

# *AP Chemistry*

## **Safety in the Chemistry Laboratory**

The Bromfield School  
2016-2017 Academic Year

AP Chemistry has a mandatory laboratory component that is both rigorous and comprehensive. This college-level lab sequence is intended to expose students to a variety of chemical techniques and methods, while providing students with an opportunity to connect multiple concepts. Many experiments will be carried out over multiple lab sessions. Complex experiments provide many opportunities to learn a great deal about chemistry and also present multiple opportunities to cause harm to oneself or others. The chemistry laboratory must be a safe place in which to work. Be sure to know and follow all the safety rules, summarized below.

The official safety manual for Bromfield AP Chemistry is [\*Safety in Academic Chemistry Laboratories, Vol. 1 \(7<sup>th</sup> edition\)\*](#), which be downloaded from the American Chemistry Society.

### **The following safety rules always apply in the lab.**

1. Safety goggles are to be worn at all times when working in the lab. They must be worn to cover your eyes.
2. Wear appropriate clothing for lab work. This means: no tank tops or bare midriffs; shorts and skirts must reach to the knees, and avoid wearing contact lenses. Wear aprons or lab coats and gloves when appropriate.
3. Learn the location and use of safety devices in the lab BEFORE an emergency arises. These include the fume hood, fire blanket, fire extinguisher, eye wash, safety shower, emergency gas-cutoff, and first-aid kit.
4. The lab is a place for serious work. Fooling around can bring danger to you and to others around you. Horseplay, practical jokes, and pranks are dangerous and prohibited.
5. Never work alone in the laboratory.
6. Read the entire experiment before entering the lab. Memorize the safety precautions and be familiar with the procedure for the experiment; follow the instructions and safety precautions carefully.
7. Never taste or smell anything in the lab. This includes chewing gum and small candies you may have brought into the room. Chemical fumes can be absorbed by gum or candy while in your mouth. DO NOT bring your lunch or any other food into the lab. Do not apply cosmetics while in the lab. Don't chew on a pen which was lying on the lab bench.
8. Read chemical labels. Follow the instructions and safety precautions stated on the labels.
9. Keep the laboratory table, sink, storage areas, and floor clean, dry, and neat.
10. Put lids or caps back on bottles and jars.
11. Reactions producing large quantities of noxious fumes should be conducted in the fume hood. You will be notified when you need to do this.
12. NO UNAUTHORIZED EXPERIMENTS are to be performed.
13. Dispose of broken glassware in the designated glass waste basket immediately. Notify the instructor. Use a whisk broom and dust pan. Do not use your fingers.
14. Clean up spills immediately. Contact your instructor first if a solution may be a waste hazard. If you spill a very reactive substance such as an acid or a base, notify the people in the area and then obtain assistance from your instructor. Acid spills should be neutralized with baking soda, base spills with vinegar before cleaning them up.
15. Never heat a closed system.
16. Lubricate glass tubing with glycerol or detergent before putting it into rubber stoppers. Wrap the tubing in a towel, and hold it close to the stopper while gently twisting and inserting it. Never force it.
17. If you take more of a chemical substance from a container than you need, you should not return the excess to the container. This might cause contamination of the substance remaining. Dispose of the excess as your instructor directs.
18. Be sure to turn off the Bunsen burners when you are finished working or whenever you leave the area. Never leave a lit Bunsen burner unattended.
19. Use caution when moving glass, porcelain, or metal which has been heated. Hot glass looks cool.

20. When heating substances in open test tubes, always point the mouth of the tube away from any person.
21. Always add acid to water and stir the solution while adding the acid. Never add water to an acid.
22. Chemical contact with eyes requires extensive flushing (15 minutes) at the eyewash. If you spill anything on you or your clothes, always wash with plenty of water first (for at least five minutes) and inform your instructor.
23. Immediately inform the instructor of an injury, particularly those involving cuts, no matter how minor.
24. If you or your lab partner are hurt, immediately call out "Code one, code one" to get your instructor's attention.
25. Solid waste produced in the lab (i.e., precipitates), solvents (i.e., phenol, methanol, chloroform, etc.) and solutions containing hazardous ions (i.e., heavy metals, chromate, etc.) go into a labeled waste jar in the hood. Paper towels go in the trash can. Solids do not go in the sinks!
26. Comply with the wastewater treatment rules for the chemical disposal system.
27. DO NOT rub your eyes in the lab. Your hands may have chemicals on them.
28. DO NOT sit on the benches or on the floor at any time. Chemical residues and small pieces of broken glass are frequent hazards.
29. Always sponge off the bench top before leaving the lab, and check to be sure that you have replaced all of the lab equipment properly before you leave the lab.
30. Always wash your hands with soap and water immediately after or upon leaving the lab.
31. Tie long hair back when near a flame or when working with solutions.
32. Never take any chemicals out of the lab.
33. Whether or not the lab instructions remind you, all of these rules apply all of the time.

## **Most Common Accident Causes**

- **UNAWARE OF HAZARDS:** May be due to lack of experience, lack of training, a temporary hazard created by someone else, or poor judgment.
- **INDIFFERENCE:** A poor attitude toward safety, when one knows the safe method but doesn't care, creating a hazard for all in the area.
- **TEMPER**
- **HASTE**
- **LAZINESS**

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This sheet must be signed by both the student and a parent/guardian and returned to Dr. VanderVeen before the student will be allowed to participate in laboratory activities. The handout "Safety in the Chemistry Laboratory" is to be kept in your science notebook as a constant reminder of the safety rules.

AGREEMENT

I have read and understand the handout titled "Safety in the Chemistry Laboratory" and agree to abide by the rules and procedures described in the handout and *Safety in Academic Chemistry Laboratories, Vol. 1 (7<sup>th</sup> edition)*. I realize that I must obey these rules to ensure my own safety and that of my fellow students and instructor. I will cooperate to the fullest extent with my instructor and fellow students to maintain a safe lab environment. I will also closely follow the oral and written instructions provided by my teacher. I am aware that any violation of this safety contract that results in unsafe conduct in the laboratory or misbehavior on my part may result in being removed from the laboratory, or other consequences as determined by the instructor.

\_\_\_\_\_  
Name of Student

\_\_\_\_\_  
Signature of Student

\_\_\_\_\_  
Date

Dear Parent or Guardian:

It is important that you are informed of the school's effort to create a safe chemistry classroom/laboratory environment. With the cooperation of the instructors, parents, and students, a safety instruction program can eliminate, prevent, and correct possible hazards. You should be aware of the safety instructions your son/daughter will receive before engaging in any laboratory work. Please read the handout titled "Safety in the Chemistry Laboratory". No student will be allowed to perform laboratory activities unless this contract is signed by both the student and parent/guardian and is on file with the instructor.

Your signature on this contract indicates that you have read the handout titled "Safety in the Chemistry Laboratory," are aware of the measures taken to insure the safety of your son/daughter in the science laboratory, and will instruct your son/daughter to uphold his/her agreement to follow these rules and procedures in the laboratory.

\_\_\_\_\_  
Name of Parent/Guardian

\_\_\_\_\_  
Signature of Parent/Guardian

\_\_\_\_\_  
Date