



Has Something Been Living in Your Water?

This activity looks at how ammonia affects water quality

YEAR LEVELS

Year 3-4

THEME OF UNIT

Water is essential to life

As humans, we not only drink water, we use it for cooking, hygiene, recreation and agriculture. Australia is a dry continent with an expanding population, and how we use water has become increasingly important.

Water is a scarce and finite resource. Around 70 per cent of the Earth's surface is covered by water, in oceans, seas, lakes, rivers and swamps; however, less than one per cent is available as fresh, drinkable water.

Water has a wide range of properties, many of which can be investigated by primary schools students using various simple investigations using everyday materials.

Investigations that can be used include:

What's in a colour?

This activity separates colours from water soluble felt pens using paper chromatography

Cleaning up dirty water

This activity shows that solids and oils can be separated from water

Conductivity in water

This activity introduces conductivity as a method of analysing water.

Stranded

This activity looks at filtration

What do different chemicals do to water?

This activity looks at the effect of household chemicals on the environment

Are you balanced?

This activity looks at pH

ACTIVITY CURRICULUM LINKS

- Science
- Interpersonal development
- English/Literacy
- Mathematics/Numeracy

ACTIVITY LINKS TO NATIONAL STATEMENTS OF LEARNING FOR SCIENCE

Science as a human endeavour

Broad learning objectives

- Students recognise scientific aspects of their everyday activities, application of science in their own lives and the place of science in the work of people in their community.
- Students show and share responsibility for the quality of their immediate environments and for resource conservation

Concepts developed

- To examine how ammonia can affect the quality of water and the plants and animals that live in it.

Science as a way to know

Broad learning objectives

- Students begin asking questions and making predictions related to their everyday experience.
- Students revisit their questions in light of their results. They share findings, talk about the way in which the investigation could be changed and begin to consider fairness of tests.

Concepts developed

- Students revisit their experiment in light of their results by comparing how they carried out the experiment and discuss what they would change if they repeated the experiment in the future.

Science as a body of knowledge (Living Things)

Broad learning objectives

- Students identify some ways in which living things depend on the environment and each other.

Concepts developed

- Students will be able to identify ways in which living things depend on the environment by determining if animals have been living in the water and how much they have affected its quality, which in turn can affect them.

ASSESSMENT

Student worksheets
Observational records
Pre/post tests or quiz.
Open ended activities.

For example: The students make a plan of how they would set up their own aquarium, including water quality (ammonia and pH) the types of plants, fish and filters.

[Student worksheet: available as a separate download on the same webpage](#)

TEACHER BACKGROUND INFORMATION

Prior to undertaking this activity, it is recommended that students will have developed fundamental ideas of water, including the water cycle, the properties of water and the source and use of water. It is also recommended that students have had opportunities to work and think scientifically.

Ammonia is produced from fish wastes and decaying plants. At high levels it is one of the biggest killers of fresh and saltwater fish. By determining if and how much ammonia is present in the water samples you will be able to tell whether someone or thing has been living in the water.

EQUIPMENT AND MATERIALS

- A pond water sample
- A pool water sample
- A tap water sample
- An ammonia test kit

SAFETY

- Some ammonia test solutions may be corrosive. Check the packet and wear protective gloves.
- If swallowed seek medical advice

PREPARATION REQUIRED

- Prior to experiment an ammonia test kit needs to be purchased
- Three different water samples need to be collected from your local area.
- If students don't do the method correctly they will get the wrong results.
- You will need to fill in the 'What to do' section of your student worksheet as this will vary depending on the ammonia test kit you buy.

LESSON STEPS

Need to be filled in after the ammonia test kit has been purchased.

FURTHER INFORMATION

Handy Hints

Answers to discussion questions:

Which samples contained ammonia?

- Refer to colour card

Can you think of what might have caused the ammonia to be in your water sample?

- Animals or plants that are living around the sample site

Did all students get the same results?

- Talk about the importance of following the method correctly
- Talk about human error with the students.
- When scientists do experiments they will repeat the experiment at least three times to show that their results have not been affected by human error.
- For a new medicine or substance to be available for purchase it has to go through a series of tests to make sure it is fit for use. As humans we can all make mistakes

Visit www.raci.org.au for further chemistry education resources