Teaching Lab Health & Safety: A Guide for TAs

Here describes some practical ideas for how TAs (or others) can incorporate safety into their lab sessions. Safety in the lab is the lab instructor's responsibility. Emphasize it with the students, and remain in the lab at all times during class - your department may have more requirements.

Prepare Yourself: TAs should discuss potential problems of an upcoming experiment with the class supervisor. The pre-laboratory lecture should be used to point out hazards and appropriate precautions. Do a dry run of the experiment and imagine yourself in the place of an inexperienced student.

Emphasize Safety from Day One: The first day is the time to set the right tone, emphasizing that safety is of utmost importance. While you may later develop an easy rapport with your students, take advantage of the respect they will afford you at the beginning to convey a serious commitment to safety. Topics to be covered in a general safety orientation session could include:

- Overview of hazards found in your lab
- Students' responsibilities for safety
- Dress - no sandals, hair pulled back, ties, loose clothing and other requirements
- Requirement for safety goggles/glasses and other protective clothing/equipment
- No eating, drinking, smoking
- Procedures for spills, fire, earthquake, injury, and location of evacuation point
- Location/use of eyewash, fire extinguishers, other safety equipment
- Use of fume hoods, if applicable
- Safe use of chemicals/radiation/biohazards/etc.
- Waste disposal procedures, glass and sharps disposal procedures
- Safe use of equipment and location of manuals for each piece of equipment
- "Housekeeping" requirements; clear paths to emergency showers and exit doors
- How safety measures will be enforced and consequences if they are not followed

Students should be strongly advised to carefully read the experimental write-ups before the lab period. Some TAs include specific safety activities on the first day, such as having students draw a map of the lab and show where the safety equipment is, or asking them to look up a chemical they will be using in the Merck Index or MSDS and doing a brief write-up.

Integrate Safety Into Each Session

1. Review activities for each session beforehand, and identify specific hazards/safety precautions to highlight. Do not assume students know safety procedures! A good way to keep your students informed is by preparing a safety summary sheet for each experimental procedure if the information is not already presented in the lab manual (or even if it is).

2. Discuss with class supervisor what safety aspects to cover in each session;

3. Start the class by outlining the activities on the board. Highlight safety tips as you go along

4. Include safety questions in quizzes;

5. Look for and use "teachable moments" in lab sessions-if you see someone doing something wrong, try to make a general safety point about it to the class (without singling the person out). Explain what's wrong, what the consequences could be, and how it should be done. Likewise, if someone is using a good technique, point that out as well;

6. Make sure your instructions are understood by your students-ask them questions to test their understanding and encourage them to ask you to clarify something they don't understand. For the sake of clarity, it is better to demonstrate a technique rather than trying to describe it;

7. Think about and plan for crowd control - students stacking up to use the fume hood or doing work outside of a fume hood are a potential safety hazard, so you may have to do parts of some experiments in "shifts" if equipment is limited.

Monitor the Class Activities Closely

1. Often a TA can't see all the lab activities at once -you should move around the lab to spot problems and correct them before they lead to accidents. Ask your students to describe what they're doing and have them identify the safety precautions they should be following.

2. Supervise any crowd control activities you implement as noted above.

3. Safety rules should be enforced consistently. If someone repeatedly refuses to work safely, they should be asked to leave the lab and should be discussed with the class supervisor.

4. Do not allow incompatible make-up labs to occur simultaneously with regularly scheduled labs. Check with your department for specific policies on make-up labs.

Try to Motivate Your Students

1. First and foremost - set a good example.

2. Give positive reinforcement for good safety techniques.

3. If appropriate (check with your class supervisor) evaluate safe work practices in students grades. If they know this will happen, it may create an "interest" in safety where before there was none.

What Should I Do If a Student is Injured in a Lab I'm Teaching?

- If student needs immediate medical assistance call 9-911. Campus paramedics should be on-scene in a few minutes. Note that a cell phone call to 911 goes off-campus and not to the local Dispatcher, therefore a campus phone is preferable.

- If there is some question as to their condition (e.g. student feels faint), do not put yourself in the position of trying to play doctor. There is no charge for having the campus paramedics (9-911) come out. Let them make the evaluation.

- For a minor injury (e.g. cut) use the local first aid kit for the lab. Know where this is located – often it's in the storeroom. However, never give students any medications (e.g. aspirin) and the 1st aid kit should not contain medications. One exception to this is a simple burn cream, but let the student self-administer this.

- Another injury treatment option is to have the student go to Student Health. However, don't let the student go there by themselves. If they were to pass-out while walking or biking, it could come back to haunt you later.

- Injuries that are significant, or which could escalate later (e.g. chemical exposure, back injury) should be documented to protect you and the University. Your department office has a form for doing this, but note that the student injury form is different than the one for employee injuries. This Business Services form is also available via their website: http://www.busserv.ucsb.edu/riskmanagement/incident.htm

I, the undersigned, acknowledge the guidelines and procedures for lab safety as outlined below. Topics covered include, but not limited to, the following areas:

1. Location of safety first aid kits.
2. Location of fire extinguishers and emergency notification cards in the lab.
3. Location of eye-wash and shower equipment.
4. Mechanical, chemical, and electrical hazards in the lab.
5. Laser use and safety.
6. What to do if a student is injured in your lab.

Name: (PRINT) _____

Signature: _____Date:_____