

Name _____

Pollutant Effect of PO₄/NO₃

Algae, which are normally present in freshwater will undergo a series of changes when phosphate and nitrate compounds are added. These changes can influence the quality of an entire body of water. This lab activity allows you to understand what changes occur in pond water as a result of the addition of nitrate and phosphate. In order to save time, you will predict the outcome and then analyze results that are provided to you.

Question: How do nutrient pollutants affect water quality?

Hypothesis:

Procedure:

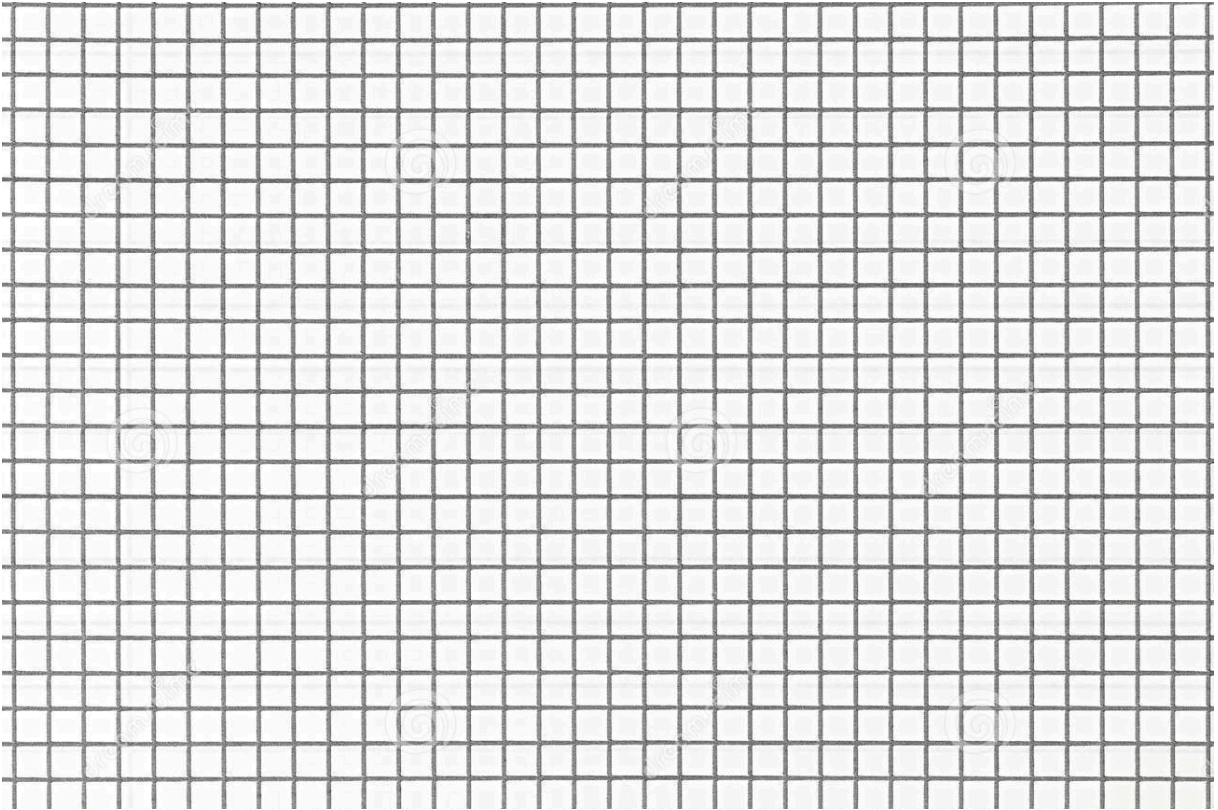
1. Place 90ml of fresh water from any waterway into each of 7 testing containers. #1 will be the control.
2. Add the nitrate and phosphate “pollutants” to the containers, according to the schedule below:
 - #1 – nothing added (control)
 - #2 – 9 drops phosphate solution
 - #3 – 18 drops phosphate solution
 - #4 – 9 drops nitrate solution
 - #5 – 18 drops nitrate solution
 - #6 – 9 drops phosphate and nitrate solution
 - #7 – 18 drops phosphate and nitrate solution
3. Place a piece of paper towel over containers and place in a well lighted area.
4. Record observations after 7 days using a mass spectrophotometer.*

* Mass spectrophotometer works by measuring the amount of transmittance of light through the sample. The lower the number, the less light can pass through and thus the cloudier the sample. If there is a lot of algae growth, would you expect the sample to have more or less transmittance?

Data collection:

| Day | Control | #2 (low P) | #3 (high P) | #4 (low N) | #5 (high N) | #6 (low P & N) | #7 (high P & N) |
|-----|---------|------------|-------------|------------|-------------|----------------|-----------------|
| 1 | 97.4 | 99.2 | 96.4 | 88.4 | 97.6 | 99.2 | 96 |
| 4 | 93.2 | 91 | 98.2 | 92.2 | 95.2 | 96.2 | 99 |
| 7 | 85.2 | 84.6 | 87.6 | 84 | 87 | 90.2 | 86.4 |
| 11 | 79.4 | 81 | 77.8 | 88 | 77.8 | 97.4 | 69.8 |

Graph:



Analysis: (remember Claim, Evidence, Reasoning)

*No conclusion needed this time.