General Safety & Waste Disposal Training

URSINUS COLLEGE

BIOLOGY DEPARTMENT

Objectives

- What is the Thomas Hall Research Policy?
- Who do you go to for assistance?
- What are the general safety issues to be aware of when working in the lab?
- How do you handle chemical/biological reagents?
- What do you need to do in case of a chemical/biological spill?
- How do you properly dispose of waste in the lab?

The Thomas Hall Research Policy

- All students will undergo a safety training
- No eating or drinking allowed in the laboratories
- iPods and laptops (or equivalent) can only be used during non-gloved activities
- If you are here in the evenings/weekend you are **strongly encouraged** to bring a buddy!
- Personal protective equipment (goggles, gloves, etc.) are available
- Thomas Hall will be locked between midnight and 6 am.

The Thomas Hall Research Policy – Building Access

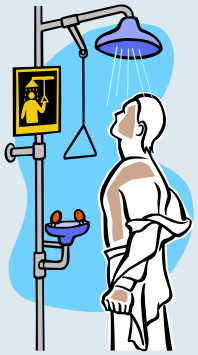
- No teaching lab spaces will be available after the normal working day (i.e. after 5pm).
- If students require access to teaching lab spaces after hours, they will be provided with the access code by their PI. Access codes should remain confidential. Access codes will be changed at least once/semester at a minimum.
- Students may only by in research labs after normal working hours (i.e. after 5pm) if their PI has given them permission to do so.
- Students may not be in a research lab doing research between midnight and 6am.

The Thomas Hall Research Policy – Emergency Contact Information

- All lab spaces should be locked when not in use.
- All labs have posted on the door Emergency Contact Numbers.
- The Thomas Hall Safety Officer is Rebecca Roberts. Her office is Thomas 124A.
- The Biology Laboratory Manager is Ann Breen. Her office is located in 126A.
- All faculty and the Lab Manager are good resources for information and help in an emergency.

General Safety

- Be aware of your environment.
- Do not work in the lab if you are tired or impaired.
- Use common sense.
- Know where the First Aid kits, eye washes, emergency showers, and fire extinguishers are located.



General Safety

- NO FOOD OR DRINK IN THE LAB – EVER!

General Safety

- You must wear closed-toed shoes when in any lab.
- No flip-flops or sandals

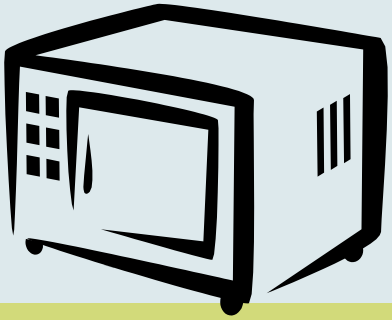
Protecting Your Eyes in the Lab

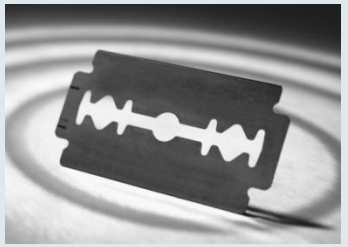
- We comply with Pennsylvania Act 116 of 1965 that states:

"Every teacher, student, visitor, spectator and every other person in the laboratory or is within the area of known danger created by the use of hot liquids, solids, or gasses, or caustic or explosive materials…..shall wear industrial quality eye protective devices at all times while engaged in such activities or exposed to known dangers."

Physical Hazards

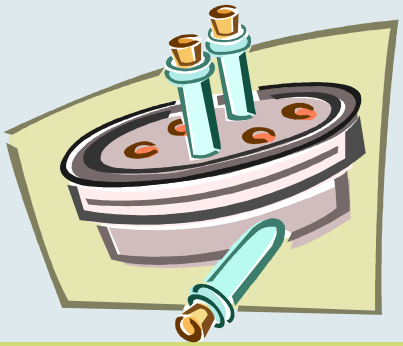
- Be aware of physical hazards in the lab.
- Razor blade accidents and tripping are the most frequent lab injuries.
- Be careful when dealing with high voltage (such as running gels).
- Do not heat closed containers in the microwave.
- Wear appropriate personal protective equipment.





Centrifugation Hazards

- Have someone show you how to use the centrifuge.
- Be sure to use the correct rotor, tubes, and adaptors.
- Do not exceed the maximum speed for the rotor.
- Ensure that the samples are balanced and that the rotor lid is secured.
- Stay at the instrument until it is running smoothly at the desired speed!



Chemical & Biological Safety

- Working safely in the lab is paramount. Prior to working in the lab, you should
  - Know the hazards associated with chemicals you'll be working with PRIOR to the experiment
    - Read Safety Data Sheets
    - Read the container label
    - Consult your professor/mentor
  - Know how to respond if you spill the chemical in the lab or on your body
  - Know how to properly dispose of chemicals
  - Ask questions if unsure

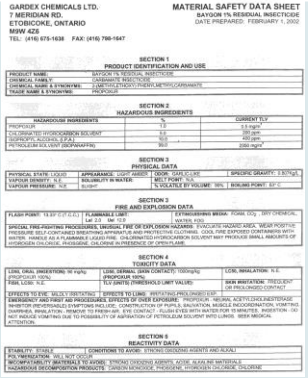
Safe Use of Chemicals – Where to find what you need to know

- Chemical Hygiene Plan
- Safety Data Sheets
- Container labels
- Your research advisor

Safe Use of Chemicals – Where to find what you need to know

- Chemical Hygiene Plan
  - This document describes procedures, equipment, personal protective equipment and work practices that are used to protect lab workers from health hazards..
  - It is available on the Environmental Health & Safety page of the Ursinus website.

Safe Use of Chemicals – Where to find what you need to know



GARDEX CHEMICALS LTD.
7 MERIDIAN RD.
ETOBICOKE, ONTARIO
M9W 4Z6
TEL: (416) 675-1638 FAX: (416) 798-1647

MATERIAL SAFETY DATA SHEET
BAYGON 1% RESIDUAL INSECTICIDE
DATE PREPARED: FEBRUARY 1, 2002

SECTION 1
PRODUCT IDENTIFICATION AND USE

PRODUCT NAME:	BAYGON 1% RESIDUAL INSECTICIDE
CHEMICAL FAMILY:	CARBAMATE INSECTICIDE
CHEMICAL NAME & SYNONYMS:	2-(METHYLETHOXY) PHENYLMETHYLCARBAMATE
TRADE NAME & SYNONYMS:	PROPOXUR

SECTION 2
HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	CURRENT TLV
PROPOXUR	1.0	0.5 mg/m³
CHLORINATED HYDROCARBON SOLVENT	6.0	200 ppm
ISOPROPYL ALCOHOL (I.P.A.)	10.0	400 ppm
PETROLEUM SOLVENT (ISOPARAFFIN)	99.0	2050 mg/m³

SECTION 3
PHYSICAL DATA

PHYSICAL STATE: LIQUID	APPEARANCE: LIGHT AMBER	ODOR: GARLIC-LIKE	SPECIFIC GRAVITY: [illegible]
VAPOUR DENSITY: N.E.	SOLUBILITY IN WATER:	MELT POINT: N.A.	
VAPOUR PRESSURE: N.E.	SLIGHT	% VOLATILE BY VOLUME: [illegible]	BOILING POINT: [illegible]

SECTION 3
FIRE AND EXPLOSION DATA

FLASH POINT: 13.33° C (T.C.C.)	FLAMMABLE LIMIT: Lel 2.0 Uel 12.0	EXTINGUISHING MEDIA: FOAM, CO_2, DRY CHEMICAL, WATER, FOG

SPECIAL FIRE-FIGHTING PROCEDURES, UNUSUAL FIRE OR EXPLOSION HAZARDS: EVACUATE HAZARD AREA. WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING. COOL FIRE EXPOSED CONTAINERS WITH WATER. HANDLE AS A FLAMMABLE LIQUID FIRE. CHLORINATED HYDROCARBON SOLVENT MAY PRODUCE SMALL AMOUNTS OF HYDROGEN CHLORIDE, PHOSGENE, CHLORINE IN PRESENCE OF OPEN FLAME.

SECTION 4
TOXICITY DATA

LD50, ORAL (INGESTION): [illegible] mg/kg (PROPOXUR 100%)	LD50, DERMAL (SKIN CONTACT): 1000mg/kg (PROPOXUR 100%)	LC50, INHALATION: N.E.
FISH, LC50: N.E.	TLV (UNITS) (THRESHOLD LIMIT VALUE):	SKIN IRRITATION: FREQUENT OR PROLONGED CONTACT
EFFECTS TO EYE: MILDLY IRRITATING	EFFECTS TO LUNG: IRRITATING-PROLONGED EXP.	

EMERGENCY AND FIRST AID PROCEDURES, EFFECTS OF OVER EXPOSURE: PROPOXUR - [illegible] ACETYLCHOLINESTERASE INHIBITOR (REVERSABLE) SYMPTOMS INCLUDE: CONSTRICTION OF PUPILS, SALIVATION, MUSCLE INCOORDINATION, VOMITING, DIARRHEA. INHALATION - REMOVE TO FRESH AIR. EYE CONTACT - FLUSH EYES WITH WATER FOR 15 MINUTES. INGESTION - DO NOT INDUCE VOMITING DUE TO POSSIBILITY OF ASPIRATION OF PETROLEUM SOLVENT INTO LUNGS. SEEK MEDICAL ATTENTION.

SECTION 5
REACTIVITY DATA

STABILITY: STABLE	CONDITIONS TO AVOID: STRONG OXIDIZING AGENTS AND ALKALI
POLYMERIZATION: WILL NOT OCCUR	
INCOMPATABILITY (MATERIALS TO AVOID): STRONG OXIDIZING AGENTS, ACIDS, ALKALINE MATERIALS	
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, PHOSGENE, HYDROGEN CHLORIDE, CHLORINE	

- Safety Data Sheets
  - These documents accompany every chemical purchased on campus.
  - They contain important information on handling the chemical and what to do in case of a spill or physical contact.
  - They are located in a binder in the stockroom.
  - They are also online in a searchable database at:
    - http://www.msds.com/ or type in "Safety data sheets" in the search box of the college website to access the Chimera safety data sheets

Safe Use of Chemicals – Where to find what you need to know

- Container labels.
  - This should be your first go-to place for information on how to safely handle the chemical.
- Your research advisor.
  - Always ask your advisor about any safety concerns.

Safe Use of Chemicals – Chemical Storage

- Store solids and liquids separately.
- Don't put acids next to bases.
- Know if a chemical needs to be stored in the hood or in a safety cabinet.
- Put date and lab name on all newly-arrived chemicals.

Safe Use of Chemicals – What if there is a spill?

- If there is a spill of a chemical or biological reagent, don't panic!
- Assess the situation
  - Should you call 911 or Campus Safety?
  - Should you evacuate the area?
  - Is someone hurt?
- Get help – find a professor or Lab Manager. If no one is around, look at the emergency contact sheet near the lab door for phone numbers.

Safe Use of Chemicals – What if there is a spill?

- Check container labels and/or SDS sheets to determine how to clean up the spill or how to deal with physical contamination.
- Work with a professor or Lab Manager to safely clean the area.
- Use spill kits if needed – chemical/biological spill kits are located in Thomas126A (the prep room) and Thomas202 (The Beagle).

Waste Disposal In Thomas Hall

- Many different types of waste are generated in Thomas Hall.
- It is important that all waste is disposed of properly to ensure the safety of people and the environment.
- The Waste Disposal Table is available on the Environmental Health & Safety page of the Ursinus website.

Waste Disposal In Thomas Hall
Sharps

- Sharps containers are the red plastic boxes located in each lab.
- Use for syringes, needles, razor blades, contaminated slides and coverslips.
- Removal is through a contractor and should be done when 2/3 to ¾ full or after 1 year of use.
- Date should be on the side of the container.
- Contact Lab Manager in the stockroom if full.

Waste Disposal In Thomas Hall Biohazard

- Cardboard boxes lined with red bags.
- Located in rooms 220 and 126A.
- These are for animal carcasses, human blood and bodily fluids.
- They are removed by a contractor.
- Contact Lab Manager if full.

Waste Disposal In Thomas Hall
Hazardous Chemical Waste

- Bins labeled as "satellite accumulation areas"
- Located in some labs (usually in hoods)
- Use for chemicals that must be removed according to EPA regulations.
- Ask your professor if you use any chemicals that need this type of waste removal.
- Removed by contractor.
- Each lab must maintain a satellite accumulation area. Waste containers are removed for disposal at the end of each semester.

Waste Disposal In Thomas Hall
Hazardous Chemical Waste

- Hazardous chemical waste removal must be done correctly.
- Any containers in satellite accumulation areas must be labeled (ask the Lab Manager or your research advisor for extra labels).
- All containers must be closed!
- All containers must have a start date listed.
- All containers must have the FULL NAME of the chemical written on the label. (no abbreviations!)

Waste Disposal In Thomas Hall
PROPER LABELING IS ESSENTIAL

You must label everything with the date, your name/initials, and what it is.

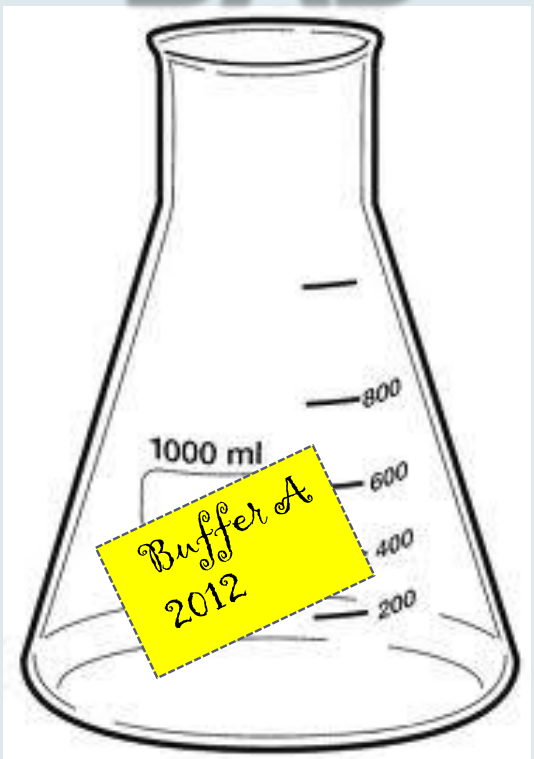
Waste Disposal In Thomas Hall
PROPER LABELING IS ESSENTIAL

But WHY do I need to put my name, date, and contents on every solution I make in the lab?

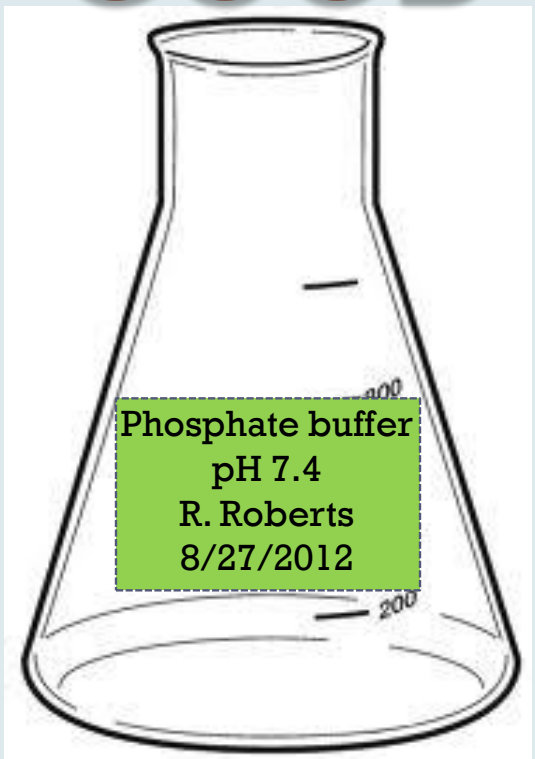
Because if you don't, we have to treat every solution in the lab, even if it's really just water, as a hazardous waste. It costs a lot of money to dispose of unknown solutions!

Waste Disposal In Thomas Hall
PROPER LABELING IS ESSENTIAL

BAD



GOOD



Waste Disposal In Thomas Hall
Plastic Lab Waste

- White cardboard boxes in each lab.
- Use these for gloves, plastic pipettes, petri dishes, centrifuge tubes, 15mL and 50mL tubes, etc.
- Do NOT include anything that can't be autoclaved (solvents, ethidium bromide)
- When box is ¾ full, remove bag and autoclave
- Reuse box by lining with 2 autoclave bags.

Waste Disposal In Thomas Hall
Broken Glass

- Cardboard boxes in each lab that say "Glass" on them.
- Use for non-contaminated broken class, slides, cover slips, Pasteur pipettes, etc.
- When box is ¾ full, taped close.
- Let the Lab Manager know and obtain a replacement box.

Completing the Training – Taking the Quiz!

- Thank you for carefully reviewing the safety and waste disposal information.
- Please contact your research advisor for the quiz associated with this training. The completed quiz must be on file in the Biology Office.

- The Biology Department hopes you have a safe and productive research experience!