

Pflugerville Independent School District



Safety Contract

Required of ALL Middle School and High School Science Students

I will:

- Follow all instructions given by the teacher.
- Protect my eyes, face, hands, and body when involved in science experiments.
- Carry out good housekeeping practices.
- Know where to get help fast.
- Know the location of first aid, eye wash, fire blanket, and fire extinguisher.
- Conduct myself in a responsible manner at all times.

I, _____, have been instructed in the lab
(Student's Name)

safety and emergency techniques needed for my science class. I have mastered 100% of the lab safety objectives, which allows me to participate in lab activities. I understand and agree to follow the lab safety regulations set forth above and in the Lab Safety Guide I received from my teacher. I am aware that my safety and the safety of my classmates depends on my behavior in the laboratory. With this in mind, I will closely follow the oral and written instructions provided by my teacher and/or the school administration.

Date:

Student Signature

All students will wear eye protective goggles when instructed to do so by the science teacher. Students who wear glasses will wear the goggles over their glasses. Students who wear contact lenses will wear unvented goggles when using chemicals because of the increased risk of injury from chemical splashes. Fumes from chemicals can also interact with some contact lenses and therefore, unvented goggles are used.

Please check one of the statements below:

_____ My son/daughter does not wear contact lenses.

_____ My son/daughter wears contact lenses and will wear unvented goggles when working with chemicals.

Date:

Parent/Guardian Signature



Lab Safety Guide

Required of ALL 6th Grade Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

- Rule 1** Listen to your teacher and follow all instructions very carefully. This is the most important rule.
- Rule 2** Be on your best behavior in lab; this is the time to think and work; and not a time to play.
- Rule 3** Keep your hands and other materials away from your nose, mouth, and eyes.
- Rule 4** Wear safety goggles (removing contact lenses, if applicable) when:
 - a. working with heat in the lab
 - b. working with certain chemicals in the lab
 - c. your teacher tells you to
- Rule 5** Handle your lab equipment very carefully. Tell your teacher before doing anything else if something is broken or damaged.
- Rule 6** Mix chemicals only when you have teacher's directions to do so.
- Rule 7** Never mix two unknown chemicals; do not use substances that are not labeled.
- Rule 8** When mixing acids and water, always **add the acid last!**
- Rule 9** Turn the gas jets on only when the burners are to be used.
- Rule 10** Fasten long hair back during labs.
- Rule 11** When heating something, always heat slowly and keep test tube pointed away from you and others, holding it diagonally.
- Rule 12** If you are in doubt about what to do in lab ask your teacher.
- Rule 13** All lab equipment should be cleaned and returned after being used.
- Rule 14** Wash your hands thoroughly after each lab period.

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Eye Wash Station** - provided in all labs to flood eye with water for 15 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
3. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
4. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
5. **Lab Showers** – these are found in physical science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
6. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
7. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
8. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
9. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.





Lab Safety Guide

Required of ALL 7th Grade Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

- Rule 1** All class rules apply during lab. Your safety and the safety of others depend on your good behavior.
- Rule 2** Any disruptive behavior such as horseplay, playing with lab equipment, running or loud talking will result in immediate discipline.
- Rule 3** The teacher's desk, cabinets, lab equipment and storeroom are off limits to students unless they have permission. Never handle lab equipment unless instructed to do so by your teacher.
- Rule 4** Listen to all instructions and follow them carefully.
- Rule 5** Only taste, touch, or smell things if you have been instructed to do so.
- Rule 6** Never mix chemicals or perform any other experiment unless instructed to do so by your teacher.
- Rule 7** Equipment should remain in its assigned area.
- Rule 8** Any broken equipment should be reported to the teacher and will be paid for by the student who broke it.
- Rule 9** Place all unnecessary equipment safely out of the way.
- Rule 10** After lab clean all equipment and return it to its assigned area.
- Rule 11** Never eat or drink in the lab. Wash and dry your hands after each lab.
- Rule 12** Trash and paper towels are to be placed in the wastebasket.
- Rule 13** Report all accidents immediately to the teacher without fail.
- Rule 14** If a chemical is spilled or splashed on your skin or in your eyes, send for a teacher and flood with water.
- Rule 15** Tie back long hair to prevent accidents.
- Rule 16** Never leave an open flame unattended.
- Rule 17** When heating test tubes, hold them at an angle and heat the sides of the tube as well as the bottom. Never point the mouth of a test tube toward yourself or another person.

- Rule 18** Sinks are used to dispose of liquid wastes only. At the end of lab, check sinks to make sure liquids have been rinsed down the drain. All solid wastes should be placed in the trash can.
- Rule 19** Be very careful when operating electrical equipment.
- Lab working surface, equipment, and your hands should be dry.
 - Check all cords and plugs to be sure they are in good condition.
 - Look for exposed or broken wires and insulation in poor condition.
 - Never use an electrical socket without a cover plate.
 - Report any equipment that is not working to your teacher.
- Rule 20** Read all lab instructions before beginning the procedure.

Emergency Equipment

- Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
- Eye Wash Station** - provided in all labs to flood eye with water for 15 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
- Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
- Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
- Lab Showers** – these are found in physical science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
- Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
- Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
- Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
- Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.





Lab Safety Guide

Required of ALL 8th Grade Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

General Guidelines

1. Listen to all instructions given by your teacher and follow them carefully.
2. When entering a science room, do not touch any equipment, chemicals, or other materials in the lab area until you are instructed to do so.
3. Perform only those experiments on which you have been instructed.
4. Your behavior and attitude in lab should be excellent; both your safety and the safety of others depend upon it. There should not be any loud talking or horseplay.
5. Do not eat food, drink beverages, or chew gum in the laboratory.
6. It is your responsibility to take care of the lab equipment. Use it only as instructed and report any damages to your teacher.
7. If you are in doubt about any procedure, ask your teacher.
8. Know the location and use of all safety and emergency equipment (goggles, aprons, eye wash, fire blanket, fire extinguishers, lab shower, safety charts, MSDS sheet, etc.)
9. Set up apparatus as far back on the lab table as conveniently possible so it will not tip onto the floor. Apparatus that can roll such as thermometers, etc., should be placed on the table at right angles to the end to keep them from rolling off onto the floor.
10. When using scissors and other sharp instruments always carry them with the tips and points pointing down and away. Always cut away from your body.
11. Wash your hands after each lab experiment.
12. Clean and dry your lab work area at the close of the lab period.
13. After each experiment clean up your area as instructed by the teacher. Check the sinks to be sure liquids have been flushed down the drain and that NO solids remain in the sink.

Clothing

14. Wear safety goggles when:
 - a. working with heat
 - b. working with chemicals
 - c. instructed to do so by your teacher
15. Tie back long hair, roll up sleeves, and remove dangling jewelry and/or jacket to prevent injury.

Accidents and Injuries

16. Report all accidents to the teacher even if they are minor ones.
17. If a chemical should splash in your eye(s) or on your skin, immediately flush with running water for at least 20 minutes.
18. If you smell natural gas in the lab room, notify your teacher immediately.

Handling Chemicals

19. Never taste, touch, or smell any chemical unless instructed to do so.
20. Never return unused chemicals to their original container.
21. Never remove chemicals or other materials from the laboratory area.

Handling Glassware and Equipment

22. Examine glassware before each use. Report chipped or broken glassware to the teacher. Never use dirty glassware. Never handle broken glass with your bare hands.
23. Do not immerse hot glassware in cold water because it may shatter.
24. Be very careful when operating electrical equipment.
 - a. Check all cords and plugs to be sure they are in good condition. Do not use damaged electrical equipment. Report damaged electrical equipment immediately.
 - b. When removing an electrical plug from the socket, grasp the plug not the electrical cord.
 - c. Lab working surface, equipment, and your hands should be dry.
25. Never reach across a flame or a hot plate.
26. When heating material in a test tube, do not point the mouth of the tube at anyone.
27. Never leave anything that is being heated unattended. Always turn the burner or hot plate off when unattended.
28. Use tongs or heat protected gloves before handling any hot glassware or heated metal.

LAB SAFETY GUIDE

8th Grade Science

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Eye Wash Station** - provided in all labs to flood eye with water for 15 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
3. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
4. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
5. **Lab Showers** – these are found in physical science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
6. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
7. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
8. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
9. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.



Pflugerville Independent School District



Lab Safety Guide

Required of All Biology Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

General Guidelines

1. Listen to all instructions given by your teacher and follow them carefully.
2. Read your lab assignments before coming to class. Perform only those experiments on which you have been instructed.
3. When entering a science room, do not touch any equipment, chemicals, or other materials in the lab area until you are instructed to do so.
4. Your behavior and attitude in lab should be excellent; both your safety and the safety of others depend upon it. There should not be any loud talking or horseplay.
5. Do not eat food, drink beverages, or chew gum in the laboratory.
6. It is your responsibility to take care of the lab equipment. Use it only as instructed and report any damages to your teacher.
7. If you are in doubt about any procedure, ask your teacher.
8. Know the location and use of all safety and emergency equipment (goggles, aprons, eye wash, fire blanket, fire extinguishers, lab shower, safety charts, MSDS sheet, etc.)
9. Know what to do if there is a fire drill during a laboratory period. Containers must be closed, and the following should be turned off: gas valves, fume hoods, and any electrical equipment.
10. Set up apparatus as far back on the lab table as conveniently possible so it will not tip onto the floor.
11. Apparatus that can roll such as thermometers, etc., should be placed on the table at right angles to the end to keep them from rolling off onto the floor.
12. When using scissors and other sharp instruments, always carry them with the tips and points pointing down and away. Always cut away from your body.
13. After each experiment, clean and dry all equipment. Check the sinks to be sure liquids have been flushed down the drain and that NO solids remain in the sink. Return all equipment to its proper place. Be certain that all faucets and burners are turned off.
14. Clean and dry your lab work area at the close of the lab period.
15. Wash your hands after each lab experiment.

Clothing

16. Wear safety goggles when:
 - a. working with heat
 - b. working with chemicals
 - c. doing any type of grinding, cutting, soldering, etc.
 - d. instructed to do so by your teacher
17. Tie back long hair, roll up sleeves, and remove dangling jewelry and/or jacket to prevent injury.
18. Wear your lab apron or lab coat when instructed by the teacher.

Accidents and Injuries

19. Report all accidents to the teacher, even if they are minor ones.
20. If a chemical should splash in your eye(s) or on your skin, immediately flush the affected area with running water for at least 20 minutes. Use running water from the eyewash station or safety shower.
21. If mercury thermometers are broken, mercury must not be touched. Notify the teacher immediately.
22. If you smell natural gas in the lab room, notify your teacher immediately.

Handling Chemicals

23. Never taste, touch, or smell any chemical unless instructed to do so. The proper technique for smelling chemicals fumes will be demonstrated to you.
24. Never return unused chemicals to their original container.
25. Never remove chemicals or other materials from the laboratory area.
26. Carefully read the label twice on any bottle prior to using it. Many formulas and chemical names look very much alike but confusing them could be dangerous.
27. Be extra careful when working with acids and bases. Pour chemicals over the sink, not over your lab table.
28. When diluting acids, always pour the acid slowly into the water and stir continuously. Acids are more dense than water and a great deal of heat is released during mixing. Mixing acid and water in this way allows the heat to be spread throughout the entire solution.

Handling Glassware and Equipment

29. Examine glassware before each use. Report chipped or broken glassware to the teacher. Chipped or broken glassware should be disposed of in the proper place. Never use dirty glassware.
30. Lubricate glass tubing or thermometers with glycerin or water before inserting them into rubber stoppers. Use a cloth towel and grasp the tubing close to the stopper to remove the glass.

31. 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.
32. Do not immerse hot glassware in cold water because it may shatter.
33. Be very careful when operating electrical equipment.
 - a. Check all cords and plugs to be sure they are in good condition. Do not use damaged electrical equipment. Report damaged electrical equipment immediately.
 - b. When removing an electrical plug from the socket, grasp the plug not the electrical cord.
 - c. Lab working surface, equipment, and your hands should be dry.

Heating Substances

34. Never reach across a flame or a hot plate. Do not touch a burner or hot plate – it may be hot.
35. When heating material in a test tube, keep the tube in constant motion and do not point the mouth of the tube at anyone.
36. Never leave anything that is being heated unattended. Always turn the burner or hot plate off when unattended.
37. Use tongs or heat protected gloves before handling any hot glassware or heated metal.
38. Never look directly into a container that is being heated.

Biological Equipment and Materials

39. Microscopes are very delicate and expensive instruments. They should always be carried with two (2) hands and handled gently. Microscopes should be stored with the lowest power objective in place, with the stage and objectives as close as possible. Cover the microscope with a dust cover and wrap the cord neatly around the base.
40. Do not handle an autoclave, incubator, or aquarium without special instructions.
41. Scalpels can make very serious cuts if not used properly. When working with a scalpel, hold it as you would a pencil when writing. Never attempt to replace a scalpel blade. Ask your teacher to replace it for you.
42. No experiments that will cause pain, discomfort, or harm to mammals, birds, reptiles, fishes, or amphibians should be done in the classroom or at home.
43. Animals should be handled only if necessary. If an animal is excited or frightened, pregnant, feeding, or with its young, special handling is required.
44. Clean your hands thoroughly after handling animals or a cage containing animals.
45. When working with bacteria, only nonpathogens are to be cultured. Care will be taken to avoid contamination of cultures. All cultures will be disposed of by the teacher.

LAB SAFETY GUIDE
High School Science - BIOLOGY

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Safety Aprons** - these cover everyday clothing and are worn on the front of the body to protect against chemical spills.
3. **Eye Wash Station** - provided in all labs to flood eye with water for 20 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
4. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
5. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
6. **Lab Showers** – these are found in all science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
7. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
8. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
9. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
10. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.

**Know the location of each
piece of emergency
equipment in your
classroom.**





Lab Safety Guide

Required of All IPC Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

General Guidelines

1. Listen to all instructions given by your teacher and follow them carefully.
2. Read your lab assignments before coming to class. Perform only those experiments on which you have been instructed.
3. When entering a science room, do not touch any equipment, chemicals, or other materials in the lab area until you are instructed to do so.
4. Your behavior and attitude in lab should be excellent; both your safety and the safety of others depend upon it. There should not be any loud talking or horseplay.
5. Do not eat food, drink beverages, or chew gum in the laboratory.
6. It is your responsibility to take care of the lab equipment. Use it only as instructed and report any damages to your teacher.
7. If you are in doubt about any procedure, ask your teacher.
8. Know the location and use of all safety and emergency equipment (goggles, aprons, eye wash, fire blanket, fire extinguishers, lab shower, safety charts, MSDS sheet, etc.)
9. Know what to do if there is a fire drill during a laboratory period. Containers must be closed, and the following should be turned off: gas valves, fume hoods, and any electrical equipment.
10. Set up apparatus as far back on the lab table as conveniently possible so it will not tip onto the floor.
11. Apparatus that can roll such as thermometers, etc., should be placed on the table at right angles to the end to keep them from rolling off onto the floor.
12. When using scissors and other sharp instruments, always carry them with the tips and points pointing down and away. Always cut away from your body.
13. After each experiment, clean and dry all equipment. Check the sinks to be sure liquids have been flushed down the drain and that NO solids remain in the sink. Return all equipment to its proper place. Be certain that all faucets and burners are turned off.
14. Clean and dry your lab work area at the close of the lab period.
15. Wash your hands after each lab experiment.

Clothing

16. Wear safety goggles when:
 - a. working with heat
 - b. working with chemicals
 - c. doing any type of grinding, cutting, soldering, etc.
 - d. instructed to do so by your teacher
17. Tie back long hair, roll up sleeves, and remove dangling jewelry and/or jacket to prevent injury.
18. Wear your lab apron when instructed by the teacher.

Accidents and Injuries

19. Report all accidents to the teacher, even if they are minor ones.
20. If a chemical should splash in your eye(s) or on your skin, immediately flush the affected area with running water for at least 20 minutes. Use running water from the eyewash station or safety shower.
21. If mercury thermometers are broken, mercury must not be touched. Notify the teacher immediately.
22. If you smell natural gas in the lab room, notify your teacher immediately.

Handling Chemicals

23. Never taste, touch, or smell any chemical unless instructed to do so. The proper technique for smelling chemicals fumes will be demonstrated to you.
24. Never return unused chemicals to their original container.
25. Never remove chemicals or other materials from the laboratory area.
26. Carefully read the label twice on any bottle prior to using it. Many formulas and chemical names look very much alike but confusing them could be dangerous.
27. When diluting acids, always pour the acid slowly into the water and stir continuously. Acids are more dense than water and a great deal of heat is released during mixing. Mixing acid and water in this way allows the heat to be spread throughout the entire solution.

Handling Glassware and Equipment

28. Examine glassware before each use. Report chipped or broken glassware to the teacher. Chipped or broken glassware should be disposed of in the proper place. Never use dirty glassware.
29. Lubricate glass tubing or thermometers with glycerin or water before inserting them into rubber stoppers. Use a cloth towel and grasp the tubing close to the stopper to remove the glass.
30. 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.

31. Do not immerse hot glassware in cold water because it may shatter.
32. Be very careful when operating electrical equipment.
 - a. Check all cords and plugs to be sure they are in good condition. Do not use damaged electrical equipment. Report damaged electrical equipment immediately.
 - b. When removing an electrical plug from the socket, grasp the plug not the electrical cord.
 - c. Lab working surface, equipment, and your hands should be dry.

Heating Substances

33. Never reach across a flame or a hot plate. Do not touch a burner or hot plate – it may be hot.
34. When heating material in a test tube, keep the tube in constant motion and do not point the mouth of the tube at anyone.
35. Never leave anything that is being heated unattended. Always turn the burner or hot plate off when unattended.
36. Use tongs or heat protected gloves before handling any hot glassware or heated metal.
37. Never look directly into a container that is being heated.

LAB SAFETY GUIDE
High School Science - IPC

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Safety Aprons** - these cover everyday clothing and are worn on the front of the body to protect against chemical spills.
3. **Eye Wash Station** - provided in all labs to flood eye with water for 20 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
4. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
5. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
6. **Lab Showers** – these are found in all science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
7. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
8. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
9. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
10. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.

**Know the location of each
piece of emergency
equipment in your
classroom.**





Lab Safety Guide

Required of All Chemistry Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

General Guidelines

1. Listen to all instructions given by your teacher and follow them carefully.
2. Read your lab assignments before coming to class. Perform only those experiments on which you have been instructed.
3. When entering a science room, do not touch any equipment, chemicals, or other materials in the lab area until you are instructed to do so.
4. Your behavior and attitude in lab should be excellent; both your safety and the safety of others depend upon it. There should not be any loud talking or horseplay.
5. Do not eat food, drink beverages, or chew gum in the laboratory.
6. It is your responsibility to take care of the lab equipment. Use it only as instructed and report any damages to your teacher.
7. If you are in doubt about any procedure, ask your teacher.
8. Know the location and use of all safety and emergency equipment (goggles, aprons, eye wash, fire blanket, fire extinguishers, lab shower, safety charts, MSDS sheet, etc.)
9. Know what to do if there is a fire drill during a laboratory period. Containers must be closed, and the following should be turned off: gas valves, fume hoods, and any electrical equipment.
10. Set up apparatus as far back on the lab table as conveniently possible so it will not tip onto the floor.
11. Apparatus that can roll such as thermometers, etc., should be placed on the table at right angles to the end to keep them from rolling off onto the floor.
12. When using scissors and other sharp instruments, always carry them with the tips and points pointing down and away. Always cut away from your body.
13. After each experiment, clean and dry all equipment. Check the sinks to be sure liquids have been flushed down the drain and that NO solids remain in the sink. Return all equipment to its proper place. Be certain that all faucets and burners are turned off.
14. Clean and dry your lab work area at the close of the lab period.
15. Wash your hands after each lab experiment.

Clothing

16. Wear safety goggles when:
 - a. working with heat
 - b. working with chemicals
 - c. doing any type of grinding, cutting, soldering, etc.
 - d. instructed to do so by your teacher
17. Tie back long hair, roll up sleeves, and remove dangling jewelry and/or jacket to prevent injury.
18. Wear your lab apron or lab coat when instructed by the teacher.

Accidents and Injuries

19. Report all accidents to the teacher, even if they are minor ones.
20. If a chemical should splash in your eye(s) or on your skin, immediately flush the affected area with running water for at least 20 minutes. Use running water from the eyewash station or safety shower.
21. If mercury thermometers are broken, mercury must not be touched. Notify the teacher immediately.
22. If you smell natural gas in the lab room, notify your teacher immediately.

Handling Chemicals

23. Never taste any chemical in the lab.
24. Never touch any chemical unless instructed to do so.
25. The proper technique for smelling chemicals fumes will be demonstrated to you. Whenever you are asked to note the odor of any chemical, fill your lungs with GOOD air, and then carefully waft the fumes toward your nose. Do not inhale the fumes directly.
26. Never remove chemicals or other materials from the laboratory area.
27. Carefully read the label twice on any bottle prior to using it. Many formulas and chemical names look very much alike but confusing them could be dangerous.
28. If a container is unlabeled, or if the label is difficult to read, never guess. Ask your teacher.
29. Always label a container before filling it with a certain material.
30. Use the specified amounts of materials called for in the experiment. Small quantities produce reactions which are easier to control.
31. Do NOT carry supply bottles to your desk as other students will need them and waste time looking for them. Bring the appropriate container up to the supply area and take only what you need. Don't waste materials.
32. Do NOT return unused portions of chemicals to their containers as you could contaminate the entire bottle. Dispose of the excess as directed.
33. Do NOT use the same spatula to remove chemicals from two different containers. Each container should have a different spatula.
34. When you remove the stopper from a bottle, do NOT lay it on the desk, but place the stopper between your two fingers and hold the bottle so that the label is in the palm of your hand. This prevents the stopper from being placed in the wrong bottle. It also prevents drips from ruining the label. Be sure to rinse and/all drips that may have gotten on the outside of the bottle.

35. Never pick up a bottle by its stopper or cap. Always tighten caps securely. Replace all stoppers and caps on bottles as soon as you finish with them.
36. Be careful not to interchange stoppers from two different containers.
37. Never remove liquids from a reagent bottle with an eye dropper. Pour a small quantity into a clean beaker or bottle and then use the eye dropper.
38. If possible, wash glassware while it is still wet. Chemicals that dry on glass are sometimes difficult to remove. If possible, rinse all glassware with small amounts of distilled water after washing.
39. Always be sure that you are using the proper concentration of a solution.
40. When pouring liquids, try to do so over the sink.
41. Use a rubber bulb or syringe to fill a pipette. You NEVER use your mouth to suck the liquid into the pipette.
42. Water soluble liquids should be carefully poured into the drain and flushed with plenty of water.
43. Dispose of solids in the proper container, NOT in the sink.
44. Do NOT weigh chemicals directly on a balance pan. Use a weighing boat, weighing paper, or previously weighed container.
45. Mercury spills must be cleaned up immediately and if the spills run into an inaccessible area cover the spill with sulfur to reduce vaporizing. If there is a spill, notify the teacher.
46. Many chemicals are hygroscopic; that is, they absorb water from the air and become mushy or even dissolved. That is why it is so important to cap bottles as quickly as possible.
47. Be extra careful when working with acids and bases. Pour chemicals over the sink, not over your lab table.
48. When diluting acids, always pour the acid slowly into the water and stir continuously. Acids are more dense than water and a great deal of heat is released during mixing. Mixing acid and water in this way allows the heat to be spread throughout the entire solution. If the container becomes too hot, either let it cool down before continuing or immerse it in a cool water bath and continue.
49. When handling chemicals, keep your hands away from your face, eyes and body until after they have been washed thoroughly. If some chemical does get on your hand, don't be terrified as it takes a concentrated or caustic chemical to really damage your skin. Calmly wash off the spill with plenty of water and notify the teacher.

Handling Glassware and Equipment

50. Examine glassware before each use. Report chipped or broken glassware to the teacher. Chipped or broken glassware should be disposed of in the proper place. Never use dirty glassware.
51. Lubricate glass tubing or thermometers with glycerin or water before inserting them into rubber stoppers. Use a cloth towel and grasp the tubing close to the stopper to remove the glass. Gently twist the tubing into the stopper – inching it along. NEVER force the tubing.
52. Never handle broken glass with your bare hands. Use a brush and dust pan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container. Absorbent cotton may be used to pick up fine pieces of broken glass. Hold the cotton with tongs. Never use a towel or paper towel to clean up broken glass.
53. Do not immerse hot glassware in cold water because it may shatter.
54. Carry long pieces of glass tubing or glass rods vertically, not like a spear.

55. To cut glass tubing or a glass rod:
- Use a triangular file and place two scratches at the point of desired break. Moisten the scratch. Turn the scratch away from you and anyone else.
 - Place the thumbs directly behind the scratch, and your forefingers next to the scratch.
 - Press gently with the thumbs while pulling back with your forefingers.
 - A towel is often used around the tubing to protect both hands and in case the tubing or rod shatters.
 - Always fire polish the ends of glass tubing or rod after they have been cut. To fire polish, you place the end in the hottest part of the flame until it is smooth.
56. When bending or pulling glass, be sure you have plenty of room and that your neighbors know what you are about to do.
57. Hot glass looks just like cold glass. Most of our accidents are from burns due to hot glass or the hot ring stand. Hot glass or other objects should always be placed on the white center of the wire gauze to cool. This serves as a reminder to you and as a caution to others. If you ever want to see if an object is hot, SLOWLY approach it with your hand. DO NOT TOUCH IT. If it is dangerously hot, you will feel the heat radiating from it.
58. Be very careful when operating electrical equipment.
- a. Check all cords and plugs to be sure they are in good condition. Do not use damaged electrical equipment. Report damaged electrical equipment immediately.
 - b. When removing an electrical plug from the socket, grasp the plug not the electrical cord.
 - c. Lab working surface, equipment, and your hands should be dry.

Heating Substances

59. Never leave anything that is being heated unattended. Always turn the Bunsen burner or hot plate off when unattended.
60. Never reach across a flame or a hot plate. Do not touch a burner or hot plate – it may be hot.
61. Keep a lighted burner away from your clothing, books, and other combustibles.
62. Before heating glass beakers, tubes, etc., check to see that they are DRY on the outside and contain no cracks.
63. Use tongs or heat protected gloves before handling any hot glassware or heated metal.
64. When heating liquids in a test tube, place the clamp near the mouth of the tube and always hold the test tube at an angle. Heat the side of the tube as well as the bottom. If just the bottom is heated, vapor can be produced at that point which will cause the entire contents to spurt out.
65. Do not clamp test tubes and other glassware more tightly than necessary to hold them in place. The glass will expand when heated and may break if it is clamped too tightly.
66. When heating any solids or liquids in a test tube, keep the tube in constant motion and do not point the mouth of the tube at anyone.
67. Do not heat a liquid in a closed vessel. Be sure to remove any cork or stopper. If not removed, vapor could build up inside the tube and cause an explosion.
68. A wire gauze with a white center should be used when heating beakers or flasks directly with a Bunsen burner. It supports the glassware and spreads the heat.
69. Never look down into a tube containing a chemical (or hot water) while it is being heated.
70. Use a water or steam bath to heat volatile or flammable solvents. Do this within a fume hood if available. Never apply a direct flame to a container of volatile or flammable materials. Never place an open flame near such containers.

EMERGENCY PROCEDURES – The main thing to remember when an accident occurs is to be calm and carry out the emergency procedure. Be sure the teacher has been notified.

- 1. Chemical spills:** If any chemical gets on you or your clothing, flush with lots of water. Use the safety shower for extensive spills. Do not apply ointment. If any chemical spills onto the desk or floor, flush with lots of water and wipe up with rags or paper towels and dispose of rags. If any chemical gets in the eye, immediately irrigate the eye with a gentle stream of water from the eye wash to wash away the chemical. Do this for 20 minutes. Do not put anything on the eye. The presence of contact lenses often hinders the treatment of chemical splashes. The eye needs urgent irrigation after injury and removal of contact lenses is made difficult by the spasm of the eyelids.
- 2. Cuts and abrasions:** Immediately cleanse wound and surrounding skin with water. Notify the teacher and see the nurse.
- 3. Burns:** Immerse burned area in clean, cold water. Notify teacher.
- 4. Poisoning:** (Chemicals accidentally taken into mouth.) You should never touch your eyes or your mouth while in the lab. It does not take large quantities of some chemicals to cause poisoning. If you have taken something into your mouth, immediately flush your mouth with water. Notify your teacher. For your general knowledge, a poison victim should not always be made to vomit. If a corrosive substance burns going down, it will also burn coming up! Call poison control.
- 5. Fires:**
 - **Small fires:** Extinguish with water, camp rags or wet towels.
 - **Clothing fires:** Don't run. Use a fire blanket, safety shower if close by, or roll on the floor to put it out.

If a fire cannot be put out by the above, then select the correct fire extinguisher for the type of fire.

Type of Extinguisher	Type of Fire
Type A – Wood paper, cloth	Use water, foam, soda-acid or CO ₂
Type B – Burning oils, solvents	Use foam, CO ₂ , dry chemical extinguisher, but NEVER water
Type C – Live electricity	Use CO ₂ or dry soda
Type D – Alkali metals	Use sand but NEVER use water, CO ₂ or foam

- **Major fires:** Alert personnel in the vicinity, evacuate building and summon aid.

LAB SAFETY GUIDE
High School Science - CHEMISTRY

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Safety Aprons** - these cover everyday clothing and are worn on the front of the body to protect against chemical spills.
3. **Eye Wash Station** - provided in all labs to flood eye with water for 20 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
4. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
5. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
6. **Lab Showers** – these are found in all science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
7. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
8. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
9. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
10. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.

**Know the location of each
piece of emergency
equipment in your
classroom.**





Lab Safety Guide

Required of All Physics Students



To the Student:

The following rules and regulations are very important for your safety in the science laboratory. Your teacher is going to explain these rules to you, and you are to learn them. You will be given a safety test soon, and it will be necessary for you to answer all questions correctly. Please study the rules very carefully and ask the teacher to explain anything that you do not understand.

General Guidelines

1. Listen to all instructions given by your teacher and follow them carefully.
2. Read your lab assignments before coming to class. Perform only those experiments on which you have been instructed.
3. When entering a science room, do not touch any equipment, chemicals, or other materials in the lab area until you are instructed to do so.
4. Your behavior and attitude in lab should be excellent; both your safety and the safety of others depend upon it. There should not be any loud talking or horseplay.
5. Do not eat food, drink beverages, or chew gum in the laboratory.
6. It is your responsibility to take care of the lab equipment. Use it only as instructed and report any damages to your teacher. If you are in doubt about any procedure, ask your teacher.
7. Know the location and use of all safety and emergency equipment (goggles, aprons, eye wash, fire blanket, fire extinguishers, lab shower, safety charts, MSDS sheet, etc.)
8. Know what to do if there is a fire drill during a laboratory period. Containers must be closed, and the following should be turned off: gas valves, fume hoods, and any electrical equipment.
9. Set up apparatus as far back on the lab table as conveniently possible so it will not tip onto the floor. Apparatus that can roll such as thermometers, etc., should be placed on the table at right angles to the end to keep them from rolling off onto the floor.
10. Be careful when operating electrical equipment. The lab working surface, equipment, and your hands should be dry. Check all cords and plugs to be sure they are in good condition. Look for exposed or broken wires and insulation in poor condition. Do not grab wires to unplug equipment. Use the plug to disconnect equipment from the socket.
11. Lasers should never be pointed into the eyes of another person. Never look directly into the oncoming beam as this might cause eye damage.
12. Clean and dry your lab work area at the close of the lab period. Return all equipment.

Clothing

13. Wear safety goggles when:
 - a. working with heat
 - b. working with chemicals
 - c. doing any type of grinding, cutting, soldering, etc.
 - d. instructed to do so by your teacher
14. Tie back long hair, roll up sleeves, and remove dangling jewelry and/or jacket to prevent injury.

Accidents and Injuries

15. Report all accidents to the teacher, even if they are minor ones.
16. If a chemical should splash in your eye(s) or on your skin, immediately flush the affected area with running water for at least 20 minutes. Use running water from the eyewash station or safety shower.
17. If mercury thermometers are broken, mercury must not be touched. Notify the teacher immediately.
18. If you smell natural gas in the lab room, notify your teacher immediately.

Handling Chemicals

19. Never taste, touch, or smell any chemical unless instructed to do so. The proper technique for smelling chemicals fumes will be demonstrated to you.
20. Never return unused chemicals to their original container.
21. Never remove chemicals or other materials from the laboratory area.
22. Carefully read the label twice on any bottle prior to using it. Many formulas and chemical names look very much alike but confusing them could be dangerous.

Handling Glassware

23. Examine glassware before each use. Report chipped or broken glassware to the teacher. Chipped or broken glassware should be disposed of in the proper place.
24. 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.
25. Do not immerse hot glassware in cold water because it may shatter.

Heating Substances

26. Never reach across a flame or a hot plate. Do not touch a burner or hot plate – it may be hot.
27. Never leave anything that is being heated unattended. Always turn the burner or hot plate off when unattended.
28. Use tongs or heat protected gloves before handling any hot glassware or heated metal.

LAB SAFETY GUIDE
High School Science - Physics

Emergency Equipment

1. **Safety Goggles** - these are provided for each student. They can be the most important piece of safety equipment you use. They are vital to the safety of your vision. Wear them when heating, when working with chemicals or at any time you are instructed to do so by your teacher.
2. **Safety Aprons** - these cover everyday clothing and are worn on the front of the body to protect against chemical spills.
3. **Eye Wash Station** - provided in all labs to flood eye with water for 20 minutes to remove foreign materials and to dilute any harmful chemical. Know where these are located in your lab and how to use them.
4. **Fire Blankets** - these fire retardant blankets are provided in all labs. They are used to smother out a fire, can be used to wrap around an individual, smother a table surface fire, or smother a fire in a waste basket. Know where they are located.
5. **Fire Extinguisher** - provided in all lab areas, these are used to put out small chemical or paper fires. In case of major fires, signal alarm and evacuate building, using fire drill procedures.
6. **Lab Showers** – these are found in all science labs. They are operated by pulling a release chain. Their purpose is to flood an individual's body in order to dilute a chemical spill or to extinguish a clothing or hair fire. Know their location.
7. **Safety Charts** - provided in all lab areas. It is important to read them. They will remind you of important lab procedures and safety precautions.
8. **Gas Leaks** - if you should smell the odor of natural gas in your lab room, immediately inform your teacher.
9. **Microscopes** - should always be carried with two hands. After use, the light should be turned off, the objectives on low power, the body tube all the way down and the cord wrapped around the base.
10. **Material Safety Data Sheets** - these sheets contain important information about the chemicals you use in lab. Know the location of the MSDS file.

**Know the location of each
piece of emergency
equipment in your
classroom.**

