



### > Great science recycling ideas

- [Recycling for science](#)
- [Experiment 1: Make a biosphere](#)
- [Experiment 2: Make a lava lamp](#)
- [Experiment 3: Make a 'lung'](#)
- [More experiments](#)
- [Catchment detox game](#)

### > Recycling for science



Photo Credit California Integrated Waste Management Board.

From plastics to tyres and even disposable nappies, there's no excuse these days for wasting your waste. Most plastics, paper, cardboard, metal and glass are collected kerbside (check with your local council or Planet Ark's [recycling near you](#) website to find out what can be recycled in your street). Innovations are cropping up around the industry, from new ways to cut up and sort tyre rubber to recycling the plastic and paper waste from disposable nappies.

If you're after a more educational use of your waste, there's also hundreds of science experiments that utilise recycled materials. Here's just a few.

### > Experiment 1: Make a biosphere

#### You will need

- A clean, transparent 2L PET bottle
- Scissors
- Stickytape
- Soil
- Pebbles
- Charcoal fragments
- Small plants

**Instructions:** Cut the top off the PET bottle using scissors or a sharp knife. Add a layer (about 1 cm deep) of charcoal, followed by a layer of pebbles (about 2 cm deep) and a layer of soil (about 5 cm deep). Stick some holes in the soil and add some small plants. You could also add a layer of moss. Tape the top of the bottle back on. Place your mini biosphere in direct sunlight and water occasionally but not too often - the water in the container should evaporate and condense on the sides of the container, creating its own water cycle.

**Results:** The biosphere is a closed ecosystem - you just need to add sunlight and some water. The charcoal acts as a filter, purifying the water as it cycles through the system. You can also create an aquarium in a PET bottle, with water plants, rocks and some water from your local creek.

### > Experiment 2: Homemade lava lamp



Photo courtesy of H.Catchpole.

#### You will need

- A clean, transparent PET bottle
- Oil
- Water
- Food colouring

**Instructions:** Fill the bottle about 3/4 full of water and add a few drops of food colouring. Fill the rest of the bottle with cooking oil, and allow the components to settle and separate. Screw the lid on tightly and invert the bottle.

**What's happening?** Because the oil and water don't mix, you get some nice oily blobs circling around the bottle as you turn it upside down. Water is denser than oil and if left will settle to the bottom of the container.

### > Experiment 3: Make a lung

#### You will need:

- A clean 1.25 or 2L PET bottle
- Two balloons

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#### Recycling facts:

A disposable nappy takes about 500 years to break down (degrade) once it ends up in landfill.

The average Australian household uses 94 toilet rolls a year.

On May 4 2009 South Australia banned the use of plastic bags in supermarkets.

Landfill is a source of carbon dioxide and methane from the anaerobic (without air) breakdown of organic matter, and leachate, a noxious soup of liquid materials that can seep into the groundwater system.

Despite recycling initiatives, around 900 million cans end up in landfill every year.

Information from Planet Ark

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#### Garden out of control?

Carne Specialist Horticultural

Scissors  
Stickytape  
rubber band

**Instructions:** Cut the bottom off the plastic bottle and cut the top off one of the balloons. Stretch the balloon tightly over the bottom of the container so it forms a thin skin like the surface of a drum, and secure *very firmly* with stickytape. This balloon represents the diaphragm. Place the other balloon inside the bottle, with the top of the balloon attached to the bottle with the rubber band - the balloon should sit inside the bottle. This balloon represents the 'lung'. Carefully pull the 'diaphragm' balloon at the base of the bottle and watch the 'lung' balloon inflate.

**What's happening?** When you breathe in, your diaphragm - the muscle at the base of your lungs, contracts. This expands your chest cavity, lowering the air pressure of the cavity below the air pressure outside, and inflating the lungs. You can see this same principle at work in this 'homemade lung'. When you pull on the diaphragm balloon, it lowers the air pressure in the bottle. This pulls in air from outside the bottle, allowing the balloon at the top - the lung - to inflate.

### > More experiments from Fizzics

[Make a beanhouse](#)

[Make recycled paper](#)

[Make a simple thermometer](#)

### > Catchment detox game

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