

## St. Thomas Aquinas Science Department

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### STUDENT GUIDELINES FOR SAFETY IN THE LABORATORY

The following guidelines are general rules for all school laboratories. In addition to this set of guidelines, your teacher will have specific rules for the science course that you are taking.

After you have read these rules, you will be required to write a test on laboratory safety. You must sign form, indicating that you have read the rules and understand them. Finally, you must explain the rules to your parents/guardian and have them sign indicating that they are aware of your responsibilities towards lab equipment.

***Remember: Student safety is YOUR responsibility. THE BIGGEST DANGER IN THE LAB IS YOU!***

***THINK before you act.***

***CONCENTRATE on what you are doing.***

***KEEP CALM if there is an accident.***

***ALWAYS inform the teacher if an accident occurs.***

1. Safety glasses (not prescription glasses) must be worn at all times, unless you have specific instructions from your science teacher. Eye protection must be worn until EVERYONE in the class is finished the activity. Contact lenses are NOT recommended during chemistry labs.
2. Bunsen burners and/or hot plates must not be left unattended when operating. The heat from both of these devices can burn skin and clothing. Always assume that Bunsen Burners and hot plates are hot, even after use.
3. Horseplay, practical jokes and running must not take place in the laboratory.
4. Eating and drinking are strictly forbidden in the laboratory.
5. All accidents (even minor ones) must be reported to your science teacher immediately. If you feel dizzy at any time during the laboratory, you must report it to your teacher.
6. Learn the location and the proper use of all safety equipment such as fire extinguisher, shower, fume hood, eye wash station, safety glasses, lab aprons, and gloves.
7. Dispose of all specimens and chemicals as indicated by your science teacher. Broken glass is to be swept up and placed in the bucket marked "Broken Glass".
8. All experiments should be performed while standing so you can move out of the way more quickly in the event of an accident, and all lab stools or chairs should be placed under the laboratory benches.
9. Read all experiments before you perform them, and be aware of all safety precautions.
10. Wash hands after all experiments.

11. Never perform an experiment unsupervised.
12. Never taste, touch, or smell substances in the laboratory, unless told to do so.
13. Shoes must be worn in the laboratory. NO OPEN TOED SHOES IN THE LAB AT ANY TIME, INCLUDING DRESS-DOWN DAYS.
14. Hair and loose clothing must be tied back when working in the laboratory, and especially when working with a Bunsen Burner. Bracelets and watches should be removed so they will not catch on anything. Rings should not be worn when working with chemicals. Rings can react with the chemicals being used, or puncture protective gloves, or can cause chemicals to become trapped underneath and cause skin irritation.
15. To smell gases, cup your hand over the container and wave your hand towards your nose.
16. Wear the appropriate safety equipment (*i.e. gloves, safety glasses, apron*) when indicated by your teacher.
17. Make sure that your laboratory work area is uncluttered.
18. All jackets, coats, and book bags should be left in lockers – they are forbidden in the lab.
19. When heating test tubes, never point them at another person. Heat solids by holding the test tube almost horizontally, and gently moving the test tube back and forth through the flame. Heat liquids at an angle of about 45 degrees. Never heat a test tube that is more than a quarter full of liquid.
20. Never attempt any unauthorized experiments.
21. Never pipette by mouth. All pipeting is to be done with bulbs ONLY. **DO NOT SUCK CHEMICALS INTO THE PIPETTING BULBS.** All chemicals should be handled with spatulas or scoopulas and not with fingers.
22. Read the reagent labels twice before using.
23. Students must not transport dangerous chemicals throughout the laboratory (ex. conc. sulfuric, nitric, hydrochloric acids, caustic alkalis). They are to be left in the fume hood.
24. When diluting acid, the ACID must be added to the water, NOT the water to the acid. Use a glass stirring rod to conduct the acid into the receiving container.
25. Never take the reagent bottles back to your laboratory bench, unless instructed by the teacher to do so.
26. Never return anything to the reagent bottles in order to prevent contamination.
27. Clean up all spills immediately. Students are responsible for leaving the sink and counter area clean and organized.

28. If you have any questions regarding procedures or chemicals, ask your teacher *before* proceeding with the experiment.
29. Students must be prepared to do the lab. They are expected to have pre-read the lab activity and have done the necessary preparations, as directed by your teacher.
30. Students are to do the following during **every** lab exercise: a) Wipe down the bench top prior to the activity. b) Replace materials as directed by the teacher. c) Wipe down the bench top after the activity.
31. Only heat glassware made of Pyrex. Never heat any glassware that is chipped or cracked. Never heat glassware that is not approved by your teacher (e.g. a graduated cylinder or a volumetric flask. These can be irreparably damaged by heating). Never set hot glassware on a cold or wet surface. Never run water (hot or cold) over very hot glassware.
32. Flammable liquids should only ever be heated in a hot water bath, NEVER with an open flame.
33. Never insert glass tubing or thermometers into rubber stoppers – let the teacher do this for you.
34. In the event of a burn from a flame or a hot object, immediately flood the burn with cold water.
35. When pouring liquids from a bottle, always pour on the opposite side to the label so that the label does not become damaged by the chemical.
36. When pouring liquids from a volumetric flask, remove and hold the glass stopper between the back of your fingers and pour the solution. Never place the stopper down on the lab bench or other surface.
37. Always check electrical apparatus for loose or bare wires. Never use defective equipment. Always ensure switches are OFF before plugging equipment in. Always have a teacher check your equipment or circuit before turning it on. Never handle electrical apparatus with wet hands. Always disconnect equipment by pulling gently on the plug, and NEVER by pulling on the cord.
38. Always use stands, clamps and holders to secure any potentially dangerous or fragile equipment that could be tipped over or roll off the bench. Adjust clamp heights and tighten thoroughly BEFORE heating any apparatus. Also, be careful about touching the clamps after items have been heated.
39. Be careful when cleaning glassware. There is an increased risk of breakage from dropping, especially when the glass is wet and slippery.
40. Never pick up an object after using burners or hot plates without first checking its temperature. This can be done by first placing your hand near, not on the object. If it does not seem to be hot, very lightly and quickly touch it to make sure it is cool. Many items that have been heated (esp. glassware) will remain hot for a long time, even though they do not appear that way.
41. Never look down the barrel of a Bunsen Burner.

42. Always pick up a Bunsen Burner by the base, and never by the barrel.
43. Always include a “cooling time” in your experiment plan and never put away hot equipment.
44. Before lighting the Bunsen Burner, always make sure the gas source is off and fully close the gas valve on the bottom. Turn on the gas source at the bench and listen to make sure no gas is escaping from the burner before it is lit. Close the gas valve on the bench. Open the bottom valve of the burner slightly (no more than one full turn), turn on the gas source at the bench, then light it with the butane lighter. Make further adjustments to the flame size and colour after it is lit. The flame should have an inner light blue cone and an outer dark blue cone.
45. When adding chemical reagents from droppers, make sure the tip of the dropper does NOT come into contact with other solutions or solids. Drip the correct number of drops from a distance of at least 1 cm above the other substances.
46. NEVER underestimate the risks associated with chemicals and ALWAYS assume that any unknown chemicals are dangerous.
47. To stir the contents of a test tube in which a mixture has been placed, NEVER place your finger or thumb over the open end of the test tube. Hold the top of the test tube with your forefinger and thumb of one hand, and use the forefinger of the other hand to gently tap the bottom of the test tube. You should be able to see a sort of “whirlpool action” inside the test tube if you are doing this correctly.

**FAILURE TO ADHERE TO THESE LAB GUIDELINES WILL RESULT IN THE FOLLOWING:**

- a. The student will be exempted from doing the lab activity.
- b. The student will receive a mark of "0" on that lab.