

Laboratory Safety Guidelines

“Safety in the Science Laboratory”

New Bedford High School

Science involves hands-on activities and laboratory work. You will be doing many laboratory activities which may require the use of hazardous chemicals. Safety in the science classroom is the #1 priority for students, teachers, and parents. To ensure a safe science classroom, a list of rules and guidelines has been developed and provided to you in this student safety contract. These rules must be followed at all times.

Two copies of this attestation page of the safety contract are provided. One copy must be signed by both you and a parent or guardian before you can participate in the laboratory. A copy of The Laboratory Safety Guidelines is to be kept in your science notebook as a resource and constant reminder of the safety rules.

AGREEMENT

I, _____ (student's name) have read and agree to follow all of the safety rules set forth in this contract. I realize that I must obey these rules to insure my own safety, and that of my fellow students and instructors. 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 the instructor. 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, detention, receiving a failing grade, and/or dismissal from the course.

Do you wear contact lenses? yes no

Are you color blind? yes no

Do you have allergies? yes no

If so, list specific allergies _____

Student Signature

Date

Dear Parent or Guardian:

We feel that you should be informed regarding the school's effort to create and maintain a safe science 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 list of safety rules. No student will be permitted to perform laboratory activities unless this contract is signed by both the student and parent/guardian and is on file with the teacher.

Your signature on this contract indicates that you have read this Student Safety Contract, 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.

Parent/Guardian Signature

Date

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The laboratory is really not a dangerous place, but it demands a reasonable prudence on the part of an experimenter to keep it safe. The following information is intended to be the basis for the establishment of good, safe laboratory practice and lists precautions which must be strictly adhered to.

Following general safety guidelines

1. When first entering a science room, **do not touch** any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.
2. **Do not eat food, drink beverages**, or chew gum in the laboratory. Do not use laboratory glassware as containers for food or beverages.
3. **Be prepared** for your work in the laboratory. Read all procedures thoroughly before entering the laboratory.
4. **Conduct yourself in a responsible manner** at all times in the laboratory. Order prevents confusion and accidents. Never fool around in the laboratory. Horseplay, practical jokes, and pranks are dangerous and prohibited. During laboratory sessions stay within your assigned work area.
5. **Follow all written and verbal instructions carefully**. If you do not understand a direction or part of a procedure, ask the instructor before proceeding. Do not deviate from the existing procedures. Note any special cautions as stated in the experiment directions and by the instructor during pre-lab instruction.
6. Perform only those experiments authorized by the instructor. Never do anything in the laboratory that is not called for in the laboratory procedures or by your instructor. Carefully follow all instructions, both written and oral. **Unauthorized experiments are prohibited**.
7. **Set up apparatus as described** in the lab procedure or described by your teacher. Never use makeshift arrangements.
8. Always **use the prescribed instrument** (tongs, test tube holder, forceps etc) for handling apparatus or equipment.
9. **Never remove any substance from the lab** unless instructed to do so by your teacher.
10. **Be alert and proceed with caution** at all times in the laboratory. Notify the instructor immediately of any unsafe conditions you observe.
11. **Never work alone**. No student may work in the laboratory without an instructor present.
12. **Observe good housekeeping practices**. Work areas should be kept clean and tidy at all times. Bring only your laboratory instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored in the classroom area.
13. **Keep aisles clear**. Push your chair under the desk when not in use.
14. **Know the locations and operating procedures of all safety equipment** including the first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and the exits are located and read the posted fire drill instructions.
15. Always **work in a well-ventilated area**. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
16. **Labels and equipment instructions must be read carefully** before use. Set up and use the prescribed apparatus as directed in the laboratory instructions or by your instructor. In using chemical reagents, double-check the label to make sure you are not using the wrong chemical. Also, clearly label all laboratory generated reagents and solutions.
17. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. **Wash your hands with soap and water after performing all experiments**. Clean (with detergent), rinse, and wipe dry all work surfaces (including the sink) and apparatus at the end of the experiment. Return all equipment clean and in working order to the proper storage area.

18. **Experiments must be personally monitored at all times.** You will be assigned a laboratory station at which to work. Do not wander around the room, distract other students, or interfere with the laboratory experiments of others.
19. **Dispose of all chemical waste properly.** Never mix chemicals in sink drains. Sinks are to be used only for water and those solutions designated by the instructor. Solid chemicals, metals, matches, filter paper, and all other insoluble materials are to be disposed of in the proper waste containers, not in the sink. Check the label of all waste containers twice before adding your chemical waste to the container.
20. **Clean up all spills** thoroughly. Never sit on laboratory counters.
21. **Students are never permitted in the science storage rooms** or preparation areas unless accompanied by or with explicit permission of their instructor.
22. **Know what to do if there is a fire drill during a laboratory period;** containers must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.
23. **Handle all living organisms** used in a laboratory activity **in a humane manner.** Preserved biological materials are to be treated with respect and disposed of properly.
24. **When using knives and other sharp instruments,** always carry with tips and points pointing down and away. Always cut away from your body. Never try to catch falling sharp instruments. Grasp sharp instruments only by the handles.
25. **Maintain sterility** when necessary.
27. **Contact lenses should not be worn in the laboratory** unless you have permission from your instructor.
28. **Dress properly** during a laboratory activity. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back and dangling jewelry and loose or baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed.
29. Lab aprons have been provided for your use and should be worn during laboratory activities. **Aprons save clothing - use when working with all chemicals.**

Accidents and Injuries

30. **Report any accident** (spill, breakage, etc.) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
31. **If you or your lab partner are hurt,** immediately yell out "Code one, Code one" to get the instructor's attention.
32. **If a chemical should splash** in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 20 minutes. Notify the instructor immediately.

Handling chemicals

34. **All chemicals in the laboratory are to be considered dangerous.** Do not touch, taste, or smell any chemicals unless specifically instructed to do so. The proper technique for smelling chemical fumes will be demonstrated to you. Avoid breathing toxic vapors and work in a ventilating hood when instructed. (Remember, heating favors the vapor state.) All poisons can stick to the hands and eventually end up the mouth; wash hands thoroughly after exposure to hazardous chemicals.
35. **Check the label** on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
36. To **avoid contamination** do not return reagents to their original containers unless instructed to do so. Take only the amount specified in the experimental procedure.
37. **Never use mouth suction** to fill a pipet. Use a rubber bulb or pipet pump.

Clothing

26. Any time chemicals, heat, or glassware are used, students will wear laboratory goggles. There will be no exceptions to this rule! The eyes are particularly susceptible to permanent damage by corrosive chemicals as well as by flying fragments. **WEAR EYE PROTECTION during all experiments.** (Chemicals in the eye should be flushed with water immediately for at least 20 minutes.)

38. *When transferring reagents* from one container to another, hold the containers away from your body.
39. *Acids must be handled with extreme care.* You will be shown the proper method for diluting strong acids. Always add acid to water, swirl or stir the solution and be careful of the heat produced, particularly with sulfuric acid.
40. Handle *flammable hazardous liquids* over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
41. *Take great care when transferring* acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.
42. *Dispose of all chemicals properly.* If flushable, use large amounts of water; if not, use crocks provided or follow any specific instructions given.
43. *Never remove chemicals or other materials from the laboratory area.*

Handling Glassware and Equipment

44. *Carry glass tubing*, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
45. *Never handle broken glass* with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
46. *Inserting and removing glass tubing from rubber stoppers can be dangerous.* Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Glass tubing must be fire-polished. Always protect your hands with towels or cotton gloves when inserting glass tubing into, or removing it from, a rubber stopper. If a piece of glassware becomes "frozen" in a stopper, take it to your instructor for removal.
47. *Fill wash bottles only with distilled water* and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
48. *Examine glassware before each use.* Never use chipped or cracked glassware. Never use dirty glassware.

49. Do not immerse *hot glassware* in cold water; it may shatter
50. *Report damaged electrical equipment* immediately. Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
51. *When removing an electrical plug* from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching an electrical switch, plug, or outlet.
52. *If you do not understand* how to use a piece of equipment, *ask the instructor.*

Heating Substances

53. *Exercise extreme caution when using a gas burner.* Take care that hair, clothing and hands are a safe distance from the flame at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over an exposed flame. Light gas (or alcohol) burners only as instructed by the teacher.
54. *Never leave a lit burner unattended.* Never leave anything that is being heated or is visibly reacting unattended. Always turn the burner or hot plate off when not in use.
55. You will be instructed in the proper method of heating and boiling liquids in test tubes. *Do not point the open end of a test tube being heated* at yourself or anyone else.
56. *Never look into a container that is being heated.*
57. *Do not place hot apparatus directly on the laboratory desk.* Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
58. *Heated metals and glass remain very hot for a long time.* They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary.
59. When bending glass, *allow time for the glass to cool before further handling.* Hot and cold glass have the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.
60. *Keep all combustible materials away from open flame.*