# Activity: Where does water come from?(Years 3 and 4)

Looking after our water

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| Victorian Curriculum F–10[[1]](#footnote-1) links:  **Science**  **Levels 3 and 4**  **Science Understanding**  **Science as a Human Endeavour**  Science knowledge helps people to understand the effects of their actions  **Chemical sciences**  Objects are made of materials that have observable properties |

Students explore the ideas of evaporation and condensation through a set of simple hands-on activities to better understand the water cycle and where our water comes from.

## Duration

One double session to conduct experiments with one session for follow up. (Note: The Appearing water activity needs to be left overnight.)

## Equipment

Mysterious handprint experiment (per student): plain paper towel, water, texta pen

Disappearing puddle experiment (per pair of students): piece of chalk or piece of string, plastic cup, water

Inside out experiment (per group): cans with label removed (no sharp edges), ice

Appearing water experiment (per group): large bowl or 2 L ice cream container, small bowl or plastic cup, plastic film, masking tape, blue-tac, small stone

## Preparation

Students will need a notebook or paper and pencils for recording their observations during the activity.

The experiments focus on the key ideas of evaporation and condensation. It is recommended that you select a minimum of one experiment from each of the focus areas. Students could work through the experiments sequentially as a class or students could rotate through work stations in groups.

Students are required to set up the experiment and make observations over a period of time. Some experiments require a sunny day and access to the outdoors. The important outcome of these experiments is the follow-up discussion based on students’ observations.

Ensure that all safety requirements are followed.

## Activity steps

1. Explain that students will be doing a number of experiments about water and that they will need to record their observations from the initial setting up of the experiment to the conclusion. Students should include labelled drawings, comments and measurements (where appropriate). Ask them to predict what they think will happen before conducting each experiment.

**Evaporation experiment 1: Mysterious handprint**

Each student has a piece of paper towel. They wet one hand and place it on the paper towel. They draw around the hand with a pen, leave it for an hour and observe what happens. Students record their observations.

**Evaporation experiment 2: Disappearing puddle**

This activity needs to be done outside on a sunny day. Organise students into pairs and provide each pair with a small piece of chalk and a cup of water. Students find a hard surface area (e.g. asphalt) in the schoolyard and pour a small amount of water onto the surface. Students use chalk to mark the perimeter of the puddle. Students visit the puddle at set times such as at half-hourly or hourly intervals. At each visit, students mark the perimeter of the puddle and record their observations. They could use string to measure the perimeter.

**Condensation experiment 1: Inside out**

Working in pairs, students fill a can with ice and observe what happens on the outside of the can.

**Condensation experiment 2: Appearing water**

Working in groups, students quarter-fill a large bowl (or ice cream container) with water and carefully place a small, empty bowl (or plastic cup) in the middle of the large bowl. You may need to blu-tack the bowl to the base of the large bowl. Students cover the large bowl with plastic film and secure it firmly with masking tape or an elastic band. Students place a small stone on the plastic film so that it dips into the middle over the inner bowl.

Students leave the bowl in the direct sun for a minimum of an hour. The length of time depends on the intensity of the sun on a given day. (Over a period of time the heat of the sun will cause water to evaporate. Eventually, the water vapour will condense appearing as water droplets inside the plastic wrap and drip into the small bowl.) Students observe and draw a picture of what is happening. They carefully move the bowl (without splashing) to a cool and shady place, which may well be inside the classroom.

Students leave it for a few hours or overnight. Students observe what has happened. At this point students can remove the plastic film and look inside the small bowl.

1. When students have completed the experiments, ask them to review their observations. Use the following questions to probe their understanding of what happened. Encourage them to use their observations to support their responses.

* Where did the water go?
* What happened to the water in the puddle?
* What helped the water disappear?
* What is happening on the outside of the tin? Where did the water come from? Why do you think this is happening?
* Where did the water in the small bowl come from? Why did we place a stone on the plastic film?
* What helped the water appear?

1. Ask students to think about the weather and invite them to connect the ideas from the experiments with the weather. Students may be familiar with the natural water cycle and include this in their explanations. Take this opportunity to discuss and clarify:

* Evaporated water is water vapour.
* Water is evaporating all the time from many sources such as pools, creeks and oceans, as well as through the leaves of plants and from the soil.
* You cannot see water vapour because it is a gas, but when it cools down it becomes a liquid: water droplets. You can see water droplets as clouds or fog or as dew on the grass.
* The water that appears in the **Inside out** and **Appearing water** experiments is from water vapour in the air that has condensed: that is, the water vapour has cooled and turned back to water droplets.
* Rain is water vapour that has cooled and condensed in the sky to form water droplets. The water droplets bump into each other and join together to form bigger drops. When these get too heavy the water falls back to Earth, like the water in the small bowl in **Appearing water**.

1. Invite students to think about the natural water cycle and contribute to a discussion on the importance of looking after our water supply. Some suggested prompts:
   * How might evaporation change in different months of the year?
   * How do seasons affect our rainfall?
   * In what ways does our water use change over the year?
   * Where does the water come from that we use every day?
   * Why is it important to look after the water that we use?

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