WORKING WITH WATERSHEDS



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INSIGHTFUL STORY

Visiting the beach is a common family destination. The waves call to us, the warm, gentle breeze relaxes us, and it's fun to squish the sand between our toes.

BEACH VISITS

Beach Time

Disclaimer: The story you are about to read is correlated with real events.

You regularly enjoy trips to the beach with family and friends. You have visited your local beach several times in the past year. Some of the time the beach looks pristine, while other times there is evidence of trash and debris. During some beach visits, you have to take detours to get to your destination because a new roadway is being built. Following the building of the new road, there is often a green buildup on the surface of the water, making it uncomfortable to swim or spend time in the water.

On your last beach trip, there was signage instructing people to not spend time on the beach, either on the sand or in the water. The signage indicated increased toxin levels in the water that are harmful to humans and other life forms.

FUN FACT!

While you might think of a beach as the shore of an ocean, beaches are the sandy shore of any body of water, including oceans, rivers, and lakes.



The signs and closure had a disappointing impact on your day.



A few days after your most recent beach trip you begin hearing about people falling ill. You have ignored this until your sibling and friend, whom you visited the beach with the last time, came down with the following symptoms:

- Nausea
- Vomiting
- Diarrhea
- Pneumonia
- Perioral dermatitis
 - (a red rash, dry and
 - flaky skin, and blisters
 - around the mouth)

No Wading

12. Set your pie plate in a sink or place that can get wet. Holding the pie plate at a slight angle, pour the colored water down the modeling dough.

13. Remove the top pie plate and measure the amount of water the resulted in the bottom pie plate using the graduated cup.

Design	Amount of Water in Bottom Pie Plate
Peat Moss	mL
Peat Moss and Aluminum Foil	mL



THINK ABOUT IT!

I. What was the impact of the foil on the amount of water in the bottom pie plate?

2. How do you think this experiment is similar to what happens naturally?

8

HURTING OR HELPING?

Fertilizer Frustration

As you know, phosphorus is naturally found in rocks, soil, and waterways. The levels typically stay at a level that wouldn't result in cHAB occurring. In the experiment from Activity 2, you found that the addition of fertilizer caused an increase in the amount of cyanobacteria in the test tube.

Fertilizers are regularly used for agriculture and home use. When it comes to fertilizer, the saying "too much of a good thing" is true. Fertilizers are used to increase the growth and success of plants. However, there is a threshold, or maximum amount, of fertilizer that plants and soil can absorb at one time. After the threshold of fertilizer has been met in plants and soil, the excess ends up in runoff.



Phosphorus is an essential nutrient for aquatic ecosystems. However, excess phosphorus can lead to **nutrient pollution**, where too many nutrients are added to water bodies, simulating the growth of algae and cyanobacteria. This in turn begins a negative cycle, called **eutrophication**, or an excessive amount of nutrients in a body of water, causing dense growth of plants and other non-animal life forms. As a result, cHAB occurs, leading to **hypoxia**, or extremely low levels of oxygen, essentially suffocating aquatic organisms and collapsing ecosystems.





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