

## Science Safety at the AAE

At the AAE, one of our responsibilities is to impart to the learning community we serve how they are to safely conduct themselves during investigations (in the classroom and in the field). With this in mind, we have put together a comprehensive set of “General Student Safety Guidelines” that have been developed to address most of the situations that our students might find themselves involved during an investigation or during fieldwork. If there are some additional guidelines that you would like to have included or would like to suggest changes in the existing ones, please let us know your thoughts by e-mailing them to @ [mhuffine@lcer.org](mailto:mhuffine@lcer.org).

With this in mind we ask all parents and instructors to read through, review, sign, date and return to the instructor, the following “Science Student Safety Contract” at the beginning of each course. The “**General Guidelines**” section needs to remain with the student, stored in their science folder or notebook. The last page signed “**AAE Science Student Safety Agreement**” section needs to be kept by the instructor for the duration of the school year.

Thank you in advance for your participation in making the practice of science and science inquiry a safe and invigorating experience for all of the participants in the AAE/LCER’s learning community.

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## Generic Student Safety Contract, 2004-2005

For \_\_\_\_\_  
(enter the course name above)

Name \_\_\_\_\_ Date \_\_\_\_\_ Section \_\_\_\_\_

**Purpose** Science is a hands-on class. Student will be doing many activities that may require the use of hazardous chemicals and/or equipment. Safety in the science classroom is the #1 priority for students, instructors, and parents. To ensure a safe science classroom, a list of rules has been developed and provided to you in this student safety contract. These rules must be followed at all times. Two copies of the contract are provided. Both you and a parent or guardian must sign one copy before you can participate in hand-on science related investigations. The second copy is to be kept in your science notebook as a constant reminder of the safety rules. **Check mark the box next to guidelines you do not understand and discuss them with your instructor.**

### General Guidelines

- 1. Conduct yourself in a **responsible** manner at all times.
- 2. **Follow all written and verbal instructions** carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
- 3. **Never work alone.** No student may work without an instructor present.
- 4. **When first entering** a science room, do not touch any equipment, chemicals, or other materials in the work area until you are instructed to do so.
- 5. **Do not eat food, drink beverages, or chew gum during an investigation.** Do not use science glassware as containers for food or beverages.
- 6. Perform only those **experiments authorized by the instructor.** Never do anything during an investigation that is not called for in the investigation procedures or by your instructor. Carefully follow all instructions, both written and oral. Unauthorized experiments are prohibited.
- 7. **Be prepared for your work** during an investigation. **Read all procedures** thoroughly before starting the investigation. Never fool around while conducting an investigation. Horseplay, practical jokes, and pranks are dangerous and prohibited.
- 8. Observe **good housekeeping practices.** Work areas should be kept clean and tidy at all times. Bring only your investigation instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored away from the general work area.
- 9. **Keep aisles clear.** Push your chair under the desk when not in use.
- 10. **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.

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<sup>1</sup> Check the specific guidelines your instructor emphasizes for your course. These will be on the science safety test.

- 11. 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.
- 12. Be alert and proceed with caution at all times in the work area. Notify the instructor immediately of any **unsafe conditions** you observe.
- 13. **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.
- 14. Labels and equipment instructions must be **read carefully** before use. Set up and use the prescribed apparatus as directed in the investigation instructions or by your instructor.
- 15. 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 investigation. Return all equipment clean and in working order to the proper storage area.
- 16. Experiments must be **personally monitored** at all times. You will be assigned an investigation station at which to work. Do not wander around the room, distract other students, or interfere with the investigation apparatus of others.
- 17. Students are never permitted in the science storage rooms or preparation areas unless given specific permission by their instructor.
- 18. Know what to do if there is a **fire drill** while conducting an investigation in class; containers must be closed, put out all flames, fume hoods turned off, and any electrical equipment turned off.
- 19. Handle all **living organisms** used in an investigation activity in a humane manner. Preserved biological materials are to be treated with respect and disposed of properly.
- 20. 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.

### Clothing

- 21. Any time **chemicals, heat, projectiles or glassware** are used, students will **wear protective goggles**. There will be **no exceptions** to this rule!
- 22. **Contact lenses** should not be worn during an investigation unless you have permission from your instructor.
- 23. **Dress properly** during an investigation. Long **hair**, dangling jewelry, and loose or baggy clothing are a hazard when conducting investigations. 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.
- 24. **Lab aprons** have been provided for your use and should be worn during investigations that involve potentially dangerous liquids and chemicals.

### Accidents and Injuries

- 25. **Report any accident** (spill, breakage, etc.) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
- 26. **If you or your lab partner is hurt**, immediately yell out "**Code one**, Code one" to get the instructor's attention.
- 27. 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.
- 28. When **mercury thermometers** are broken, mercury must not be touched. Notify the instructor immediately.

### Handling Chemicals

- 29. **All chemicals used during an investigation 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.
- 30. **Check the label** on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
- 31. Never return **unused chemicals** to their original containers.
- 32. Never use **mouth suction** to fill a pipette. Use a rubber bulb or pipette pump.
- 33. When **transferring reagents** from one container to another, hold the containers away from your body.
- 34. **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.
- 35. Handle **flammable** hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
- 36. **Never remove chemicals** or other materials from the investigation work area.
- 37. Take **great care when transferring** acids and other chemicals from one part of the investigation work area to another. Hold them securely and walk carefully.

### Handling Glassware and Equipment

- 38. **Carry glass tubing**, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
- 39. **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.
- 40. **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. 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.

- 41. **Fill wash bottles only with distilled water** and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
- 42. 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.
- 43. **Examine glassware** before each use. Never use chipped or cracked glassware. Never use dirty glassware.
- 44. **Report damaged electrical equipment immediately.** Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
- 45. If you do not understand **how to use a piece of equipment**, ask the instructor for help.
- 46. Do not immerse hot glassware in cold water; it may shatter.

### Heating Substances

- 47. 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 using only the process taught by your instructor.
- 48. **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.
- 49. 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.
- 50. **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.
- 51. **Never look into a container** that is being heated.
- 52. Do not place **hot apparatus directly on the desk or work surface.** Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
- 53. When **bending glass**, allow time for the glass to cool before further handling. Hot and cold glass has the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.

### Questions

- 54. Do you wear contact lenses?       Yes     No
- 55. Are you color blind?                     Yes     No
- 56. Do you have allergies?                 Yes     No

**If so, list specific allergies** \_\_\_\_\_

# AAE Science Student Safety Agreement

I will:

- ☐ Read the investigation before coming to class when available.
- ☐ Wear personal protective equipment as directed to protect my eyes, face, hands, and body while conducting investigations.
- ☐ Follow all instructions given by the instructor.
- ☐ Conduct myself in a responsible manner at all times in an investigation situation.

I, \_\_\_\_\_  
(student's name)

have read and agree to follow all of the safety rules set forth in this contract and also in any additional printed materials provided by the instructor or school. 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 learning and investigation 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 during an investigation or misbehavior on my part, may result in being removed from the work area, detention, receiving a failing grade, and/or dismissal from the course.

\_\_\_\_\_  
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/working 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 hands-on, investigative work. Please read the list of safety rules above. No student will be permitted to perform hands-on/investigative 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 this **Science Student Safety Contract**, are aware of the measures taken to insure the safety of your son/daughter while conducting hand-on investigations, and will instruct your son/daughter to uphold his/her agreement to follow these rules and procedures that have been put in place to provide a safe working environment while on campus.

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

\_\_\_\_\_  
Date