



Carbon
Neutral
Energy
Solutions
Laboratory
Safety Briefing

What to think about while in the laboratory?

- Make your and everyone's safety the top priority.
- Openly discuss safety and integrate lessons learned from near misses.
- Decide what you will do if an accident occurs before you begin work.

CNES Safety Committee

- Shane Getchell
- Ben Emerson
- Shannon Yee
- Diane England
- Sankar Nair

Materials Covered

- Safety Culture
- CNES Lab Guidelines
 - Lab Signs
- CNES Absolutes
- Standard Operating Procedures
 - Cylinders and Respirators
 - Gas Lines
 - Flammables and Hazardous Gasses
 - Lasers
 - Chemicals
- Required Training
- CNES Courtesies

Safety Culture

- Goal: To provide a safe and healthy environment for all faculty, staff, students, and visitors
- Conduct research in a manner where CNES is an exemplar for health and safety
 - Make CNES the “gold-standard” for safety
- Maintain clean and safe laboratories and workplaces
- Develop and promote the adoption of EHS “best practices”

Safety Culture

- Identify and correct health and safety hazards and encourage the reporting of hazards and safety related incidents to EHS
- Work cooperatively with all research groups inside CNES

CNES Lab Guidelines

- All exterior lab doors must have posted Emergency Contacts with name and day and night phone numbers of PI's, students, researchers, Lab Managers, and GT Police.
- Labs must have warning information about chemicals and gases
- All containers must be labeled and use the appropriate colored cap

Example Lab Signs

EMERGENCY

CALL CAMPUS POLICE AT X4-2500

The following individuals are familiar with the equipment and current research activity in this room. They can be contacted after hours at the listed numbers.

NAME	NUMBER
1. Akanksha Menon	404-944-6499
2. Sampath Kommandur	213-361-8828
3. Prof. Shannon Yee	614-506-5735

HAZARDS

CHEMICALS BIOLOGICALS RADIATION
 LASERS NON-IONIZING RADIATION

Date 10/8/2013

GT Police: Once you have attempted to contact lab members, please call EHS at 404-216-5237.
Environmental Health & Safety 2009

<p style="text-align: center;">Major EMERGENCY</p> <p style="text-align: center;">Injuries, Burns, or Fire (un-extinguished)</p> <p style="text-align: center; font-size: 1.2em;">404-89 4-2500</p> <p style="text-align: center; font-size: 0.8em;">(Campus Police)</p> <p style="text-align: center;">OR</p> <p style="text-align: center; font-size: 1.2em;">911</p> <p style="text-align: center; font-size: 0.8em;">(Routes to HWY Patrol)</p> <p style="font-size: 0.8em;">Send someone to greet E-response Bring MSDS binder and inventory</p> <p style="text-align: center;">Then call Shannon 404-38 5-2176 (614-506-5735)</p> <p style="text-align: center;">Then call Shane 404-38 5-0229 (404-883-5969)</p>	<p style="text-align: center;">Minor EMERGENCY</p> <p style="text-align: center;">Chemical Spills Most Chemical Exposures Fire you put out yourself</p> <p style="font-size: 0.8em;">(EHS will help assess what services you need and can deal with specific chemical exposures quickly)</p> <p style="text-align: center; font-size: 1.2em;">404-89 4-6224</p> <p style="text-align: center; font-size: 0.8em;">(Campus EHS 9-5 PM)</p> <p style="text-align: center;">OR</p> <p style="text-align: center; font-size: 1.2em;">404-216-5237</p> <p style="text-align: center; font-size: 0.8em;">(Campus EHS 24/7)</p> <p style="text-align: center;">Then call Shannon 404-38 5-2176 (614-506-5735)</p> <p style="text-align: center;">Then call Shane 404-38 5-0229 (404-883-5969)</p>	<p style="text-align: center;">Other Resources</p> <p style="text-align: center;">24/7 GT EHS 404-216-5237</p> <p style="font-size: 0.8em;">Debbie Wolfe-Lopez 404-38 5-2964 (404-202-7454)</p> <p style="font-size: 0.8em;">Ryan Lisk 404-38 5-9531 (404-516-0238)</p> <p style="font-size: 0.8em;">Morgan Wright 404-38 5-0821 (404-246-0082)</p> <p style="font-size: 0.8em;">Shane: (Building Issues) 404-38 5-0229 (404-883-5969)</p> <p style="font-size: 0.8em;">Waste Pick Up: 404-89 4-6224</p>
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This is a working laboratory.
Safety Glasses are required to enter.
All persons entering must have safety training
appropriate for the hazards listed below:

Safety Glasses Required

Chemical Hazards	Biological Hazards	Radiation Hazards	Toxic Gas Hazards
STRONG MAGNETIC FIELD "The Magnet is Always On!" Strong Magnetic Field	No Cardiac Pacemakers or Ferro- Metallic Medical Implants	No Loose Metal Objects	Laser Hazards

Environmental Health and Safety at 404-894-4635.

Squeeze Bottle Color Coding

Solvent	Cap color
Methanol	Blue
Acetone	Red
Tetrahydrofuran	Yellow
Hexanes	Green
Chloroform	White
Water	Clear

CNES Lab Guidelines

- Ear plugs and ear muffs must be worn when exposed to loud noises.
- Students must be trained on power tools before use.
- Face shield must be worn over safety glasses when working with high pressure systems (>150 psi).

CNES Lab Absolutes

- Safety glasses or goggles must be worn at ALL times while inside any laboratory. No Exceptions.
- Long pants and closed toed shoes must be worn while inside any laboratory. No Exceptions.
- NO working alone in laboratories
 - Someone must be present in the building and know you are working!
- Keep ALL aisles clear and clean at all times

CNES Lab Absolutes

- NO student is to work on any energized electrical system. No Exceptions.
- NO person is to intercept power wiring at any location other than a receptacle installed by a licensed electrician.
 - If you receive an electrical shock, seek medical attention immediately, then please report this to your supervisor.
- NO food or drinks in any laboratory.
- ALL research groups will undergo safety reviews by the internal CNES safety committee

Standard Operating Procedures

- ALL experiments must have a Standard Operating Procedures (SOPs) on hand at all times and must be posted near the experiment
- ALL researchers must be trained and certified on the SOP before using any apparatus, instrument, or tool
 - Written record of training and certification will be kept by PI for each apparatus, instrument, or tool

Cylinders and Respirators

- Cylinders must be moved using a cylinder cart only.
- Cylinders not “in use” shall not be stored in the laboratory unit. We must use the “1+1” system.
- ALL gas cylinders in use must be connected to a regulator.
- EHS must pre-approve, evaluate and issue any and all respirators. No Exceptions

Gas Lines

- ALL permanent piping systems must have a vented pressure relief.
- ALL gas systems must be leak checked before first run and after any modifications to the system via “snoop.”

Flammables and Hazardous Gasses

- Each control area is allowed 1000 cubic feet of flammables
- Each lab is allowed 6 gallons of liquid fuel storage. This includes propane.
- The use of O₂ will be evaluated by the safety committee before it is brought into the building
- Flammable gases shall not be stored within 6ft of building access points (i.e., doors or windows that open)
- All gases with a health hazard 3 or 4 (or 2s with poor warning properties) will be pre approved by the GT Chemical and Environmental Safety Committee prior to purchase

Lasers

- Everyone must take the GT Laser Awareness Online Training
- Only authorized, trained people are allowed to operate lasers
- Each PI with laser research is responsible for issuing proper laser PPE, registering lasers, and posting laser use notifications

Chemicals

- All incoming chemicals must be tagged and logged into Chematix when brought into the building.
 - This includes gas cylinders.
- Each lab is responsible for providing a URL or scanned copy of the MSDs to EHS for any chemical not already in Chematix or does not have an MSDS in Chematix-

Required Training

Classroom Courses

- Basic Lab Safety
 - Renew every 3 years
- Right to Know
- Using Chematix
- Fire Safety
- Any additional research specific training (see you PI)

Recommended (not required):

- Understanding MSDS

Online Courses

- Shipments of Dangerous Goods
- Receipt of Hazardous Materials
- Hazardous Waste Awareness
<http://www.usg.edu/ehs/training/hazwaste/>
- Laser Awareness

Online Training can be found here:
<http://trains.gatech.edu/courses/index>

CNES Lab Courtesies

- Everyone please work together
- Please do not remove or use anything from another lab without permission
- Please keep everyone updated on your current research and experimental hazards
- Please review the CNES Lab Safety Manual and comply with all guidelines