LAB SAFETY INFORMATION
Environment Health & Safety
Biology Department

Many of the items discussed in this training session are mandated by Federal, State, and University rules and regulations. ALL items discussed are departmental policies and as such are to be enforced and practiced by you as an instructor and you as a student and/or researcher. The Safety Contract is in accordance with all said above entities and as such failure to follow it can result in disciplinary action by the department and/or university.

General Information

- Personal items such as coats and backpacks are to be kept off work benches and away from the working area.

- All gloves are to be removed and hands are to be washed with soap prior to leaving the laboratory. This includes breaks and leaving to use the restroom.

- **ALWAYS** practice good housekeeping and put everything back where it goes (not necessarily where you found it)! No materials may be taken from the laboratory at any time. If lab materials are to be moved from lab to lab, they need to be in secondary containment.

- **No** children are to be allowed in the laboratories for any reason at any time. No adult not registered for class is allowed in the laboratory at any time for any reason unless invited by the instructor or an employee of the university acting on behalf of said university.

- Any lab work performed in the lab outside of normal lab hours must be done with the instructor’s written *prior* permission. **Both instructor and student are required to retain a copy of the document.**

- Please limit the use of students using cell phones to taking photos and as calculators when permitted. Cell phones can cause one to be distracted and therefore inadvertently ignore proper safety precautions. Cell phones can also allow for microbes to be carried outside the laboratory setting.
There is to be

**NO SMOKING (Including e-cigs and digital vaporizers), NO EATING, and NO DRINKING in the LABORATORY**

*Teaching Labs:* Faculty, GTA’s and Students can store covered food and drink containers in the cubbies. As long as a drink has a lid, it is considered “covered.”

However:

1) There is to be no consumption in the lab. Everybody must step outside the lab to drink/eat.

2) Food and drinks cannot be at the lab benches, tables or instructor’s station.

3) Containers cannot be placed in the hallway outside the lab door (they need to be in the cubbies).

   Dr. Mullen suggests that the bottom cubbies be designated for covered container storage (so that a spilled coffee does not damage anyone’s personal property).

All containers that are left in the BIOL 1031/1111/1121 cubbies at the end of each day will be thrown away.

**ABSOLUTELY NO EXCEPTIONS!!!**
In addition, there is to be

**NO SMOKELESS TOBACCO PRODUCTS, NO PUTTING ON COSMETICS OR LIP PROTECTION, NO GUM CHEWING,** and **NO HORSEPLAY** of any kind.

Personal Protective Equipment (PPE) must be worn during **all** appropriate laboratory sessions and properly removed before leaving the immediate work area. **Note:** All labs are considered an appropriate lab for closed toe shoes (shoes that completely cover the toes **AND** the top of the foot).

PPE’s required are:

**GOGGLES**
GLOVES

CLOSED TOE SHOES

NOT ACCEPTABLE:

Ballerina Flats
Crocs with holes on top or around edges

Chacos and Tevas with OR without socks.
Know the location of all safety features in individual laboratories and nearby hallways and how to properly use them.

**EYE WASH STATION:**

*When to Use:* Any time the eye has been exposed to chemicals and/or debris.

*Where Located:* Next to the sink and at the safety shower station.

*How to Use:*  
1) If you wear contact lenses, remove them, if possible.  
2) Flip off the plastic caps from the eyewash spray heads (if at sink) and pull out the appropriate length of hose (if at sink).  
3) Hold your eyes open and place them over the spray heads and squeeze the handle if at the sink. Get someone to assist you if necessary.  
4) Wash both eyes, even if only one is affected. Chemicals can reach the other eye by common ducts that run behind the nose.  
5) Gently lift your eyelids and wash under them to remove any chemicals or debris that may be trapped.  
6) Flush your eyes for at least 15 minutes to remove most or all of the chemical and/or debris.

**FIRE EXTINGUISHER:**

*When to Use:* PULL the closest fire alarm and have your students exit the building in a calm and orderly fashion using the stairwells. Once everyone is to a safe location away from the building CALL 911. Be sure to provide assistance to those in need (i.e. wheelchair bound, people on crutches, visually impaired persons, etc.)

*Where Located:* Some are located with-in the laboratory itself at the safety station and others are located in the hallway. Always check to see where the nearest extinguisher is located before the first laboratory begins.

**REMEMBER** not to wear shirts with baggy sleeves and to pull back long hair when working with a Bunsen burner. Loose clothing and hair can easily catch on fire. Fire blankets are located in certain areas where a fire is more likely to occur (be sure to look for one in the laboratory in which you are teaching).

*After the Fire:* If any fire extinguishers were used please contact Environmental Health and Safety Services (EH&S) for a replacement as soon as possible.

**Ways to Stop a Fire on a Person**

1) Drop and Roll.  
2) Remove Burning Clothing.  
3) Smother the Fire.  
4) Douse the Fire (As a Last Resort). **BE CAREFUL** if a water reactive chemical caused the fire.
EMERGENCY GAS SHUT-OFF:

When to Use: This button is to **ONLY** be pushed if there is a gas leak or a fire anywhere within the room. Do **NOT** press this button for any other reason!!!

Where Located: Labs that contain gas have been equipped with an emergency gas shut-off button. This button is located on the wall by itself or on the safety panel in each laboratory.

How to Use: Simply push in the button completely. If at any time this shut-off button has been pushed, please contact the building safety officer Mark Hatcher and/or Jim Rowland (see contact page) to assess the situation and to turn back on the gas once identified as safe.

EMERGENCY LOCK DOWN BUTTON:

When to Use: This button is **ONLY** to be used under extreme circumstances, such as but not limited to an intruder with a gun.

Where Located: This button is located on the safety panel in each laboratory.

How to Use: This will lock any laboratory doors that are in contact with the hallways. Keep in mind this will not lock internal doors. It is also important to note that once you exit through these doors after lockdown you will not be able to reenter. The windows on these doors are also **NOT** bulletproof and are to serve as a deterrent and not as a barrier.

If at any time this feature is activated, turn off all lights to the room, gather everyone to the front and center of the room, and call 911. **REMAIN SILENT!!!**

FIRST AID KIT:

When to Use: For the use in minor cuts and burns.

Where Located: The safety panel in each laboratory.

How to Use: Do not allow any student that is burned or cut to remove items from the first aid kit. Always treat everyone as if you don’t know what disease(s) they may or may not have and put on gloves before handing anyone something from the first aid kit or assisting them.

As supplies get low, please contact the building safety officer Mark Hatcher and/or Jim Rowland.
CHEMICAL SPILL KIT:

When to Use: For chemical spills that are 1 liter or less and are not hydrofluoric acid. For spills of larger capacity and/or hydrofluoric acid spills please contact the building safety officer Mark Hatcher or Jim Rowland if Mr. Hatcher is unavailable. Please also see the contact section for phone numbers.

Where Located: Various places within each laboratory. Please locate the spill kit in your laboratories prior to the first day of teaching.

How to Use: Everything necessary to clean up a 1 liter spill or less is located within the spill kit bucket.

- Please do not use any items not found within the kit to clean up a spill.
- First be sure to put on the appropriate pair of gloves and goggles for personal protection.
- Remove the container of absorbent and spread liberally over the entire spill. Wait approximately 2 minutes for the absorbent to work.
- Use the broom and dust pan located in the bucket to sweep the absorbent/chemical mixture and place into a labeled Ziploc bag and seal.
- Keep labeled waste in area designated for hazardous waste until next removal and pick-up.
- Report any low or completely used items to the building safety officer Mark Hatcher.
Know what to do OR who to contact in case of an emergency.

**FIRE**

1. **When in Doubt, Get Out** ---- Pull the nearest fire alarm & call the Fire Department (911) --- YOUR SAFETY is MOST IMPORTANT!
2. See the previous section on using a fire extinguisher and putting out a fire on a person.

**TORNADOS**

Whenever the tornado siren sounds you and students must exit the room and immediately proceed to the nearest first floor hallway attempting to keep away from glass when at all possible. Do **not** use the elevator and do **not** return to your rooms until the siren is no longer sounding. Remember to assist those in need of extra help to get down the stairwell.

**CHEMICAL SPILLS**

See the previous section on the Chemical Spill Kits.

**DANGEROUS INTRUDERS**

See previous section on Emergency Lockdown Button.
INJURY

Make sure the students know to notify you immediately.

**Minor Injuries** (example: small cut or minor burn)

1. See the previous section on First Aid Kits.
2. Document the incident on the departmental accident/incident form which may be obtained from the main office. Also, be sure to notify your lab coordinator.

**Major Injuries** (example: deep cuts)

1. If the student is bleeding make sure they put pressure on the injury with Kleenex, paper towels, etc. **NEVER** allow a bleeding student to touch anything unnecessarily. **NEVER** help a student unless wearing clean gloves.
2. Inform the student to get the proper medical attention. If they need to go Student Health Services be sure to send someone with the injured person.
3. If a student has bleed on anything, use either a 2% bleach solution (preferred) or a 5% Lysol solution to disinfect the contaminated and surrounding area. Allow the disinfecting solution to set for at least 10 minutes before wiping up. **ALWAYS WEAR GLOVES and ALWAYS PLACE THE CONTAMINATED WASTE IN AN AUTOCLAVE BAG AND STERILIZE** (Tammy Jessen can sterilize for you if you do not know how).
4. Document the incident on the departmental accident/incident form which may be obtained online at [http://www.mtsu.edu/ehs/StudentAccidentReport2017.pdf](http://www.mtsu.edu/ehs/StudentAccidentReport2017.pdf). Also, be sure to notify your lab coordinator/supervisor.
5. **DO NOT** under any circumstance give a student any medication (i.e. allergy medication, Tylenol, Ibuprofen, etc.).

**Emergencies** (example: bad burns, diabetic related incidents, asthma attacks, etc.)

1. CALL 911 and/or any other appropriate emergency phone numbers (it might be necessary to go near a window or outside).

   MTSU Police & Public Safety 615-898-2424
   MTSU Environmental Health & Safety 615-898-5784
   American Association of Poison Control Centers 800-222-1222

2. Stay with the person until emergency help arrives. If you are the only person there **only** leave to call for help.
3. Notify your lab coordinator/supervisor.
4. Have someone notify the office.
To avoid possible injuries during your own research:

1) **NEVER** leave an experiment unattended (**NOT** to make a phone call, wash dishes, use the rest room, etc.)

2) Unless absolutely necessary, **DO NOT** work alone during nights and/or weekends. If you must work alone during these times, please notify someone that you will be alone.

3) Read all pertinent safety information [Standard Operating Procedures (SOP’s), Protocol’s, Operating Manuals, SDS’s, etc.] **before** conducting work.

4) Wear all **appropriate** Personal Protective Equipment (PPE’s) for each experiment and **NEVER** leave the immediate work area wearing said PPE’S.

**ALL GLOVES, EYE PROTECTION, and LAB COATS MUST BE REMOVED BEFORE LEAVING THE IMMEDIATE WORK AREA.**

**NEVER WEAR GLOVES TO TOUCH COMMON NONHAZARDOUS ITEMS** (i.e. door and drawer handles, items contained within drawers and/or cabinets, the copy machine, water fountain, elevator button, shared equipment such as but not limited to the ice machine and autoclaves, etc.).

Use secondary containment when transportation of items is necessary between laboratories.

**NO EXCEPTIONS!!!**
Know the potential hazards in a laboratory AND inform your students of any proper handling and disposal techniques.

**CHEMICALS**

**Handling**

1. Wear all appropriate PPE’s.
2. Read and understand the symbols and text on the chemical label.
3. Read the Safety Data Sheet (SDS) before using the chemical.
4. **ALWAYS** label secondary containers with the chemical name, the date, and your name.
5. **NEVER** put back any unused portion of chemical back into the original container.

**Disposal**

1. **NEVER** pour ANYTHING down the sink drain.
2. **ALWAYS** place used chemicals and/or chemical solutions in a properly labeled waste container with the chemical(s)* name(s), an approximate amount, and the term HAZARDOUS WASTE listed on the container
   *NEVER mix incompatible chemicals. If you are unsure if a chemical is compatible with another chemical use a separate waste container.
3. Leave waste in room which it was generated until next removal.

**SHARPS**

**Handling**

1. Show the students the proper way to place a needle on a syringe and how to remove the needle sheath. **NEVER** attempt to place the sheath back over the needle.
2. When using a razor blade, scalpel, knife, etc. **NEVER** place your fingers over the blade and always cut away and down. **NEVER** cut towards yourself.

**Disposal**

1. **ALWAYS** dispose of metal sharps in a properly labeled sharps container. Sharps containers are available from me as needed. **DO NOT** place any other items in these containers.
BROKEN GLASS

Handling

1) **NEVER** pick up broken glass. **ALWAYS** use a dustpan and a broom.

Disposal

1) **ALWAYS** place broken glass in a broken glass container. Containers are available from the stockroom Tammy Jessen or Tina Carter as needed. **DO NOT** place any other items in these containers.

CONTAMINATED ITEMS (i.e. cotton swabs, pipets, pipet tips, culture wells, culture bottles, biological waste, used media, etc.)

Handling

1. **ALWAYS** wear the appropriate PPE’s. *Assume everything is pathogenic.*
2. Place all individual items in clear autoclave bags. **DO NOT** fill bags more than 2/3 full.
   a) **Liquid and Non-Liquid Pointy/Sharp Items:** Items containing liquids when heated or before heating (i.e. media plates, tissue culture flasks, etc.) should be placed in bags **SEPARATE** from items that are considered to have a point (i.e. pipets, cotton swabs, non-heat fixed slides, etc.). Bags containing liquids should be placed in porcelain pans before placing in the autoclave.
   b) **Human biological waste:** Items containing human urine and/or items containing human blood should be placed in doubled autoclave bags.
3. All bags should be closed by twisting remaining portion of empty bag and wrapping area with masking tape.
4. Properly dispose of waste by autoclaving. If you are unsure as to how to use an autoclave many faculty members or Tammy Jessen will gladly assist you.

**Note:** Please see a faculty member or Tammy Jessen for autoclave bags.

Disposal

**Note:** All research labs and teaching labs are responsible for autoclaving their own waste with the exception of general microbiology and upper division microbiology courses. Please use the autoclaves in the central prep area located in rooms 2060A or 2110. Items from the exception courses may be placed in large autoclave pans on the floor in prep room 2097.

1) Remember that all bags containing liquids or agar when heated are to be placed in a porcelain pan before placing in the autoclave.
2) Bags containing no liquids and only dry pointy items may be placed directly in the autoclave.

3) Screw top test tubes and bottles need to be loosened before placing in the autoclave. **DO NOT** overfill tubes and bottles. There should be no more than 60% of the total volume in any one vessel.

4) Before every cycle, **ALWAYS** add deionized water it reaches the bottom lip of the autoclave.

5) Run a 20-minute cycle on slow exhaust.

6) **REMEMBER** to come back and remove your waste. **ONLY** open the autoclave once pressure has reached zero. You do not have to wait for the temperature to equal zero. Autoclave bags go in the large 55 gallon trash cans provided. Disposable tubes are to be emptied and discarded in the broken glass container.
Know what an SDS is and how to understand it.

**SDS = Safety Data Sheet**

An SDS is accessible at all times in each laboratory and should be read before using any chemical. Each principle investigator (PI) is responsible for providing the SDS’s for their research laboratories. If for some reason you cannot locate an SDS, please contact the party responsible for that particular laboratory.

There are 16 sections to an SDS (All important sections for the GTA and their students are italicized):

1) *Product and Company Identification*
2) *Hazards Identification*
3) *Composition/ Information on Ingredients*
4) *First Aid Measures*
5) *Firefighting Measures*
6) *Accidental Release Measures*
7) *Handling and Storage*
8) *Exposure Controls/Personal Protection*
9) *Physical and Chemical Properties*
10) *Stability and Reactivity*
11) Toxicological Information
12) Ecological Information
13) Disposal Considerations
14) Transport Information
15) Regulatory Information
16) Other Information

See Example (Sodium Hypochlorite Solution)
Know the Basic Hazard Symbols and/or Potential Warning Labels

Top row: Hazardous to the Environment, Toxic, Gas Under Pressure
Middle row: Corrosive, Explosive, Flammable
Bottom row: Caution, Oxidizer, Long Term Health Effects

Always Outlined in Red.

Biohazard

Radiation (Including Microwaves)

NFPA Rating
Contacts:

Mark Hatcher (Radiation Safety Officer)
Mark.Hatcher@mtsu.edu
Science Bldg. (SCI) 1124, between the greenhouse and elevator
615-898-5831
931-209-7461 (cell)

Jim Rowland (Environmental Health and Safety)
Jim.Rowland@mtsu.edu
Davis Science Bldg. (DSB) 105, Haynes Turner Bldg. 113
615-494-7743
615-545-8931 (cell) * best number. If not available,
please leave a message. Your call will be returned as soon as
possible.

John W. Turner (Acting Fire Marshall)
Jake.Turner@mtsu.edu
615-305-9722

Amanda Rogers (EH&S Coordinator)
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