reasonably achievable. The Radiation Safety Office does this through training, periodic surveys, audits, consultation, and information dissemination.

But, unfortunately, workers are sometimes not able to evaluate their own exposure histories because they have little idea what levels of exposure are safe. Our culture tends to teach that any level of risk is unacceptable – particularly when radiation is involved. Is there a safe level? The best way to answer this question is to put it into the context of other more familiar risks, so that the risk involved with worker exposure to radiation at MCG can be more reasonably evaluated. We will compare the doses commonly received at MCG with benchmark dose levels to help evaluate risk and then we will look at the life expectancy lost as a result of several physical insults, to include radiation dose.

First, Some Important Terms

Rad (Radiation Absorbed Dose) The rad is a unit to measure a quantity called *absorbed* dose. This relates to the amount of energy absorbed in some material, and is used for any type of radiation and any material, but it doesn't describe the biological effects of the different radiations.

Rem (Radiation Equivalent Man) The rem is a unit used to derive a quantity called *equivalent* dose. The rem relates the absorbed dose in human tissue to the effective biological damage of the radiation. Not all radiation has the same biological effect, even for the same amount of absorbed dose. Equivalent dose is usually expressed in thousandths of a rem, or mrem. An example would be film and ring badge reports received from Landauer that are expressed in mrem.

Background Radiation Background radiation is a term used to describe the radiation that all individuals are exposed to on a daily basis. Sources of background radiation include naturally occurring sources such as radon and cosmic rays. The average dose that an individual receives in the United States each year from background radiation is estimated at approximately 360 mrem whole body equivalent dose. It is important to understand that even individuals who do not work with, or are not near, radioactive sources still receive an annual equivalent dose due to background radiation. To add some perspective to the average risk incurred at MCG, the following comparisons are provided.

Comparative Dose Levels

Lethal dose (50% of exposed population within 60 days)	450,000 mrem (acute)
Biological change is observable (blood changes)	50,000 mrem (acute)
Maximum personnel exposure allowed by NRC	5,000 mrem/year
Nuclear power industry employees	2,000 mrem/year
Background radiation - United States average	360 mrem/year
Average exposure from 1 X-ray of the abdomen	300 mrem
Average exposure from 1 dental X-ray	200 mrem
Average exposure from 1 chest X-ray	20 mrem
Average personnel exposure at MCG	20 mrem/year

Comparative Health Risks

Health Risk	Estimated Life Expectancy Lost
Smoking 20 cigarettes a day	6 years
Overweight (15%)	2 years
Alcohol (US Avg.)	1 year
All Accidents	207 days
All Natural Hazards	7 days
Occupational Dose 1000 mrem/year	51 days

Occupational Dose 300 mrem/year

15 days

Average personnel exposure at MCG,

20 mrem/year

none demonstrated

There are some individuals who work with fluoroscopic X-ray machines who may get much higher doses than the average doses shown. When this is the case, special precautions are taken to lessen their doses. The wearing of leaded aprons, gloves, and glasses is common. The comparative doses shown are not for the purpose of relaxing standards or for saying that there is no risk involved in working with radiation at MCG. The purpose of the comparisons is to enable radiation workers to understand the relative risk involved in their work by providing necessary perspective.

Written by Douglas Watson, Deputy Radiation Safety Officer

IS IT REALLY BIOMEDICAL WASTE?

For the past several years, MCG has seen an increase in bio-medical waste being generated. The cost of proper disposal has also increased significantly. Note the comparison increase in poundage over the past several years.

FY01 – 66,780 lbs.-FY02 – 71,160 lbs.

FY03 – 72,492 lbs. -FY04 – 82,380 lbs.

Institution cost for biowaste disposal has increased nearly 50% from eight years ago. Where general trash is estimated at about 5 cents/lb. to dispose of, biowaste is now 26 cents/lb., a five-fold increase.

This makes considering what goes into the biomedical waste stream more important than ever. Spending what dollars we have wisely is always a good plan. One way to do this is to look at what is placed in our red bag waste. If package wraps, paper towels, soft drink cans and bottles, cardboard cartons, plastic wraps, and other uncontaminated items end up in red bags, that is unnecessary expense to the institution.

Non-autoclaved wastes considered biomedical need to be disposed of as such in red bags or containers. The State of Georgia includes as biowaste the following:

Pathological waste:

- Recognizable human tissues
- Body parts (except teeth)

Biological waste:

- Blood and blood products
- Exudates, secretions, suctionings, and other body fluids (not discarded by sewer)

Cultures and stocks of infectious agents:

- From medical and pathological labs
- Infectious agents from research
- Biologicals production wastes
- Discarded live and attenuated vaccines
- Culture dishes and devices used to transfer, inoculate, and mix cultures

Sharps

- Needles
- Scalpel blades
- IV tubing and syringes with needles
- Any other discarded articles that can cause punctures or cuts.

Chemotherapy waste:

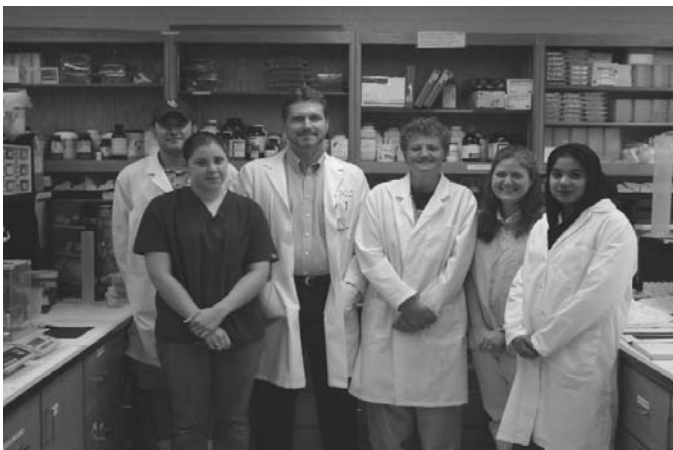
- Any disposable material that was in contact with cytotoxic/antineoplastic agents (agents toxic to cells)
- Empty devices that contains chemotherapy wastes

We should all make an effort to look and to be prudent in how we dispose of our wastes, getting it into the proper waste stream.

Written by Duane Perry, Environmental Safety Officer

Chemical Safety Lab of the Quarter

Often overlooked on a research campus are the laboratories that perform both research and clinical procedures. These labs work both the theoretical and practical avenues and balance their endeavors accordingly. What is necessary for both are safe working conditions.



Top left to right: Lonnie Davis, Louise Middlemore, Alvin Terry, Ph.D., Debra Gearhart, Ph.D., Elizabeth Hohnadel, Sameera Warsi

Radiation Safety Lab of the Quarter

The Radiation Safety Department is very pleased to announce the selection of Dr. Alvin Terry's Clinical Pharmacy Program Laboratory as the outstanding lab of the quarter. Dr. Terry's laboratory personnel that include Dr. Debra Gearhart, Lonnie Davis, Elizabeth Hohnadel, Louise Middlemore and Sameera Warsi, have kept their radiation safety lab notebook up-to-date and they have completed their annual radiation safety training on schedule. Additionally, they have properly managed their radionuclide inventory by submitting their disposal sheets on a timely basis. Dr. Terry's research team has also done an excellent job of maintaining the security of their rad material. The team's continued attention to radiation safety details is a reflection of the work habits that have made Dr. Terry's research team a success in their research efforts.

Two members of Dr. Terry's research team, Lonnie Davis and Sameera Warsi, are graduates of Augusta State with degrees in biology. Beth Hondadel is a graduate of Presbyterian College and Georgia College and State University and is currently a Ph.D. graduate student at UGA College of Pharmacy Program in Clinical and Experimental Therapeutics. Originally from England, Louise Milldlemore came to MCG as a biology graduate of George Mason University. Louise came very close to representing England in the Olympics as a swimmer. Dr. Debra Gearhart brought ten years of experience with Eli Lilly and Company to MCG and she earned a Ph. D. in Neuroscience at Loyola University Chicago after leaving Eli Lilly. Dr. Alvin Terry, who grew up in Greenville, South Carolina, received his Ph. D. in Pharmacology from the University of South Carolina and he has enjoyed the pain, discipline and other benefits of mountain bike racing. So given the diverse and competitive backgrounds of the "Terry" research team, one may understand and appreciate how their off campus activities have been instrumental in helping them succeed at MCG.

The Radiation Safety Office is very pleased to provide radiation safety services in support of Dr. Terry's research and we appreciate his research team's adherence to excellent radiation safety practices.

Written by Phil Maguire, Assistant Radiation Safety Officer



Left to right: Dr. Dolen, standing, Jan Ford, Penny Young

This is the case for the Allergy/Immunology laboratory in Pediatrics. William Dolen, M.D., with the help of his two Sr. Medical Technologists, Jan Ford and Penny Young meets that challenge. Steeped in science, they have learned to rely on the resources available to meet their goals. Ahmed Khocht, Ph.D., also utilizes this laboratory for some of his research endeavors, which accounts for the necessity of segregation of chemical inventories, and a set of protocols separate and apart from the others. Further Environmental Health and Safety resources have been utilized as new research is being prepared and all facets of meeting Institutional Chemical Committee procedures are addressed. It is a fine balancing act, and this laboratory, located at BG 1057 does it in an outstanding way.

Written by Tim Nelken, HazMat Officer

EHS Welcomes New Chemical Safety Officer

Kenneth U. Erondy recently joined the Environmental Health & Safety (EH&S) division as the new Chemical Safety Officer. Mr. Erondy has over 25 years of experience in environmental analytical laboratory testing and laboratory operation in the commercial laboratory industry.



Mr. Erondy holds a BA in Chemistry from The University of South Florida and a MS in Analytical Chemistry from Texas Southern University. He was a Laboratory Director at SRS and most recently, Laboratory Director in Cincinnati, OH.

Mr. Erondy believes that every employee here at MCG and MCGHI is critical to the success of the Division's efforts to meet the mission of EH&S, which is to provide environmental safety services to staff, patients, students and visitors. Ken can be reached at 721-2591.

Environmental Health and Safety News

Medical College of Georgia
Environmental Health & Safety Division
1405 Goss Lane, CI-1001, Augusta, GA 30912
Phone: (706) 721-2663 FAX: (706) 721-9844

Editor: Jackie Freeman EHOS
Technical Editors: Ken Erondou EHOS/Chemical/Biological
Phil Maguire Radiation Safety

Director of EH&S: James S. Davis, Ph.D., CHP

Assistant Director: Douglas Watson

EH&S Officers:

Radiation Safety Office James S. Davis, Ph.D., CHP

Chemical & Biological Safety Office Ken Erondou

Environmental Health & Occupational Safety Office Duane Perry

Fire Safety Office Jimmy Murray

Thermometer Disposal

Mercury thermometers should never be disposed of in sharps containers. Sharps waste is typically destructed by incineration, which would liberate mercury vapor to the atmosphere, and contaminate the environment. Dispose of broken or unusable mercury thermometers by placing them in a mercury collection container or by calling the Chemical/Biological Safety Department (ext. 1-9643) to pick them up. Your help in this matter is most appreciated.



Written by Duane Perry, Environmental Safety Officer

2004 Training For Shipping Infectious Substances, Diagnostic Specimens and /or Dangerous Goods

Federal regulations require anyone who offers for transport, transports, or handles for transport hazardous materials to be a trained person (49 CFR Part 172 - Subpart H). Certification is mandatory every two years. An interactive training CD is available through the Division of Environmental Health and Safety for employees who ship infectious substances, diagnostic specimens and/or dangerous goods. Please contact Jackie Freeman, ext. 1-2663 to pick up a training CD packet or for further information.



Written by: Patricia L. Walker

Each calendar year, MCG employees are required to take the Right to Know (RTK) training. The online training program is designed to educate University System of Georgia employees to properly recognize and work safely with hazardous materials.

Please take approximately 15 minutes to complete the on-line Right to Know training at <http://www.usg.edu/ehs/training/rtkbasic/>. For more information, please contact Ken Erondou, ext. 1-2591.

Written by: Patricia L. Walker

Georgia Highway Safety Facts

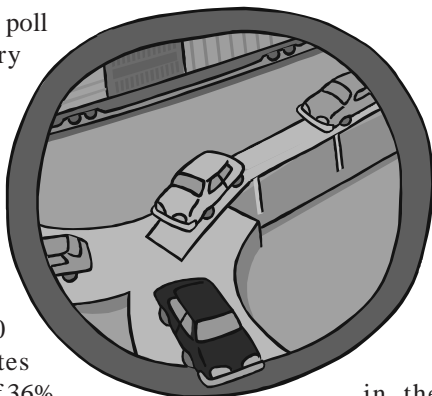
Some interesting facts from the "Georgia Highway Safety Fact Book" distributed by the Governor's Office of Highway Safety:

- In the past 50 years, more than 68,000 people lost their lives in motor vehicle crashes in Georgia.

- In Georgia, motor vehicle crash fatalities outnumber murder victims almost three to one. In 1998, 1,579 people died in motor vehicle crashes compared with 583 murdered persons.

- According to a public poll conducted in February 1999, Georgians are more concerned with being killed in a motor vehicle crash than being killed as a victim of crime, fire, or cancer.

- In July 1996, the speed limit was increased to 70 mph on rural interstates resulting in an increase of 36% in the number of fatalities on rural interstate highways.



- In 1998, the crash rate per 100,000 licensed drivers ages 16 and 17 was 227% higher than the rate for drivers over age 24.

- Non-interstate roads are almost three times more dangerous than interstates. In 1998, 1,387 people died on state, county, and city roads, compared with 192 deaths on interstate highways.

Drive safely to and from work. Also remember to drive carefully on campus as well. Obey deck speed limits (10 mph) and Laney-Walker speed limit (25 mph). Follow road signs, parking instructions, and always honor pedestrian crosswalks.

Submitted by: Jimmy Murray, Safety Officer

Source: Georgia Highway Safety Fact Book