

What is risk assessment?

A risk assessment is a judgment of how likely it is that someone (anyone) might come to harm if a planned action is carried out. The law requires the likelihood of harm to be reduced to as low as is reasonably practicable. Risk assessments, although an excellent idea for all of us, are only *legally* required for actions which take place at work. The *significant findings* of risk assessment must be recorded. (You must show the answer, you don't have to show your workings).

You carry out risk assessments all the time, for example, when riding a bike or crossing the road. When riding a bike in the UK you can choose whether or not to wear a cycling helmet. However, because risk assessments are required at work, paid cycling couriers will wear helmets. The risk of them being knocked off their bike is quite high but a helmet reduces the likelihood of head injury.

Who is responsible for risk assessment?

In law, risk assessment is the responsibility of the employer. The employer can ask employees to assess risks, as long as they have been trained, but the employer must then check from time to time that it is being carried out correctly. Students can be asked to draw up a risk assessment as part of their education, but it must always be checked by teachers before being put into effect. Everybody in a work situation must, by law, take care for their own safety and that of other people and employees must do what their employer requires on health & safety matters.

Model risk assessments

In schools and colleges the employer usually makes use of model (or general) risk assessments written for them by national organisations (such as CLEAPSS). Model risk assessments give sufficient details of a procedure to enable it to be carried out safely – equipment, amounts, safety precautions, etc. However teachers (or other employees) must consider whether the model assessment needs to be adapted slightly to the particular circumstances of their own situation, eg the nature of the building or equipment used, the proximity of other students, etc. An activity considered suitable, in the model risk assessment, to be carried out in the open laboratory might not be suitable in a laboratory with poor ventilation.

How do you 'do' a risk assessment?

To make a risk assessment you need to know the **hazards** and the **risk** of them causing harm in the planned activity.

A **hazard** is anything which could cause harm. For example some chemicals, electricity at high enough currents, glass (if it breaks) and even you running in the corridor are all hazards because they can all cause harm. Although sometimes you can use your common sense to identify a hazard, often you will need specialist information, eg as provided on *CLEAPSS Student Safety Sheets* or on chemical suppliers' *Safety Data Sheets*.

The **risk** is the likelihood that a hazard would cause significant harm. It is a matter of judgment and depends on:

- how *likely* it is that something would go wrong with this hazard;
- how *serious* any resulting injuries would be; and
- how *many* people would be affected.

To reduce the risks to an acceptable level, we put in place relevant **control measures**. These are the safety precautions used to reduce the risk of harm. In science we often wear safety spectacles, or use fume cupboards. We also minimise the quantities of materials used and the concentration of hazardous solutions.

What should you do when making a risk assessment?

When making a risk assessment, go through the following process.

1. Consider what materials you are working with and what procedures you are following. You could list them on the *CLEAPSS Student Form for Assessing Risk*. Think about microorganisms, heavy weights, electricity, chemicals (how much of each, what concentration of solutions), hot objects. You should also try to find out if there are any hazardous materials produced by your procedure - you may need to ask your teacher!
2. For each of the materials and procedures, ask what are the hazards? Add them to your list. What could possibly go wrong? Look up the materials and procedures in reliable and relevant sources, eg, *CLEAPSS Student Safety Sheets*.
3. How many people could be affected if it went wrong? Who would they be?
4. What control measures (safety precautions) would you adopt? Check relevant *CLEAPSS Student Safety Sheets*.
5. Make sure you record anything important and especially the control measures.
6. Have the result of the risk assessment checked by your teacher before you carry on.

Science Safety Certificate

Name

Form

I can carry out the following with due regard to safety.

Teacher's signature *Date*

Behave sensibly during practical sessions

Wear safety spectacles or goggles when appropriate

Recognise and understand the hazard symbols

Control a Bunsen burner

Heat a liquid in a boiling tube

Heat a liquid in a beaker using a tripod and gauze

Locate the position of the eye wash in the laboratory

Measure and pour dilute acids

Deal with an acid spill

Check that mains plugs have the correct fuse & are correctly wired

Explain why each of the Lab Safety Rules is needed

CLEAPSS

Student safety sheets

Student form for assessing risks

Proposed practical activity:

Name(s) of pupil(s) completing form:

Class / set:

Date:

<i>Hazardous chemical or microorganism being used or made, or hazardous procedure or equipment</i>	<i>Nature of the hazard(s)</i>	<i>Sources(s) of information</i>	<i>Control measures to reduce risk</i>

Checked by:

Date:

Proposed practical activity: Making copper sulfate crystals from copper oxide or copper carbonate

Name(s) of pupil(s) completing form:

Class / set:

Date:

Hazardous chemical or microorganism being used or made, or hazardous procedure or equipment	Nature of the hazard(s)	Sources(s) of information	Control measures to reduce risk
(1) Sulfuric acid	(1) Acid is corrosive if 1.5 M or more; irritant if 0.5 M or more.	(1) Bottle label; CLEAPSS Student Safety Sheets.	(1) Use lowest possible concentration, 0.5 M; wear eye protection.
(2) Copper carbonate	(2) (a) The solid is harmful if swallowed and dust irritates lungs and eyes. (b) When the reaction takes place, tiny bubbles of carbon dioxide are formed which may produce a spray of sulphuric acid as they burst.	(2) (a) Bottle label; CLEAPSS Student Safety Sheets. (b) Text book; teacher.	(2) (a) Avoid raising dust; wear eye protection. (b) Keep face well away from reaction; wear eye protection.
(3) Copper oxide	(3) (a) The solid is harmful if swallowed and dust irritates lungs and causes serious damage to eyes. (b) Unlike copper carbonate, copper oxide needs to be heated so mixture may boil over, spill hot acid, etc. (c) Hot tripods, etc.	(3) (a) Bottle label, CLEAPSS Student Safety Sheets. (b) Teacher; text book. (c) Teacher; past experience.	(3) (a) Wear eye protection, (b) Control Bunsen-burner flame; stir to speed dissolving; stand up throughout process. (c) Pay attention.
(4) Copper sulfate	(4) Solid and solutions more concentrated than 1 M are irritant and cause serious eye damage. The solid is harmful if swallowed.	(4) CLEAPSS Student Safety Sheets.	(4) Wash hands after activity; when solution is standing to crystallise label it carefully.
(5) Evaporating solution to form saturated solution	(5) (a) Solution may boil over, or start spitting when nearly saturated. (b) Hot tripods, etc. (c) Process is slow, leading to rushing at end of lesson and accidents.	(5) (a) Teacher; past experience. (b) Teacher; past experience. (c) Teacher; past experience.	5) (a) Keep careful watch over Bunsen burner. Do not evaporate too much - allow to crystallise slowly. Wear eye protection. (b) Pay attention. (c) Use small volume, so it is quicker

Checked by:

Date:



Student safety sheets

Student form for assessing risks

Proposed practical activity:

Name(s) of pupil(s) completing form:

Class / set:

Date:

A **hazard** is anything which could cause harm, eg, a hot tripod, a cluttered floor.

A **risk** is the likelihood of harm actually being caused.

Use the CLEAPSS *Student Safety Sheets*, the practical instructions and the labels on the bottles to fill in this form.

<i>Hazardous chemical or procedure</i>	<i>Type of hazard</i>	<i>Control measures to reduce the risk</i>

Checked by:

Date:

CLEAPSS

Student safety sheets

Student form for assessing risks

Proposed practical activity:

Name(s) of pupil(s) completing form:

Class / set:

Date:

Hazardous chemical or microorganism being used or made, or hazardous procedure or equipment	Nature of the hazard(s)	Source(s) of information	Control measures to reduce the risks	Emergency procedure

Checked by:

Date: