

National Science Week 2006: 12-20 August

Our Dry Continent

Teachers' Resource Book

To help celebrate National Science Week, the Australian Science Teachers' Association (ASTA) has sent out to every school a FREE School's Kit that includes a copy of



Our Dry Continent: Teachers' Resource Book.

Our Dry Continent: Teachers' Resource Book is filled with practical ideas and activities, curriculum guidelines, extension website resources, and

reproducible pages covering topics such as: Our Dry Continent, Our Dry Land, Adapting to Arid Areas, Sustainable Natural Resource Management, Water — Conserving it For the Future.

Did you know that Australia is the driest inhabited continent in the world? (*Antarctic is the driest continent — it's a cold desert!*)

Web links:

www.scienceweek.info.au

www.science.org.au

www.teacherstoolkit.net.au (go to Download Lesson Plans)



An Australian Government Initiative



Here are some great activities taken from *Our Dry Continent: Teachers' Resource Book*, "Water—Conserving It For The Future" Unit (page 33–43).

Did you know?

A person needs about 5 litres of water a day to survive?

The average family uses about 1,020 litres of water around the house everyday. That's 118 full buckets of water.

Australia uses 24,000 gigalitres of water every year, which is enough to fill Sydney Harbour forty-eight times.

Water usage around the house

Daily household activity	Usage
Brushing teeth	5 litres
Washing hands	5 litres
Flushing toilet	12 litres
Shower	40–250 litres
Bath	50–150 litres
Trickling toilet	6,000 litres/year
Washing machine	40–265 litres
Drinking, cooking, cleaning	8 litres/day
Dishwashing by hand	18 litres
Dishwasher	20–90 litres/load
Sprinkler	1,000 litres/hour
Washing car with running hose	30 litres/day
Hand-held hose	10–20 litres/min
Filling swimming pool	up to 55,000 litres
Evaporation loss from typical home pool	up to 200 litres/day

Activities

Calculate the water usage of your household. These weblinks will assist you.

www.ecoselect.net.au/water_calculator
(Water calculator)

www.waterforlife.nsw.gov.au/education/index.shtml
(Water saving ideas)

www.watercare.sa.gov.au/whatsnew.php#id
(DIY tips for conserving water)

Write a water saving plan for your school, including at least THREE strategies for saving water at your school and include ideas for recycling water.

Conduct a class competition to design a water awareness poster.

Have students design a game that illustrates the process of water use from the water supply to disposal.

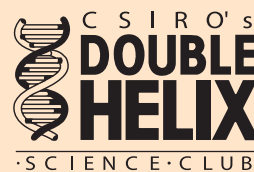
Design a garden that will never be watered by a person. (Visit

www.ourwaterfuture.com.au/waterwsie/content_waterwise_newgarden.asp)



CELEBRATE SCIENCE WEEK

with CSIRO's Double Helix Science Club



Australia may be a **dry continent** but here are three great activities that involve our precious resource: water. The first involves water's amazing heat absorbing properties, the second shows an exciting chemical reaction producing water, and the third reveals water's attraction to static electricity. These activities are perfect for classroom activities and demonstrations as they require only simple materials.

Activities

Burn-proof balloon

Discover the remarkable heat absorbing properties of water.

You will need:

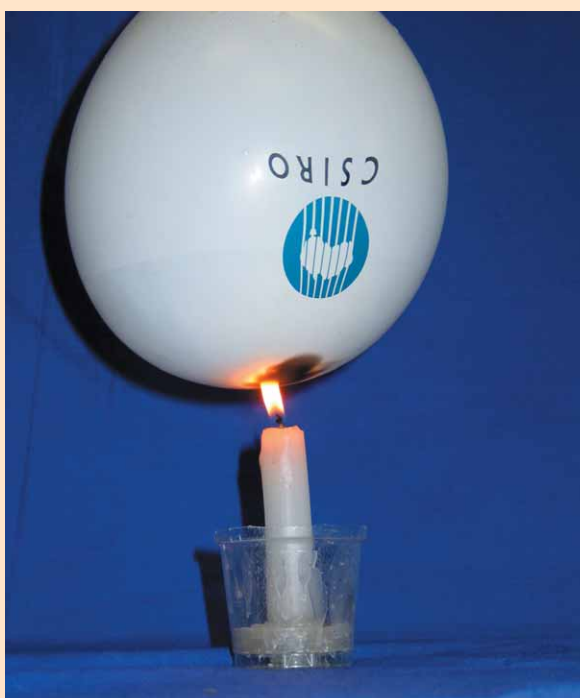
- an adult
- candle and matches
- two balloons
- water

What to do:

SAFETY WARNING:

This experiment involves a naked candle flame. An adult must help, supervise and provide a candle and matches.

1. Blow up one balloon up and tie it off.
2. Fill the other balloon with about two cups of water from the tap (like you would with a water balloon), pinch it off with your fingers and then blow it up so it contains both air and water. Tie it off.
3. With an adult's help, make sure the candle is fixed upright and won't fall over. Light the candle.
4. Holding it by the knot, lower the air-filled balloon slowly until it touches the flame and pops.
5. Repeat the process with the water-and air-filled balloon, holding the balloon by the knot so the water-filled part touches the flame. Be careful not to touch the wick to the balloon.
6. The balloon shouldn't pop this time. Remove it from the flame and check out the black soot.



What's happening?

When the first balloon touches the flame, the skin of the balloon heats up, burns and then pops. The water-and air-filled balloon doesn't pop because the water keeps the balloon cool.

Water is very good at absorbing heat and the heat that would usually burn the balloon slowly heats the water instead. The black soot left on the balloon is a deposit of carbon from the flame, similar to the soot that collects in chimneys.

Activity adapted from CSIRO's Double Helix Science Club. For a special limited time offer on club membership — with a choice of magazines, weekly email experiments, events and other benefits — visit www.csiro.au/helix/scienceweekdeal.pdf by 31 August or call 02 6276 6643

For FREE activities, science news and heaps more, subscribe to Science by Email at www.csiro.au/sciencemail

Canister rocket

In this experiment, you'll make a rocket out of common household items.

You will need:

- film canister
- vinegar
- baking soda
- teaspoon or paddle-pop stick
- eye protection or glasses
- plate
- an adult

What to do:

SAFETY WARNING:

This activity involves a flying projectile. An adult must be present. You must wear eye protection. Do this activity outside and NEVER point your canister rocket at ANYTHING, except the sky!

1. Take the lid off the canister. Before adding ingredients, go to step 5 and practice it this several times.
2. Put on your eye protection.
3. Pour a small amount of vinegar, about 5ml, into the canister body.
4. Place about one-third of a teaspoon of baking soda on the inside of the lid.
5. Place the plate level on the ground. Holding the body of the canister in one hand and the lid in the other, quickly press the lid firmly back on, and place the canister lid-side down on the plate. Stand back as your canister will blast off 2-10 seconds later!
6. Have a close look at the lid and bubbling ingredients left on the plate.

What's happening?

When vinegar and baking soda are mixed together, a fast chemical reaction occurs that produces, amongst other things, carbon dioxide gas (CO_2) and water. As more and more carbon dioxide gas is produced, the bits of carbon dioxide (called molecules) are squashed together and pressure builds up inside the canister. The pressure soon pops the lid off, launching the canister into the air.



Primary Science Matters

is an organisation designed to support science teaching in primary schools by providing:

- Professional development courses
- Appropriate scientific resources — *Science in a Box*.

Science in a Box provides a complete set of resources to support primary school teachers who are teaching the Science and Technology Key Learning Area.

To learn more, go to:

www.primarysciencematters.com

Or email:

priscimat@yahoo.com.au



Bendy water

In this activity you'll discover some weird and wonderful properties of electricity and water!

You will need:

- balloon
- tap
- sink
- cup

What to do:

1. Inflate the balloon and tie it off.
2. Turn the tap on so the water is coming out in a slow steady trickle. (To conserve water, catch the water in a cup and drink it later.)
3. Rub the balloon against your hair or woolly jumper to give it a static electrical charge.
4. Hold the balloon near the water, but don't let it touch.
5. What does the water do?

What's happening?

You should find the water bends towards the balloon. With enough rubbing, you may pull the water several centimetres off course. When you rub the balloon against your head, you give it a negative electrical charge. Although water has no overall charge, the hydrogen atoms in water (the H in H_2O) have a positive charge. As the old saying goes, opposites attract, so the negatively charged balloon attracts the water.

