Georgia Tech-Environmental Health & Safety

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www.safety.gatech.edu

Safety Buzz

From the Director

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For this issue of the Safety Buzz, we are emphasizing laboratory safety and hazards associated with gasoline filing. I will start this issue by addressing a potentially insidious hazard that we might face during the winter-Carbon Monoxide.

Carbon monoxide is a colorless, odorless, and tasteless gas. It is a product of combustion of fossil fuels such as natural gas, fuel oil, propane, liquefied natural gas (LNG), gasoline, and kerosene. Carbon monoxide is a poison because the part of human blood that transports oxygen, hemoglobin, has a far greater affinity for carbon monoxide than oxygen. In situations where there are very high airborne concentrations of carbon monoxide, hemoglobin will carry so little oxygen that the exposed individual can be starved for oxygen. In urban environments during periods of high motor vehicle traffic, such as where Georgia Tech is located, the ambient level of carbon monoxide outdoors will be about 1 to 2 parts per million (ppm)—not a dangerous level. For workers, EH&S limits carbon monoxide exposure to 25 ppm over an 8 hour working day. Individuals can safely be exposed to higher levels for shorter times.

What can you do to protect yourself from carbon monoxide and the possibility of carbon monoxide poisoning?

First and foremost, ensure that your furnace is maintained according to the manufacturer. Have it checked to make sure that it is working normally. Make sure that the heat exchanger is checked and that it is not cracked. Ensure that the flue or chimney is not blocked. Modern furnaces have protective devices to check for proper operation and the "computer" will shut down the furnace if a "fault" is detected. However, these devices do not detect carbon monoxide so it is important to have the furnace inspected.

Second, make sure that your car exhaust system is intact, and be sure that he engine is maintained properly. Several years ago I tested a police car for carbon monoxide because police officers were falling asleep while on patrol. My test results showed very high carbon monoxide levels that explained their drowsiness. A gasket on the engine exhaust recirculation system had failed and replacing this inexpensive part cured the problem.

Third, use fireplaces, gas stoves, propane grills, kerosene heaters, propane heaters, and radiant heaters properly. These devices can emit very high levels of carbon monoxide and/or can present a significant fire hazard. Refer to the manufacturer's instructions for guidelines in safe usage.

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Lastly, and certainly very importantly, install carbon monoxide detectors. These are plug in devices available in hardware stores, department stores, and warehouse clubs. Follow the directions for installing them, and be sure to have one on each floor. When elevated levels of carbon monoxide are detected, the detector will time the carbon monoxide in the air before sounding an alarm. Lower levels take a longer time to sound the alarm than higher levels. Refer to the detector instructions for a detailed description of the "programming."

Also, refer to the detector instructions for actions to take when the alarm sounds. You might need to call the fire department because carbon monoxide levels are so high that it would be unsafe to investigate yourself and take immediate corrective action to eliminate the hazard.

Be safe out there,

Safety Tips for Working in Laboratories

By Debbie Wolfe-Lopez, Chemical Safety Coordinator

Let's make one thing perfectly clear, the person most responsible for your safety in a laboratory is <u>you</u>.
There, I said it.

It is a surprisingly unrecognized and often unpopular idea. Yes, your instructor or employer is responsible for making certain information available to you, such as *Material Safety Data Sheets* (MSDS)s, and making sure you are oriented to the unique set of hazards present in <u>your</u> laboratory, and for making you aware of safety resources, such as www.safety.gatech.edu, the Georgia Tech Lab Safety Manual, and sites such as www.hazard.com, but it is your day to day actions, including what you do, or don't do, with the information made available to you, that determines your level of risk.
Let's take a look at some of the things that you can do to take an active part in your own safety:

Safety begins at the door with the donning of safety glasses for all wet bench labs. What's a wet bench lab? Any lab with chemicals or biologicals, or any lab that is not strictly an electronic instrumentation room. If there were a lab safety axiom regarding who is likely to get splashed and when, the axiom would be that "it is not your experiment that is going to blow up all over you, it's the other guy's". So wear those safety glasses all of the time when inside the lab, regardless of what you are working with. (By the way- you instrumentation people- soldering requires safety glasses too!)

"Fashion" in laboratories has an entirely different meaning than it does anywhere else. It means the difference between wearing the Harley-Davidson or the Smith & Wesson safety glasses or the belted or unbelted knee length lab coat. Remember, any part of you that is uncovered is at risk, hence the rule about shoes: No open toes, no canvas, no open weave tops. As mentioned, a lab coat (preferred) or an apron should cover you to the knees (sorry, tall folks, I know this is a hard one for you). Shorts and skirts are not disallowed at GT, as long as they are covered with a coat or apron, but I would like to discourage you from wearing them in labs. A case in point is an accident that occurred last summer when two students were exposed when a bottle of acid fell, hit the floor, and the contents splashed <u>up</u>, not down, as it would in most cases. The student wearing shorts was burned on his legs. The student wearing long pants got to buy himself a new pair of jeans.

Speaking of Spills- the last thing you want to have to do if you are splashed is start

looking for a shower or eyewash, so locate these, along with the fire extinguishers and all the exits, when you first walk into the lab. Remember- you may have to find the shower or eyewash with your eyes closed so locate them now and make sure that they remain unobstructed.

That's all for now. Remember that EH&S not only has a library of safety videos that you can borrow, but we give "live and in person" training too. To contact us, or to see the list of available videos, go to www.safety.gatech.edu.

We're on the web!
www.safety.gatech.edu

Gas Pump Safety (Extracted from Techlines, December 2004)

Gasoline is a very flammable liquid, though most people forget this fact when they fill up their gas tank every week. During the winter, when static electricity is common, fueling up your tank at the gas station can quickly turn dangerous. The picture shown below is the result of a gasoline explosion which was the result of static electricity.

OPW, a manufacturer or petroleum equipment, gave some helpful tips to remember when refueling:

- Always shut off the vehicle, even if only filling a portable container.
- Don't re-enter a vehicle after fueling has begun. If something is needed from the vehicle, make sure to discharge any static electricity before touching the fuel nozzle. This can be done by touching a metal part of the car. Never touch the fuel nozzle first.
- Never leave the nozzle unattended when refueling.
- Never smoke when refueling.
- Leave the cell phone in the car when refueling.
- Since gasoline expands as it gets warm, do not overfill or "top-off" the gas tank. This will prevent gasoline spills.
- Only use the hold open latch on the pump nozzle, never jam it open with another object.
- Never let children refuel a vehicle.
- Before fueling, always locate the emergency kill switch found at each pump.
- If a fire occurs, NEVER remove the fuel nozzle from the vehicle. Back away and notify the attendant to turn off the pump. If the nozzle is left in the vehicle's fill pipe And the pump is turned off, the fire will most likely extinguish itself.
- When refueling recreational vehicles or campers, always turn off all pilot lights.

When filling portable containers, OPW suggest the following:

- Use approved containers.
- Always place the container on the ground before filling it.
- The nozzle should contact the wall of the container when filling.
- Never fill the container inside a vehicle, bed of a truck, or in a trailer—the containers are not grounded to dissipate a static charge that may be present.
- Never fill a container more than 95 percent full to allow for fuel expansion.
- Cap the container tightly.
- If fuel is spilled on the container, make sure it evaporates or is removed before placing it back in the vehicle.
- When transporting, make sure the container is secured. Never leave a container in a vehicle or in direct sunlight longer than necessary.

Stay alert—don't get hurt!

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In Case of Fire:
Call GT Campus Police at 894-2500 or if Off-campus, call 911

Defensive Driving (DDC-6)

Note: This course is for current and prospective Georgia Tech employees and students who drive state vehicles.
The goal of the National Safety Council's DDC is to provide drivers with knowledge and safe driving techniques to prevent accidents and violations. This course focuses on accident prevention through hazard recognition and application of accident-avoidance techniques. In addition, the course addresses common driving violations that result in accidents and how to change driving habits to eliminate moving violations.
Throughout the 6-hour course, participants learn how to recognize both potential and immediate hazards, how to avoid accidents in a variety of driving conditions and how to choose safe and legal driving behaviors. The emphasis is on identifying and choosing safe and legal behind-the-wheel behaviors and actions.

In order to attend this course you must have a valid state driver license.
Who Should Attend?: All current and prospective Georgia Tech employees and students who drive state vehicles. This course is for Georgia Tech faculty and staff. **Students can ONLY attend if they work within a department where they will be operating a Georgia Tech vehicle in their daily duties.** Individuals who drive vans to transport 15 or more people must take the Coaching The Van Driver Course.
Please call Environmental Health & Safety 404-385-0263 for information concerning this course.

Upcoming course dates:
FEB.15
MARCH 11
APRIL 12
MAY 17

In Case of a Fire:

You do need to be prepared in case a fire does occur. When the fire alarm system sounds, proceed to the nearest exit, being careful to close all doors behind you (but do not lock them). If smoke has entered the room, get down on the floor and crawl under the smoke. Keep your head 12-24 inches from the floor. Heavier toxins can gather in a thin layer below 12 inches. Cover your nose and mouth with a damp cloth. NEVER USE THE ELEVATOR UNDER ANY CIRCUMSTANCES. Proceed outside to the agreed upon safe meeting place in the Emergency Action Plan so head counts can be taken.

In case you are trapped in your office or dorm by smoke and flames, DO NOT PANIC. Seal cracks around the doors with damp clothing. Telephone the fire department, even if they are already on the scene to tell them where you are. Open a window. Do not break the windows! You may need to close them later. Stay near the window where you can signal for help.

Fire Extinguisher operation:

P – Pull the pin that unlocks the operating handle
A – Aim the extinguisher low at the base of the fire.
S – Squeeze the lever on the extinguisher to discharge the agent.
S – Sweep the nozzle or extinguisher hose from side to side. Move slowly and carefully toward the fire, continuing to sweep the extinguisher back and forth at the base of the flames.