



# Graphic Arts Safety: Creating a Safety Illustration



## Introduction

Graphic arts laboratories are designed to be safe places to work. Even so, machines and tools can cause serious injuries if you do not develop safe work habits. Using materials, chemicals, and solvents found in the graphic arts laboratory can also pose a health hazard if not handled, stored, and disposed of properly.

Safety and health are full time concerns when working in the laboratory, not only for your instructor, but for you as well. You are responsible both for your own safety and for the safety of those people working in the laboratory with you.

Safety is stressed throughout all the activity packages you will be working with. Each unit has its own specific safety concerns, and you will be reminded of safety practices whenever you become engaged in an activity that may have some potential hazard. However you should also be aware of and concerned with the **general safety rules** in the laboratory.

## Materials and Supplies

To complete this activity you will need the following materials:

illustration board, 11" x 17"  
assorted clip art books or disks  
pencils  
T-Square & triangle  
colored pencils, markers, and water colors  
art supplies as available in your laboratory  
scissors and/or X-acto knife

## Job Description

In this activity package you are going to design a safety illustration, or safety poster. The design will be based on the information you will read in this package, as well as the directions and rules your instructor provides.

Safety posters are used in all areas of technology education to illustrate the importance of developing safe attitudes towards your own safety and the safety of others. Safety posters are important in the laboratory because they serve as silent reminders to all the people working in the lab that safety is everyone's concern, and should be a concern at all times.

In this activity, you will be utilizing the **design process**, a skill that you will use over and over again in your study of graphic arts technology. Starting with a problem, you will develop small sketches called **thumbnails**. These ideas are then developed further into full size **rough sketches**. Later a **comprehensive** is completed, full size and in full color. The comprehensive looks just like the actual production design, except that it is "one of a kind". In a later activity package, you will learn the techniques used to produce **mechanicals**, or "camera ready copy", for reproducing your designs.

For this activity, you are to design a safety poster to illustrate some "attitude toward safety" in your graphic arts laboratory. You can use any of the ideas, concerns, and rules your instructor has given you. Your finished poster may be displayed in the laboratory in an appropriate location to remind students and teachers to follow safe practices.

## Proper Dress

If you were working on a job, you would be required to dress properly. When working in a laboratory you should also be concerned with proper dress. Avoid loose fitting clothing. Keep sleeves rolled up. Remove ties, large rings, and hanging jewelry, as these items can get caught in moving machinery. An apron or special shop coat should be worn to protect your clothing. Shoes must be worn at all times, and open-toed shoes are not appropriate. Wear approved safety glasses when required.

## Behavior

The graphic arts laboratory is no place for horse-play, pranks, or throwing objects. Avoid running in the laboratory, as you could stumble, fall, and collide with another student who is working on machinery.

## If You Are Injured

Make sure you report all accidents to your instructor. Get prompt attention for cuts, bruises, or other injuries.

## Using Solvents and Chemicals

Use **solvents** only in well-ventilated areas. Never use gasoline for any work in the graphic arts lab. Store solvents in approved containers, and store the containers in metal storage cabinets designed for this purpose.

Always read labels on solvents, chemicals, and other materials in the lab. Know what to do if you get these materials on your skin, clothing, or in your eyes. Know where the eye wash station is in your lab. Never try to identify a chemical or solvent by "sniffing" the vapors. If you find an unlabeled container, report it to your instructor.

Rags that have been used to clean presses can ignite easily, so dispose of them in safety containers. Do not throw them in the trash can with paper, and never store them in your locker.

## Machine Safety

Most of the machines in the graphic arts lab have moving parts and are electrically operated. **Do not use any power equipment until:**

1. You have been taught how to use it.
2. You have the instructor's permission to use it.
3. All guards and safety devices are in place.

Never use a piece of equipment that has been tagged "out of service".

Only one person should use a machine at a time. If your laboratory has machine operator lines on the floor, this means that only one person should be within the area of that machine at a time.

## Lifting

Never lift heavy objects, including cases of paper, unless you use the "leg lifting" method. Properly using your leg muscles, rather than your back muscles, will greatly reduce the risk of injury.

## Paper Cutters

Paper cutters have very sharp blades; even touching the blade can result in a serious injury. Large paper cutters also have a "crush hazard" that can cause serious injury. Never operate a paper cutter without permission. If a paper cutter is locked, obtain permission before unlocking the guard. Never use a paper cutter until you have received instruction on how to operate it correctly and safely.

## Fire Safety

You should know where the fire extinguishers are located in the laboratory. Your instructor will provide instruction in their use. Fire evacuation routes and procedures will also be reviewed by your instructor. Know what to do in case of a fire, and know which route to take.

Flammable materials must be stored properly, using rag cans and flammable storage cabinets.

Metal cans should be used for all solvents, with pump cans being the best way to use them.

## Stripping or Light Tables

You should never sit on a stripping or light table, as these special tables have a glass surface. Never stack large objects or cartons of paper or place your books, book bags, or other personal items on the tables.

## Exposure Devices

Platemakers, arc lamps, and other exposure equipment contain very bright lights. Never look into a platemaker or other exposure device, as looking into them can cause injury to your eyes.

## Electrical Cut-Off Switch

Your laboratory should be equipped with a safety device that will cut off all electrical power to machines in the event of an emergency. Locate the switch in your lab, and ask your instructor under what conditions you should activate this device.

## Ecology

You should be concerned with the waste materials generated in your laboratory. Read the labels on all materials, chemicals, and solvents. Know how these materials, including photographic chemicals, should be disposed of. Never pour materials in a sink or down the drain without permission. Do not wash solvent rags, tools, or ink knives in a sink.

## Safety Pledge & Information Sheet

You are going to create a safety information file for your instructor. In this file, you will place a copy of the Laboratory Safety Regulations that your instructor has given you, a Student Information Sheet, and a signed Safety Pledge in which you will agree to follow safe procedures in the

laboratory. After this, you will take a Safety Quiz.

1. On the Laboratory Safety Regulations sheet, copy down the specific safety rules as given to you by your instructor.
2. Read and sign the Safety Pledge.
3. Complete the Student Information Sheet.
4. Complete the Safety Quiz.

Place all four of these items in a file folder with your name on the tab. Return the completed package to your instructor.

## Developing an Idea

If your school has a Technology Student Association Chapter and you plan to enter this poster in the Safety Illustration competition, make sure you read the rules before you go any further. What is the "theme" for this year's contest?

1. Make a list of some of the topics that have been presented in this unit so far. Your list might include things like:
  - Wear goggles when mixing chemicals.
  - Running in the laboratory is dangerous.
  - Put oily rags in a safety can.
  - Wear an apron to protect your clothing.
  - Report all accidents.

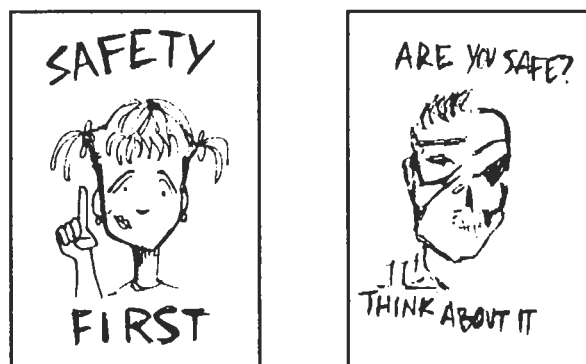


Figure 1 - Sample Thumbnail Sketches

2. Now select one of the items from your list for your safety illustration. Begin your design by creating several **thumbnail sketches** of your ideas. Thumbnail sketches are small sketches, with little detail, that show what the poster might look like.

3. Once you have completed several thumbnails, select the one you think best represents your idea - the one that really says "This is safety!". Begin the next step by obtaining a sheet of paper that is 11" x 17". Rough out the design from the thumbnail full size onto this **rough sketch**. Your lettering should be drawn in block letters, rather than single lines. The rough sketch is drawn with a pencil, so you can erase as you develop your idea.

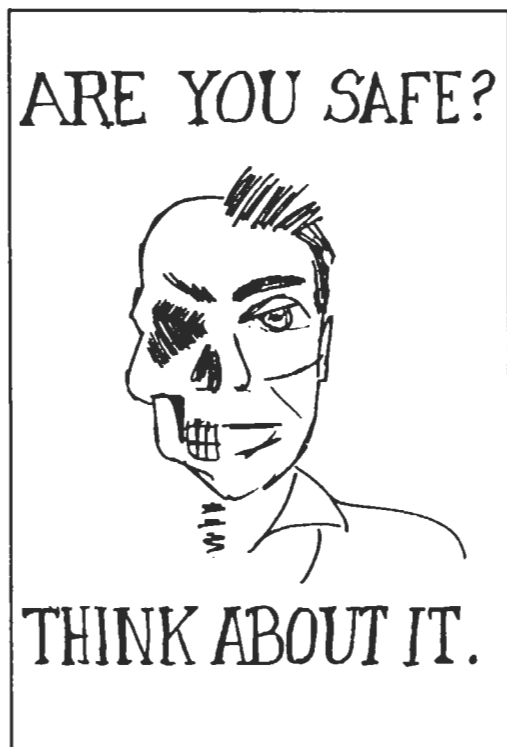


Figure 2 - Sample Rough Sketch

### Creating the Comprehensive

The **comprehensive** can be completed using a variety of materials and methods. Many of the techniques you will be using are common to commercial artists, composers, layout and paste-up artists, and graphic designers. You will learn more about these careers in other activity packages.

1. Obtain a clean sheet of drawing paper, tag board, or illustration board suitable for your illustration. The size of the finished poster must be 11" x 17"; make sure your board is the proper size.

2. Use a pencil to lay out the location of your text. Make sure your lettering is square by using a T-square and triangle .

3. Complete the comprehensive using materials and techniques as demonstrated by your teacher. Some suggestions are:

- Letter the poster using stencils.
- Use a computer to do some type styling.
- Use magic markers or colored pencils to color your design.
- Use clip art for illustrations.
- Paste up elements of your design on the illustration board.

### Vocabulary

plunger can	oily rag container
safety goggles	product data sheet
caustic material	flammable
volatile	solvent
fumes	ventilation
safety guard	evacuation plan
panic button	thumbnail
rough	comprehensive
camera ready	mechanical

### On Your Own

1. Contact a graphic arts supply company and ask for some product data sheets for plates, chemicals, film, developers, and other materials found in your laboratory. Compile these sheets in a safety file.

2. Make a safety color code chart.

3. Volunteer to create a safety bulletin board for your laboratory.

4. If you are a member of the Technology Student Association, enter your safety poster in the Safety Illustration Contest. Also read through a copy of the TSA Achievement Awards Program and see what other safety activities you can complete in your laboratory.



Office of Vocational, Adult, Career, and Community Education  
Technology Education  
Dade County Public Schools • Miami, Florida

## **TEACHER GUIDE**

### **GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION**

**Objectives:** Upon completion of this assignment, students will be able to:

- Identify the ten safety regulations for their laboratory.
- Complete a safety quiz with at least 80% correct responses.
- Sign a safety code and agree to follow safe practices in the laboratory.
- Know what safe practices are expected in the graphic arts Laboratory.
- Create a design for a safety illustration.

#### **Helpful Hints:**

1. Review the safety content of the current textbook you are using.
2. Make a safety inspection of your laboratory before you do this assignment. Make sure you have product data sheets, safety bulletins, color codes, equipment guards, fire extinguishers, and fire evacuation notices posted and in good condition in your laboratory.
3. Have file folders available for students to create a Safety File.
4. Have a film or safety video available for this activity.
5. Make up your ten safety regulations ahead of time. Post these in your lab.
6. Make sure you have oily rag waste cans, safety cans for solvents, flammable storage cabinets, and waste cans for paper and recyclable aluminum that are separate from trash cans. (DCPS has these available for your school through the recycling program.)
7. Make a safety color code chart for your room.
8. Check with your school about fire safety evacuation plans.
9. Get a copy of the Dade County Youth Fair Exhibits Handbook if your students are going to use their safety illustrations for entering Safety Illustration competitive event. Read all the rules, as these will change from year to year.
10. This is a good interdisciplinary activity you can do with the other technology teachers, as well as with the art teacher!
11. Check to see what art materials you have available for coloring, lettering, and making enlargements for the posters. *DCPS Stores & Distribution Catalog* has many of these materials available, including illustration board.

## **TEACHER GUIDE**

### **GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION (Cont'd.)**

12. A computer type styling program and laser printer are very useful for this assignment.
13. Clip art books and computer files of clip art can also be useful for this assignment.

**LANGUAGE ARTS APPLICATION**  
**GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION**

\_\_\_\_\_ Student Name

In all types of jobs you will find that you need the ability to communicate your ideas effectively. Writing skills are necessary in all occupations. Here are a few examples of how writing skills are related to this activity.

In the space provided write at least four **safety slogans**. A slogan is a sort of "catchy" phrase that will remind you to follow the safety rules. You can use the slogans you create in this activity on your safety illustration. An example of a safety slogan would be:

"Goggles prevent blindness."

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

If you were the technology education teacher in this laboratory, it would be your responsibility to make sure accidents were prevented. One of your jobs would be to create a list of safety rules for your laboratory. In the space below, write ten safety rules you think would be important to have in **your** lab. These can be different from the ones your teacher has given you. Perhaps your ideas will give your teacher some material to improve his/her safety program!

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

**MATH APPLICATION**  
**GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION**

---

Student Name

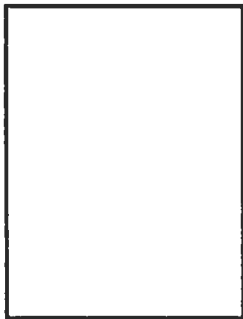
In all types of jobs and occupations you need the ability to apply mathematics effectively. Here are a few examples of how math skills are used in relation to this activity.

Printing paper is based on sheet sizes. A standard size sheet of paper is  $8\frac{1}{2}$ " x 11". This is often referred to as an **A size** sheet. Other sheet sizes are multiples of this basic sheet size. For example, a **B size** sheet is 11" x 17", which is two  $8\frac{1}{2}$ " x 11" sheets side by side.

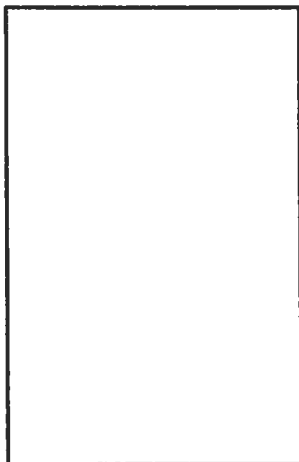
For printers, this is a convenient way to have printing papers sized. When producing printed items such as booklets and brochures which have more than one page, a sheet size that is based on a multiple of the standard size sheet makes **imposition** (or arranging pages) easier. Here is a simple activity that will help you figure sheet sizes based on the  $8\frac{1}{2}$ " x 11" page size.

**PROBLEMS:**

- 1) The rectangle below represents a single  $8\frac{1}{2}$ " x 11" sheet. Draw another rectangle the same size next to this one. What size sheet would you have if both rectangles were drawn on a single sheet?



- 2) The rectangle below represents a B size sheet, which is 11" x 17". If you place two B size sheets side by side along the 17" side, what size sheet would you have?





**QUIZ**  
**GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION**

---

Student Name

True or False:

- \_\_\_\_\_ 1. You should never work alone in the laboratory.
- \_\_\_\_\_ 2. Only severe injuries need to be reported to your instructor.
- \_\_\_\_\_ 3. It is acceptable to use machines with "out of operation" tags.
- \_\_\_\_\_ 4. Gasoline should be used to clean presses.
- \_\_\_\_\_ 5. The paper cutter should be operated by only one person at a time.
- \_\_\_\_\_ 6. It is acceptable to pour used ink down the sink.
- \_\_\_\_\_ 7. Old rags should be stored in your locker.
- \_\_\_\_\_ 8. You should wear long sleeved shirts rolled down when working on a press so you won't get ink on your arms.
- \_\_\_\_\_ 9. Long necklaces and ties pose no safety hazard in a graphic arts lab.
- \_\_\_\_\_ 10. Never use equipment without permission.
- \_\_\_\_\_ 11. Once you have had instruction on the use of a piece of equipment, you may use the equipment without asking permission.
- \_\_\_\_\_ 12. Never run in a laboratory.
- \_\_\_\_\_ 13. Sniffing solvents is a good way to find out what they are.
- \_\_\_\_\_ 14. It is okay to use equipment that has a guard off or missing as long as you are careful.
- \_\_\_\_\_ 15. Lifting heavy boxes with your back can cause injury.
- \_\_\_\_\_ 16. A safety zone around a machine means two people can work inside that area.
- \_\_\_\_\_ 17. Looking into platemakers when they are on can cause eye damage or injury.
- \_\_\_\_\_ 18. All photographic chemicals can be disposed of by pouring them down any sink.

## QUIZ

### GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION (Cont'd.)

- \_\_\_\_\_ 19. The electrical safety switch is also called a "panic button", and it will shut off all power to machinery in the lab.
- \_\_\_\_\_ 20. Paper cutters pose no real safety hazard.
- \_\_\_\_\_ 21. Using a plunger or "pump" can is the best way to use solvents.
- \_\_\_\_\_ 22. Light tables or stripping tables have glass that is so strong you can sit on them.
- \_\_\_\_\_ 23. Solvents like lacquer thinner can be used in a room without ventilation.
- \_\_\_\_\_ 24. When diluting acid based chemicals, you should add the water to the acid.
- \_\_\_\_\_ 25. Wear safety goggles when mixing chemistry in the darkroom.

**STUDENT INFORMATION SHEET**

**Period** \_\_\_\_\_

1. Name \_\_\_\_\_  
  Last    First    Middle

2. Home Address \_\_\_\_\_

3. Home Phone Number \_\_\_\_\_

4. Father's Occupation \_\_\_\_\_ Work Number \_\_\_\_\_

5. Mother's Occupation \_\_\_\_\_ Work Number \_\_\_\_\_

6. Emergency Contact (Other Than Parent): Phone \_\_\_\_\_

Name \_\_\_\_\_ Relationship \_\_\_\_\_

7. Doctor's name \_\_\_\_\_ Phone \_\_\_\_\_

8. Describe below any medical conditions such as allergy, sensitivity to chemicals, or skin condition of which the instructor should be aware.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Class Schedule    Homeroom: \_\_\_\_\_

Period	Subject	Teacher
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____

**MATH APPLICATION**

**GRAPHIC ARTS SAFETY: CREATING A SAFETY ILLUSTRATION (Cont'd.)**

- 3) If you had 100 B size sheets and you cut them into A size sheets, how many sheets of A size paper would you have? (Show your work.)
- 4) **C size** sheets are 17" x 22". If you cut a C size sheet in half along the 22" side, what size sheets would you have? (Show your work.)
- 5) How many A size sheets can you cut from one C size sheet? (Show your work.)

## LABORATORY SAFETY REGULATIONS:

In the spaces below, record ten safety regulations for your laboratory as given by your instructor.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## SAFETY PLEDGE:

I pledge that I will follow the safety rules discussed in this activity package. I will also follow all of the safety regulations given by the instructor. I will not use a press, paper cutter, camera, exposure device, or any other piece of equipment without permission of the instructor. I will report all accidents to the instructor immediately, no matter how small they are. I will help to maintain a safe laboratory by working on my own projects and by not bothering other students.

As part of my responsibility to the environment, I will not waste materials, contaminate the water supply by disposing of chemicals and solvents improperly, or use materials incorrectly in the laboratory. I will read labels to insure that I use, store, and dispose of materials correctly.

Student Signature \_\_\_\_\_ Date \_\_\_\_\_