Work Area Specific Training (Wooley Laboratory)

Principal Investigator: Professor Karen L. Wooley

All Wooley Group members must read and understand this document before working in any of the Wooley Group Labs (Chemistry Building Wing '72 rooms 1405, 1405A, 1411, 1413, 1417, 1417A, 1417B, 1430 and 1432).

Additionally, all group members should be familiar with the Texas A&M University Laboratory Safety Manual:
http://ehsd.tamu.edu/documents/TAMUSafetyManual/2008%20LSM%20CH%201-5%202-4-09.pdf

and other documents available on the TAMU Environmental Health & Safety website: http://ehsd.tamu.edu/LaboratorySafety.aspx, many of which are appendices in this manual.

All group members are also required to review the materials located on the Texas A&M University Department of Chemistry:

Departmental Safety Regulations website:
http://www.chem.tamu.edu/safety/safety_frame.html

Emergency Response Plan website: http://www.chem.tamu.edu/safety/emergency/

NEVER WORK ALONE IN THE LABORATORY

UPON ENTERING THE LABORATORY, DON LAB COAT AND SAFETY GLASSES, AND OPEN THE SIDE DOOR TO ALLOW KEYLESS ENTRY, IN THE CASE OF AN EMERGENCY

(perform the reverse on exiting)

I. Personal Protective Equipment

A. Safety Glasses
B. Lab Coat (not to be worn out of the lab)
C. Gloves (not to be worn out of the lab)
D. Closed-toe shoes
E. Long Pants/Skirt
F. Fume Hood

II. Clean Areas

A. The break room (room 1424) and all the office spaces (rooms 1421 and 1421A, 1422 through 1429) are considered clean areas
B. Storage areas (rooms 1427B and 1431) are not considered clean areas
C. Absolutely no chemicals are to be used or stored in the clean areas
D. No food or drink is allowed in non-clean areas, and no food or drink is allowed to be stored in any refrigerator with a “No Food or Drink” designation

III. Use of Volatile Organic Chemicals, Corrosives, Flammable Materials, and Toxins

A. Use only in a chemical fume hood
B. Wear appropriate eye protection, foot protection, lab coat, and gloves

IV. Use of Peroxide Forming Chemicals (ethers, picric acid, *etc*.)

A. Purchase small quantities
B. Date each container when received and when opened, and do not keep longer than one year
C. Wipe lips of containers before replacing the lid

V. Use of a Chemical Fume Hood

A. The fume hood should not be used as a storage area for chemicals or equipment unless designated as such by Professor Wooley with approval from EH&S
B. All containers must be capped when not in use
C. Work at least 6” inside the hood with a sash opening of 12 to 15 inches

VI. Use of Gas Cylinders

A. Always cap when not in use and keep cylinders secured to a wall bracket or transport cart at all times
B. When transporting cylinders, use a transport cart with a chain or strap
C. Match regulator type to gas type and do not use adapters to fit regulators to cylinders
D. For all gasses that are not Non-Flammable gas, purchase the minimum amount and follow the guidelines for appropriate storage and disposal

VII. Use of Centrifuge

A. Use sealed cups for carcinogenic, biologic or infectious agents
B. Do not open the centrifuge until it has completely stopped spinning
C. Do not centrifuge odd number of tubes, always balance single tubes with a tube of similar weight containing an inert substance (preferably water, and use a balance to confirm equivalent masses)
D. Wait 5-10 minutes after the run is complete before opening the lid. This will permit any aerosols generated to settle

VIII. Use of Carcinogens (see Appendices 14 & 15)

A. Use only in designated carcinogen use areas—the fume hood.
B. Provide specific carcinogen training to employees prior to carcinogen use
    1. Use a fume hood (or controlled area like a glove box) and wear all appropriate personal protective equipment, including a **respirator, which is fitted specifically for each individual and cannot be shared**
    2. Vent vacuum pumps into the fume hood if being used with a carcinogen
    3. Decontaminate any glassware in fume hood
    4. Dispose of carcinogens in an appropriate container and use secondary containment for storage and transportation of waste
    5. Store in an area with limited access in a fully labeled, non-breakable secondary container
    6. If working with a known carcinogen regularly (*i.e.* three or more times per week) you must consult the chemical safety officer, Professor Wooley, and an EH&S representative about medical surveillance
    7. Should a spill occur, contact EH& S and be sure that exposure of people and property to the carcinogen is limited

8. Remove all protective equipment and dispose of gloves, *etc*. in a proper manner and wash hands, neck and face prior to leaving

IX. Use of Lasers

A. "Laser in Use" signage must be turned on whenever lasers that are not shielded are in use
B. Wear appropriate laser shielding eyewear at all times when working with the laser
C. Restrict access to lasers whenever they are on

X. Reproductive Toxins/ Reproductive Protection (see Appendix 14)

A. All group members are responsible for knowing the reproductive hazards of the chemicals they are directly working with
B. All reproductive toxins must be handled in a hood
C. Any member who is pregnant or is considering becoming pregnant should notify Professor Wooley and discuss appropriate measures to limit their exposure to reproductive toxins

XI. Highly Toxic Materials/Select Agents

A. Avoid use of highly toxic or select agents whenever possible
B. Discuss use of highly toxic or select agents with Professor Wooley before use
C. Purchase the minimal amount of highly toxic or select agents possible
D. Consult EH&S before disposal

XII. Phosgene and Chloroform Special Precautions (see Appendix 13, http://www.cdc.gov/niosh/pdfs/76-137b.pdf)

A. Information copied from http://legacy.earlham.edu/chemicalhygiene/content/disposal/chloroform.html
B. "Phosgene is very toxic, with fatality occurring with short exposures of 50ppm and exposures of less than one minute at the 500ppm level. Persons exposed to phosgene may feel no adverse effects immediately, but may later suffer from pulmonary edema (build-up of fluid in the lungs) and possibly death up to 24 hours later."

C. “Every bottle of chloroform should be treated as if it contains phosgene to help prevent exposure, however, testing is possible using test strips or sampling tubes. Testing can be done by the Chemical Hygiene Officer or can be done by the user using strips prepared as stated:
Strips of filter paper are dipped in 5% w/v Diphenylamine and 5% w/v Dimethylaminobenzaldehyde in an alcoholic solution (ethanol works fine) and then allowed to dry. Strips should be a very light yellow when dry, and activate to a dark yellow/orange color upon presence of phosgene.”
D. Anyone working with phosgene must have prepared test strips ready, available and in use to test the food hood area for phosgene release from the apparatus and from the hood.
E. A respirator must be worn.
F. Postings must be placed in the area while phosgene is in use.

XIII. Cell and/or Skin Permeable Agents

A. For all agents that are capable of cell transduction (*e.g*., cell penetrating peptides, cationic polymers, cationic nanoparticles, *etc*.) or skin transport (*e.g*., dimethylsulfoxide) special precautions are needed to protect contact with skin, mucus membranes via touch, inhalation, *etc*.
B. Gloves should be worn at all times and aerosolization should be avoided.

XIV. Biology Rooms (Room 1417A and 1035)

A. The door to biology room should be kept closed at all times
B. Only trained individuals with prior approval from Professor Wooley and who have undergone TAMU BSL-2 and bloodborne pathogen training are permitted to work with bio-hazardous agents in the BSL-2 room
C. All surfaces should be sprayed down with 70% ethanol after use
D. All glassware that has come in contact with the bio-hazardous agents should be washed with pure commercial grade, bleach then autoclaved before reuse
E. All waste that has been in contact with or is suspected of coming into contact with bio-hazardous agents must be autoclaved before disposal
F. Any infectious agent, bio-hazardous agent, cell line or other biological organism must be pre-approved by Professor Wooley before being purchased or introduced into the BSL-2 room

XV. Instrument Labs (Chemistry Building Wing '72 rooms 1405A, 1417, 1417A, 1430, 1432, 1005 and 1035)

A. All instruments and instrument computers are glove free areas
B. Samples are not to be prepared in the instrument labs
C. No compounds that fall into the following hazard classes are to be used in the instrument labs unless given express permission from Professor Wooley (Inhalation hazards, Unstable explosives, Highly toxic solids/liquids)

XVI. Inspections

A. All eye washes must be inspected once a week by a designated Wooley group member for operation and accessibility and inspection dates recorded in the Emergency Eyewash Station Weekly Activation Log
B. All fire extinguishers are inspected once a month by designated EH&S personnel for operation and accessibility
C. Designated Wooley group members should conduct "Peer Audits" on a periodic basis and report findings to Professor Wooley and the group at group meetings

XVII. Hazardous Waste

A. All hazardous waste containers must be labeled with a complete Hazardous Waste Disposal Tag from the date that the container is first used
B. Hazardous waste must be stored in a container that is compatible with the waste, is fully closeable and is in good repair
C. All hazardous waste containers that are to be sent out for disposal are to be placed in the designated waste hood in each lab
D. After 11 months of use, all hazardous waste containers must be sent for disposal
E. Non-biohazard sharps are to be collected in an approved sharps container with a completed hazardous waste label
F. Any questions regarding hazardous waste streams should be directed to EH&S before the waste stream is started to ensure compliance

XVIII. Chemical Storage

A. All the chemicals must be stored in compliance with the Chemical Storage Guldelines established by the Texas A&M University Environmental Health and Safety office (see Appendices 9 & 10)

Safety video links, which must be viewed in their entireties:

Handling Pyrophoric Materials and General Schlenk Techniques Video, by Dartmouth, July 2, 2010:

http://www.youtube.com/watch?v=gi_ODNJCbqY

Pyrophoric Liquid Safety Video: Transfer, use and storage of pyrophoric chemicals, by UCLA, Oct. 21, 2009, YouTube video:

http://www.youtube.com/watch?v=RaMXwNBAbxc

Fire Safety in the Lab, by UCLA, May 28, 2010, YouTube video:

http://www.youtube.com/watch?v=HCVRZuupcFw&feature=relmfu

Safety Training

Materials adapted from Texas A&M University LABORATORY SAFETY MANUAL prepared by EH&S

Wooley Group Blue Book Outline

- Emergency Exit Routes and Assembly Areas
- TAMU CHEM Emergency Response Team and Contact Numbers
- TAMU Laboratory Safety Manual
- TAMU General Safety
- TAMU General Laboratory Safety
- TAMU Fire & Life Safety
- TAMU Personal Protective Equipment
- TAMU Chemical Safety
- Chemical Storage Guidelines, Color Codes & Hazardous Materials ID
- Chemical Compatibility Charts (EPA and labsafety.org)
- Chemical Fact Sheets: ethyl ether, HF, perchloric acid
- Pyrophoric Handling Policy
- Phosgene Handling Policy
- Recommendations for the Safe Handling of Cytotoxic Drugs
- Guidelines on Handling Carcinogens, Teratogens, & Mutagens
- Best Practices & Interim Guideline for Working Safely with Nanotechnology
- TAMU Electrical Safety
- TAMU Office Safety
- Wooley Laboratory Work Area Specific Training Document, PPT Overview & Safety Video Links
- TAMU & Wooley Lab Safety Evaluation & Inspection Checklists
- TAMU Emergency Eyewash and Safety Shower SOPs
- TAMU Hazard Communication Program
- Hazards Communication Training Record
- Attendance Records for Work Area Specific Training - kept in the laboratory

Work Area Specific Training

- Appendix 19: Work Area Specific Training

I. *Personal Protective Equipment*
II. *Clean Areas*
III. *Use of Volatile Organic Chemicals, Corrosives, Flammable Materials, and Toxins*
IV. *Use of Peroxide Forming Chemicals (ethers, picric acid,* etc.*)*
V. *Use of a Chemical Fume Hood*
VI. *Use of Gas Cylinders*
VII. *Use of Centrifuge*
VIII. *Use of Carcinogens*
IX. *Use of Lasers*
X. *Reproductive Toxins/ Reproductive Protection*
XI. *Highly Toxic Materials/Select Agents*
XII. *Phosgene and Chloroform Special Precautions*
XIII. *Cell and/or Permeable Agents*
XIV. *Biology Rooms (Room 1417A, 1035)*
XV. *Instrument Labs (Chemistry Building Wing '72 rooms 1405A, 1417, 1417A, 1430, 1432)*
XVI. *Inspections*
XVII. *Hazardous Waste*
XVIII. *Chemical Storage*
XIX. *Contact Lenses in a Chemical Environment*

Appropriate Usage of PPEs

Safety glasses

NOT to be worn out of the lab

Lab coat

Hands should be washed between glove changes and after glove removal

Gloves

Long pants/skirt

Closed-toe, non-porous shoes

Benchtop safety shield

- Personal protective equipments (PPEs):

1)Include arms & hand protection, body protection, hearing conservation, eye & face protection, foot protection, head protection, respiratory protection,

2)Should be used in conjunction with engineering, administrative or procedural controls

3)Should always be removed before coming in contact with other individuals or before going in/out or near elevators, break rooms, classrooms, office rooms, bathrooms, touching door knobs, *etc.*

Close fume hood sashes when not in use. A single fume hood running 24 hours can use as much energy as a single-family home uses in a year.
-Vanderbilt Univ. ThinkOne Energy Conservation

1) The fume hood should not be used as a storage area for chemicals or equipment unless designated as such by Professor Wooley with approval from EH&S

2) All containers must be capped when not in use

3) Work at least 6” inside the hood with a sash opening of 12 to 15 inches

Specific PPE

Face shield

Respirator

Dust mask

- Everyone requiring a face shield or respirator must be properly fitted and receive training prior to use by EH&S – done annually
- The appropriate cartridges must be worn for specific tasks.
- Cartridge usage must be documented, and cartridges must be discarded after 8 hours of use.
- Dust masks are in the bulk area in 1413 and must be worn when handling silica gel. Further use at user discretion.

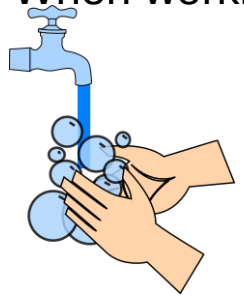
Contact Lenses

- Contact lenses are not allowed in our laboratory due to possible risks associated with their use (*e.g.* handling while in “dirty” areas and other risks outlined below

- OSHA recommends that contact lenses not be used in a chemical environment/chemical laboratory setting
- The arguments against wearing contact lenses in the work environment are based on the following:
    - Dusts or chemicals can be trapped behind the lens and cause irritation or damage to the cornea or both.
    - Gases and vapours can cause irritation and excessive eye watering.
    - Chemical splash may be more injurious when contact lenses are worn. This increased risk is related to the removal of the lenses. If removal is delayed, first aid treatment may not be as effective and, in turn, the eye's exposure time to the chemical may be increased.

Hygiene & Chemical Safety

• Good personal hygiene will help minimize exposure to hazardous chemicals. When working with chemicals, follow these guidelines:



1.Wash hands frequently and before leaving the laboratory. Also, wash hands before eating, drinking, smoking or applying makeup.

2. Remove contaminated clothing immediately. Do not use the clothing again until it has been properly decontaminated.

4. Do not eat, drink, smoke or apply makeup around chemicals

5. Do not keep food, beverages, or food and beverage containers anywhere near chemicals or in laboratories where chemicals are in use.

6. Do not use laboratory equipment, including laboratory refrigerators/freezers, to store or serve food or drinks.

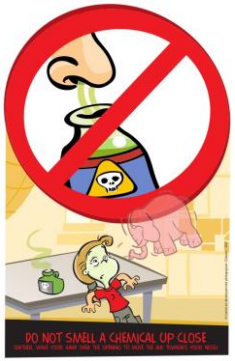
7. Do not wash food and beverage utensils in a laboratory sink.

Hygiene & Chemical Safety II

8. Follow any special precautions for the chemicals in use

SDS

9. Do not sniff or taste chemicals



10. Tie back long hair when working in a laboratory or around hazardous chemicals

11. Clothing that is worn into lab cannot be made of synthetic fiber. Check your sweaters, leggings, etc. before going into lab

12. ALWAYS wear your PPE in lab

Other Laboratory Safety

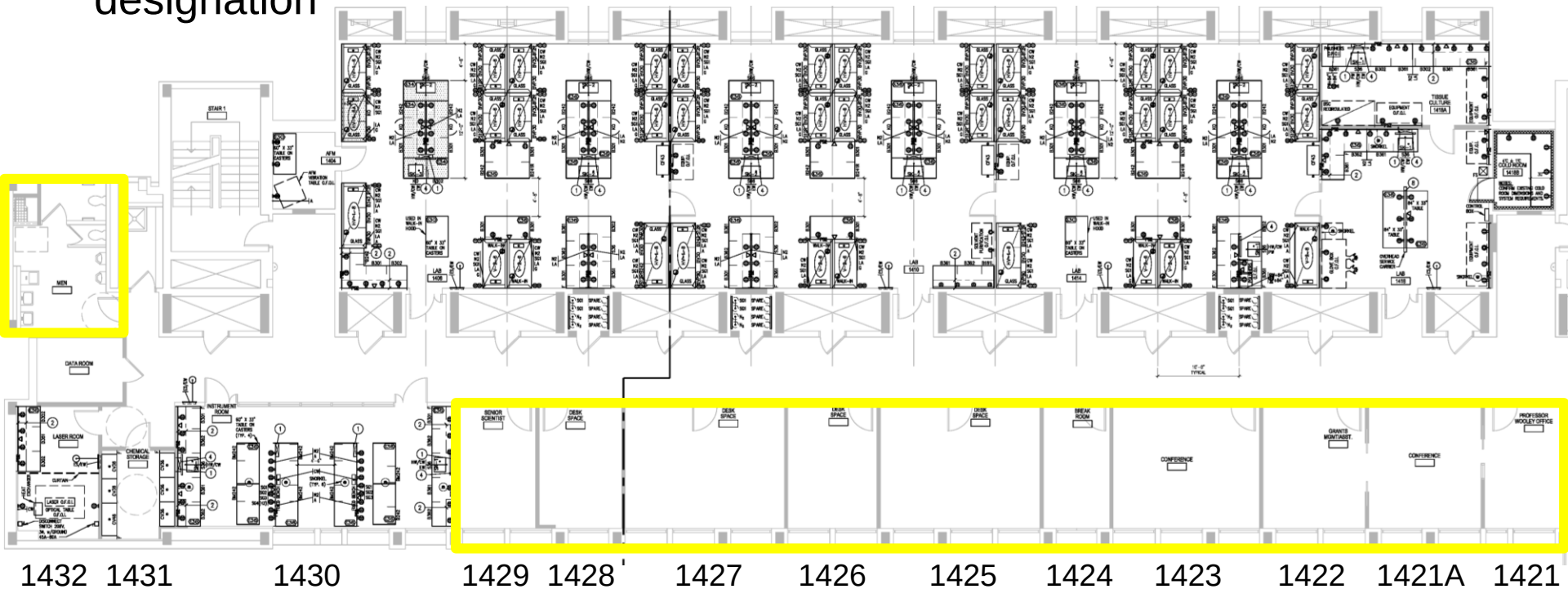
- Music in the laboratory
  - If you chose to play music in the lab, it should play quiet enough so that you are able to hear others and remain aware of your surroundings
  - If headphones are used **do not** wear both headphones
    - Wearing both headphones in lab is a safety hazard

- Use of technology in the laboratory
  - Technology items like computer mice, keyboards, smartphones, phones, music players, tablets, laptops, cameras, and other electronic devices are **clean items** and should not be touched with gloves
  - Gloves are assumed to be **dirty items** and should always be treated as such
  - Additional items that should be touched with gloves on include door knobs and door handles.

YUCK!

Clean Areas

A. The break room (room 1424) and all the office spaces (rooms 1421 and 1421A, 1422 through 1429) are considered clean areas.
B. PPE such as lab coats and gloves are not to be worn in clean areas
C. Absolutely no chemicals are to be used or stored in the clean areas
D. No food or drink is allowed in non-clean areas, and no food or drink is allowed to be stored in any refrigerator with a “No Food or Drink” designation



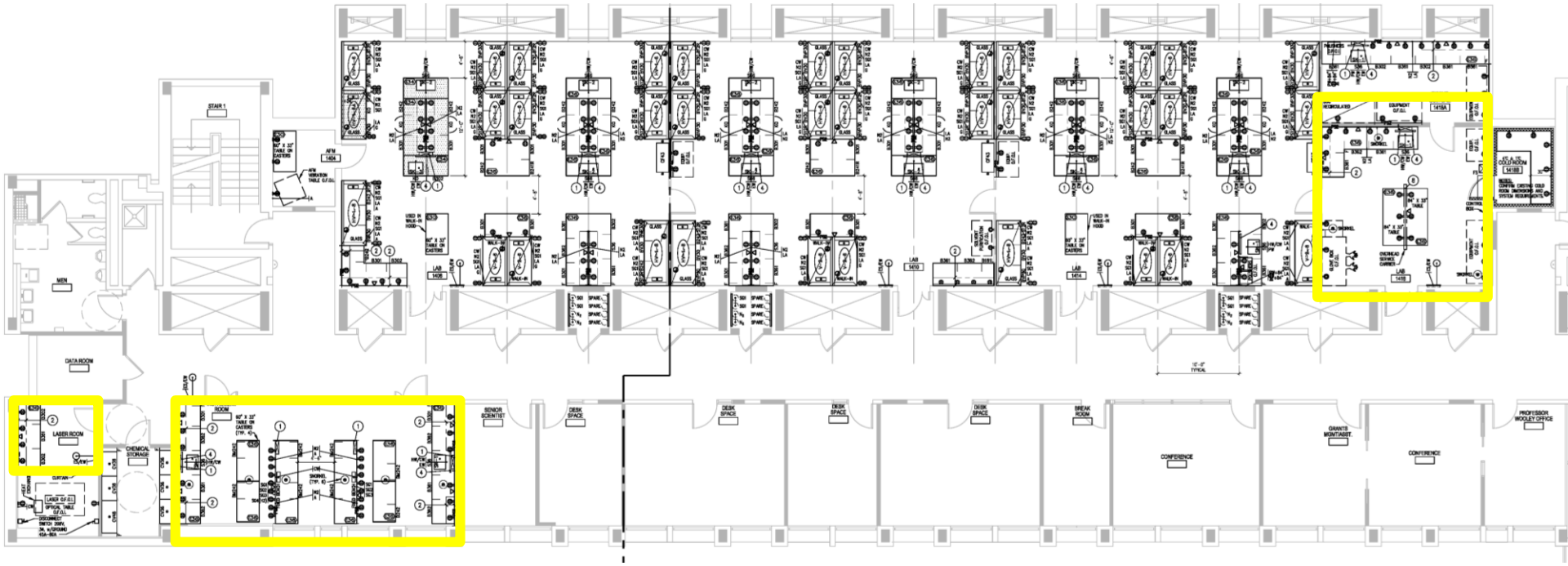
Instrument labs

XV. Instrument Labs (Chemistry Building Wing ’72 rooms 1417, 1430, 1432)

A. All instruments and instrument computers are glove free areas

B. Samples are not to be prepared in the instrument labs

C. No compounds that fall into the following hazard classes are to be used in the instrument labs unless given express permission from Professor Wooley (Inhalation hazards, Unstable explosives, Highly toxic solids/liquids)



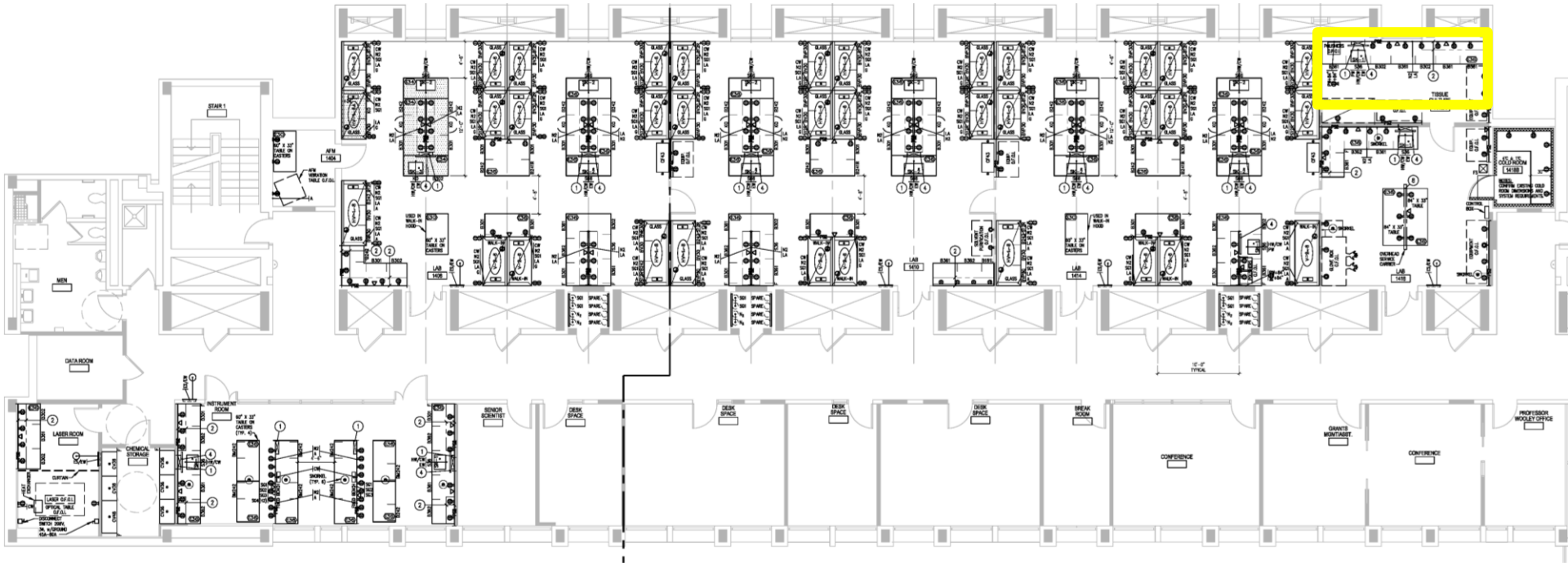
Bio-hazard Lab

XIV. Bio-labs are located in 1417A and 1035

A. Bio-safety level 2 (BL2) training is required to use and enter this room

B. BL2 training is offered by the university and record of training must be submitted to Justin

C. Further questions about bio safety should be addressed to Sarosh



General Chemical Safety

Once logged into inventory systems, all chemicals are marked with a received date, open date must be written on bottle

Improper dating of chloroform: Chloroform should be used within 1 year of purchase or 6 months of opening because it can form phosgene gas. Dispose of any unused chloroform once these time limits have passed

Improper dating of peroxide-forming or oxidizing chemicals (ethyl ether, THF, perchloric acid, cyclohexene, butadiene, isopropyl ether and dioxanes): Explosive peroxide forming chemicals and oxidants such as ethyl ether, THF, perchloric acid, cyclohexene, butadiene, isopropyl ether and dioxanes must be used **within 1 year of purchase** or **6 months of opening** and must be disposed of before the expiration date

VIII. Use of Carcinogens (See Appendix 1, 3-18)

1. Use a fume hood (or controlled area like a glove box) and wear all appropriate personal protective equipment
2. Vent vacuum pumps into the fume hood if being used with a carcinogen
3. Decontaminate any glassware in your fume hood
4. Dispose of carcinogens in an appropriate container and use secondary containment for storage and transportation of waste
5. Store in an area with limited access in a fully labeled, non-breakable secondary container
6. If working with a known carcinogen regularly (*i.e.* three or more times per week) you must consult the chemical safety officer, Professor Wooley, and an EH&S representative about medical surveillance
7. Should a spill occur, contact EH& S and be sure that exposure of people and property to the carcinogen is limited.
8. Remove all protective equipment and dispose of gloves *etc*. in a proper manner and wash hands, neck and face prior to leaving

X. Reproductive Toxins/ Reproductive Protection

A. All group members are responsible for knowing the reproductive hazards of the chemicals they are directly working with

B. All reproductive toxins must be handled in a hood

C. Any member who is pregnant or is considering becoming pregnant should notify Professor Wooley and discuss appropriate measures to limit their exposure to reproductive toxins

Specialized Safety

XII. Phosgene and Chloroform Special Precautions
“Phosgene is very toxic, with fatality occurring with short exposures of 50ppm and exposures of less than one minute at the 500ppm level. Persons exposed to phosgene may feel no adverse effects immediately, but may later suffer from pulmonary edema (build-up of fluid in the lungs) and possibly death up to 24 hours later.”

Respirators with appropriate cartridges must be worn at all times when working with phosgene. Also phosgene test strips must be available and in use!

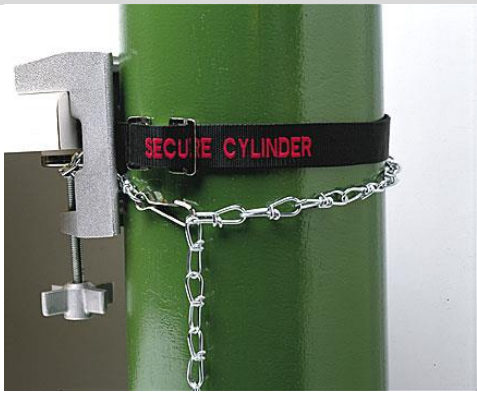
All persons within the lab must be informed of the use of phosgene prior to use. Doors connecting labs must be closed and signs must be posted.

All persons must contact Samantha to receive specialized phosgene training.

XIII. Cell and/or Skin Permeable Agents
For all agents that are capable of cell transduction (e.g., cell penetrating peptides, cationic polymers, cationic nanoparticles, etc.) or skin transport (e.g., dimethylsulfoxide) special precautions are needed to protect contact with skin, mucus membranes via touch, inhalation, etc.
Gloves should be worn at all times and aerosolization should be avoided

Use of gas cylinders

a. Never move a gas cylinder unless the cylinder safety cap is in place.
b. When working with particularly hazardous gases use special procedures and work in approved gas storage cabinets.
c. The gas cylinder should be chained or otherwise secured to an approved cylinder cart or dolly when being transported. Do not move a cylinder by rolling it on its base.
d. Only use regulators approved for the type of gas in the cylinder.
Do not use adapters to interchange regulators. Also, never try to repair or modify a gas regulator or its pressure gauges.
e. Do not use Teflon tape when attaching the regulator.
f. When opening a cylinder valve, follow these guidelines:
i. Direct the cylinder opening away from people.
ii. Open the valve slowly. Never open a cylinder valve without a regulator.
g. For a leaking cylinder:
i. Close the valve if it is open and contact the supplier to pick it up.
ii. If the valve is already closed, leave the laboratory and shut the door behind you. Contact EHS immediately.
h. Do not use oil or other lubricant on valves and fittings.
i. Do not use oxygen as a substitute for compressed air.
j. Do not lift cylinders by the safety cap.
k. Do not tamper with the safety devices on a cylinder. Have the manufacturer or supplier handle cylinder repairs.
l. Do not change a cylinder's label or color. Do not refill cylinders yourself.
m. Do not heat cylinders to raise internal pressure.
n. Do not use compressed gas to clean your skin or clothing.
o. Do not completely empty cylinders. Maintain at least 30 psi pressure.
p. Do not use copper (>65% copper) connectors or tubing with acetylene. Acetylene can form explosive compounds with silver, copper, and mercury.
q. Always wear impact resistant glasses or goggles when working with compressed gases.
r. Do not subject compressed gas cylinders to cryogenic temperatures.

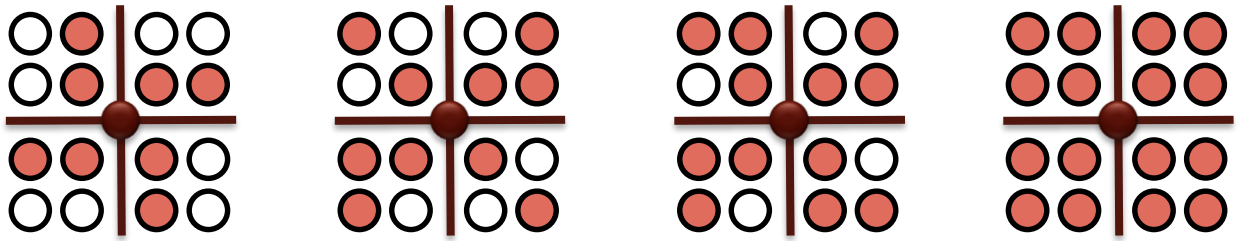


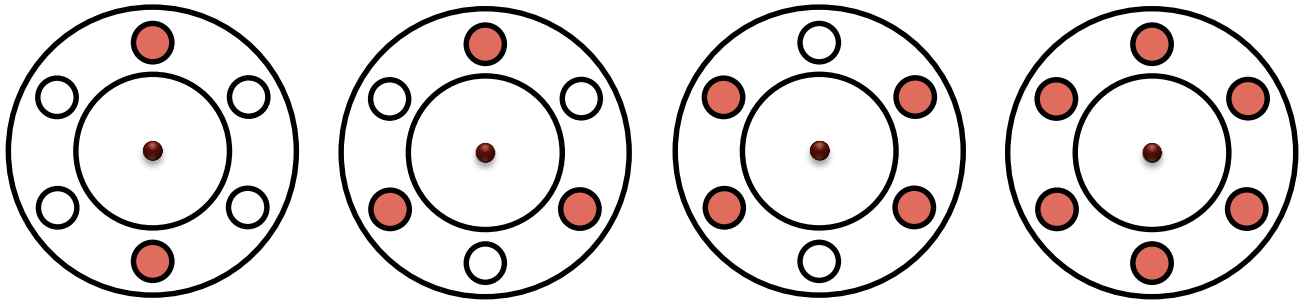
Use of Centrifuge

Fisher Scientific
Sorvall ST 16R

Eppendorf 5804R

A. Use sealed cups for carcinogenic or infectious agents
B. Do not open the centrifuge until it has completely stopped spinning
C. Do not centrifuge odd number of tubes, always balance single tubes with a tube of similar weight containing an inert substance (preferably water)
D. Wait 5-10 minutes after the run is complete before opening the lid. This will permit any aerosols generated to settle





2 **3** **4** **6**

Proper Waste Disposal

XI. Highly Toxic Materials/Select Agents

A. Avoid use of highly toxic or select agents whenever possible

B. Discuss use of highly toxic or select agents with Professor Wooley before use

C. Purchase the minimal amount of highly toxic or select agents possible

D. Consult EH&S before disposal

Water waste needs pH

Dialysis water should be disposed in waste bottle if using carcinogens or other dangerous chemicals

XVII. Hazardous Waste

A. All hazardous waste containers must be labeled with a complete Hazardous Waste Disposal Tag from the date that the container is first used

B. Hazardous waste must be stored in a container that is compatible with the waste, is fully closeable and is in good repair

C. All hazardous waste containers that are to be sent out for disposal are to be placed in the designated waste hood in each lab

D. After 11 months of use all hazardous waste containers must be sent for disposal

E. Non-biohazard sharps are to be collected in an approved sharps container with a completed hazardous waste label

F. Any questions regarding hazardous waste streams should be directed to EH&S before the waste stream is started to ensure compliance

Waste Bottles Need to Be Defaced and Tagged.
After defacing bottles, inventory tag must be removed and chemical must be logged out of system or tag placed in boxes for future removal

Do not fill past shoulder or to the brim for the 5 gallon drums

Labeling Waste

(Attach Tag to Container With String)

24001

HAZARDOUS WASTE DISPOSAL TAG

REQUESTOR: Karen Wooley
DEPT/PART: Chemistry
PHONE: 979-863-2083
CHEMICAL(S): methanol, tetrahydrofuran, acetone

24001

HAZARDOUS WASTE DISPOSAL TAG

ACCUMULATION START DATE: 04/26/2012
REQUESTOR: Karen Wooley
DEPT/PART: Chemistry
BLDG. NAME & NO. Chemistry building 72 wing
ROOM NO. 14XX PHONE: 979-862-3083
CHEMICAL(S): methanol, tetrahydrofuran, acetone

PHYSICAL PROPERTY: ☑ Liquid ☐ Solid ☐ Gas ☐ Other
QUANTITY: ☐ Pint ☐ Quart ☐ Gallon ☐ 5-Gallon ☑ Other 4 L
CONTAINER TYPE: ☑ Glass ☐ Metal ☐ Other
REACTS WITH: ☑ None ☐ Air ☐ Water ☐ Other
HAZARDS: ☑ Flammable ☐ Explosive ☑ Carcinogen ☑ Toxic ☐ Corrosive ☐ Other
REMARKS:

Mail lower portion of tag to Safety & Health Office when container is ready for pickup. (MS 4472, Campus: 845-2132)

SHO Form 15-13

Write full chemical name

(Attach Tag to Container With String)

MASS

24001

HAZARDOUS WASTE DISPOSAL TAG

REQUESTOR: Karen Wooley
DEPT/PART: Chemistry
PHONE: 979-863-2083
CHEMICAL(S): Lab supplies contaminated with …

MASS

24001

HAZARDOUS WASTE DISPOSAL TAG

ACCUMULATION START DATE:
REQUESTOR: Karen Wooley
DEPT/PART: Chemistry
BLDG. NAME & NO. Chemistry building 72 wing
ROOM NO. 14XX PHONE: 979-862-3083
CHEMICAL(S): Lab supplies contaminated with …

PHYSICAL PROPERTY: ☐ Liquid ☑ Solid ☐ Gas ☐ Other
QUANTITY: ☐ Pint ☐ Quart ☐ Gallon ☐ 5-Gallon ☑ Other Weight of waste
CONTAINER TYPE: ☐ Glass ☐ Metal ☑ Other Plastic bag
REACTS WITH: ☑ None ☐ Air ☐ Water ☐ Other
HAZARDS: ☑ Flammable ☐ Explosive ☑ Carcinogen ☑ Toxic ☐ Corrosive ☐ Other
REMARKS:

Mail lower portion of tag to Safety & Health Office when container is ready for pickup. (MS 4472, Campus: 845-2132)

SHO Form 15-13

Broken glass disposal

- Glassware contaminated with biological agents, chemical or radiological materials must be ***decontaminated*** prior to disposal

- If decontamination is not possible, the glass should be disposed of as hazardous or radioactive waste

- If broken glass is commingled with metal sharps, it must be treated as sharps waste and encapsulated before for disposal

- FAQ: Old/unwanted/almost empty bottle of chemical that cannot be washed: Give it a separate waste tag and treat it as a liquid/solid waste bottle
    - Bottles that can be wash, must be triple rinsed and the label removed then they may be placed in the hallway for removal by the custodial staff

- Large glass disposal boxes will not be taken down by custodial staff, you must take them to the dumpster for disposal

Metal sharps disposal

• Sharps that have been used with chemical or biological materials should be decontaminated whenever possible prior to disposal

• Needles must be capped or covered (melting parafilm, *etc.*) prior to disposal
  – According to EHS needles must not be recapped

• When the container is ¾ full, encapsulate the sharps with Plaster of Paris (calcium sulfate hemihydrate, stockroom ID 025912, CAS 10034-76-1) or some other solidifying medium. Once the contents are encapsulated, seal the sharps container, label it “Encapsulated Sharps,” and take it to the dumpster

$$2\ \mathbf{CaSO_4 \cdot \tfrac{1}{2} H_2O} + 3\ H_2O + \text{needles} \rightarrow 2\ CaSO_4 \cdot 2H_2O + \text{needles}$$

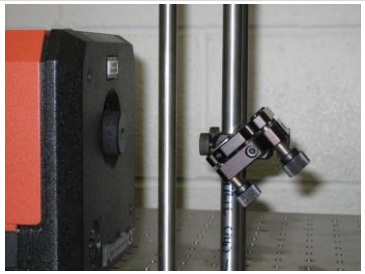
Lasers

IX. Use of Lasers

A. “Laser in Use” signage must be turned on whenever lasers that are not shielded are in use

B. Wear appropriate laser shielding eyewear at all times when working with the laser

C. Restrict access to lasers whenever they are on



Innova 300

Laser group job person needs to complete the following:
Laser safety training (by EH&S)
Laser permit verification (renew annually)

	Examples	Warnings	Precautions
Class 4 (most hazardous)	Innova 300	Avoid eye or skin exposure to direct or scattered radiation	“LASER IN USE” Laser protective eyewear Laser curtains
Class 3b	Delsa Nano C when open and interlocks defeated	Avoid direct eye exposure	Not applicable
Class 3a	Laser pointer	Do not stare into beam	
Class 2	Barcode scanner	?	
Class 1 (least hazardous)	Delsa Nano C	none	

Showers, Eyewashes, Fire Extinguishers and Spill Kits

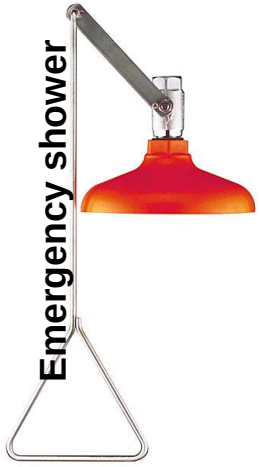
swivel eyewash station

Requires a weekly testing + recording by a group member

Acid spill neutralizer - sodium bicarbonate, sodium carbonate, or calcium carbonate.
Base neutralizer - sodium bisulfate.
Solvent absorbent - Inert absorbents such as vermiculite, clay, sand, Flor-Dri, and Oil-Dri.

Acid, caustic, solvent, mercury spill kits

Fire classes	Fuel/Heat Source
Class A	Ordinary combustible
Class B	Flammable liquids
	Flammable gases
Class C	Electrical equipment
Class D	Combustible metals
Class K	Cooking oil or fat



A. All eye washes must be inspected once a week by a Wooley group member for operation and accessibility and inspection dates recorded in the Emergency Eyewash Station Weekly Activation Log.
B. All fire extinguishers are inspected once a month by designated EH&S personnel for operation and accessibility
C. Safety officers should conduct “Peer Audits” on a periodic basis and report findings to Professor Wooley and the group at group meetings

[P.A.S.S.]
Pull, Aim, Squeeze, Sweep
• May request a demonstration & practice session if desired

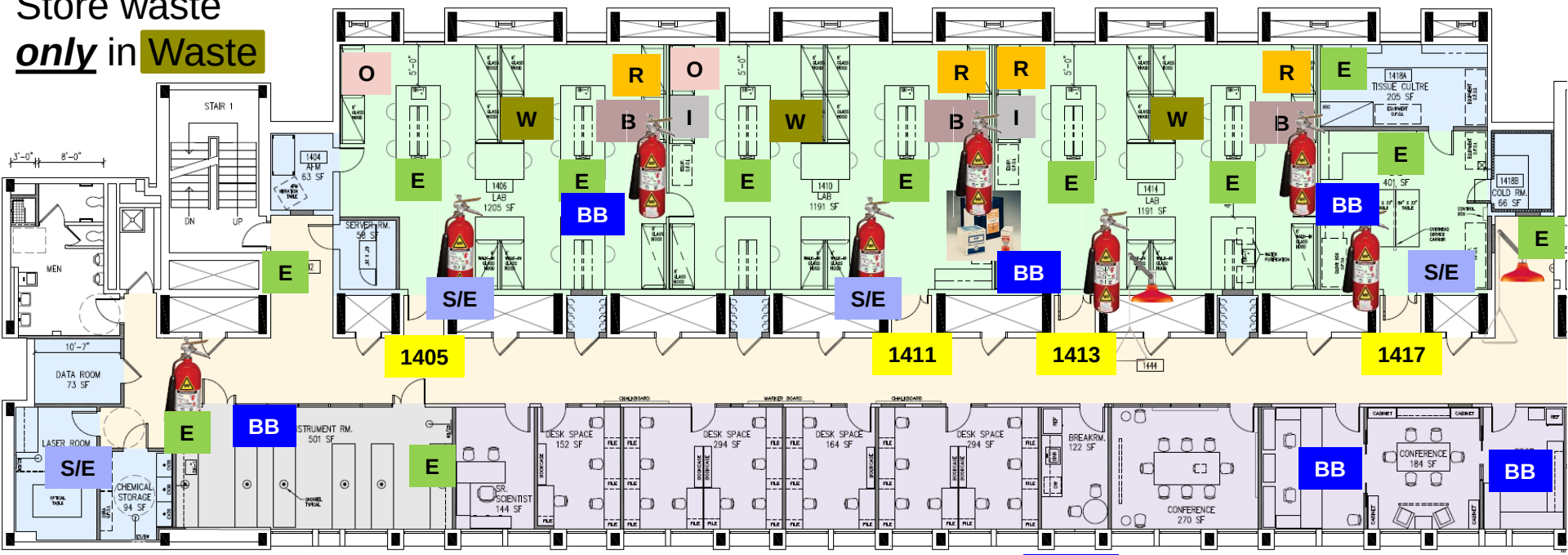
Fire extinguisher for B & C fires inspected by EH&S

https://www.youtube.com/watch?v=21iC4YEgOAs

http://www.youtube.com/watch?v=CTFxCr_Oy94

Showers, Eyewashes, Fire Extinguishers and Spill Kits

Store waste ***only*** in Waste



S/E

E

BB Blue book

I Inorganic acid

O Organic acid

B Base

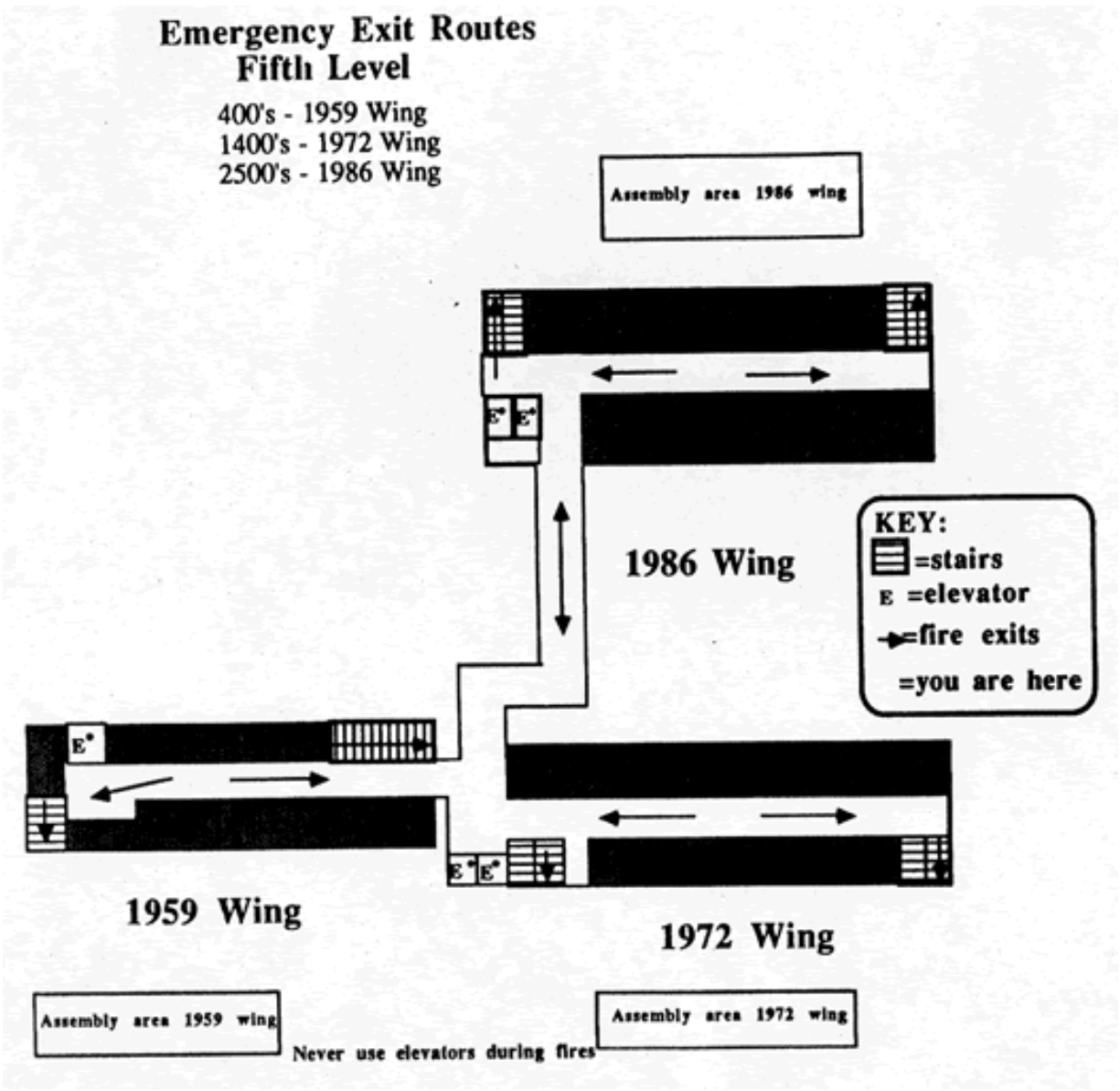
W Waste

R Reactive

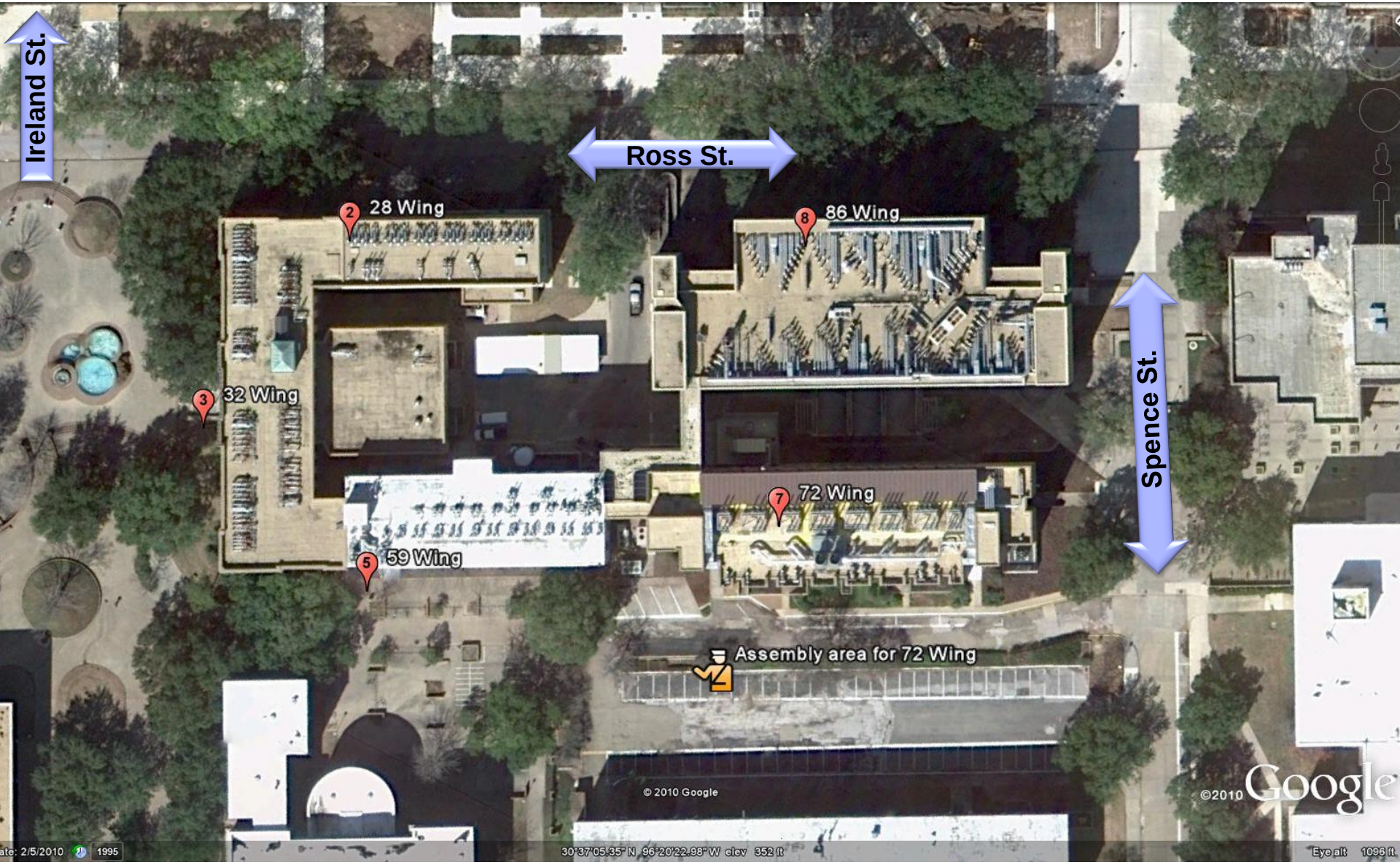
- 12 eyewash stations
- 2 emergency shower stations
- 4 shower/eyewash stations
- 8 fire extinguishers
- 1 set of spill kits

Check where each safety measure is located from your lab space

Emergency Exit Routes



Emergency Evacuation



Additional information

ehsd.tamu.edu

Chemical Inventory
Emergency Preparedness
Fire and Life Safety
Hazardous Material Shipping
Hazardous Waste Management
Laboratory and Chemical Safety
Personal Protective Equipment

Call any one of the EH&S personnel and ask questions & interact

***Ca*. four *proactive & responsible* group members with *high speed of execution* should be in charge of safety**

Contacts	From On-Campus
EMERGENCY ASSISTANCE: Fire, Police, Ambulance	9-911
Non-Emergency Assistance	
College Station	
Fire	9-764-3700
Police	9-764-3600
Ambulance	9-764-3700
Bryan	
Fire	9-361-3888
Police	9-361-3888
Ambulance	9-764-3700
Brazos County (Rural)	
Fire	9-361-3888
Sheriff	9-361-4100
University Police	5-2345
Dept. of Public Safety (State Troopers)	9-776-3101
FBI	9-822-6916
Crime Stoppers	9-775-8477
Hospitals	
St. Joseph	9-776-3777
College Station Medical Center	9-764-5100
Scott & White Urgent Care	9-691-3648
TAMU Environmental Health & Safety	
General Information	5-2132
Spill Response	5-2132
Radiological	5-2132
Maintenance Service (Non-business hours)	5-4311

Safety videos:

Pyrophoric Liquid Safety Video: Transfer, use and storage of pyrophoric chemicals, by UCLA, Oct. 21, 2009, YouTube video

http://www.youtube.com/watch?v=RaMXwNBAbxc

Fire Safety in the Lab, by UCLA, May 28, 2010, YouTube video

http://www.youtube.com/watch?v=HCVRZuupcFw&feature=relmfu