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Week 8: Public Environment & Health

Module 4: Water and Health

Lesson: Why Isn't All Water Safe to Drink?

Lesson Overview

Students investigate how water becomes contaminated and how contaminated water affects human health. They gather evidence from the module, use that evidence to evaluate ideas about water safety, and apply their learning to a realistic public health situation. Understanding how contamination happens helps students make informed decisions about water rather than relying on appearances.

Learning Targets

Explain how water becomes contaminated.

Identify how contaminated water affects human health.

Analyze and correct explanations about water safety using evidence.

Vocabulary

Contamination
harmful substances entering water

Water Quality
how safe water is

Runoff
water that carries pollution across land

Microbial Contaminants
invisible germs in water

Materials

Module
Student response sheets
Whiteboard or chart paper

Instructional Notes

This lesson builds on students' understanding of environmental systems by focusing on the connection between human activities, water quality, and health. Students move from viewing water safety as something that can be determined by appearance to understanding that contamination is often invisible.

The most important conceptual shift is recognizing that water can become unsafe through multiple pathways and that evidence is needed to evaluate water safety. Students may initially assume that clear water is safe or that pollution only comes from obvious sources. Through the module, students discover how runoff, microbes, chemicals, and human activities can affect water quality and health. This lesson prepares students for future learning about environmental health, public health, and evidence-based decision making. The lesson progression is intentional: students make an initial claim, gather evidence, revise their thinking, and then apply their understanding to a new situation.



Learning Experience

8 min	Opening	The teacher displays the prompt, "You are on a summer hiking trip. You run out of water. You find two options." The teacher then presents Option A: A clear mountain stream, and Option B: A reusable water bottle sitting on a picnic table that someone left behind. The teacher asks students, "Which one would you trust more?" Students commit to a choice independently before discussing. Volunteers from each side explain their reasoning. The teacher then asks, "What evidence would you need before you could be confident your choice is actually safe?" Student ideas are recorded without confirming or correcting them. The teacher tells students, "Today, you will investigate why deciding whether water is safe is often more complicated than it seems." Students choose the option they trust more, explain their reasoning, discuss what evidence would help them make a better decision, and listen to alternative viewpoints.
15 min	Module	Focus: How water becomes contaminated, how contamination affects health, and how people protect water resources. Guiding Questions: • How do pollutants enter water? • Why can't contamination always be seen? • How does unsafe water affect the body?
15 min	Application	The teacher displays the scenario: "It's the start of summer break. Your friend sends a group text: 'My family found an amazing swimming hole outside town. The water looks crystal clear. We should all go tomorrow.'" Later that evening, you learn: • The area received several days of heavy rain. • Water flowed through nearby streets, yards, and farmland before reaching the swimming area. • Nobody has tested the water. Several people in the group chat think the water must be safe because it looks clean. Your friend asks: "Should we go?" The teacher tells students, "You are not trying to find the right answer. Your job is to use evidence from the module to help your friend make an informed decision." Students are reminded that all evidence must come from the module. The teacher displays evidence students may use from the module: • Rainwater runoff carries pollution across land. • Urban runoff can contain heavy metals, plastics, microbial contaminants, pesticides, and trash. • Agricultural runoff can contain fertilizers, animal waste, and other contaminants. • Floodwater can contain contaminants, including wastewater. • Contaminated water can spread disease and expose people to harmful chemicals.



		As students work, the teacher circulates and asks, “What evidence from the module applies to this situation?” “What contamination risks could exist even if they are not visible?” and “What evidence most influences your recommendation?” In Step 1: Analyze the Situation, students read the scenario, identify information that could affect water safety, and review relevant evidence from the module. In Step 2: Use Evidence, students select evidence from the module that applies to the situation, explain how contaminants could enter the water, and explain potential health concerns. In Step 3: Make a Recommendation, students decide what advice to give the friend and support the recommendation with evidence from the module. In Step 4: Defend and Revise, students share the recommendation with another group, compare evidence and reasoning, and revise the explanation if new evidence strengthens it. Sentence Frame: “We recommend _____ because evidence from the module shows _____.”
2 min	Reflection	How has your thinking about safe water changed during today’s lesson?
2 min	Career Connections	Public health investigators, environmental health specialists, and water quality experts help communities make decisions about water safety. They collect evidence, identify contamination sources, and investigate risks that are often invisible. Their work helps prevent disease, protect drinking water, and ensure that communities can make informed decisions about their health and environment.