The Lab Rat NEWS
December 2014

EMORY UNIVERSITY
Environmental Health and Safety Office
Research Administration

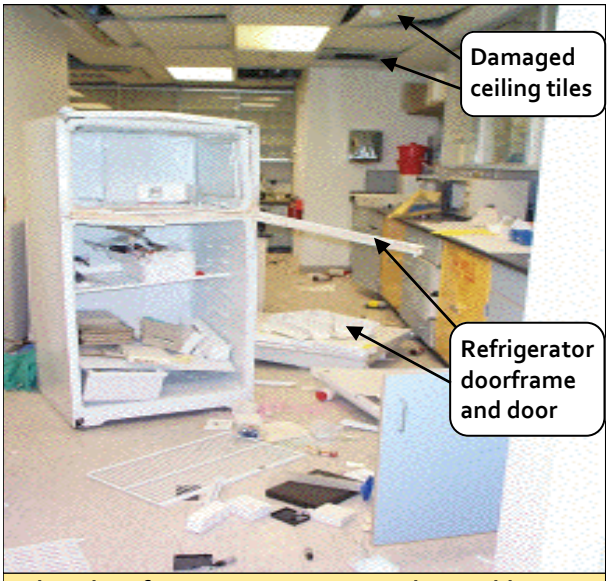
FLAMMABLE CHEMICALS AND REFRIGERATOR STORAGE

Recently, there was a refrigerator explosion on Emory's main campus that was caused by storing flammables in a conventional refrigerator. Luckily, no one was around during the time of the explosion, but this incident serves as a reminder that flammables should never be stored in non-approved refrigerators or freezers. A flammable liquid is defined by OSHA as "having a flash point at or below 199.4°F (93° C)." Flammable liquids include common alcohols such as Ethanol or Isopropyl Alcohol.

Are you storing your flammable chemicals in conventional refrigerators, freezers, or cold rooms?

If you are, then you are creating a potential situation that can result in serious injuries or death to someone working in the lab! Vapors from the stored chemicals can accumulate over time and can come into contact with an electrical spark, thus creating a powerful explosion. The spark can occur during the normal operation of these appliances such as when the thermostat, defrost timer, the internal lighting unit, or the motor turns on and off. Conventional refrigerators and cold rooms should NOT be used for flammable chemical storage. Even a small quantity of flammable liquid stored in a non-approved refrigerator or freezer can cause a large explosion.

Two more similar incidents from the University of Vermont and the University of Virginia are shown below. The explosions were both due to storing flammables in conventional refrigerators.



University of Vermont, June 2000: Flammable liquids stored in a refrigerator resulted in an explosion. The door blew off and debris propelled across the room.

University of Virginia: A thermostat spark ignited flammable vapors.

Freezer compartment melted.

How do I tell what type of refrigerator I have?

Flammable materials must be stored in approved refrigerators or freezers. Cold rooms are not appropriate for storage because they are not ventilated and have closed air circulation systems that re-circulate leaks and escaped vapors within the chamber. The table on the next page will help you determine if your refrigerator is appropriate for flammable storage.

Training

Most of EHSO's Trainings are available online: ehso.emory.edu.
Rad Safety Training
2nd Tuesdays at 10:00am (monthly).
Lab Safety Training
3rd Thursdays at 10:00am (monthly).

Chemical/ Radioactive Waste

Full Schedule here...
All **chemical** waste pick up should be requested by emailing chemwaste@emory.edu.
All **radioactive** waste pick up should be requested via EHS Assist pick-up.
Chemical waste disposal inventory form and/or **radioactive** waste inventory form should accompany all waste containers at the time of pick-up.

PPE

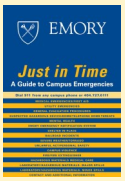
Choice to be based on potential exposures involved:
Eye: Glasses, goggles & face shields.
Gloves: Appropriate for the type of procedure.
Clothing: Gowns, lab coats, aprons, coveralls.
Respirators: Appropriate for the type of procedure.

Conventional Refrigerators	Flammable Storage Refrigerators	Explosion Proof Refrigerators
		
• Contain sparking components inside the refrigerator cabinet, such as thermostats and switches, that can ignite vapors from the flammable liquids stored inside. • Commonly used due to low cost. • **Flammable materials must never be stored in these types of refrigerator!** • Please look in your refrigerator now and remove any flammable materials if your refrigerator is not approved for flammables storage.	• UL listed for storage of flammable chemicals. • Electrical sparking devices are on the outside of the refrigerator and cannot ignite flammable vapors from chemicals stored inside. • More costly than conventional refrigerators, but can safely store chemicals that exude explosive vapors. • Cannot be placed in a room containing explosive vapors.	• UL listed for explosion-proof. • Similar in design to flammable approved units, but operating components and electrical junction boxes are sealed from explosive vapors. • Limited use on campus. • Only required for storage of volatile materials in areas or rooms with explosive atmospheres, such as solvent dispensing rooms. • Very expensive and requires special wiring.

Alternative Solutions

Flammables can be safely chilled in an ice bucket or with dry ice. For long term storage, check if a lab on your floor will let you use their approved units or pool together funding to purchase one for the department or floor. Emory-approved vendors offer discounts when purchasing multiple units at one time.

DO YOU KNOW WHAT TO DO IF A FIRE STARTS IN YOUR LAB?



If not, here are three important reminders to ensure your safety in the event of a fire emergency:

1) Activate the alarm at the first signs of a fire. Assess the fire to determine if you should extinguish the fire or evacuate. If (a) you do not know what is burning, (b) the fire is spreading and not contained, or (c) you are not trained in using a fire extinguisher (either hands-on training or the October Lab Rat Newsletter), **then you must evacuate immediately.**

Once you have assessed that you do not need to evacuate immediately and you feel comfortable with using an extinguisher, you may try to extinguish the fire.

2) Locate the nearest fire extinguisher and use the PASS technique. **Pull** the pin, **Aim** at the base of the fire, **Squeeze** the lever, and **Spray** while sweeping from side to side. Once the fire is extinguished, you will need to return the extinguisher to its location and request a replacement from Campus Services. If the fire cannot be extinguished, evacuate immediately. Refer to the October Lab Rat Newsletter for more information.

3) All fires **must** be reported by contacting the Emory Police Department. You can dial the EPD Direct Emergency Line **(404-727-6111).** Refer to the "Just in Time" guide and Emory Fire Life Safety for more information.

Please Read—

Signature indicates: I have read and I understand the information in this issue of Lab Rat Newsletter. Use an additional sheet of paper for more signatures, if needed and attach to this document.

- This newsletter is a tool to help fulfill a legal requirement for ongoing safety training.
- Supervisors are responsible for ensuring that individuals in their area have read and understood the information that applies to their area.
- The signed newsletter should be placed into the PI's EHSO Lab Safety Binder.

Signature Here

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

Eye Wash Testing

Eyewash Stations should be tested and documented once a month by lab personnel

Certifications

Certifications required annually:
Biosafety Cabinets, Geiger Meters and Chemical Fume Hoods.

Fire Extinguishers

Visual fire extinguisher inspections conducted monthly:

A. Is it present and mounted in its proper location?

B. Is it readily accessible?

C. Initial and date attached tag.

If it appears to need servicing contact the Maintenance HELP line at 7-7463

Tell us how we are doing!

The newsletter has a new home. Every individual article is now hosted **online**!

Got something to share? Tell us! Post comments, related articles/links, and safety concerns.

Feel free to also send your comments to **biosafe@emory.edu**.

We look forward to reading your ideas and comments!

Building Liaisons

Click here to find your building's Radiation and Research liaisons.