

Personal Safety

## Taking a Look at Lab Safety

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Labs are essential in the 21st century, evident by the research that led to *the breakthrough* of messenger RNA (mRNA) and the associated technology that resulted in a global vaccine for COVID-19. But mRNA was not a discovery that occurred in one lab overnight. Instead, it *took decades of research* spanning numerous labs, including the Paris laboratory of André Boivin; University College, London; and the Pasteur Institute.

Regardless of any specific lab's achievements over another, they all have one thing in common. The importance of safety is central; otherwise, researchers, scientists, and students can easily be injured by the hazards within a laboratory.

The Occupational Safety and Health Administration (OSHA) reports over *500,000 workers* are employed in laboratories across the United States. Each of these workers looks to enter a healthy workplace where they can perform their job free of safety hazards that pose a significant risk of personal injury. Preventing laboratory accidents requires vigilance, care, and staying informed.

This article dives into lab safety, the most common rules needing to be observed, and the personal protective equipment all lab workers need to wear.

### Overall Importance of Lab Safety



Most people remember their first day operating a Bunsen burner in high school chemistry class. They remember it because the chemistry and biology teachers stressed how important it is to take lab safety seriously. And, for those who have gone on to enhance their scientific understanding, that initial safety lesson continues in their modern research and testing activities.

Why is safety so important in a lab? Labs are full of hazards: **biological hazards** such as foodborne diseases, infectious specimens, and **bloodborne pathogens**. Many tools and substances used within a laboratory can be dangerous if not handled properly and dealt with safely. Chemicals can present physical danger and health threats to workers in clinical, academic, and industrial laboratories. If not treated with care, hazardous chemicals can be toxic, corrosive, and irritative to the skin, eyes, organ systems, and other body parts. They can also be lethal.

## 10 Lab Safety Rules

What is the most important lab safety rule? It's a **simple one**, but it's often overlooked: **Follow Instructions**. From paying attention to safety symbols to listening to an instructor, safety instructions can help prevent accidents. Using common sense and knowing when to ask for help is essential in any laboratory.

Still, there are many other important lab safety rules. Some are common sense, but some are also worth thinking about and reviewing, as they can be easily forgotten or remembered only *after* an accident has occurred.

Always remember these top 10 rules when you're in a lab:

### 1. Know the Location of Safety Equipment

Always know where the safety equipment in a lab is located. If you're joining a new lab, be sure to find out these locations quickly. Also, **regularly check** that safety equipment is maintained and can function properly in an accident or emergency. Many lab safety signs designate equipment locations, including fire extinguishers, eyewash stations, safety showers, and other devices.

### 2. Report Lab Accidents Right Away

If an **accident occurs** in the lab, even a minor one, let a supervisor know right away. Do not falsify any story or lie about accidents, as awareness and transparency are essential safety steps to follow. Whether it's a cut, a spilled chemical, burn, all accidents should be reported.

### 3. Know What to Do in Case of Emergency

You should always know where the emergency eyewash station is located. In a severe disaster, **emergency exit routes** should be clearly marked, and everyone should be aware of the evacuation path.

### 4. Proper Disposal of Lab Waste

Many chemicals, metals, papers, disposable gloves, tools, biological samples, and liquid substances cannot be simply poured down the drain or left in the garbage. Proper disposal of lab equipment and

substances *ensures harmful materials* don't leak into the outside environment.

## 5. Leave Equipment and Experiments in the Lab

Removing any lab equipment, specimens, or other lab components is typically prohibited, and for a good reason. The proper procedures, equipment, and regulations for dealing with accidents are not in place outside of the laboratory setting.

## 6. Manage Chemicals with Care

All facets of chemical handling and control should be done with care, including *labeling all chemical containers* to know their contents and not working with unlabeled or otherwise unknown chemicals.

## 7. No Food or Drinks in the Lab

Never *consume food* in a lab, as it can easily contaminate or damage lab samples and equipment. Also, food and beverages themselves can become contaminated by toxic or unknown substances in a lab.

## 8. Dress for the lab

Wearing *proper lab clothing* means wearing safety goggles and glasses, closed-toe shoes, gloves, and lab coats or aprons if working with chemicals and substances. Any loose or long hair should be tied back.

## 9. Care for All Equipment

*Caring for lab equipment* means using it correctly, whether it's a piece of heavy equipment or a simple beaker. Some equipment and materials require the use of additional safety equipment, such as handling hot or volatile materials.

## 10. Safety Signage and Labeling

In addition to labeling the safety equipment locations and making sure all chemicals are clearly marked and labeled, labs should have plenty of visual cues tied to safety. This includes labeling exits, labeling paths to exits, and placing *warning signs* for unusual hazards and toxic, hazardous materials.

MCR Safety only targeted the 10 rules they believe need to be in the Top 10. Every lab has different rules, so it's essential to be familiar with them. You may want to visit other websites to see which rules they highlight as being critical. Here are some other websites to consider reviewing:

- *General Safety Rules*
- *Fairlawns School Rules*
- *Explosion Safety*
- *Science Classroom Safety*

*Previously Featured on MCR Safety's blog.*

