

Yale Environmental Health & Safety

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MEMORANDUM

DATE: July 2, 2010
TO: Instructors of Undergraduate Laboratory Courses
FROM: Rob Klein, Deputy Director
SUBJECT: Safety Discussion Outline

As in previous years, we write again to remind you of the important role that laboratory instructors play in providing a consistent safety introduction to their lab courses.

Please review the attached outline, compare it with your intended laboratory exercises, and identify issues and operations that apply to your course. (This document is also available from the front page of our website, at www.yale.edu/ehs.) During your first laboratory meeting, please take a few minutes to discuss and demonstrate these items with your students. Please also let your class know that more detailed Yale safety information and training are available from our Office, including our web site.

We welcome any additional comments or suggestions for improving the outline. And we'd also welcome the opportunity to work towards including safety issues and topics in any departmental student manuals or guides your department or course may already have.

Thanks very much – and please call if you have any questions.

Distribution:

Business Managers and DUS in the Departments of:

- Chemistry
- Ecology and Evolutionary Biology
- Engineering
- Forestry and Environmental Sciences
- Geology
- Molecular Biophysics and Biochemistry
- Molecular, Cellular, and Developmental Biology
- Physics

Safety Discussion Outline for Undergraduate Laboratory Courses

The purpose of this discussion is to review basic safety practices and procedures for laboratory work, and outline the appropriate actions to follow in the event of an emergency. Additional information is available from the Office of Environmental Health and Safety (www.yale.edu/ehs).

Responsibilities

- Safety is an integral and important component of effective laboratory sciences.
- Everyone shares responsibility for safety in this class.
- Plan ahead for lab exercises but do not hesitate to ask questions or ask for assistance if you are unsure about a particular step or process in the experiment.

Appropriate Lab Clothing

<<DEMONSTRATE>>

- Lab coats or aprons.
- Safety goggles or safety glasses with side shields.
- Chemically-resistant gloves when handling hazardous materials.
- Do not wear open toe shoes, sandals, shorts, or short skirts when working in the lab.
- Remove lab clothing and protective equipment when leaving the lab.
- Wearing contact lenses during wet labs is strongly discouraged.

Emergencies

<<POINT OUT>>

- Locations of the nearest exits from room and building, fire extinguishers, safety shower, eyewash station, spill response supplies, phone, and fire alarm pull station.
- In the event of a fire alarm, turn off equipment, reactions, and electrical supplies and exit the building. Stage together near the building and await the “all clear” from the police, fire department, or other emergency responder before re-entering.
- If you are involved in or witness an accident, immediately notify the instructor and others in the area. For small spills, a local response may be sufficient. However, for large spills, medical emergencies, or fires of any size, pull the nearest fire alarm box or dial 911 from any

campus phone before beginning any other emergency response. This will ensure that the appropriate fire, safety, and medical responders have been summoned for back up.

- When making an emergency notification, give dispatcher as much information about incident as possible, including phone, location, incident type, and whether anyone has been injured.

Fire Extinguishers

<<DEMONSTRATE SIMULATED USE >>

- Extinguisher use is not as intuitive as it seems - improper use can actually spread a fire.
- Summon emergency assistance first or notify others to do so before attempting to use an extinguisher.
- To actually use an extinguisher, remember the acronym PASS –
 - PULL the pin
 - AIM the nozzle
 - SQUEEZE the trigger, and
 - SWEEP back and forth across the base of the fire.

<Contact the Yale Fire Marshal if you want an actual demonstration of extinguisher use>

Safety Showers and Eyewashes

<<POINT OUT AND DEMONSTRATE SIMULATED USE>>

- Showers and eyewash stations are basic emergency equipment – note where these are.
- Immediately flush the affected area with a deluge of water for 10 - 15 minutes. If the splash also affected clothing, remove soiled clothing to improve dilution and wash chemical from the skin. Follow-up with medical evaluation from Yale Student Health or Urgent Visit at University Health Services Center, 17 Hillhouse.

Safety Information

<<SHOW AND DESCRIBE>>

- Describe the safety hazards of the chemicals and equipment in the lab, and how to safely use them.

Basic Laboratory Safety

<<DEMONSTRATE WHERE APPLICABLE>>

- Never work alone in the lab.
- Eating, drinking, smoking, and applying cosmetics are prohibited in all labs. And never store food or beverages in a lab refrigerator or freezer.
- Plan your experiment ahead of time, use written procedures, and keep notes during the work.

- If you are unsure of any step or procedure in your experiment, ask questions first.
- Never mouth pipette – use rubber “sucker” bulbs or mechanical pipetters.
- Use tongs or heavy gloves when handling hot objects.
- Avoid the use of sharps such as needles or glass pasteur pipettes wherever possible. If you must use needles, never recap them after use - instead dispose of them in the needle box.
- Where skin contact with chemicals is possible, select and wear the appropriate gloves - consult OEHS. As a general purpose glove, nitrile offers superior chemical resistance.
- Use a fume hood for transfers, reactions, and other work with volatile or hazardous materials that could evolve or release gases or fumes. Follow the posted Safe Use Guidelines.
- Clean lab work surfaces and equipment at the end of your experiment or procedure.
- Avoid using open flames - instead, use a hot plate, heating mantle, or oil, water, or sand bath.
- Never overload electrical circuits, and keep extension cord use to a minimum.
- When working with concentrated acids, remember: add acid *to* water.
- Use a plastic blast shield and wear a faceshield in addition to standard lab safety glasses whenever performing highly reactive work.
- Date-label all time sensitive compounds (e.g., ethers, concentrated peroxides, picric acid, perchloric acid) and dispose once out-dated.
- Be suspicious of any reagent container that has visible residue or crystals around the cap, and seek advice from the instructor before opening.
- Wash hands with soap and water before leaving the lab.

Waste Disposal

<<DEMONSTRATE WASTE COLLECTION CONTAINERS AND AREA>>

- The proper collection and disposal of laboratory wastes has important safety, environmental, financial, and legal implications for you and the University.
- Keep different waste streams separate from each other.
- Collect wastes in compatible containers in a central area of the lab, using a tray or bin below as secondary containment in the event of a spill or leak. Keep track of the materials placed into waste containers so that the filled container can be characterized prior to disposal.

- Dispose of waste chemicals in a timely manner to avoid lengthy accumulation periods and minimize the potential for damage to storage containers.
- Do not put “Sharps” (e.g., syringes and needles, scalpels, razor blades, glass pipettes, and other objects that can easily puncture skin) in the regular trash.
- Biological waste disposal procedures vary according to the BioSafety Level of the organisms or tissues used. However, regardless of BioSafety Level, all liquid cultures and stocks of microorganisms must be inactivated by chemical treatment with 10% household bleach before drain disposal.
- When waste containers are full, label them with a “Hazardous Waste” tag, and call the Office of Environmental Health & Safety for pick-up (785-3551).

Note to Instructors: Work with human blood, bodily fluids, unfixed human tissues, human or non-human primate cell cultures, human pathogens, or radioactive materials requires additional safety training. Certain field work with the potential for exposure to infected arthropods or wild mammals may also require additional training and acknowledgement of risks.

Emergency Contact Numbers	
Medical, Fire, Police:	911 or 432-4400
Safety Emergency Line:	785-3555 (regular hours) 911 (after hours)
YHP Urgent Visit Services:	432-0123
Office of Envi. Health & Safety Main Phone Line:	785-3550