**Science Acticity: Fuses**

**Aim:** To make a model fuse and to investigate how a fuse works.

**Materials:**

* 12 V power supply
* 4 connecting wires
* 12 V light globe in holder
* 6 alligator clips
* cork
* 2 pins
* 4 cm of fuse wire
* (a real fuse for students to observe)

**Method:**

To make the model fuse, push the 2 pins into the flat end of the cork so they stick up like two little ears. The fuse wire is wrapped around one pin then stretched across to the other pin and wrapped around that one.

Connect a series circuit using the power supply, fuse, light globe and three of the connecting wires (leave one wire for later). Use alligator clips at both connections to the fuse and light globe. Switch on. The globe should work.

When you are ready ... short out the light globe by attaching the last two alligator clips to both ends of the remaining connecting wire. Switch off the circuit and connect this last wire to the clips across both terminals of the light globe. It should form a ‘bypass’ circuit on its own around the light globe. Ready? Turn on the circuit again and carefully observe what happens ...!!

**Questions:**

**1.** Why did the fuse blow when the short circuit was connected but not before?

**2.** Why was cork used to make the base of the fuse? (Hint: could it be made from metal to provide a firmer base?)

**3.** Examine a real fuse if it is available and see what its base or container is made from. Why is this material used?

**4.** In your own words, explain why fuses are used. (Do they protect circuits from burning or people from electrocution?)

**5.** If you have a modern house, circuit breakers are used instead of fuses as they have a distinct advantage. What is the disadvantage of using fuses in circuits?

**6.** Draw a neat circuit diagram using the correct symbol for a fuse.