



# Chemical Demonstrations

## When fossil fuels are burned

This reaction can be applied to curriculum for excellence.

*I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things.*

**SCN 3-05b**

*Through investigation, I can explain the formation and use of fossil fuels and contribute to discussions on the responsible use and conservation of finite resources.*

**SCN 4-04b**

*Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance.*

**SCN 4-05b**

N4 Chemical change & structure  
- Energy changes of chemical reactions

## Planet Earth: Processes of the planet SCN 3-05b, SCN 4-04b, SCN 4-05b

### What you will need

- ❖ A filter funnel
- ❖ Two side arm boiling tubes
- ❖ A suction pump
- ❖ A large beaker of ice
- ❖ A candle or Bunsen burner
- ❖ A jar of anhydrous copper(II)sulphate (**harmful**)
- ❖ A beaker of water
- ❖ A teat dropper
- ❖ A spatula
- ❖ A watch glass
- ❖ A jar of salt
- ❖ A bottle of lime water (**irritant**)
- ❖ Rubber tubing to connect the apparatus together

### What you do

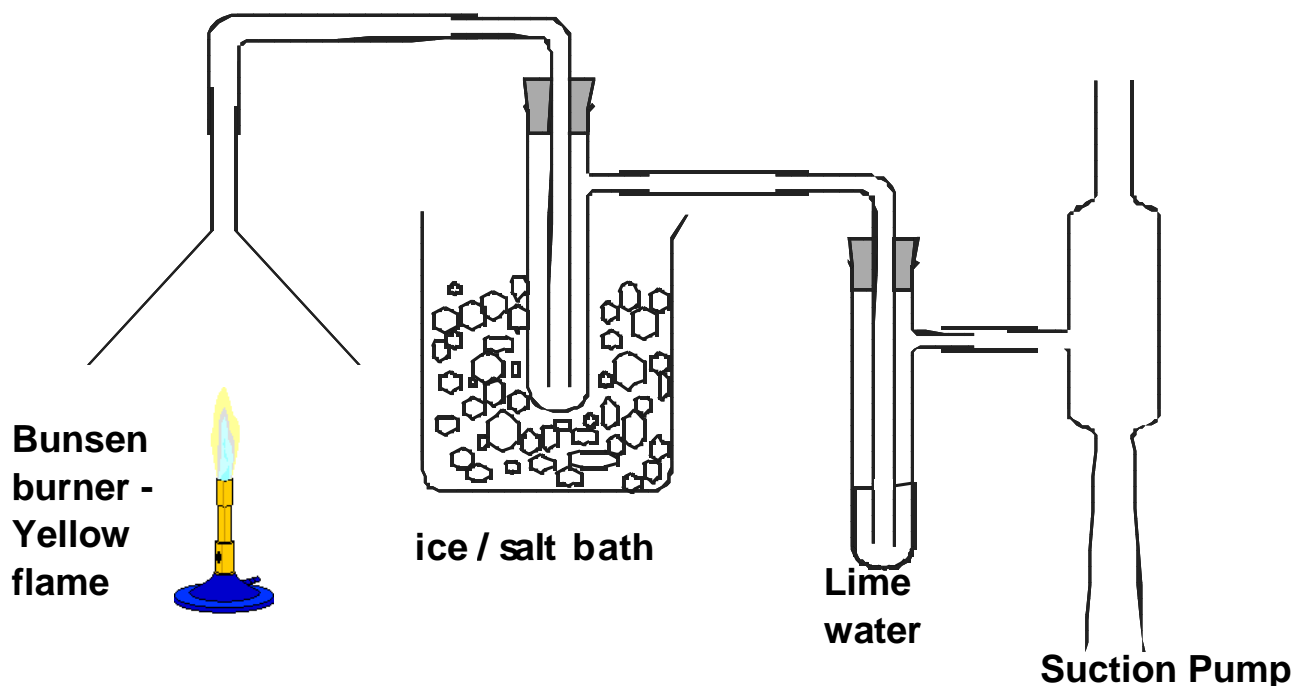
#### before the demonstration

Set up the apparatus like this:

The ice/salt mixture is made by sprinkling some salt onto the ice.

Connect the pump to a water tap but do not turn the water on yet or light the bunsen.

The pump sucks air through the apparatus and so sucks the products from the burning of the gas into the apparatus.



1. Light the Bunsen burner (or candle ) and place it under the filter funnel.
2. Turn on the filter pump.
3. While the experiment is running, place a spatula of anhydrous copper(II)sulphate on a watch glass and add a few drops of water. Note the colour change.
4. Let the experiment run until the lime water is very misty (about 3 minutes)
5. Remove the test tube from the ice/salt mixture and look to see if there is any liquid in the tube.
6. Add a small amount of anhydrous copper(II)sulphate to the this test tube and note what happens.

### Teaching Tips

A colourless liquid will collect in the boiling tube placed in the beaker of ice. It is worthwhile showing that this boiling tube is completely dry at the start of the demonstration. The products are of course water and carbon dioxide. Anhydrous (white) copper(II) sulphate turns blue on the addition of water and also does so when placed in this colourless liquid, showing that it is water.

The lime water turns cloudy proving that carbon dioxide is also made.

It is worthwhile leaving the demonstration running to show that the lime water eventually goes colourless again, a point not often appreciated by pupils.

(the calcium carbonate causing the cloudiness disappears as it combines with water and the additional carbon dioxide to form soluble calcium hydrogencarbonate).

### Safety

Wear eye protection.



Care when using the chemicals – harmful and irritant



**It is the responsibility of teachers doing this demonstration to carry out an appropriate risk assessment.**