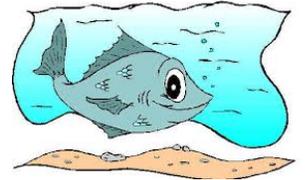


Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## How Does Oxygen Get Into The Water?

### Learner Outcomes:

- Describe and illustrate processes by which chemicals are introduced to the environment or their concentrations are changed.
- Identify chemical factors in an environment that might affect the health and distribution of living things in that environment (e.g., available oxygen, ph, dissolved nutrients in soil).



### Key Terms:

Monitoring

Turbulence

Parts per million

Dissolved oxygen

Solubility

**Background Information:** Both aquatic plants and animals depend on dissolved oxygen (D.O.) for survival. Dissolved Oxygen concentrations are influenced by many factors including water temperature, the rate of photosynthesis, the degree of light penetration (turbidity and water depth), the degree of water turbulence or wave action, and the amount of oxygen used by respiration and decay of organic matter.

**Research Question:** What is the effect of turbulence on the amount of dissolved oxygen in water?

**Hypothesis:** Answer the above question

### Materials:

Dissolved oxygen kit

Jar with lid

50 mL graduated cylinder

Boiled water

100 mL baker

This investigation / activity has been adapted from:

Mah K, Martha J, McClelland L, et al. *Science in Action 9*. Toronto, ON: Addison Wesley.

**Procedure:**

1. Pour 50mL of the boiled, cooled water into a small beaker.
2. Follow the instructions on the dissolved oxygen kit and measure the amount of dissolved oxygen in your sample in milligrams per litre and record your measurement.
3. Pour the remaining 50ml of the boiled, cooled water into a jar with a tight-fitting lid.
4. Shake the jar vigorously for 1 minute.
5. Open and close the jar and repeat step 4 two more times.
6. Follow the instructions on the dissolved oxygen kit and measure the amount of dissolved oxygen in your sample in milligrams per litre and record your measurement.

**Observations:****Analysis:**

1. Why did you have to use water that had been boiled and then cooled for this activity? (HINT: think about what the boiling process did)
  
2. Would the amount of dissolved oxygen in the shaken water sample change if the water was boiled and cooled again? Explain your answer.

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3. What was the manipulated variable in this experiment? What was the responding variable?
4. How would you go about testing the effect of temperature on the concentration of dissolved oxygen in water?

**Conclusion:** Explain the effect of turbulence on the amount of dissolved oxygen in the water.

**Extension:**

1. Go to the LabBench website and work through the dissolved oxygen activity to find out how varying amounts of light influence the amount of dissolved oxygen in a sample.

[http://www.phschool.com/science/biology\\_place/labbench/lab12/intro.html](http://www.phschool.com/science/biology_place/labbench/lab12/intro.html)

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2. Identify three aquatic organisms that live in different bodies of water (i.e. stream, small shallow lake, large deep lake) and research how much dissolved oxygen each organism needs and how adequate oxygen is supplied to their aquatic environment.

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