GOULD LAKE OUTDOOR CENTRE
Limestone District School Board

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Algae Activity

Growth & Pollution

Recommendations: For students in Grades 3-8, curriculum can apply from Grades 2-10. Can be done inside or outside. Adult supervision recommended.

Purpose: To explore the scientific process while observing algae growth in pond water and the impact of different pollutants in an eco-system

Materials:

- 3-4 clean containers (mason jars work well)
- Pond water
- 1-3 "Pollutants" *(vinegar, fertilizer, detergent, safe household cleaners)*
- Tape & marker to label the jars

How It Works:

Step 1: Fill your jars with 1 ¼ cups of pond water. If you see algae in the pond, scooping some into the jars will help the initial growth process go faster.

Step 2: Allow the jars to sit in a sunny spot for the algae to grow for several days to one week.

Step 3: Gather your pollutants: table vinegar represents acid rain, a fertilizer or detergent with phosphorus represents toxic run off from farmers and factories. If you have more jars you can experiment with oil, gas, bleach, or other household products but be sure you have adult permission and supervision before handling such items.

Step 4: Label one jar "control". Do not add anything to this jar! It will be used to compare the way algae growth is affected.

Step 5: Add ¼ cup of one type of pollutant to one jar and label it, add ¼ cup of a different chemical to the next jar, etc. Do not mix chemicals. It will skew results and you should never mix products when you don't know what the chemical reactions will be. Predict what you think will happen to the growth of algae in each jar.

Step 6: Visit the jars daily and record your observations. What changes do you see? Has size or colour changed?

Step 7: After a week of observation, how do the results of each jar compare to what you predicted would happen? How does each polluted sample compare to the control jar? For precision, you can even drain the water down the sink and weigh the amount of algae from each jar.

*Important: be sure to dispose of the polluted water by pouring it down a household drain, that way it ends up in septic or town treatment centre and not absorbed into your local eco-system.

Extra Info:

Algae grows naturally in ponds and is a normal part of the ecosystem of a pond. Certain pollutants can affect the growth of algae. Phosphorus found in farm fertilizers, for example, is one of the most important nutrients for plant growth but if too much phosphorus makes its way into a pond, river, or lake, it can cause the algae and other aquatic plants to explode in growth. Overgrown algae use up all the oxygen in the water and suffocates other life forms like frogs and fish.

Acid rain is another problematic pollutant. If the pH level in the pond rises too high, then it kills off the algae and other living things.

Do any of your test jars show evidence of acid or phosphorus?

Conclusion:

Eco-systems are resilient but human activity can have a big impact on ecosystems. Brainstorm and discuss ways that human activity can benefit pond life versus ways that it can be a detriment.

Resources:

Ontario Science & Technology Curriculum

Grade 2: Air & Water in the Environment

Grade 3: Growth & Changes in Plants

Grade 4: Habitats & Communities

Grade 5: Conservation of Energy & Resources

Grade 6: Biodiversity

Grade 7: Interactions in the Environment

Grade 8: Water Systems

Grade 9: Sustainable Ecosystems & Human Activity

Grade 10: Chemical Reactions, Climate Change