Wonder Project

Water Challenge

Activity 3.1: Wai paru investigation

Put on your detective hats and investigate how to deal with sneaky pollutants in wai.

STEM superstars use many different tools to investigate how clean water is, and how to make it safe to drink.

Begin your own investigation by experimenting with physical and chemical changes in wai.

Physical changes

Experiment: Turbidity and flocculation

Remember! Turbidity is the clarity of water, or how well a light beam can travel through it. Flocculation is when tiny particles clump together to form larger chunks called flocs.

You'll need:

- A clear glass (or jar)
- Clean wai
- Small chunks of natural debris (dirt, bark, grass, leaves)
- Salt
- Measuring scoop
- Torch (optional)

Step 1: Turbidity

- Fill a clear glass with wai.
- Add a spoonful of natural debris and stir well.
- Shine a torch or simply look through the glass.

Observations

Step 2: Flocculation

- Add 1 tablespoon (3 measuring scoops) of salt into the wai.
- Stir gently for about 30 seconds, then leave it to sit.

Observations

After 2 minutes:

After 20 minutes:

Test 1: Observation

Use your senses to observe each glass of wai. How can you tell which wai is paru? Record your observations in the table.

Test 2: pH

Using your pH strips, test the pH level of each glass of wai. Record your results in the table.

Make sure the pH strip is dipped in and out quickly and that you take the reading straight away to get accurate results.

Test 3: Neutralisation

See if you can neutralise each wai glass to a pH of 7 by measuring out an acid, or a base. Then, add it into the wai.

After letting it sit for 30 seconds, test the wai using your pH strips. Record your results in the table.

Continue making changes until you achieve a neutral pH.

Chemical changes

Experiment: pH

Remember! pH is the measure of how acidic or basic something is. It's measured on a scale from 0 (extremely acidic) to 14 (extremely basic). Neutral wai should have a pH of 7.

You'll need:

- Four clear glasses of wai:
  - Wai glass 1: Add 2 teaspoons of lemon juice
  - Wai glass 2: Add 2 teaspoons of salt
  - Wai glass 3: Add a spoonful of natural debris
  - Wai glass 4: Pure wai
- Baking soda
- pH strips
- Measuring scoops

Tests	Wai glass 1: Lemon	Wai glass 2: Salt	Wai glass 3: Natural debris	Wai glass 4: Neutral water
Test 1: Observation				
Test 2: pH				
Test 3: Neutralisation	Acid/base added: pH:	Acid/base added: pH:	Acid/base added: pH:	Acid/base added: pH:
	Acid/base added: pH:	Acid/base added: pH:	Acid/base added: pH:	Acid/base added: pH:
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Analysis

What did you learn from your data? How do you think each experiment helped you investigate wai paru?