

# Safety First

What practices are followed to ensure safety in the laboratory?

## Why?

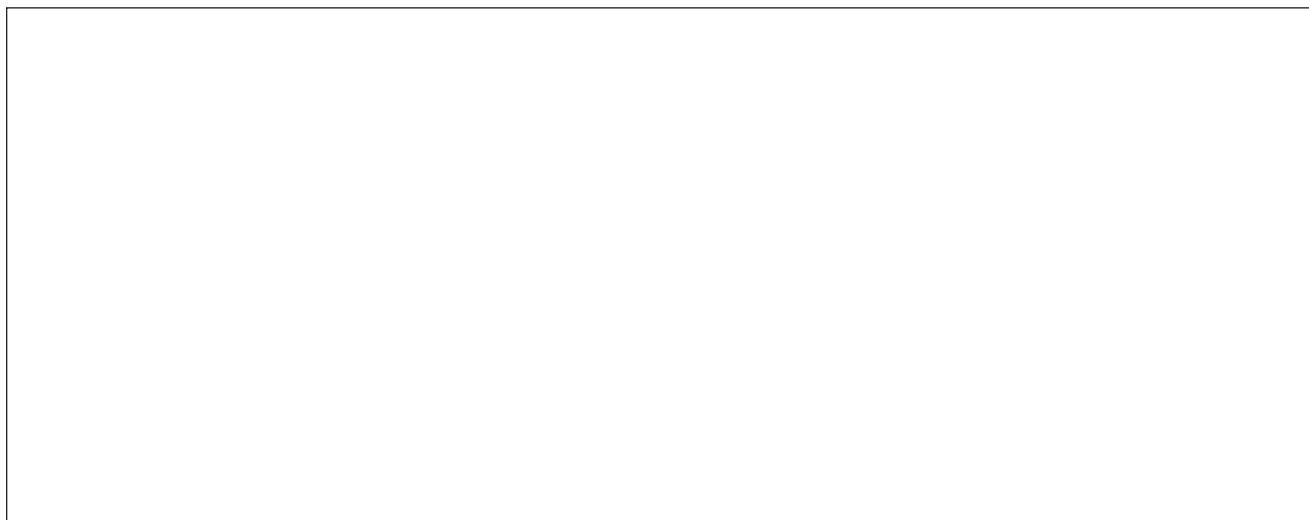
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Academic laboratory accidents are estimated to occur 10–50 times more frequently than chemical plant accidents. Laboratory accidents often have unexpected outcomes that may result in permanent injury. Dressing appropriately and following laboratory safety rules will reduce the incidence and severity of accidents and help keep students safe.

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1. Create a laboratory safety diagram in the space below by doing the following:
  - a. Sketch the outline of your laboratory room including all doors and windows.
  - b. Mark and label the position of the following laboratory safety equipment.
    1. Fire blanket
    2. Fire extinguisher
    3. Safety shower
    4. Eyewash station
    5. Fume hood
    6. Chemical disposal area
    7. Broken glassware disposal
    8. Chemical spill clean-up kit
    9. Location of goggles
    10. Location of gloves
  - c. Locate and read the evacuation instructions that are posted in your laboratory. Describe how you should evacuate in case of an accident.
  - d. Label the fire exits in the diagram and add the evacuation route to your picture (this should be posted in your room).


## Laboratory Safety Diagram



2. Biohazard materials are disposed of in biohazard bags when you are finished working with them.
  - a. On the diagram above, label where the bags are generally located.
  - b. What color are the bags?

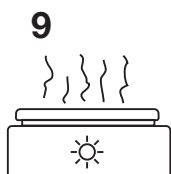
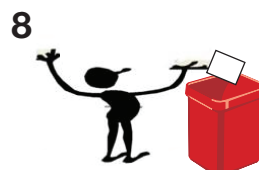
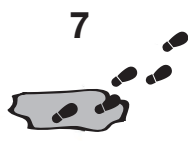
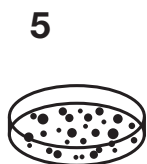
## Model 1. Laboratory Attire

This student is dressed <b>inappropriately</b> for laboratory work.	This student is dressed <b>appropriately</b> for laboratory work.
	

3. Look at the two students in the model above.
  - a. List at least three inappropriate items of dress for the student on the left.
  
  
  
  
  
  
  
  
  
  
  - b. List at least three appropriate items of dress for the student on the right.
  
4. Why wear goggles while working with chemicals and glassware?
  
5. When working with a Bunsen burner what precautions should be taken with respect to your clothing and hair?
  
6. Why should one avoid wearing shorts or skirts while working with chemicals and with glassware?
  
7. What type of shoes should a student wear while working with chemicals and with glassware?
  
-  8. If an accident occurred in the laboratory, which of the two students in the model would have protection provided by their clothing? Why?



## Model 2 – Scenes in the Lab



9. Complete the table below using the pictures in Model 2.


Scene	Potential Concern	Proper Safe Behavior
1		
2	Broken or chipped glassware.	
3		
4		
5	Bacteria growing in an open Petri dish—could spread to other areas.	
6		
7		
8	Dispose of waste in designated locations.	
9	Hot plate turned on, could cause burns.	
10		Dispose of used scalpel blades in a sharps container; put all scissors away when finished.
11		
12		

## Read This!

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Communication with your teacher in the laboratory can also help prevent accidents or injuries to yourself and others. For example, you should always tell your teacher if you spill something or are cut or injured when performing an experiment. You should also alert your teacher if any equipment or glassware is broken. Your teacher can provide Material Safety Data Sheets (MSDS), which contain safety information about chemicals you may come in contact with in the laboratory. Chemicals should be disposed of safely, as directed by your teacher. Do not dump chemicals into the sink or trash.

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10. Suppose you spill a chemical on yourself:
  - a. What information can your teacher provide for you concerning that chemical?
  
  - b. Where is the information located?
  
11. Why is it important to let your teacher know if you cut, burn or injure yourself when performing an experiment?
  
12. Why should you tell your teacher if any equipment or glassware is broken?
  
13. Why should you never perform unauthorized experiments or ignore written directions for an experiment?
  
-  14. Your teacher asks your group to create a list of ten rules that everyone must follow in the laboratory. What rules would your group include? After developing a list, send a representative from your table to another group to compare responses.

