

#3656

SCIENCE LAB SAFETY

Grade Levels: 8-12

18 minutes

CAMBRIDGE EDUCATIONAL 1998

1 Student Activity Sheet

DESCRIPTION

A science lab can be an exciting place to learn as well as a very dangerous place, if proper safety guidelines are not followed. Covers correct lab clothing, safety equipment, reading labels, and interpreting symbols. The most important rule is to stay alert. Models correct procedures for all rules presented and for handling emergency situations.

ACADEMIC STANDARDS

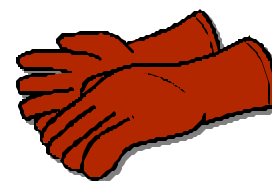
Subject Area: Self-Regulation

- ◆ Standard: Uses common knowledge to avoid hazard or injury (See Instructional Goals #1, #2)
- ◆ Standard: Applies preventative measures prior to a task to minimize security or safety problems (See Instructional Goals #1, #2)
- ◆ Standard: Selects an appropriate course of action in an emergency (See Instructional Goal #3)
- ◆ Standard: Identifies emergency and safety procedures before undertaking hazardous procedures (See Instructional Goals #1, #2)



INSTRUCTIONAL GOALS

1. To present basic science lab safety rules.
2. To point out important symbols used in the science lab.
3. To explain what should be done if there is an accident in the lab.



VOCABULARY

- | | |
|---------------------------|---------------------------------------|
| 1. heat-resistant gloves | 6. lead-lined clothing |
| 2. designation | 7. volatile |
| 3. contaminated | 8. Material Safety Data Sheets (MSDS) |
| 4. ventilation | 9. frayed |
| 5. radioactive substances | |

BEFORE SHOWING

1. Discuss the necessity of having rules in a variety of situations. (Classroom, home, sports, workplace.)

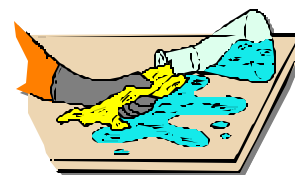
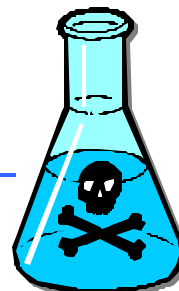
2. Make a list of student personalities that might exist in a high school science lab and discuss how personalities can affect the safety in the lab.

(1) Serious Sue	(5) Curious Craig
(2) Frightened Fred	(6) Joker Joe
(3) Oblivious Olaf	(7) Cautious Curt
(4) Risky Rick	
3. List the names of laboratory equipment that come to mind when thinking of the word safety.

DURING SHOWING

Discussion Items and Questions

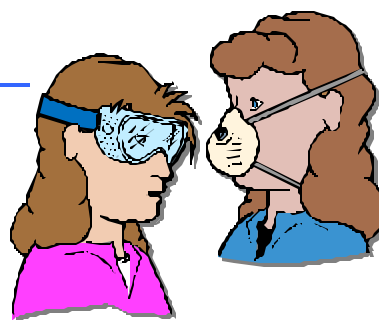
1. View the video more than once, with one showing uninterrupted.
2. Pause after the section on "Dress the Part."
 - a. Why should loose hair be tied back?
 - b. Why should loose-fitting clothes not be worn in the lab?
 - c. Why should long pants be worn?
 - d. What kinds of shoes is suitable and unsuitable for lab work?
 - e. Does a person wearing glasses need to wear goggles?
 - f. Why should contact lens not be worn in the lab?
 - g. What should be done to identify contact lens wearers?
 - h. What kinds of protective clothing should be worn in the lab?
 - i. What kinds of gloves are needed?
 - j. Why should one take off gloves when writing with a pencil?
3. Pause after the section on "Act the Part."
 - a. Discuss the role that attitude plays in working in the lab.
 - b. What do the letters A, B, and C on fire extinguishers mean?
 - c. How should a fire blanket be used?
 - d. What procedures should be followed at the eyewash station?
 - e. What information needs to be known when the lab needs to be evacuated?
4. Pause after the section on symbols.
5. Pause after the section explaining basic rules.
 - a. What are health-fire-safety diamonds?
 - b. What are Material Safety Data Sheets?
 - c. Why is it not a good idea to put something back into its original container after it has been taken out?
 - d. What should one do before dumping something down the drain?
 - e. What should one always do before and after any lab activity?
6. Pause after the section on reporting accidents in the lab.
 - a. What is the first thing one should do if there is an accident in the lab?
 - b. What should one do if the teacher is not in the room?



AFTER SHOWING

Applications and Activities

1. Make a collection of the rules mentioned in the video.
 - a. notebook illustrated with photographs
 - b. video
 - c. posters
 - d. mobiles
 - e. bulletin board display
 - f. computer Web page with digital graphics
2. Make a computer-generated table stating lab rules and the reason for each.
3. Produce a video imitating lab bloopers.
4. Make a wall-sized scale drawing of the science lab.
 - a. Mark the areas where the fire extinguishers and fire blankets are kept with an X.
 - b. Mark the areas where the shower and eyewash station are located with an O.
 - c. Mark the areas where the windows, doors, and other exits are located with an *.
5. Write several don'ts of lab safety on notecards.
 - a. Draw a card and role-play the action described on the card.
 - b. Write a sentence describing the correct rule.
6. Research and report on the following:
 - a. Statistics on types of accidents in the science lab
 - b. EPA classification of chemical wastes
 - c. Health-fire-safety diamonds and other markings used on chemical containers
 - d. Proper ways of storing chemicals in the lab
 - e. History of the MSDS
 - f. Modern designing of science labs
7. Illustrate dos and don'ts of laboratory safety on posters.
 - a. clothing, hair, and shoes
 - b. goggles, lab aprons, and gloves
 - c. shower and eyewash station
 - d. animal care
 - e. exhaust hoods
 - f. disposing of chemicals
 - g. handling equipment
 - h. operating the lab burner
 - i. workspace
8. Act out various examples of horseplay that is not permitted in the lab.
9. Ask the local fire department to set up a demonstration of the proper use of fire extinguishers.
10. Create a true-or-false quiz about lab safety.
11. Estimate the cost of safety equipment in the laboratory. Consult a science supply catalog to find the actual prices.
12. Design colorful stickers or signs to post near fire extinguishers, fire blankets, showers, eyewash stations, and other important locations in the lab.



RELATED RESOURCES



Captioned Media Program

- Safety: The Science Laboratory #2427

World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **LAB SAFETY**

<http://pc65.frontier.osrhe.edu/hs/science/clab.htm>

Includes information about lab safety, accidents, safety equipment, lab procedures, MSDS, and safety links.

- **CHEM LAB SAFETY**

<http://wwitch.unl.edu/safety/>

Contains dos and don'ts of lab safety. Includes information on using the fire extinguisher, fire blanket, eyewash operation, first-aid kit, and safety shower.

- **MSDONLINE**

<http://www.msdonline.com/>

Serves as a source for MSDS information.

- **LABORATORY DESIGN**

<http://www.flinnsci.com/homepage/lindex.html>

Presents ideas, tips, and hints to help design a safe laboratory.

- **SCIENCE LAB SAFETY**

<http://www.frontiernet.net/~jlkeefer/safety.html>

Includes a true-false quiz about science lab safety.

- **WHERE AND WHY SCIENCE ACCIDENTS OCCUR**

<http://www.flinnsci.com/homepage/safe/accoccur.html>

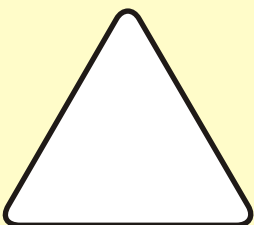
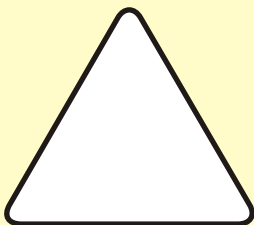
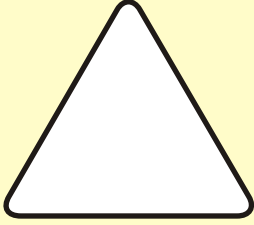
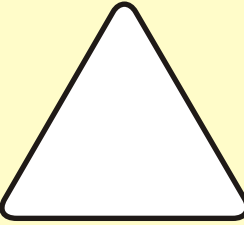
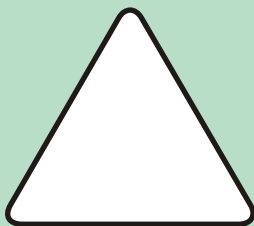
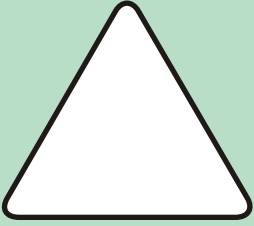
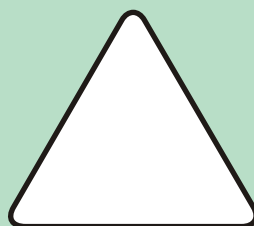
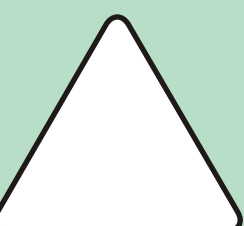
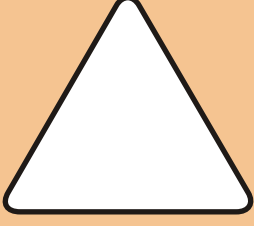
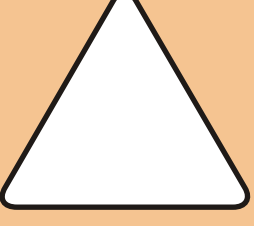
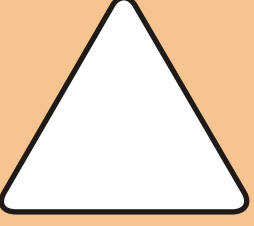
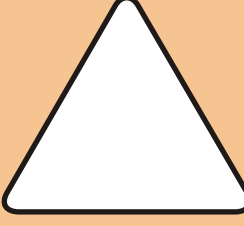
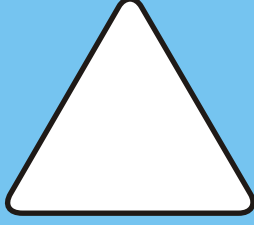
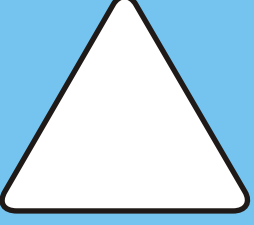
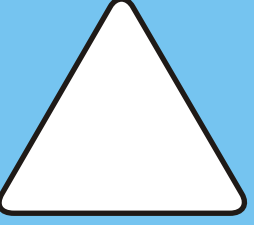
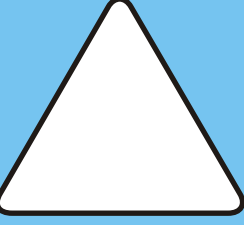
Presents the results of a junior high and high school lab safety survey and offers possible solutions to the problems.

STUDENT ACTIVITY SHEET

- SCIENCE LABORATORY SYMBOLS

SCIENCE LABORATORY SAFETY SYMBOLS

Directions: Sketch the correct symbol inside the triangle as shown in the video.

			
Glassware	Poison	Plant Hazard	Eye Protection
			
Eye Hazard	Radiation Hazard	Foot Protection	Clothing Protection
			
Electrical Hazard	Fire Hazard	Animal Safety	Hand Protection
			
Sharpness Hazard	Gas-Fume Protection	Explosion Hazard	Hand Hazard