

## **Equipment**

plastic water bottles including lids  
splint  
a long handled cooker lighter  
[tornado connector](#)  
glitter  
water

### **Instructions: Cloud in a Bottle**

Put 1 tsp water into a clear plastic drinks bottle and swirl it around to coat the sides of the bottle.

#### ***To be done by an adult or supervise a child carefully***

Light the splint and blow it out to create smoke. Place the smoking splint into the bottle and swirl it around to fill with smoke. Replace bottle cap quickly, and place splint on heat-proof mat.

Squeeze the bottle with both hands using a pumping action, holding it up to the light.

### **What Happens?**

You will see a cloud forming inside the water bottle when you stop squeezing it.

### **The Science**

The bottle contains water on all its surfaces. Smoke particles are introduced into the bottle. When you squeeze the bottle you increase the pressure inside, when you let go you are quickly dropping the pressure inside the bottle. The rapid drop in pressure causes water vapour inside the bottle to condense onto the smoke particles -forming a cloud.

### **Instructions: Tornado in a bottle**

Put a tornado connector on an empty plastic bottle. Fill a second bottle with water and a little glitter. Fit the two together.

Turn the bottle upside down and give it a gentle swirl.

### **What Happens?**

You will see a twister forming in the water.

## The Science

The swirling water is known as a **vortex** – a type of motion that causes liquids and gases to travel in spirals around a centre line. It is created when a rotating liquid falls through an opening (the tornado cap), gravity pulls the liquid into the hole and a continuous vortex forms.

Examples of vortexes include:

opening a bath plug, toranados, hurricanes and dustdevils [**See images**]