

Analyzing Water Pollution

The small town of Lakeview is located on the shores of Piper Lake. The town relies on the lake for trout fishing, eagle watching, and recreational activities. Recently, a fertilizer plant, H.T.C. Fertilizers, was built upstream on Eagle River, which feeds into Piper Lake. The town has noticed an increase in algal blooms in the lake. They are concerned the fertilizer plant is dumping too much nitrogen into the river and their livelihood could be affected. Is the town right? Does the plant need to control the waste they put into the river?

1. DEFINE THE PROBLEM

With your team, write a statement outlining the problem you've been asked to solve. Record any questions you have about the problem and the information you need to solve it.

2. CONDUCT RESEARCH

With your team, investigate the cause-and-effect relationship between nitrogen, algae blooms, and fish populations. Could the fertilizer plant be responsible for the changes the town is experiencing?

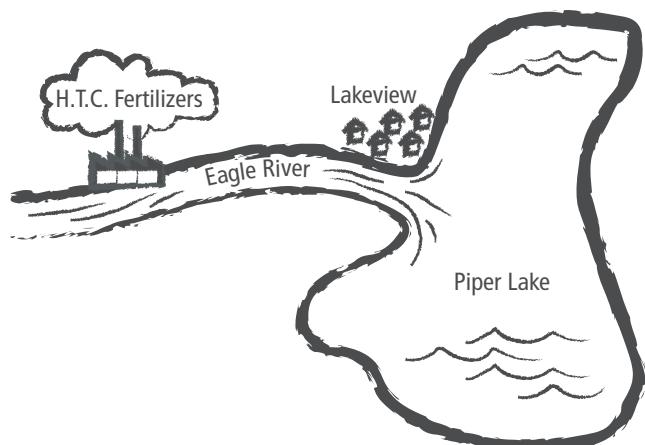
3. ANALYZE DATA

On your own, analyze the problem you've defined along with your research. Make a model to show how excess nitrogen cycles through the aquatic ecosystem. Your model should also show any effects the nitrogen may have on the ecosystem using a food web, energy pyramid, biomass pyramid, or pyramid of numbers.

4. COMMUNICATE

Present your findings to the town and the fertilizer company explaining whether or not the runoff from the fertilizer plant is adversely affecting the lake ecosystem. Your presentation should include images and data to support your claims.

FIGURE 8: The fertilizer plant is upstream from Piper Lake.



CHECK YOUR WORK

A complete presentation should include the following information:

- a clearly defined problem with supporting questions that are answered in the final presentation
- a model of the effect of the fertilizer runoff
- an explanation based on your analysis of the runoff and whether or not it is adversely affecting the lake ecosystem
- images and data that further support your claims