**Practice: Safety in The Chemistry Laboratory**

*Multiple choice: There is one correct answer for each of the following questions. Circle the most correct answer.*

**General**

1) According to the safety instructions, if you fail to follow any safety rule:
   a) you may pay a fine.
   b) you may be dismissed from the lab.
   c) you may be asked to work with a partner.
   d) you may be asked to explain yourself.
   e) you may be asked to work alone and away from other students.

2) You are excused from wearing goggles in lab:
   a) if you have permission from your doctor.
   b) if they are uncomfortable to wear.
   c) if you are finished with the experiment and ready to clean up.
   d) none of the above.

**Safety Equipment**

1) The drench hose
   a) should be handled carefully to avoid explosions.
   b) can be used on small chemical spills on the counter.
   c) can be used on chemical spills on a small area of the body or as an eye wash.
   d) should not be used on people.
   e) none of the above.

2) The phone located in the lab:
   a) is to be used for calling 911 in case of emergency.
   b) is to be used to call home, only if you are late.
   c) should not be used at all.
   d) is to be used if you have forgotten your cellular phone at home.
   e) None of the above

3) For large chemical spills on the countertop or floor:
   a) use a fume hood.
   b) use a spill kit.
   c) use baking soda (sodium bicarbonate).
   d) use emergency exits.
   e) use a drench hose.

4) In the hallway across from the lab entrance, there is:
   a) a security camera for your safety.
   b) a first aid kit.
   c) an intercom with a button and a picture of an emergency phone on it.
   d) a fire extinguisher.
   e) none of these.
Getting Ready for The Chemistry Lab

1) You should prepare for the lab by:
   a) reading the experiment carefully when you enter the lab.
   b) washing your hands well before starting the experiment.
   c) listening well to other students discussing the experiment.
   d) reading the assigned experiment before coming to the lab.

2) If you do not understand the experimental procedure:
   a) ask your classmate.
   b) read the experiment many times.
   c) leave the lab.
   d) ask the instructor.
   e) none of the above.

3) In the lab each student should:
   a) be responsible for his own safety and no one else.
   b) feel safe and secure like being at home.
   c) be on alert, watching for his own safety and the safety of others.
   d) mind his own business and ignore what the neighbor is doing.
   e) none of the above.

4) If you are pregnant or have a medical condition:
   a) wear loose clothes so you can move freely.
   b) do not hesitate to work in the lab since it is well sterilized.
   c) check with your physician prior to working in lab.
   d) bring comfortable shoes to wear.
   e) none of the above.

5) Before evacuating the lab in case of earthquake or other emergency, you will:
   a) turn off gas valves and electrical equipment.
   b) clean your desktop and work area thoroughly.
   c) pick up all solids from the floor and sink even if they are not yours.
   d) wash your hands and any other area of skin that has contacted lab equipment or lab benches.
   e) make sure floor area, fume hoods, and sink area are clean.

General Rules of Conduct

1) You are permitted to enter the lab if:
   a) the door is open and nobody is present.
   b) the instructor is present.
   c) the door is open and a group of students are present.
   d) if the janitor is present with his safety trained dog.

2) You may do an unassigned experiment, only:
   a) if you are sure it is safe.
   b) if you have found it on the internet.
   c) if you have designed it carefully yourself.
   d) if you are finished early in lab.
   e) none of the above.
3) You can only change the procedure of the experiment if:
   a) you know for sure it is safe to do so.
   b) your neighbor is willing to help you.
   c) you want to do something different from everyone else.
   d) you know it will be more interesting.
   e) none of the above.

4) In lab you are allowed to eat and drink only:
   a) if you are very hungry.
   b) if you have washed your hands well.
   c) if the food is healthy and can be digested fast and easily.
   d) if the food has been covered well to avoid contamination.
   e) None of the above

5) Store your books and bags:
   a) on your lab bench.
   b) in the aisle between lab benches.
   c) in the cabinet in the lab.
   d) under your bench.
   e) on the top of the instructor’s desk.

6) If you notice unexpected chemical reaction of your experiment:
   a) proceed with caution to the next step.
   b) check with your neighbor to see if his experiment is doing the same.
   c) leave the lab immediately.
   d) notify the instructor.
   e) none of the above.

7) In lab, to avoid bumping into other students, you should:
   a) never step backward.
   b) use the back up cart.
   c) take one step forward before you back up.
   d) look behind you before you back up.
   e) step backward, only if instructed to do so.

8) Damaged or exposed electric cord:
   a) should always be reported to the instructor.
   b) can be used only if you know how to fix it.
   c) can be used only with caution and care.
   d) should be dried out completely to avoid electric shock.
   e) none of the above.

9) To avoid electric shock when handling electric plugs and equipment:
   a) your hands must be dry.
   b) your clothes must cover your torso.
   c) your food should be kept at a distance.
   d) your shoes must cover your toes.
   e) none of the above.
10) The following should be reported to the instructor:
   a) minor injuries only; major injuries should be directed to the nurse on campus.
   b) major injuries only; minor injuries can be dealt with at home.
   c) all accidents except minor chemical splashes and minor spills.
   d) all injuries except small burns.
   e) all accidents no matter how minor.

11) If you feel ill in lab:
   a) call your family at home.
   b) tell the instructor.
   c) ask your neighbor to help you do the experiment.
   d) work with a partner in lab.
   e) leave immediately.

12) For your ‘safety’, before leaving the lab, you must
   a) put hot objects away.
   b) wash your hands and any other area of skin that has contacted lab equipment or lab benches.
   c) get the instructor’s initial on the lab report.
   d) see that all equipment in the community drawer is complete and well organized.
   e) mix all left over chemicals into one container.

13) If you accidentally mix the wrong chemicals, you must:
   a) immediately dispose of the mixture down the sink.
   b) repeat the experiment one more time.
   c) add an acid to neutralize it.
   d) report it to the instructor.
   e) share your neighbor’s experimental results.

*Dress Code for the Lab*

1) If you come to lab dressed inappropriately, you will be asked to:
   a) but you will not be allowed to do experiment, but you may watch your partner.
   b) leave the lab.
   c) watch the experiment from the side door or the screen monitor.
   d) make up the lab after class dismissal.
   e) borrow goggles and an apron to protect yourself.

2) Goggles should be worn:
   a) when working with solutions and liquids.
   b) when fumes are present.
   c) when doing specific dangerous experiments.
   d) all the time during lab.

3) You must wear goggles in the lab because:
   a) they look cool and are a trendy fashion statement.
   b) they protect your eyes from fumes and odors.
   c) they protect your eyes from chemical splashes.
   d) the instructor wants all students to have uniform eyewear.
   e) none of the above.
4) Proper apparel for the lab includes:
   a) dangling jewelry.
   b) short fitted clothes.
   c) loose clothes with loose sleeves that also cover your torso.
   d) cloths that cover your torso and your legs to the knees.
   e) none of the above.

5) Proper footwear in lab is:
   a) sandals that allow proper ventilation to the feet.
   b) a comfortable pair of slippers.
   c) closed-toe shoes.
   d) shoes with low heel.
   e) none of the above.

6) For safety, long hair needs to:
   a) be tied back.
   b) hang over your face and cheeks for protection.
   c) be cut short.
   d) be dyed without using harsh chemicals.
   e) none of the above.

Working with Chemicals

1) If you are instructed to smell a chemical in the lab, you need to:
   a) fan the air above the chemical toward your nose.
   b) bring the chemical close to your nose and inhale deeply.
   c) stir and shake the chemical well to allow the odor to come out.
   d) add water before you smell it.
   e) close your eyes during sniffing.

2) If you need to touch or rub your eyes, you must
   a) step outside the lab where there are no chemicals.
   b) ask permission from the instructor.
   c) use rubbing alcohol.
   d) use the eye wash.
   e) wash your hands.

3) You should always hold containers that have chemicals:
   a) with a pair of rubber gloves.
   b) with a clean pair of tongs.
   c) away from your body.
   d) close to your chest and with a strong grip.
   e) after rotating the lid in the counterclockwise direction.

4) Before using the contents of a bottle, check:
   a) the size of the bottle.
   b) the color and consistency of the reagent inside.
   c) the odor and concentration of the reagent inside.
   d) the label on the bottle.
   e) none of the above.
5) To remove solid chemicals from a bottle:
   a) use your spatula to remove the solid.
   b) use your spoon to remove the solid.
   c) pour the solid directly into your container.
   d) pour the solid first into the palm of your hands.
   e) none of the above.

6) To remove liquid from a reagent bottle:
   a) gently tap the bottle with the palm of your hands.
   b) use your medicine dropper to get out the amount of liquid needed.
   c) pour some liquid directly into your container.
   d) use your spatula to get the required amount.
   e) none of the above.

7) An unused/leftover chemical should be:
   a) returned back 'immediately' to its original container.
   b) returned back to its original container right 'before' you leave the lab.
   c) taken outside the lab and dumped on the soil to fertilize it.
   d) sent out to the Safety Committee.
   e) disposed of in the designated waste container.

8) To dispense a required amount of reagent:
   a) bring reagent bottle to your bench, and return it immediately after you are done.
   b) take your container to the reagent bench.
   c) move reagent bottle to a designated area for dispensing.
   d) ask the teacher to dispense it for you.
   e) none of the above; reagents are not to be dispensed in lab for safety reasons.

9) Pick up a reagent bottle by holding it:
   a) with your palm over the label.
   b) at the top part above the label.
   c) at the bottom part underneath the label.
   d) by the lid or stopper.
   e) none of the above.

10) To dilute a concentrated acid:
    a) add acid to the water.
    b) add water to the acid.
    c) mix both, the water and the acid, simultaneously.
    d) never mix acid and water; the result could be quite hazardous.

11) Store chemicals in:
    a) labeled containers.
    b) glass containers.
    c) plastic containers.
    d) large containers.
12) Apply labels and markings on the etched part found on beakers and flasks by using:
   a) pencil only.
   b) ballpoint pen only.
   c) crayons only.
   d) special markers, provided by the instructor.
   e) none of the above.

13) The fume hood is used for:
   a) perfumed chemicals.
   b) experiments that may cause explosion.
   c) liquids that are colorless.
   d) procedures that produce smoke or toxic gases.
   e) none of the above.

14) When working with an experiment under a fume hood:
   a) keep fume hood sash down as far as possible.
   b) use your hand to fan fumes away from you.
   c) get the instructor's permission.
   d) make sure to put your head inside the fume hood and carefully inspect the reaction taking place.
   e) none of the above.

15) Flammable liquids:
   a) do not evaporate unless boiled.
   b) need direct flame for heating.
   c) can catch fire easily.
   d) can become solid quickly.
   e) none of the above.

16) Alcohol used in the lab:
   a) is tainted with poison.
   b) is suitable for drinking.
   c) must have a blue label.
   d) is not denatured.
   e) none of the above.

17) Wash bottles should be filled ‘only’ with
   a) washing or cleansing solution.
   b) tap water.
   c) distilled or de-ionized water.
   d) distilled alcohol.
   e) none of the above.

18) To add water to a reagent used in an experiment:
   a) use water from the faucet.
   b) use distilled or de-ionized water.
   c) use tap water from the wash bottle.
   d) use your own water bottle from home.
   e) none of the above.
19) To weigh 2 grams of salt in lab:
   a) place salt into a beaker before weighing it on the balance.
   b) place salt directly on the balance to avoid contamination.
   c) do not use a balance and just eye-ball a sample that may look to be about 2 grams.
   d) mix the salt with water before weighing it on the balance.
   e) none of the above.

20) If you spill solid chemicals on a balance:
   a) clean it immediately using a bucket filled with water and a mop.
   b) brush off any spills.
   c) use a disinfectant like “Purell”.
   d) allow the chemicals to rest on the balance for at least 15 minutes before brushing it off.
   e) Ignore it since you are not trained to handle spilled chemicals.

21) After dispensing a chemical from a container:
   a) keep the stopper off the container for a few minutes to allow for proper ventilation.
   b) no need to replace the stopper, since someone else will be using it right after you.
   c) replace the stopper immediately.
   d) allow the chemical to drip gently on the outside of the bottle.
   e) get rid of the container as soon as you can.

**Disposal of Chemicals**

1) If no specific instructions for disposing of waste chemicals are given, you should dispose of all liquids and solutions into:
   a) any waste container available in the lab.
   b) the sink with lots of water.
   c) the flower beds outside the lab.
   d) any empty container found around the lab.
   e) none of the above.

**Handling Chemical Spills**

1) You should get under the shower in lab:
   a) if you spill chemicals on your hands or fingers.
   b) if there is a large chemical splash on the body.
   c) if chemicals get splashed into your eyes.
   d) if there is a large chemical spill on the bench or floor.
   e) none of the above.

2) If the eyewash or shower is used in lab, the affected area should be irrigated and rinsed with water for at least:
   a) 20 seconds.
   b) half a minute.
   c) an hour.
   d) 15 minutes.
   e) none of the above.
3) If you spill a large amount of chemical on the floor:
   a) ignore it and keep working on your experiment so you can finish on time.
   b) walk straight over the spilled chemical to notify the instructor.
   c) keep it confidential and do not let the students around you know about it.
   d) alert nearby students and call the instructor for instructions about how to clean it up.
   e) none of the above.

**Working with Glassware**

1) A cracked test tube or chipped glassware should:
   a) be used with care.
   b) be used only if no other glassware is available.
   c) never be used.
   d) be sent to the dump site on campus, only when the glass repair shop is closed.
   e) none of the above.

2) When inserting glass tubing into a rubber stopper, hold the glass tubing:
   a) close to the end near the stopper.
   b) close to the end away from the stopper.
   c) at a reasonable distance, about half-way to the stopper.
   d) strongly to force it into the stopper.
   e) none of the above.

3) If a ground glass stopper is frozen (stuck) to a bottle:
   a) keep it between your fingers to warm it up.
   b) wiggle it nonstop until eventually it becomes loose.
   c) pull it out with all your strength while your neighbor holds the bottle.
   d) report it to your instructor.
   e) none of the above.

4) When you use a thermometer:
   a) shake it down before using.
   b) lay it on a towel.
   c) lay it on a bench close to the edge.
   d) hold it with a towel to prevent contamination.
   e) none of the above.

**Stoppers**

1) To remove stopper or lid from a bottle, pick up the stopper then:
   a) save it in your pocket while dispensing the reagent.
   b) lay it on its side on the countertop.
   c) turn it upside down before placing it on the countertop.
   d) hold it with the hand holding the reagent bottle.
   e) none of the above.
**Working with Hot Glassware/Equipment**

1) Since you cannot tell from the appearance of a metal or glass that it is still hot, you should test it by:
   - a) cautiously touching it lightly with your fingers.
   - b) cautiously touching it with the palm of your hand.
   - c) cautiously bringing the back of your hand close to the hot glass or metal.
   - d) cautiously spraying it with cold water to see if it spatters.
   - e) none of the above.

2) To handle hot objects like a beaker or evaporating dish:
   - a) use a dry paper towel.
   - b) use a wet cloth towel.
   - c) use a wet paper towel.
   - d) run cold water on the outside of the beaker to cool it.
   - e) use a pair of tongs.

3) A hot object, like an evaporating dish or crucible, is allowed to cool by placing it on:
   - a) your lab notebook.
   - b) paper towel.
   - c) lab bench.
   - d) wire gauze.
   - e) none of the above.

4) When heating liquid in test tube, the open end of the test tube:
   - a) should point towards you.
   - b) should be pointing at an angle that allows the liquid to splash gently over the hot glass, but not out of the test tube.
   - c) should point towards the person across the lab bench from you since they are far enough away.
   - d) should be covered with a stopper or cork to avoid contamination.
   - e) none of the above.

**Use of Bunsen Burners**

1) To light a Bunsen burner
   - a) you need to step back.
   - b) you need to position the burner right in front of the gas valve.
   - c) you need to reach over the burner to turn ON the gas valve.
   - d) you need to ask your instructor to light it for you.
   - e) none of the above.

2) You may leave a lighted Bunsen burner unattended only, if:
   - a) you must go to the restroom.
   - b) your neighbor keeps an eye on it.
   - c) no one else is in the class but you.
   - d) you need to go to the reagent bench to quickly get more chemicals.
   - e) none of the above.
**What to Do in Case of an Accident**

1) In case of accident or injury to you or to your classmate:
   a) must be reported immediately to the instructor.
   b) will require that all students evacuate the lab.
   c) can be ignored if it is minor.
   d) must be ignored if it is not painful.
   e) must be handled quietly by yourself, without telling anyone.

2) Small burns from touching hot objects, should be:
   a) placed under running cold water.
   b) covered immediately with a Band‐Aid to protect it from the oxygen in the air.
   c) massaged gently until it feels better.
   d) brought closer to the air condition to cool it off.
   e) none of the above.

3) If your clothing catches fire:
   a) run quickly to the nearest drench hose or shower to smother the flame.
   b) drop to the floor and roll on the floor to smother the flame.
   c) let the instructor use the fire extinguisher to smother the fire
   d) ask the student next to you to spay you with water to smother the fire.
   e) none of the above.

4) A small contained fire may be:
   a) smothered by covering it with a fire blanket.
   b) placed carefully in the sink to be drenched with water.
   c) smothered by covering it with a cover plate or a watch glass.
   d) picked it up and thrown into the trash can.
   e) watched it closely until it burns itself out completely.

5) In case of an earthquake:
   a) evacuate the lab immediately.
   b) evacuate the building immediately.
   c) run quickly towards the emergency exit.
   d) turn off the gas valve and stay away from falling objects.
   e) none of the above.