

Chemistry Lab Safety Handout

PSI Chemistry

Name _____

Each day in the laboratory you are given the opportunity to confront the unknown and to understand it. You can wonder how things work, ask why and how, and then think of ways to answer your own questions. As part of your laboratory experience you will handle many chemical substances and manipulate specialized laboratory equipment. Many of these substances pose a health risk if handled improperly, while some of the laboratory equipment can cause severe injury if used improperly. This section is a guide to the safe laboratory practices you will use throughout this course.

Everyone who works in a chemistry laboratory should follow these safety precautions:

1. Goggles and closed-toe shoes must be worn in the laboratory at all times. Do not wear bulky, loose-fitting clothes or dangling jewelry. Aprons may be worn to protect clothing and skin.
2. Long hair must be pinned or tied back and loose sleeves must be rolled up.
3. Before each procedure, read, reread, and understand all instructions and procedures before carrying out the experiment. **Do only what you are instructed by your teacher to do.**
4. Food, drink, and gum are not allowed in the lab. Do not ingest any chemicals and keep hands away from your face when working with them.
5. Glassware that is chipped/cracked should not be used, notify the teacher immediately.
6. If spills occur, especially concentrated acid/base spills, immediately inform the teacher. All accidents, no matter how insignificant, should be reported immediately.
7. Discard chemicals according to your teacher's instructions.
8. After each lab procedure, wash hands diligently with soap and water.
9. Review chemical safety guidelines before handling chemicals. Read the label on a reagent bottle carefully before using the chemical. After removing the chemical from the bottle, check to make sure that it is the correct chemical for that procedure.
10. To avoid contamination, do not return unused chemicals to a reagent bottle. Similarly, never put a pipet, spatula, or dropper into a reagent bottle. Instead, pour some of the reagent into a small clean beaker and use that as your supply.
11. To safely smell an odor from a chemical, waft it: use your hand to wave vapors towards your nose. Do not inhale deeply. Do not put your near the chemicals.
12. When heating a liquid, turn the container away from yourself and others. Use tongs to handle hot glassware.
13. When heating a flammable liquid, use a hot plate instead of an open flame.
14. When diluting acids, always pour acids slowly into the water and stir to get rid of any generated heat. CAUTION: Water should never be poured into concentrated acid.
15. Be aware of where safety equipment (eyewash fountains, fire extinguishers, emergency shower, and fire blanket) are located. Know how to use the equipment.

Student Signature:

Parent/Guardian Signature:

Laboratory Hazards

Be aware of all hazards in the lab and take the needed safety precautions. Descriptions, prevention and treatment of common lab related injuries are given below.

Thermal Burns

Description:

- Touching hot equipment or being too close to an open flame will cause a thermal (heat) burn

Prevention:

- Be aware that hot & cold equipment appear identical at times
- Hold your hand near an item to feel for heat before holding it

Treatment:

- Immediately run cold water over affected area and apply it until pain is reduced
- Greases and oils shouldn't be used to treat burns since they trap heat. Medical assistance should be called for anything serious.
- Immediately alert the teacher if you're burned.

Chemical Burns

Description:

- Skin or mucous membrane is injured through contact with a substance.
- Corrosive chemicals can cause intense burns.
- Irritants can damage the skin, eyes, nose, throat, and lungs.

Prevention:

- Chemicals marked as corrosive or irritant should be treated with care as these burns can cause severe permanent damage.
- Wear safety goggles, even during clean up
- Mixing concentrated acids/bases is an additional burn hazard when mixed with water. The heat can cause the mixture to boil and splash.
- To properly smell an odor from a chemical, waft it:
Use your hand to wave vapors towards your nose. Do not inhale deeply. Do not put your nose near the chemicals.

Treatment:

- Rinse the affected area.
- If a chemical splashes into the eye, hold eyelid open and flush eye under water for at least 15 minutes; call for help.
- If large amounts of chemicals are spilled on skin and clothing, use the safety shower.

Cuts from Glass

Description:

- Cuts from glass can occur anytime skin is in contact with broken or chipped glass.

Prevention:

- Cuts may occur when thermometers or other glass instruments are forced into rubber stoppers. The stopper hole should be lubricated with glycerol or water to smooth the progress of the tube's movement.
- Cuts can be avoided by getting rid of chipped/cracked glassware and using gloves whenever cleaning up broken glassware

Treatment:

- Allow the cut to bleed for a short time to rid yourself of contaminants and put it under cold running water after notifying your teacher.
- Serious injuries need immediate medical attention and bleeding must be controlled by applying pressure.

Fire

Description:

- Any open flame may cause a fire.
- Improperly mixing chemicals may result in a fire
- Close proximity between flammable substances and a Bunsen burner flame/hot plate may result in a fire.

Prevention:

- Always be aware of open flames in lab.
- Make sure to have proper attire: no baggy clothing and loose hair and clothes tied back.
- A fire in a container can be extinguished by covering the container and spraying the base with extinguisher foam.

Treatment:

- Do not run if hair/clothing catches fire because the flames will be fanned. **Stop. Drop, and Roll** in order to smother the flames while shouting for help.
- If you see someone in this situation, grab a fire blanket to smother flames and help the victim to a shower.
- If a bench catches fire, turn off all gas outlets and unplug all appliances.
- Use fire blanket to smother fire, NOT safety shower.
- Never spray a fire extinguisher directly into a person's face. Use a blanket instead.
- In the case that the fire isn't extinguished quickly, vacate the lab, crawl if necessary.

Poisoning

Description:

- Poisoning occurs when toxic chemicals enter the body.
- This may occur through the mouth, nose, eyes, skin, etc.

Prevention:

- Toxic chemicals are notated by the symbol: 
- Do not touch chemicals and notify the teacher of spills.
- Keep hands away from your face in order to prevent chemicals from coming into contact with hands, mouth, nose, and eyes.
- An odor can indicate that a chemical reaction has occurred.
- Some gases are toxic if inhaled. Use your hand to fan the gas towards your nose and sniff it instead of inhaling it.

Treatment:

- Inform instructor immediately.
- Do not ingest any other substance.
- Go to nurse immediately and contact poison control.

Class Work

1. Please summarize prevention measures and treatment options for each of the following in your own words.

	Prevention	Treatment
Thermal burns		
Chemical burns		
Cuts		
Fire		
Poisoning		

2.