

# Introduction

This book contains a series of student activities intended to promote health and safety within the world of school and work. The student activities place safety within the wider context of the risks we take every day. By looking back at the work of Alice Hamilton at the start of the 20th century, it is hoped that the concept of risk assessment and control will become more meaningful to students and that they will see health and safety as necessary for their own protection as well as that of others. Students should appreciate that they must take responsibility for their own health and safety and that in some circumstances, eg rock climbing, the risk of injury greatly increases if the correct equipment is not used.

Health, safety and risk are often to be found at the heart of public outrage and controversy. Public perception is often poor and so when topics such as Bovine Spongiform Encephalopathy (BSE), new variant Creutzfeldt Jakob Disease (nvCJD) or Genetically Modified (GM) foods hit the headlines, the response from politicians, the media and the commercial world can be extreme. People are looking for immediate answers to the problems and are too impatient to wait for the results of scientific investigations.

## Fitting health and safety into the science curriculum

Health, safety and risk education should be treated as an integral part of the science curriculum. Students should be taught that health and safety is an important part of the scientific method. Whenever scientific investigations are carried out at school or in industry, risk assessment is an important part of planning. If the risk is too great, should the experiment still be carried out?

Science can be used as a context to teach about the risks and hazards involved in:

- Personal and social life (eg as discussed in PSE lessons)
- Health and safety at work
- Environmental safety
- Food safety
- Technology and our changing world.

# Safety symbols

## Teachers' notes

### Objectives

- To recognize and understand the meaning of hazard warning symbols.
- To understand the precautions that should be taken when working with hazardous material to control the risk to themselves and others.
- To be able to apply this knowledge to everyday situations.

### Outline

This activity requires a brief introduction and then the class can work through the student worksheets independently or in groups. Question 4 is intended to be carried out as a homework exercise, but it could be carried out in class if appropriate resources are made available.

## Teaching topics

This activity is suitable for 11–14 year olds. However, many teachers may feel that it is appropriate to include it as part of an introduction to chemistry/science for 11–12 year olds. It will fit into any topic that makes use of chemicals.

## Teaching tips

This activity can be carried out in groups or done as individual learning

## Resources

- A class set of CLEAPSS student safety sheets or other safety information
- Everyday items containing hazard symbols (optional)
- Student worksheets
  - Safety symbols 1
  - Safety symbols 2

## Timing

~60 minutes








## Adapting resources

The worksheets **Safety symbols 1** and **2** have been included as an example of how adjusting the required level of linguistic skills allows access to a wider range of student ability.








- Safety symbols 1 has been written for more able students, with a higher reading age.
- Safety symbols 2 has been written for less able students, with a lower reading age.

# Answers

## Safety symbols 1

-  **Harmful** – These substances are similar to toxic substances but less dangerous.  
 **Irritant** – These substances are not corrosive but can cause reddening or blistering of the skin.  
 **Highly flammable** – These substances catch fire easily.  
 **Corrosive** – These substances attack and destroy living tissues, including eyes and skin.  
 **Oxidising** – These substances provide oxygen, which allows other materials to burn more fiercely.  
 **Toxic** – These substances can cause death. They may be swallowed or breathed in or absorbed through the skin.  
 **Explosive** – These substances will explode when they are set alight.
- Answers should include precautions such as wearing eye protection, washing hands after use, wearing gloves, using the small amounts and low concentrations, using safety screens, never eat or drink when handling chemicals.
- Answers depend on what students find.

## Safety symbols 2

- 
- Harmful**
- These materials can make your skin feel itchy.
- 
- 
- Highly flammable**
- These materials burn easily.
- 
- 
- Irritant**
- These materials can give you blisters.
- 
- 
- Corrosive**
- These materials can kill living cells eg skin cells.
- 
- 
- Oxidising**
- These materials give away oxygen, so other materials can burn.
- 
- 
- Toxic**
- These materials can kill you.
- 
- 
- Explosive**
- These materials are explosive.

# Safety symbols 1

1. Match the following safety symbols and definitions.



harmful or irritant

highly flammable

corrosive

oxidising

toxic

explosive

These substances are similar to toxic substances but less dangerous.

These substances provide oxygen, which allows other materials to burn more fiercely.

These substances catch fire easily.

These substances will explode when they are set alight.

These substances attack and destroy living tissues, including eyes and skin.


These substances can cause death. They may be swallowed or breathed in or absorbed through the skin.

These substances are not corrosive but can cause reddening or blistering of the skin.

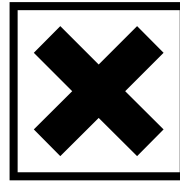
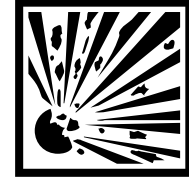
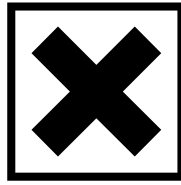
2. For each type of hazard, what precautions do you think you should take?

*Eg* when using harmful materials always wear safety glasses, avoid contact with hands and do not eat or drink.

3. Safety hazard symbols are used everyday to warn us of danger. See what symbols you can find at home or when you go shopping. Record your results in the following table.

Item	Symbols	Hazard	Precaution
Liquid paper or correction fluid		Highly flammable	Keep away from naked flames

# Safety symbols 2



**harmful**

**irritant**

**highly flammable**

**corrosive**

**explosive**

**oxidising**

**toxic**

These materials  
can give  
you blisters

These materials  
give away  
oxygen so that  
other materials  
can burn

These materials  
can kill living  
cells, eg skin cells

These materials  
burn easily

These materials  
can kill you

These materials  
are explosive

These materials  
can make your  
skin feel itchy

## Meanings

- Cut out the safety symbols, labels and meanings.
- For each symbol find the correct label and meaning.
- Stick them into your exercise books in the right order.
- Try and find a real example of each symbol eg liquid paper has a highly flammable symbol.

The first example has been done for you.



Harmful

These materials  
can make your  
skin feel itchy