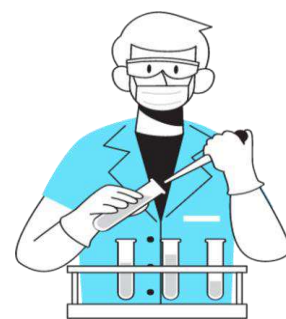


Name _____ Date _____



SAFETY IN THE LAB QUIZ –Answer Key

1. What is a laboratory?

A laboratory is a dedicated space or building where chemicals and equipment are stored, and practical subjects like chemistry are studied.

2. List at least 8 lab safety precautions.

Some lab safety precautions include:

- Carefully reviewing all instructions before starting any laboratory experiment.
- Avoiding running while in the laboratory.
- Refraining from eating or tasting any substances in the laboratory.
- Not smoking or applying cosmetics while in the laboratory.
- Wearing closed-toe shoes or footwear that covers the entire foot.
- Keeping hands away from mouth, eyes, body, and immediate items after removing gloves.
- Seeking guidance from teacher or lab technician before attempting any experiment.
- Labeling all chemicals used.
- Reading container labels carefully.
- Using clean apparatus for all reagents.
- Using tongs or test-tube holders to handle boiling tubes or test tubes when heating.
- Ensuring the open end of open test tubes does not face you or others nearby when heating substances.
- Avoiding looking directly into reaction vessels during reactions.
- Not smelling gases directly; gently wafting the gas toward the nose with the hand.
- Conducting experiments involving poisonous gases in fume cupboards or outdoors.

Find others here: <https://chemtribe.com/basic-chemistry-laboratory-safety-rules-for-students/>

3. What is the consequence of not following the lab rules and procedures?

- Can lead to accidents, injuries, and damage to equipment or property.
- May pose environmental hazards and compromise the validity of scientific experiments.
- Undermines the integrity of results and jeopardizes the safety of individuals in the laboratory environment.
- Essential for the well-being of everyone involved and the successful conduct of experiments.

4. What is the correct technique for checking the odor of a substance?

Gently wafting the scent towards the nose using hand or a piece of paper. Direct inhalation of the odor should be avoided as some substances may be harmful or irritating.

5. If you take too much of a chemical when working, what are you supposed to do with the excess?

- Return the excess to its original container, following appropriate safety protocols such as wearing gloves and using proper handling equipment.
- In certain circumstances, you may dispose of the excess chemical according to the appropriate waste disposal guidelines for hazardous or non-hazardous materials.
- Avoid disposing of the excess chemicals improperly and seek guidance from a supervisor or safety officer if necessary.

6. What is the proper and safest way to handle a hot beaker or container?

- Use tongs or heat-resistant gloves.
- Ensure a secure grip and avoid touching the heated surfaces directly to prevent burns or injuries.
- Be cautious when transferring hot materials to avoid spills or splashes

7. What precautions should be taken to prevent staining or damaging your clothing in the laboratory?

- Wear appropriate lab attire, such as a lab coat or apron, to provide an extra layer of protection against spills and splashes.
- Use chemical-resistant gloves when handling hazardous substances to protect your hands and minimize contact with potentially damaging materials.

- Be mindful of your surroundings and handle chemicals and equipment with care to minimize the risk of accidents or spills.
 - Immediately rinse any spills or splashes on clothing with water or an appropriate solvent to prevent staining or damage.
8. What is the correct way to dispose of chemicals at the end of the laboratory period?
- Depends on the specific nature of the chemicals being used. Generally, follow these guidelines:
- Check the Material Safety Data Sheets (MSDS) or consult with your instructor for specific disposal instructions for each chemical used.
 - Use designated waste containers labeled for specific types of waste (e.g., organic solvents, acids, bases) and follow any disposal protocols provided.
 - Neutralize or treat reactive or hazardous chemicals as directed before disposal to minimize environmental impact.
 - Never dispose of chemicals down the sink or drain unless explicitly instructed to do so by your instructor and local regulations.
 - Ensure all containers are properly sealed and labeled with their contents and hazard information before disposal.
 - Follow any additional disposal regulations or guidelines provided by your institution or local authorities.
9. Read through each scenario. Under each scenario, write which lab safety rule is being broken.
- a. In a past lab class, Sarah noticed that her group didn't have two reagents. Without consulting the teacher, she decided to check the science storage room to find the missing reagents.
- **Unauthorized access to hazardous materials and areas.**
 - **Science storage rooms often contain hazardous materials and equipment that require specialized handling and knowledge. By bypassing the teacher or lab technician and entering the storage room without permission, Sarah is putting herself and others at risk of exposure to potentially dangerous substances or situations.**
- b. John enters the lab with his backpack slung over his shoulder. As he engages in conversation with his friend, he turns suddenly, accidentally knocking a container filled with chemicals off the counter.

- **Failure to maintain a clear workspace and proper handling of equipment.**
- **Carrying a backpack on his shoulder increases the risk of accidental spills or collisions with equipment and containers. Additionally, engaging in distracting conversations while handling chemicals compromises his focus and attention to his surroundings, leading to the accidental knockover of the chemical container.**
- **To prevent accidents and maintain a safe laboratory environment, students should refrain from bringing unnecessary items into the lab, maintain a clear workspace, and remain focused on their tasks at all times.**

c. During their lab session, Sam and Emily find themselves with leftover chemical solutions from their experiment. They decided to pour the remaining solutions down the drain and left the water running in the sink as they left for the next class.

- **Improper disposal of chemical waste and leaving the lab unattended.**
- **Pouring chemical solutions down the drain without proper treatment or disposal protocols can lead to environmental contamination and damage to plumbing systems.**
- **Proper disposal of chemical waste requires following established procedures for neutralization, containment, and disposal in designated waste containers**
- **Leaving the water running in the sink unattended poses a risk of flooding and water wastage.**
- **Ensure that all equipment is properly shut off and the lab is left in a safe condition before leaving.**

d. Students are conducting an experiment to find out what happens when different salts are heated. Jack challenges Rebecca to taste the salts to see if they taste like the regular salt we use in cooking.

- **Lab chemicals are not intended for human consumption, and tasting them is highly irresponsible and dangerous.**
- **Consuming any chemical or substance used in the laboratory is extremely hazardous and can lead to serious health consequences, including poisoning and internal damage.**

e. Alex wanted to check the smell of a chemical. He leans close to the container with the chemical and takes a deep sniff directly from the container. As a result, he feels dizzy and his nose burns for the rest of the day.

- **By directly sniffing the chemical from the container, he exposes himself to potentially harmful vapors and fumes. Many chemicals used in laboratories can emit toxic or irritating fumes that can cause respiratory problems, dizziness, irritation, or even chemical burns.**
- **Chemicals should never be sniffed directly from the container. Instead, if it is necessary to check the odor of a chemical, it should be done cautiously using proper smelling techniques like gently wafting the scent towards the nose using hand or a piece of paper**

f. In the last chemistry lab session, Jane realized she had forgotten to eat breakfast. She sneaked a granola bar from her backpack and decided to quietly eat it when the teacher wasn't paying attention.

- **Eating or drinking in the laboratory is prohibited.**
- **Eating or drinking in the lab poses a safety hazard as it can increase the likelihood of accidental ingestion of hazardous substances or contamination of food items with chemicals.**

10. Identify at least 8 lab safety concerns in the picture below:



Identify
lab
safety
concerns
in the
picture



- Answers will vary.
- Reference: <https://chemtribe.com/basic-chemistry-laboratory-safety-rules-for-students/>