



# Drinking Dirty Water

**Subject:** Science

**Grade level:** 1-3

**Rationale or Purpose:** This lesson teaches the importance of clean drinking water and shows that water quality can not be determined solely by appearance.

**Materials:**

- two cups of water
- table salt
- cup of vinegar
- teaspoon
- data collection sheet

**Lesson Duration:** 50 minutes.

**Objectives:**

- Science 112.3 (1A), demonstrate safe practices during lab investigations
- Science 112.3 (1B), learn how to use and conserve resources and materials
- Science 112.3 (2A), ask questions about objects
- Science 112.3 (2B), plan and conduct simple descriptive investigations
- Science 112.3 (2D), construct reasonable explanations and draw conclusions
- Science 112.3 (2E), communicate explanations about investigations
- Science 112.3 (4B), record and compare collected information
- Science 112.3 (10A), identify natural sources of water
  
- Science 112.4 (1A), demonstrate safe practices during lab investigations
- Science 112.4 (1B), learn how to use and conserve resources and materials
- Science 112.4 (2A), ask questions about objects
- Science 112.4 (2B), plan and conduct simple descriptive investigations
- Science 112.4 (2E), construct reasonable explanations and draw conclusions
- Science 112.4 (2F), communicate explanations about investigations
- Science 112.4 (10B), identify uses of natural resources
  
- Science 112.5 (1A), demonstrate safe practices during lab investigations
- Science 112.5 (1B), make wise choices in the disposal of materials
- Science 112.5 (2B), collect information by observing and measuring
- Science 112.5 (2C), construct reasonable explanations and draw conclusions
- Science 112.5 (2D), communicate explanations about investigations

**Activity:**

Step 1: Gather materials before class.

Step 2: Discuss what kinds of pollutants get into water and how this makes the water look.

Step 3: Instruct students to immediately clean up any spills and to avoid getting any vinegar or salt in their eyes.

Step 4: Give each team of three students their materials and data collection sheet

Step 5: Introduce the roles each student will play.

- polluter – person who adds salt or vinegar to the water
- taster – person who takes a small sip of the water to see if it is safe
- recorder – person writing down the number of teaspoons of salt or vinegar added, the taster's description of the taste, and when it is too polluted to drink

Step 6: Explain the experiment process.

Step 7: Have students do the experiment first with salt. Repeat with a new glass of water with the vinegar.

**Modification:** none

**Student Product:** Completed data sheet.

**Closure:** Ask the students as a class whether our eyes alone can detect unsafe drinking water. Ask if our taste buds alone can detect unsafe drinking water. Draw a bar graph on the board comparing the amounts of salt and vinegar the tasters found to be undrinkable. Talk about the variation, and discuss how science often produces multiple results – in this case because of the differences in the taste buds of different individuals.

**Assessment or evaluation:** Assess the students based on the completed data sheet, safety procedures during the lab, and discussion during closure.

**Extension:** Have students write a paragraph explaining the results of the class's experiment.

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## Lab Procedure

### Materials

- two cups of water
- table salt
- cup of vinegar
- teaspoon
- data collection sheet

### Procedure

1. Get all the necessary materials from your teacher. If any water spills, please clean it up immediately.
2. Decide who will play each role: polluter, taster, and recorder.
3. The polluter should add one teaspoon of salt at a time to one cup of water. Stir after adding salt.
4. The taster should look at the water and describe what is seen; the recorder will write this down.
5. The taster then takes a small sip of the water and report to the recorder how it tastes.
6. If the water does not taste too bad to drink and more, the recorder should write "no" on the data sheet. Return to step 3 and continue.
7. If the water tastes too bad to drink any more, tell the recorder. The recorder will write "yes" on the data sheet. Continue with step 8.
8. The polluter should add one teaspoon of vinegar at a time to one cup of water. Stir after adding vinegar.
9. The taster should look at the water and describe what is seen; the recorder will write this down.
10. The taster then takes a small sip of the water and report to the recorder how it tastes.
11. If the water does not taste too bad to drink and more, the recorder should write "no" on the data sheet. Return to step 9 and continue.
12. If the water tastes too bad to drink any more, tell the recorder. The recorder will write "yes" on the data sheet. Continue with step 13.
13. Give your data sheet to the teacher, who will graph the results of the class experiment.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

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## Evaluation Rubric

Circle the points awarded. The most possible is on the far right.

Data table				
Salt	0	15	25	35
Vinegar	0	15	25	35
Lab safety	0	5	10	15
Class participation	0	5	10	15

Total \_\_\_\_\_