

Recycled water lesson plan

Aim

The learning sequence involves students investigating the source and use of recycled water in their community – home, school and public spaces such as sports fields and gardens.

Students will learn about:

- how wastewater is processed into high quality recycled water
- how purple taps provide recycled water for human use.

Students will learn to:

- identify sources of recycled water
- explain how recycled water is used
- explain why we use recycled water.

Sydney Water resources

- *Does your school have purple taps?* information booklet
- *How do we clean recycled water?* Worksheet
- www.sydneywater.com.au/education

Materials required

- coloured pencils

Learning sequence

The learning sequence is designed so teachers can use all or part/s of the sequence best suited to the needs and interests of the class and time available.

Lesson 1: What is recycled water?

1. Recycled water is water that has been used before in bathrooms, laundries and kitchens. Sydney Water cleans and purifies it so it is safe to use.
2. Give the students a copy of the water recycling treatment process activity sheet and explain the following:
 - wastewater from your home and school as well as business and industry is sent through the wastewater pipes (grey) to a water recycling plant
 - the wastewater travels through screens to remove all the big items such as paper, plastic and other items
 - after this the water is sent to a big tank where good bacteria clean the wastewater by breaking down/consuming all the organic particles

- next the water is filtered through layers of sand. It trickles through to remove other bits and pieces
 - then the water is blasted with ultraviolet radiation to make sure it is clean
 - and just to make sure it is really clean, chlorine is added (just like you add to a pool) to make sure no bad bacteria are left
 - finally the recycled water is sent through the purple pipes for you to use.
3. Go to www.sydneywater.com.au/education for more information about water recycling

Lesson 2: How do I use recycled water?

1. Recycled water is treated to a high standard and has many safe uses. By using recycled water for some jobs we are saving drinking water.
2. Use the list below to explain how recycled water should be used.

Recycled water...

Must not be used for:	Is great for:
• drinking • bathing • swimming • cleaning inside the home	• watering gardens • watering the vegetable patch • flushing toilets • washing cars • washing clothes in a washing machine

3. Identify purple tap/purple meter and show against normal tap. A recycled water tap is coloured purple and is also identified with a sign warning us not to drink the water. Whilst recycled water is not likely to make you sick it is not drinking water quality.



Images: drinking water and recycled water taps and meters

Lesson 3: Where can I find recycled water?

1. Recycled water is available for use through the purple pipe system in your area. It is easily identified by the purple tap or purple water meter. Some purple pipes are underground and you may not be able to see them. If you find a purple water meter you know you are using recycled water in your home or school.
2. The colour purple is used for recycled water taps. It is an internationally recognised colour for pipes carrying recycled water.
3. There are other sources of water people can use. Hand out the 'find the purple tap' activity sheet.
 - a. Ask the students to find the recycled water taps in the picture and colour them purple.
 - b. Explain to students the source of our drinking water (from the table below). Then ask the students to identify the drinking water taps in the picture and colour them blue.
 - c. Identify a rainwater tank in the picture and colour orange. Explain how rainwater is captured for use and discuss the reason why untreated tank water is for outdoor purposes (from the table below).

Sources of water - all water is precious. Use water wisely.

Table: Sources of water for domestic use.

Water source	Details	Preferred use
Drinking water from the tap.	This is a natural water source that is treated by Sydney Water to ensure it is the best quality for human use.	• drinking • shower/bath • washing food • watering edible plants
Recycled water from the purple tap	This is wastewater that has been used before in bathrooms, laundries and in kitchens. Sydney Water cleans and purifies it so it is safe to use	• watering garden • watering edible plants • cleaning clothes • flushing toilet • washing car

Rainwater collected in tanks	Higher levels of pollution in urban areas may contaminate the rainwater that flows into tanks. In urban areas, tap water should be used for drinking and cooking as this water has been filtered and treated to protect our health.	• watering garden • cleaning clothes • flushing toilet • washing car
------------------------------	---	---

Remember that water is good for you and you should drink it to help keep you healthy and feeling good.

Lesson 4: How can I help?

1. Safety first! - All recycled water taps have a sign warning you not to drink the water. Although recycled water is not likely to make you sick it is not drinking water quality. If a recycled water sign is missing or has been damaged then make sure you tell a responsible adult so it can be replaced.
2. Water wise – keep drinking water for drinking and bathing (revisit list from lesson 1 for recycled water uses). Remind students that all water is precious and we should use it wisely.
3. Be careful what you put down the drain at home and school to help the water recycling process. Revisit the water recycling process activity sheet and ask the students to think about steps of the process and consider the impact of some items that may end up down our drains at home.
 - a. What may get caught in the screens that maybe we shouldn't have put down the drain (hard item such as plastic, litter, cotton tips)?
 - b. How hard do you think the good bacteria will have to work if there is a lot of organic material put down the drain (organic material is anything made from a source that was once part of a plant or animal such as milk, fats and oils)?