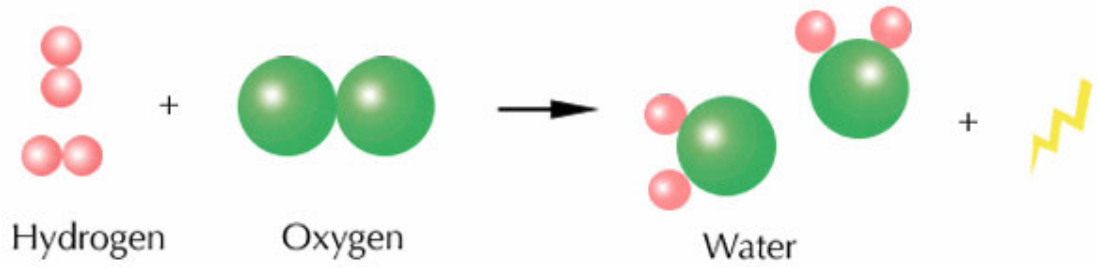
NOTE: This experiment requires adult supervision. Make sure you understand the safety issues before proceeding.

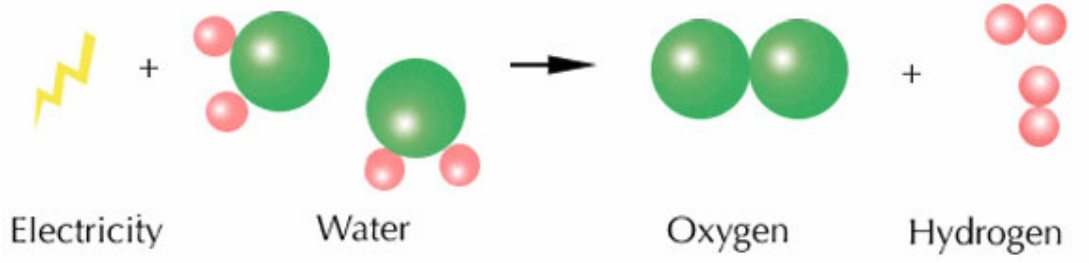
gravity DISCOVERY CENTRE

When you perform the pop test for hydrogen gas, energy is released and water is formed.

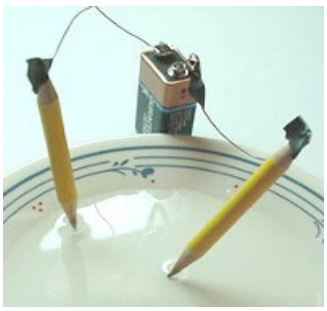


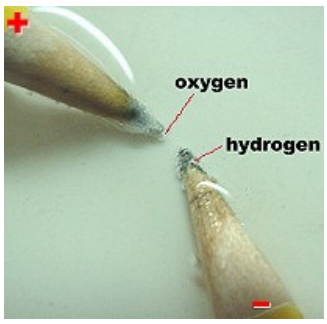
What forms of energy are released in the pop test?

It is possible to reverse some chemical reactions. It is not possible to make a popping noise near water and split it into hydrogen and oxygen gas!! However when we add electrical energy to water it will reverse the above reaction and form two separate gases.



All that you need to do this are two lead pencils (sharpened at each end), a 9V battery, some salt, electrical wires and insulation tape (or other connectors).





these images are from http://www.wcsscience.com/electrolysis/ofwater.html

Connect your pencil leads to the terminals of your battery and dip them into salty water. This reaction is called electrolysis of water. It is pretty easy to separate the water by electrolysis. You will design and follow a method whereby you can separate the water **and** collect the gases produced.

When designing your method consider the following:

- You must be able to collect the hydrogen and oxygen gases in separate containers.
- You will not be using specialised equipment, only what is available in your room or built by you.
- Safety is always a consideration in experiments. Is your procedure safe?
- Could your method be modified for use by fuel cell buses? (ie What modifications would need to be made? Could it be a possible source of hydrogen for transport? Would this method reduce the environmental effects of transport?)

Write up your method and present to your teacher before proceeding.

When performing the electrolysis:

- Record all observations.
- Measure and record the rates of gas production. Is there any difference between the amounts of each gas? Why?
- Research and find out a test for oxygen gas and perform the test on the gas produced at the positive electrode.
- Record any variations to your original method and explain why they were made.

Once you have completed your design and trials of a method, you are to make a presentation that illustrates the procedure and benefits of your method of hydrogen production. The audience for this presentation is to be the owners of hydrogen fuel cell buses.