

Laboratory Safety Rules Guide at Qassim University



Introduction

This Laboratory Safety Rules Guide at Qassim University has been prepared as an important document and reference for Qassim University personnel.

This guide contains a set of safety rules specific to laboratories, along with important information in this field. It aims to prevent hazards that laboratory users may be exposed to and to support the implementation of safety procedures.

Although this guide was issued by the Safety Department, it is not a substitute for the safety manuals of the University entities, as each entity has its own specific safety procedures. Rather, this guide serves as a supporting tool for those entities.

In line with the slogan "Safety is Everyone's Responsibility," everyone is required to apply the safety rules contained in this guide to achieve a safe working environment that meets safety requirements.

Laboratory Supervisor Responsibilities

1. Conduct monthly inspections and periodic tests of laboratory equipment and electrical installations, as well as safety devices, fire-fighting equipment, and alarm systems, and repair any fault immediately when it occurs.
2. Prepare a record (Safety and Firefighting Log) containing the results and dates of monthly inspections and periodic tests of safety equipment, the results of repair operations, and other relevant data.
3. Train all laboratory users on the safety procedures required in the laboratory and prepare an acknowledgment statement confirming this.
4. Install the necessary guidance boards and warning signs.
5. Do not allow entry to the laboratory except for persons authorized to enter.
6. Do not leave laboratory users without supervision.
7. Record incidents using the approved forms.

General Safety Rules in Laboratories

1. Read all fire alarm and safety signs and follow the instructions in the event of an accident or emergency.
2. Be fully familiar with all building evacuation procedures.
3. Know the location of laboratory safety equipment - including first-aid supplies, fire extinguishers, eyewash stations, and safety showers - and how to use them correctly.
4. Know the emergency telephone numbers to use in an emergency - God forbid.
5. Appropriate warning signs must be posted in laboratory areas containing carcinogens, radioactive isotopes, biological hazards, and lasers.
6. Never use an open flame in the laboratory unless permission has been obtained from the supervisor.
7. Know the locations of laboratory exits and fire alarm devices.
8. Keep a 1-meter-diameter area clear beneath fire sprinklers.
9. If a fire drill is being conducted, make sure all electrical equipment is switched off and all containers are closed.
10. Work must always be carried out in well-ventilated areas.
11. Chewing gum, eating, or drinking while working in the laboratory is prohibited.
12. Laboratory glassware must never be used as containers for food or beverages.
13. Each time glassware is used, inspect it for cracks or breaks. Report any damaged glassware to the supervisor so it can be disposed of properly.
14. Do not use any laboratory equipment unless your supervisor has approved it or trained you to operate it.
15. If a tool or piece of equipment fails during use or does not operate properly, inform the supervisor immediately and never attempt to repair the fault yourself.
16. If you are the last person to leave the laboratory, make sure all doors are locked and all ignition sources are shut off.
17. Do not work alone in the laboratory.
18. Do not leave an experiment in progress unattended.
19. Never raise glassware, solutions, or any other type of equipment above eye level.
20. Never smell or taste chemicals.
21. Always follow the appropriate procedures for disposing of laboratory waste.
22. All injuries, accidents, and broken equipment must be reported immediately, even if the incident appears minor or insignificant.
23. If you are injured - God forbid - call out immediately for help to ensure that assistance is provided.
24. If a chemical splashes into your eye(s) or onto your skin, immediately flush the affected area(s) with running water for at least 20 minutes.
25. If you notice any unsafe conditions in the laboratory, report them to the supervisor immediately.

Personal Safety Rules in the Laboratory

1. When working with equipment and hazardous materials, glassware, heat, or chemicals, always wear a face shield or safety goggles.
2. If your hair is very long, tie it back while in the laboratory.
3. When handling any toxic or hazardous substance, always wear appropriate gloves.
4. When conducting laboratory experiments, you must wear a laboratory coat.
5. Before leaving the laboratory or eating, wash your hands.
6. After conducting the experiment, wash your hands with soap and water.
7. When using laboratory equipment and chemicals, make sure to keep your hands away from your body, mouth, eyes, and face.
8. Wear shoes that fully cover the feet.

Laboratory Cleanliness Rules

1. Always keep your work area neat and clean.
2. Make sure all eyewash stations, emergency showers, fire extinguishers, and exits are always unobstructed and accessible.
3. Keep only the materials needed for your work in your work area. Everything else must be stored safely away from the work area.
4. Store lightweight items on top of cabinets, while heavier items should always be kept at the bottom.
5. Always keep solid materials away from the laboratory sink.
6. Always keep any equipment that requires airflow or ventilation clean to prevent overheating.

Safety Rules for Handling Chemicals

1. Treat every chemical as hazardous.
2. Do not allow any solvent to come into contact with your skin.
3. Always clearly label all chemicals with the substance name, concentration, date received, and the name of the person responsible for them.
4. Before removing any contents from a chemical bottle, read the label twice.
5. Do not take more chemical from the bottle than you need for your work.
6. Do not return unused chemicals to their original containers.
7. Chemicals or other materials must never be removed from the laboratory.
8. Chemicals must never be mixed in the drain.
9. Flammable and volatile chemicals must only be used in a fume hood.
10. If a chemical spill occurs, clean it up immediately.
11. Make sure all chemical waste is disposed of properly.

Safety Rules in Chemistry Laboratories

1. Before starting an experiment, make sure you are fully aware of the hazards of the materials you will use.
2. When refluxing, distilling, or transferring volatile liquids, always exercise extreme caution.
3. Always pour chemicals from larger containers into smaller containers.
4. Never pour used chemicals back into storage containers.
5. Never mix, measure, or heat chemicals in front of your face.
6. Water must not be poured into concentrated acid. Instead, slowly pour the acid into the water while stirring continuously. In many cases, mixing acid with water generates heat.

Safety Rules in Electrical Laboratories

1. Before using any high-voltage equipment (voltage above 50 V AC and 50 V DC), make sure you have obtained permission from the laboratory supervisor.
2. High-voltage equipment must not be changed or modified in any way.
3. Always switch off the high-voltage power source when making connections.
4. Use only one hand if you need to adjust any high-voltage device. It is safer to keep your other hand either behind your back or in your pocket.
5. Make sure all electrical panels are free of obstructions and easily accessible.
6. Avoid using extension cords whenever possible.

Safety Signs and Symbols

ISO 7010

ISO 7010 Safety Signs

General Description of Signs

No.	Sign Type	Meaning	Color	Shape	Example
1	Prohibition Sign	Prohibition	Red	Circular	
2	Warning Sign	Warning of danger	Yellow	Triangle	
3	Mandatory Sign	Must	Blue	Circular	
4	Safe Condition Sign	Safety equipment and exits	Green	Square or rectangle	
5	Fire Sign	Fire protection	Red	Square	

Prohibition Signs

No.	Sign	English	Meaning
1		Do not eat or drink	No eating or drinking
2		No cellphones allowed	Cell phones not allowed
3		Smoking prohibited	No smoking
4		No Fire, No Smoking	No ignition or smoking

Warning Signs

No.	Sign	English	Meaning
1		Generic warning	General warning
2		Radioactive substances or ionizing radiation	Radioactive materials
3		Warning for laser beam	Laser beam
4		Non-ionizing electromagnetic radiation	Non-ionizing electromagnetic radiation
5		Biohazard	Biohazard
6		Low temperatures	Low temperature
7		High Voltage	High voltage
8		Poisonous substances	Toxic substances
9		Warning for hot surface	Hot surfaces
10		Combustible and flammable materials	Flammable materials
11		Warning of sharp objects	Sharp objects

Warning Signs (continued)

No.	Sign	English	Meaning
12		Corrosive substances	Corrosive substance
13		Danger from loading batteries	Battery loading
14		Explosive substances	Explosive materials
15		Warning for magnetic field	Magnetic field
16		Slip hazard	Slip hazard
17		Warning for optical radiation	Optical radiation
18		Oxidizing material	Oxidizing materials
19		Pressurized Cylinders	Pressurized cylinders

Mandatory Signs (Personal Protective Equipment)

No.	Sign	English	Meaning
1		Use protective eyewear	Eye protection
2		Use hearing protection	Hearing protection
3		Use protective clothing	Lab coat
4		Use protective handwear	Gloves
5		Use protective footwear	Protective footwear
6		Face Mask	Face mask
7		Use protective headgear	Head protection
8		Use protective face shield	Face shield
9		welding guard	Welding guard
10		Use respiratory protection	Respiratory protection

Information and Directional Signs (Safety, Fire Protection)

No.	Sign	English	Meaning
1		Emergency Exit	Emergency exit
2		Emergency shower	Emergency shower
3		Eye shower	Eyewash station
4		Fire extinguisher	Fire extinguisher
5		First aid	First aid

Chemical Substance Signs

Hazardous Chemicals Classification by Hazard

Explosive Materials (Explosive)



Compressed Gases (Compressed gas)



Flammable Materials (Flammable)



Flammable Solid Materials (Flammable solid)



Peroxides and Oxidizers (Oxidiser - Peroxide)



Toxic Materials (Poison)



Radioactive Materials (Radioactive)



Corrosive Materials (Corrosive)



Miscellaneous Hazardous Substances (Miscellaneous substances)



Incompatible Chemicals in Storage

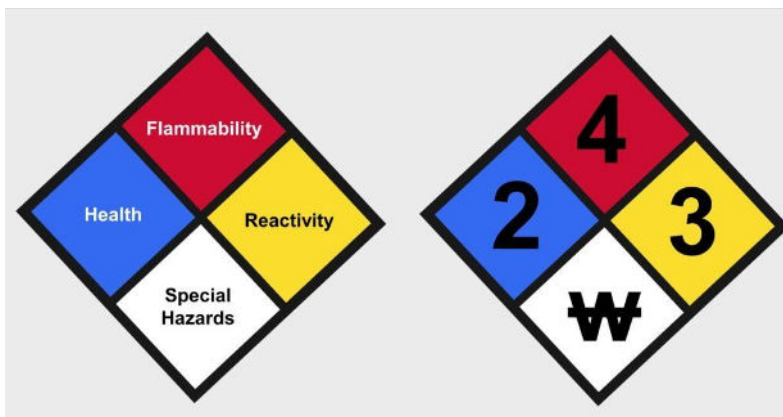
Chemical Group	Inorganic Acids	Oxidizing Acids	Organic Acids	Strong Bases	Oxidizing Materials	Toxic Inorganic Materials	Toxic Organic Materials	Water-Reactive Materials	Organic Solvents
Inorganic Acids			X	X		X	X	X	X
Oxidizing Acids			X	X		X	X	X	X
Organic Acids	X	X		X	X	X	X	X	
Strong Bases	X	X	X				X	X	X
Oxidizing Materials			X				X	X	X
Toxic Inorganic Materials	X	X	X				X	X	X
Toxic Organic Materials	X	X	X	X	X	X			
Water-Reactive Materials	X	X	X	X	X	X			
Organic Solvents	X	X	X	X	X	X			

X - Incompatible - Do not store together.

NFPA Signs

**National Fire Protection Association (NFPA) 704
diamond standard**

National Fire Protection Association (NFPA) 704 diamond standard



HEALTH HAZARD 4 - Deadly 3 - Extremely hazardous 2 - Hazardous 1 - Slightly hazardous 0 - Normal material	FIRE HAZARD Flash Point 4 - Below 22.8°C 3 - Below 38°C 2 - Below 94°C 1 - Above 94°C 0 - Will Not Burn
ADDITIONAL HAZARDS Corrosive COR Alkali ALC Acid ACD Oxidizer XO Radioactive Z ☢ Do not use water W	CHEMICAL REACTIVITY HAZARDS 4 - May explode 3 - Shock or heat may cause explosion 2 - Severe chemical change 1 - Unstable if heated 0 - Stable

Acknowledgment

I, the undersigned, acknowledge that I am fully aware of the laboratory safety procedures and that the supervisor has explained all necessary safety procedures. Therefore, I fully commit to complying with all safety procedures.

College:	Department:
Course:	Supervisor:

No.	University ID	Student Name	Date	Signature
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Laboratory Safety Form

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Building Name	Building No.	Laboratory Name	Visit Date

No.	Inspection Item	Yes	No	Notes
1	A safety code is available in the laboratory.			
2	Hazard warning signs and emergency numbers are clearly displayed in an appropriate location.			
3	Appropriate personal protective equipment is available (lab coat, goggles, gloves).			
4	Safety equipment (showers, sinks, fume hoods) is available and serviceable.			
5	A first-aid cabinet is available and properly stocked.			
6	No food or beverages are present inside the laboratory.			
7	Worktables and benches are clean and free of hazardous objects.			
8	The laboratory floor is clean and free of hazardous objects.			
9	A fire alarm system is available and operates properly.			
10	Appropriate fire extinguishers are available, within validity date, and easily accessible.			
11	Electrical outlets and electrical connections are in good condition.			
12	Heavy objects are not stored in elevated locations.			
13	Gas cylinders are secured and stored properly.			
14	Cylinders are supported and chained to prevent movement.			
15	Cylinders are capped and securely stored.			

Laboratory Safety Form

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No.	Inspection Item	Yes	No	Notes
16	Cylinders are located in open areas.			
17	Cylinders have labels identifying their contents and the required information.			
18	Cylinders are placed in easily accessible locations.			
19	Hoses and connections attached to cylinders are inspected and checked for leaks.			
20	Gas detectors are available to detect any leakage at gas connections.			
21	All gas valves and pipes are intact and in good condition.			
28	Flammable materials are stored in fire-resistant cabinets labeled "Flammable."			
29	Emergency exit signs are available and clearly visible.			
30	Oxidizing and reducing materials are separated.			
31	Incident reports are kept in files and reviewed.			
32	Radioactive materials are handled and stored in accordance with international specifications.			

Lab Technician	Safety Monitor
Name:	Name:
Signature:	Signature:

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References

1. ISO 7010:2019 - Registered safety signs
2. Requirements for Chemical Materials Warehouses and Storage Conditions - Second Edition, General Directorate of Civil Defense.
3. National Fire Protection Association (NFPA) 704 diamond standard
4. Safety and Fire Protection Requirements Regulation for Laboratories and Testing Facilities - General Directorate of Civil Defense.