

Student Guide: Water Purification Open Investigation

Engage: What makes water safe for different living things?

Learning Targets: I can...

- plan and carry out investigations to identify properties of water.
- design and evaluate water purification solutions using physical changes.
- construct an explanation of the role of water in the health of ecosystems.

1. What makes some water safe for people to drink, while other water is not safe?

2. What about your pets? Should pets drink the water from the creek?

3. What about fish and other organisms that live in or around water? What kind of water is safe for them?

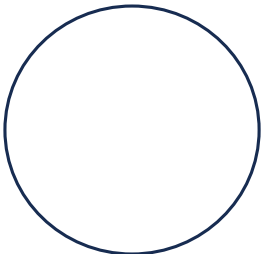
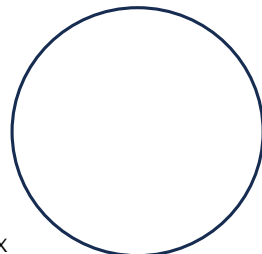
Gather and communicate information about water properties that are safe for different living things.

Properties of Water			
Safe for Humans	Safe for Our Pets	Safe for Fish and Other Aquatic Living Things	Safe for Other Living Things

A water sample has been collected at a nearby creek. What do you notice? What are you wondering? How could you gather additional data about the water to determine if its properties are safe for drinking or for aquatic life?

Collected Water		
What do you observe?	What are you wondering?	How could you gather additional data about the water sample to determine its properties?

Explore: Plan and carry out investigations to identify additional properties of the collected water sample. Organize the data you collect.

Properties of Collected Water			
Color	Odor	pH	Temperature
ppm	Conductivity	Dissolved Oxygen	Nitrate Levels
Evidence of Microorganisms		Macro Particles	Micro Particles
 4x	 10x		

Explain: Based on the data you have gathered from the collected water sample, do you think it is safe for humans to drink? Construct an initial claim supported by evidence you collected.

Initial Claim		
Supporting Evidence		
Reasons This Evidence Is Connected to the Claim		

Re-Engage (Ideate/Design a Prototype): What could you design and test to clean the water sample? Develop a model of your potential prototype. Include labels with rationales for your decisions.

Explore (Test Prototype, Redesign, Retest): How well does your prototype purify water? Test your initial prototype. Based on those results, redesign and retest the prototype until you are successful at purifying the water in the best possible way.

Physical Purification Process	New Water Properties	Design Ideas to Consider in Next Iteration

Explain: Which of your designs worked best at purifying the water?

Best Design (include labels)		
Supporting Evidence		
Reasons This Evidence Supports This Best Design		

Other Considerations:

Do you think your purified water is clean enough to replace in the creek? Things to consider in your response: How might your purified water affect microorganisms in the creek? How might your purified water affect larger organisms, like crayfish or fish?

Do you think your purified water is clean enough for humans to drink? Explain your thinking.
