

# Hydrologist: Testing Water Samples

**NGSS Standard: 5-PS1-3**



## Adventure Description:

In this adventure, you will think like a hydrologist and test water samples to determine if water from different areas is contaminated.



## Activity

### Teacher Preparation Before Class (5 minutes)

Students will be divided into pairs. Each pair needs 2 plastic baggies labeled "Indicator 1" and "Indicator 2." Put 2 Tablespoons of baking soda into Indicator 1 bag. Next, place 1/2 alka seltzer tablet into Indicator 2 bag.

### Step 1: Background on Water Testing (10 minutes)

- Play [Video: Testing Water Samples](#)
- Explain to students that they will be hydrologists and conduct an experiment to test samples of water from different locations.
- Ask students why hydrologists would test water in different areas.
- Explain that water is tested to see if there is any contamination in the water. If the water is contaminated, it is not safe for people to drink.
- Provide students with [Handout: Locations that Need Water Testing](#).
- As a group, read through the areas that need their water tested.
- Remind students that hydrologists look for chemical reactions when testing water samples. If a chemical reaction occurs, it means that the water is contaminated.
- Show [Handout: Chemical Reactions](#). As a class, read through the different signs to know if a chemical reaction has occurred.

Please contact Allison Bischoff, Director of Customer Service, at [allison@rozzylearningcompany.com](mailto:allison@rozzylearningcompany.com) or 314-272-2560 with questions.

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## Step 2: Testing Water Samples (20 minutes)

- Explain to students that they will now be testing samples from different locations.
- Provide students with [Handout: How To Test Water Samples](#). As a class, read through the steps.
- Next, divide students into pairs. Each pair will work together to test samples.
- Provide each pair with [Handout: Recording Results](#). As a class, read through steps to record results.
- Have pairs complete Step 1 from the handout (labeling cups).
- Next, have pairs complete Step 2 (adding the liquids to each cup).
- Next, pass out bags of indicators to each pair (see Teacher Preparation at the start of lesson plan).
- Next, have pairs complete Step 3a (testing sample from Cup 1). Pairs should test sample and then record results on [Handout: Recording Results](#).
- Next, have pairs repeat the process for Cups 2 and 3 (Steps 4 and 5), as explained on their handout.
- Tip: Have pairs follow the handout while they do the experiment. This is great practice to follow a multi-step science experiment!
- Answers to [Handout: Recording Results](#) is on [Handout: Teacher Key](#).

## Step 3: Analyzing Results (5-10 minutes)

- Explain to students that hydrologists analyze their results after they finish an experiment.
- Pairs will now make a safety notice that tells people where there is contaminated water. Show [Handout: Safety Notice](#).
- Provide each pair with [Handout: Our Safety Notice](#). Have pairs create a sign that says which locations need a safety notice.
- When groups are finished, have students share with the class which locations will receive a safety notice (Location 1 (Cyprus Lake) and Location 3 (Donald Pond) should receive a safety notice because a chemical reaction occurred in each cup).

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## Materials List

### Provided online:

- Video: Testing Water Samples
- Handout: Locations that Need Water Testing
- Handout: Chemical Reactions
- Handout: How to Test Water Samples
- Handout: Recording Results
- Handout: Teacher Key
- Handout: Safety Notice
- Handout: Our Safety Notice

### Not provided (each pair needs):

- 3 clear plastic cups
- Sharpie
- 1 cup of oil (to be divided into 2 cups)
- 2 Tablespoons of vinegar
- 1/2 alka seltzer tablet
- 2 Tablespoons of baking soda
- 2 ziplock plastic baggies
- Tablespoon and 1/2 measuring cup

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