Community College of Philadelphia

Department of Chemistry

SAFETY TEST ANSWER KEY

1) Who should be immediately called for assistance in case of an accident in the laboratory?

Your laboratory instructor.

Your instructor should be trained to assist with emergency first aid until qualified medical assistance arrives.

2) What must be worn in the laboratory at all times to decrease the likelihood of an eye injury?

Goggles or approved glasses.

Contact lenses should be worn only with GOGGLES or FACE SHIELD. Anything getting under a contact lens will not wash out unless the lens is removed.

3) a) What should you do if something gets in your eye?

Go to the nearest eyewash and continue to flush your eyes with WATER for about 15 minutes holding the eyelids open.

b) What devices can you use? Note their location.

Use the eyewash located on the front lab table, or the eyewash bottles located at the entrance door, or the eye-face-body spray located next to the front lab table.

Make sure you familiarize yourself with operating these devices before you start working in the laboratory.

4) a) What should be immediately used for a large chemical spill on the clothing?

Use the safety shower. All contaminated clothing must be removed as drenching will only dilute the chemical absorbed by clothing, not wash it away. Washing should continue for at least 15 minutes or until no chemical remains in contact with the skin. Qualified medical assistance should be obtained immediately to assess any possible injury.

b) Where is it?

It is located near the front door of the laboratory.

5) Why is it important to keep the lab benches free of book bags, coats, etc.?

A cluttered work area always increases the chances for accidents to happen.

Using or keeping your bags, coats, and books on your lab bench increases the chances For reaction vessels to get knocked over and spill, for equipment to break, something catching on fire. Spillage can also damage your books and other belongings kept in your working area.

6) Why is it forbidden to wear headphones in the laboratory?

Headphones obstruct hearing. Students in the laboratory need to pay attention at all times.

Your instructor needs to be able to communicate with you without delay in your response. This is particularly important in emergency situations.

7) What precautions have to be taken with equipment that was or is being

heated (e.g. crucibles, ringstands, etc.)?

Any equipment that may have been or is being heated has to be handled with extreme care in order to avoid burns.

Hot items that need to be moved have to be handled with tongs, hot test tubes with a test tube holder.

Equipment that was being heated can be checked for its temperature by approaching it slowly with the inside of your wrist where the skin is sensitive enough to detect radiating heat from a distance.

8) Why is it dangerous to leave an ignited Bunsen burner unattended?

a) When the burner is adjusted to mix only a very small amount of air with the gas, the blue flame becomes almost invisible. This can result in a burn if someone not noticing the flame reaches over it on the lab bench.

b) The flame can go out which results in emission of gas into the laboratory atmosphere.

9) Why is it dangerous to leave a reaction unattended while heating it?

a) An unattended reaction can become a safety hazard. Material can splatter from the container at any time. If the reaction is heated to dryness, it can splatter from its container.

b. Also, any glassware heated to dryness can shatter.
c. Certain solutions can catch fire.

10) Why is smoking forbidden in the laboratory?

Smoking in the laboratory is a fire hazard. It also runs the risk of possible

ingestion of chemicals.

11) a) What is a "contained" fire?

A contained fire has not spread beyond the boundaries of the container.

b) What is a simple method to put out a small, "contained" fire?

Cover it to smother it.

A small, contained fire in a test tube or a beaker can easily be put out by covering it with a watch glass or beaker to smother the flames.

Do not use papers or towels as they may catch fire.

12) a) What can be used to smother a clothing fire?

If clothing catches fire you can use the SAFETY SHOWER or the FIRE BLANKET.

When using the blanket, the individual should be wrapped in the blanket and rolled on the floor.

b) Where is it?

Both are located near the front door of the laboratory.

13) a) What should be used to put out an "open" fire in the laboratory?

Use a FIRE EXTINGUISHER.

b) Where are they?

Fire extinguishers are located at each door in every laboratory as well as along the wall opposite to the instructor's bench.

13) a) What should be used to put out an "open" fire in the laboratory?

Use a FIRE EXTINGUISHER.

b) Where are they?

Fire extinguishers are located at each door in every laboratory as well as along the wall opposite to the instructor's bench.

14) Describe the steps of using a fire extinguisher.

a) break the plastic seal holding the metal pin in place b) remove the pin
c) stand 6 to 8 feet from the fire d) aim at the base of fire with nozzle
e) discharge the extinguisher moving it slowly side to side

15) Why must long hair, neckties, scarves, etc. be secured or tied back in the laboratory?

Long hair, neckties, scarves, etc. need to be confined in order to prevent them from extending into the work area where it could catch fire, get into chemicals or get caught in apparatus.

16) What is the safest type of clothing recommended for wear in the laboratory?

When working in the laboratory do not wear clothing that is frilly or flared or has loose, flowing sleeves. Remove bulky sweaters, especially those with brushed finish.
Generally, clothing composed of nonsynthetic material is best. Synthetics tend to burn
and melt, sticking to the skin. Laboratory aprons and lab coats are recommended.

17) What is the safest type of footwear recommended for wear in the laboratory?

Recommended footwear should have low heels and be composed of leather or equivalent material. Shoes should have no open spaces in order to prevent spills from getting on the feet.
Canvas shoes tend to absorb liquids. Sandals offer no foot protection and are not permitted in the laboratory.

18) Why is eating or drinking not permissible in the laboratory?

Eating and drinking are not permitted in the laboratory due to the possible ingestion of chemicals.

One should always take the precaution of washing the hands with soap upon leaving the laboratory.

19) What do you do with excess chemicals? Briefly describe the procedures for

a) nonhazardous liquids

Nonhazardous liquids that are miscible with water and are non odorous can be poured down the drain.

b) nonhazardous solids

Nonhazardous, water soluble, non odorous solids can be dissolved in water and poured down the drain or can be disposed of in the appropriate containers in the laboratory.

c) and d) hazardous or odorous substances

Hazardous substances should be disposed of in properly labeled waste containers (e.g. "Flammable Liquids," "Heavy Metals," etc.)

e) recyclable materials

Recyclable materials should be disposed of in properly labeled containers.

20) Why should reagents not be

a) stored in your drawer?

There is always the possibility of fumes given off or spilling of the material. This could result in another individual becoming contaminated with an unidentified chemical.

b) taken from the laboratory?

Even if properly labeled, outside of the laboratory chemicals are not safe to handle. Due to the lack of the necessary equipment outside of the laboratory to handle chemicals safely, they can be mishandled or misused, thus, resulting in injury.

21) What precautions have to be taken before using any kind of glassware from your drawer?

Always check for cracks in glassware to be used. Chipped or broken glass can cause cuts. Cracked glassware will break much easier, especially when heated.

22) Where do you dispose of broken glass?

Broken glass can be disposed of in the plastic box on the front bench in every laboratory which is labeled "broken glass."

23) Why must balances and weighing areas be kept clean?

a) To prevent the possibility of contact with unidentified chemicals that may cause burns or irritations.

b) Balances should be kept clean for optimum performance.

24) When is it necessary to work under a ventilation hood?

If irritating, potentially toxic or odorous substances evolve during a chemical reaction,
the reaction has to be carried out in a fume hood.
If fumes are generated unexpectedly, turn off any heating device and move the apparatus under the fume hood as quickly as possible.
If exposed to vapors, get fresh air immediately.

25) What is the proper procedure to use to note the odor of a substance?

Hold the container with the substance about a foot away from your face. Cup your hand and waft the vapors towards your nose.
Do not sniff the material at the opening of the container as the odor may be too strong and may overcome you.

26) Why must chemical reagents be added cautiously?

When adding chemical reagents to a reaction, always add the materials slowly with stirring. This will help to keep the reaction under control and prevent splattering or foaming.

27) How do you dilute concentrated acids?

When diluting acids, or any concentrated solution, always pour the acid, or concentrated solution ***into*** *water.*
Dilution is often accompanied by heat, and splattering may occur if liquids are mixed in the wrong order. The concentration is cut down faster when the acid is added to the
water, and in case splattering still occurs, it will be the dilute acid splattering instead of the more concentrated one.

28) a) What is the purpose of adding a few boiling stones or chips to liquids to be heated?

Boiling chips or stones promote smooth boiling and prevent bumping.

b) When do you add the boiling stones or chips to liquids to be heated?

Add boiling stones at the beginning, when the liquid is still cold or only slightly warm.

If boiling stones are added to a hot liquid, it may boil over the sides of the container.

29) If a test tube cannot be heated in a water bath you may have to heat it over an open flame.

a) How do you hold the test tube?

Hold the test tube with a test tube holder.

b) How full should it be? Do you add boiling stones?

The test tube should be 1/3 to 1/2 full. Add boiling stones.

c) Where should the opening be pointed?

The opening of the tube should be pointed away from your or anybody else's face.

d) Where in the flame is it held?

It is held at the top of the blue core of the flame.

e) Do you hold it stationary or in motion?

Move the tube up and down in the flame.

30) What should you do in case of a power failure, fire drill, or any emergency as such?

*In case of emergency situations during which the laboratories have to be evacuated, it is important that students remember to **shut down** all gas burners, water, air, and electrical operations before leaving the lab.*