Science Safety

Do now: Look at the pictures below and think of your own classrooms at primary school. How is the picture below different to "normal" classes?





Science Safety



Science Safety

Learning Aim: To know how to work safely in a Science lab

Learning Outcomes:

To recall the difference between a hazard and a risk.

To describe what hazards can be seen and how to minimise the risks.

To make your own lists of ways to work safely in a Science lab

Skill Focus: Working Safely

Why are We Learning This?

* A Science lab is a very different working place to most other classrooms in a secondary school.

*It has many extra hazards and therefore there are extra safety rules which govern how we must work.

*During your time at The Bolsover School, you will be expected to carryout Scientific investigations and practical's.

Many of these will come with inherent risks which you will need to be able to recognize and deal with.

✤If you cannot be expected to work in a safe manner, you will not have the privilege of doing the practical work.

✤It is therefore important that you need to understand what is expected of you whilst you work in a Science lab at the Bolsover School.



Spend two minutes thinking about the terms hazard and risk.

What do you think they mean?

Where have you heard them before?





Hazards and Risks

*A hazard is a danger or something that could hurt you.

An example of this would be a flame or electrical wire.

✤The risk is what it would do to you.

 \bullet For the flame hazard this would be a burn.

*For the electrical wire this could be electrocution.

 \bullet In virtually every situation there would be at least one hazard.

*As humans we naturally learn to reduce the chances of this hazards causing us harm.

*An easy example is walking to school. Here there are many risks and hazards, for example being knocked over by a car.

In order to reduce the chance of being knocked over by a car. We learn to reduce the chances of being knocked over by looking before crossing the road and staying on the pavement.

*You need to learn a similar way of thinking in a lab.

✤You should have a worksheet showing a Science lab with a large number of pupils working unsafely.

Highlight / circle where you think there are
 examples of unsafe behavior.

✤For each you will need to write down what the issue is and how the person should be working.

Minimising the chance of

being hurt

*As stated before, in every practical there will be some hazards.

 When your teacher is introducing a practical they will no doubt identify some of these hazards.

However as responsible member of the Bolsover School you will be expected to identify hazards yourself and work to reduce the chances of being hurt / injured by these hazards.

\$Over the next few slides you we see some different practical set
ups.

In each you will need to identify at least one hazard and say how you would reduce the chances of being hurt.

Remember, for each slide there are several hazards and ways to reduce the chances of being hurt, however these will not be every hazard. You may spot extra hazards

Investigation 1 - photosynthesis



Possible hazards and risks:

\$Slips on water if
spilled.

Electrocution from plug
 sockets.

Mixing of water and
electricity.

How to work safely:

✤Mop up spillages

*****Ensure hands are dry before operating plugs



Investigation 2 - neutralisation



Possible hazards and risks:

- ♦ Chemical burns to skin
- Blinding from chemicals
 getting into eyes
- *Poisoning from ingestion

\$Slipping in spills

How to work safely:

*Be careful when measuring
chemicals

♦ Wear goggles

\$Do not eat / drink during
practical



Investigation 3 - F=ma



Possible hazards and risks:

- Broken bones due to falling
 masses.
- &Bumps from trolley flying off
 table.

How to work safely:

- ◆Ensure feet are away from
 pulley when letting go of
 trolley.
- Ensure only a small amount of
 masses are used.
- Take care to stop trolley running off the edge of the table.





Investigation 4 - extracting metals



Possible hazards and risks: ✤Burns from Bunsen flame. ✤Hair setting on fire. ✤Burns from hot glass / metals. How to work safely: ✤Keep body away from flame ♦Goggles. ✤Tie long hair back. *Allow tube to cool before



touching

Investigation 5 - resistance



Possible hazards and risks:

✤Burns from hot wires.

Electrocution.

�Cuts on ends of wires
How to work safely:

◆Do not run the current
for longer than needed.

♦Allow wires to cool before touching.

Keep hands away from ends of metal wires.



Working safely

\$It may seem like some of the ways of working safely are obvious and common sense.

*For example, don't eat and drink when working with chemicals; allow metals to cool before touching.

✤This is because safety for the most part is common sense.

✤You may find for the first few practical's you teachers will tell you the common sense things like, don't eat anhydrous sodium hydroxide. However, as time goes you will find your teachers will only identify the less obvious dangers. You will be expected to identify and deal with most other hazards.



One final task. Produce a list of 10 safety rules you think are important for working in a lab safely.

These should be as specific to working in a Science lab and not generic safety rules such as no fighting.





Possible safety rules

- 1. Never enter a lab without an adult present.
- 2. Never touch any piece of equipment unless told to do so by your teacher.
- 3. Never intentionally taste or inhale anything unless you are told to do so by your teacher.
- 4. Always wait for and listen carefully to instructions before doing anything.
- 5. Always wear goggles when told to do so. Do not take these off until you are told to do so.
- 6. No eating and drinking in a Science lab.
- 7. Always tie hair up when working on a practical.
- 8. Always ensure bags and coats are in the bag racks / hung up.
- 9. Always report breakages and spillages to your teacher and do not attempt to tidy these up unless told to do so by your teacher.
- 10. Always tidy up your workstation after a pratical.

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Skill Focus: Working Safely

Think about something you do at home. This could be hobby for example.

Identify the hazards associated with this and think how in the future you can ensure you minimize the risks.

