Transcript: Safety

Working in a laboratory can be dangerous unless you work safely.

Here is some guidance on the potential risks and hazards that exist and the precautions and good practice you can use in your classroom to avoid these.

Ok, first let's look at risk.

Risk is the likelihood that a hazard will cause harm. Before doing any experimental work you should always complete a risk assessment which should take into account any health and safety legislation for your country or location.

You will need to answer these questions and decide what control measures are needed to reduce the risk.

A risk assessment includes whether sufficient precautions are in place or if more needs to be done to prevent harm.

The aim is to reduce risk to an acceptably low level.

You should focus on identifying the risks of the experiment you want to do with your class and reduce them.

You should risk assess the materials, equipment and processes so that hazardous situations can be dealt with promptly and efficiently

It is good practice to document your risk assessments. This shows others that you have thought carefully about risks and hazards.

So what are some of the common hazards you might encounter?

A hazard is something with the potential to cause harm. Some examples include:

- fire
- chemicals
- micro-organisms
- and electricity.

Hazards are identified using internationally recognised symbols. Some examples include: corrosive, moderate hazard, health hazard, acutely toxic, flammable, oxidising and hazardous to the aquatic environment.

These will help you when identifying the risks for your risk assessment.

In order to reduce risks certain safety precautions can be implemented.

When working in the laboratory ensure all learners have access to:

Suitable eye protection such as safety glasses goggles or face shields. Ordinary glasses are not suitable eye protectors and learners who wear glasses should wear safety goggles over them.

Lab coats protect clothing and skin from coming into contact with chemicals used. Any loose clothing should be tucked into the lab coat securely. If lab coats are unavailable, ask learners to ensure loose clothing is secured by other means. For example, ties can be tucked into shirts.

You should also ensure that learners tie long hair back.

Ensure that no one eats or drinks in the lab, especially when working with foodstuffs. Also be mindful of any allergies learners might have.

When demonstrating you may require a safety screen separating the experiment from the learners. If you don't have access to a safety screen, ensure that your learners are a suitable distance away from your demonstration.

Now here are some examples of good practice when working in the lab.

When heating solids ensure that the Bunsen burner is on a flat surface. Boiling-tubes should be pointed away from the user and others. The boiling-tube should be shaken gently as this prevents the contents from shooting out.

Always place hot objects on a heat proof mat and store hot test-tubes in a rack

When heating liquids, ensure that the boiling-tube is never more than a quarter full. And it should be held at an angle of 45º to the horizontal.

It's important to remember when heating flammable substances you don't heat it directly with a naked flame.

Instead use a hot plate to heat a water bath, if available. If not, use hot water from a kettle or pan. Then insulate the water bath using felt or cotton wool.

If you intend to heat solids or liquids that are mixtures, gases might be released. Always hold the boiling-tubes away from your face and if you're testing for substances with a distinct smell, such as food flavourings, gently waft the fumes towards the nose and smell gently and to never inhale the gases directly. They may well be hot.

When using glass pipettes remember to use a pipette filler and never allow learners to pipette using the mouth. For some experiments, disposable glass or plastic pipettes can be used.

In order to reduce risks and to be safe in the lab you should:

- assess the risks
- identify the hazards or potential hazards
- use safety precautions
- and adopt good practice

Further information can be found from the following places.