

Name: _____

Date: _____

Problem Solving: Responding to Accidents

Learning goals

After completing this activity, you will be able to ...





- Respond to a variety of laboratory accidents including spills, broken glassware, fires, and minor burns.
- Demonstrate the use of safety equipment including fire blankets, fire extinguishers, safety showers, and eyewash stations.

What Should You Do?

If you follow your lab's safety rules, accidents will be much less likely to occur. However, accidents are always possible during lab and field investigations. Because of this, it is important that you know how to respond when an accident does happen. No matter what the accident is, the first thing you should do is inform your teacher about the accident. The table on this page gives information about what to do next depending on the type of accident that occurred.

Accident	Response
Broken glassware	<ol style="list-style-type: none"> 1. If an adult instructs you to clean up the glass, put on gloves and safety goggles. Then, use a brush and dustpan to sweep up the pieces. 2. Label a sturdy, disposable container "Broken glass," and place the swept up pieces into the container. 3. Ask your teacher for disposal instructions.
Fire	<ol style="list-style-type: none"> 1. Get away from the fire as quickly as possible. 2. If your teacher asks you to help extinguish the fire, use a fire extinguisher appropriate for the type of fire involved. If the fire is an electrical fire, do NOT use water. Also, never try to extinguish a fire by blowing on it or fanning it. 3. If a person catches on fire, they should drop to the floor and roll from side to side. If a fire blanket is available, wrap the person in the blanket.
Minor burn	<ol style="list-style-type: none"> 1. Run cold water over the affected area for 5 minutes. 2. Place an ice or a cold pack on the affected area. (Do NOT place ice directly on the skin. Instead, wrap the ice in a towel.)
Spilt water	<ol style="list-style-type: none"> 1. Mop up the spill. 2. Dry the surface with a towel.
Spilt chemical	<ol style="list-style-type: none"> 1. Different types of chemicals must be cleaned up in different ways, so wait for your teacher to give you specific instructions if you want to assist with cleanup. 2. If a chemical gets into your eyes, rinse your eyes for at least 15 minutes at an eyewash fountain. Then, seek medical attention. 3. If a chemical gets on your skin or seeps through your clothing, first remove your contaminated clothing. Then, shower for at least 15 minutes. Afterwards, seek medical attention.

It is important to know how to use the safety equipment available in your school's lab so that you can quickly and confidently respond to accidents. The table below gives you general instructions for the most common types of safety equipment.

Equipment	Directions
<p data-bbox="329 384 496 415">Fire blanket</p> 	<ol data-bbox="695 405 1383 730" style="list-style-type: none"> 1. Remove the blanket from its container 2. Using the blanket to shield your face and hands, cover the burning item or person completely with the blanket. 3. Turn off the electrical and gas supply to the area and call the fire department. 4. Leave the extinguished item to cool for at least 30 minutes. Do not breathe in the smoke emitted by the extinguished item.
<p data-bbox="293 783 529 814">Fire extinguisher</p> 	<ol data-bbox="695 772 1383 1155" style="list-style-type: none"> 1. Pull the pin out of the top of the extinguisher. 2. Stand several feet away from the fire. Aim the end of the hose at the base of the fire (not the flames) and slowly squeeze the lever. 3. Spray the discharge over the base of the fire in a side-to-side motion. As the fire starts to diminish, move towards the fire, still using a slow sweeping motion to distribute the discharge. 4. Once the fire is extinguished, turn off the electrical and gas supply to the area and call the fire department.
<p data-bbox="289 1176 534 1207">Eyewash fountain</p> 	<ol data-bbox="695 1197 1399 1459" style="list-style-type: none"> 1. If you are wearing contact lenses, remove them. 2. Hold your eyes open and place them on the designated spot on the eyewash station. 3. Turn the water on and irrigate your eyes for at least 15 minutes. 4. While you are irrigating your eyes, have somebody call an emergency response unit.
<p data-bbox="313 1491 509 1522">Safety shower</p> 	<ol data-bbox="695 1591 1377 1774" style="list-style-type: none"> 1. Remove all contaminated clothing. 2. Turn on the water and shower for at least 15 minutes. 3. While you are showering, have somebody call an emergency response unit.

Activity A: Demonstrating the use of safety equipment

Before answering the questions below, demonstrate to your teacher that you are able to operate the following safety equipment. Check the boxes next to each piece of equipment once you have successfully demonstrated its proper usage:

- Fire blanket
- Fire extinguisher
- Eyewash fountain
- Safety shower

Activity B: Determining how to respond to accidents

1. Juan is lighting a Bunsen burner when his sleeve accidentally catches on fire. What should Juan do? What should Juan's lab partner do?

2. Cho is doing a lab with a toxic liquid. During the lab, she notices that her lab coat is wet and the liquid seeped onto her legs. What should Cho do?

3. Dean is heating an enzyme solution over a Bunsen burner. He feels something splash in his eyes and feels a burning sensation. What should Dean do?

4. Charlie's plugs in an autoclave and hears a crackling sound and see smoke. Very quickly, a fire starts around the electrical outlet and spreads to papers sitting on the lab table. What should Charlie do?

5. Brian is carrying a beaker full of a corrosive chemical. He accidentally drops the beaker and it breaks on the floor. Brian slips on the liquid and falls on the spilled chemical. What should Brian and Brian's lab partner do?
