

Down the Drain

Lesson aims

What is water pollution and what can you do to stop it?

Students will identify how people's actions affect water quality.
 Students will understand how choices at play and in the home can reduce this pollution.



Learning outcomes

As outlined in the National Profiles:

Studies of Society and Environment	Place and Space	Features of places; People and places; Care of places
	Resources	Use of resources; Management and enterprise
	Natural and Social Systems	Natural systems; Economic systems
Science	Life and Living	Living together; Structure and function; Biodiversity, change and continuity
	Natural and Processed Materials	Materials and their uses; Structure and properties
	Working Scientifically	Acting responsibly



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Background information

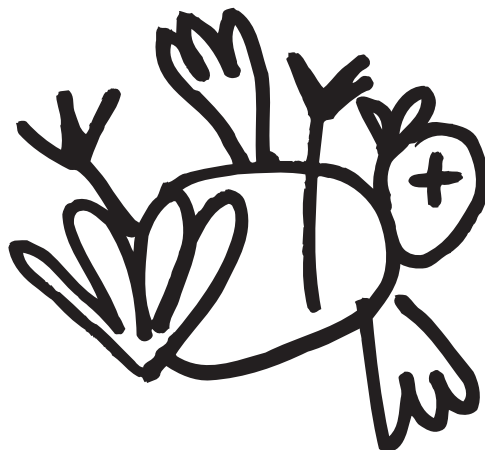
Clean water is important to everyone – for drinking, swimming, growing food, playing, showering and washing.

To ensure we all have access to clean water we need to be careful what we put down drains, toilets and sinks. Things like rubbish, oil, household cleaning chemicals, fertilizers, leaves and grass that end up in the street gutters, flow into the stormwater system. This seriously damages the water quality of our oceans, rivers and streams.

There are three main types of water pollution:

- litter, such as cigarette butts, cans, paper or plastic bags.
- chemical pollution, such as detergents, oil or fertilizers.
- 'natural' pollution, such as leaves, garden clippings or animal droppings.

Sometimes it is easy to tell if water is polluted. Strange odours, taste, or colour are immediate warning signs. It is also easy to see how large amounts of rubbish and erosion of soil can affect the wildlife that depends on the water. However, most water pollution is undetectable through senses alone.



Did you know?

- Water-borne diseases continue to be a major cause of illness and death in many less developed nations, where more than one billion people drink unsafe water.
- One gram of 2,4-D (a common household herbicide) can contaminate ten million litres of drinking water.
- One gram of PCBs (industrial chemical) can make up to one billion litres of water unsuitable for freshwater aquatic life.
- One gram of lead in 20,000 litres of water makes it unfit for drinking. Older homes often contain plumbing made of lead or soldered in lead, which can then leach into water.
- The nitrates in fertilisers promote excessive growth of algae and larger aquatic plants, causing offensive algal blooms and driving out sport fish.

The most effective way to reduce this problem is to prevent pollution entering the water system in the first place.

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Sources & further information

ACT Electricity and Water: Contains educational information and will arrange school visits and tours.

www.actewagl.com.au

Blue Mountains People Water Place: An environmental education project developed for the Blue Mountains provides great classroom resources and information.

www.bluemountains.org.au

WaterProject/index.htm

CSIRO: Water pollution experiments and activities.

www.csiro.au/scientrific/HTMLs

sfc_pollution.htm

Hobart Water Authority: Information on water quality and catchment management.

www.hobartwater.com.au/

Melbourne Water: Facts about water, lesson plans, online games and quizzes.

www.melbournewater.com.au

NSW EPA: Ideas for what to do to reduce pollution

www.epa.nsw.gov.au/stormwater

whatdo/index.htm

Power Water: Northern Territory Water Authority provides simple ways for households to reduce their water consumption.

www.powerwater.com.au

SA Water: Provides a good list of water conservation tips.

www.sawater.com.au

Streamwatch: Education and advice for communities to work together for healthy catchments.

www.streamwatch.org.au

Sydney Water: Heaps of useful information for homework and assignments and plenty of fun games to play.

www.sydneywater.com.au/html

education/schools/

Water Corporation of Western Australia:

Look at the student and teacher section.

www.watercorporation.com.au

Classroom activities



1. Introduction

- Prior to taking the students to a local water source introduce the topic and discuss the following questions:

What does water do for us?

Where does water come from?

What would happen if water is polluted? Define polluted.

Why is it important to have clean water?

What is clean water?

- Put students into groups and assign each group a question. Use newspaper articles, books, the library or the internet to research water pollution. The websites listed would be a good place for students to start.
- Have each group report back to the class and answer their question on water pollution.

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2. Field trip

- Organise a field trip to a local creek, waterhole, park, nature reserve or dam, and assess how unspoiled or polluted the water is.

- Take:

Sensible precautions, and advise the students of suitable behaviour to ensure their safety when working near water

Transparent bottles (preferably plastic as these won't shatter when dropped) to get water samples.

Gloves in case the water is contaminated.

Clipboards and pencils to record student observations on the worksheets.

- Ask the students to write down the items that they see and complete the *Worksheet: Your Local Waterway*.

3. Discussion

- Discuss the results of the field trip focusing on the effect of pollution on animals, birds, fish, trees, or whatever else was part of the local waterway.
- Students will then complete the *Worksheet: Pollution – How does your household rate?* to see what activities they can undertake in the home to reduce the amount of pollution entering the local waterway.
- Now discuss with the students what things they could do to clean up their local waterway and keep it clean?



Extension / Home-based activities

Lower Primary

Before and After

Students can draw a picture of water that is polluted and water that is not polluted. Discuss how the pollution affects the environment.

Middle Primary

Household Guide

Students can design an information handout or pamphlet (aimed at households) about the importance of clean water and informing people what they can do to improve water quality.

Upper Primary

Conduct an Experiment

Fill a tray or bowl with water. This represents your local creek or waterway. A funnel represents a storm drain. First, place some of the pollutants into the funnel, holding your finger over the bottom so that they stay inside. Hold the funnel over the 'waterway' and remove your finger. Pour some water on top of the pollutants in the funnel. This is like the rain - washing things into the storm drain. What happened to the water in the bowl? Try the experiment again, this time holding a sieve over the funnel. What happened this time? Did the sieve stop all the pollutants? What kind of pollutants still entered the 'waterway'?

Take Action

Students can develop a plan for cleaning up their local waterways. They will need to research what needs to be done to assess the waterway and what can be done to improve the surrounding environment. Invite a local community group/speaker to assist the students. Contact your local council, water authority or local environment group such as Stream Watch for further advice.