



## *Dissolved Oxygen Lesson*

Introduction: This lesson will introduce students to the concept of dissolved oxygen in aquatic environments, why it is important, and how it varies with temperature.

Time: 1 hour

Materials:

- Dissolved Oxygen Test kits
- Sonde
- Copies of Data Sheets and Graphs (attached)

### Introduction (10 minutes):

Ask students how fish breathe. Do they breathe the same way we do? What do they use to breathe? Do they breathe oxygen?

Fish use their gills to breathe oxygen much like our lungs do for us. But fish need water to survive, so do they breathe oxygen exactly like us? They breathe dissolved oxygen. What does it mean to be dissolved? Have you ever dissolved anything before? Ask students if they have ever made kool aid or dissolved chocolate milk mix in milk. These are ways they have dissolved solids in liquids. What is oxygen? Can gas dissolve into a liquid? It can! Think of when you open a soda pop. What happens? Those bubbles that form in pop are dissolved carbon dioxide, another gas. So oxygen can dissolve in water just like carbon dioxide dissolves in soda. But as your soda warms up, what happens to all of the bubbles? When are there more bubbles-when the pop is warm or when it's cold?

### Temperature and Dissolved Oxygen (10 minutes)

Is there a relationship between temperature and dissolved oxygen? Have students use the data from the Pokegama River to graph temperature and dissolved oxygen at each date. What do they notice as temperatures increase? What happens to the dissolved oxygen? Can we say these are related? Show students the graph of the data made in excel (it's easier to see the relationship with a computerized graph).

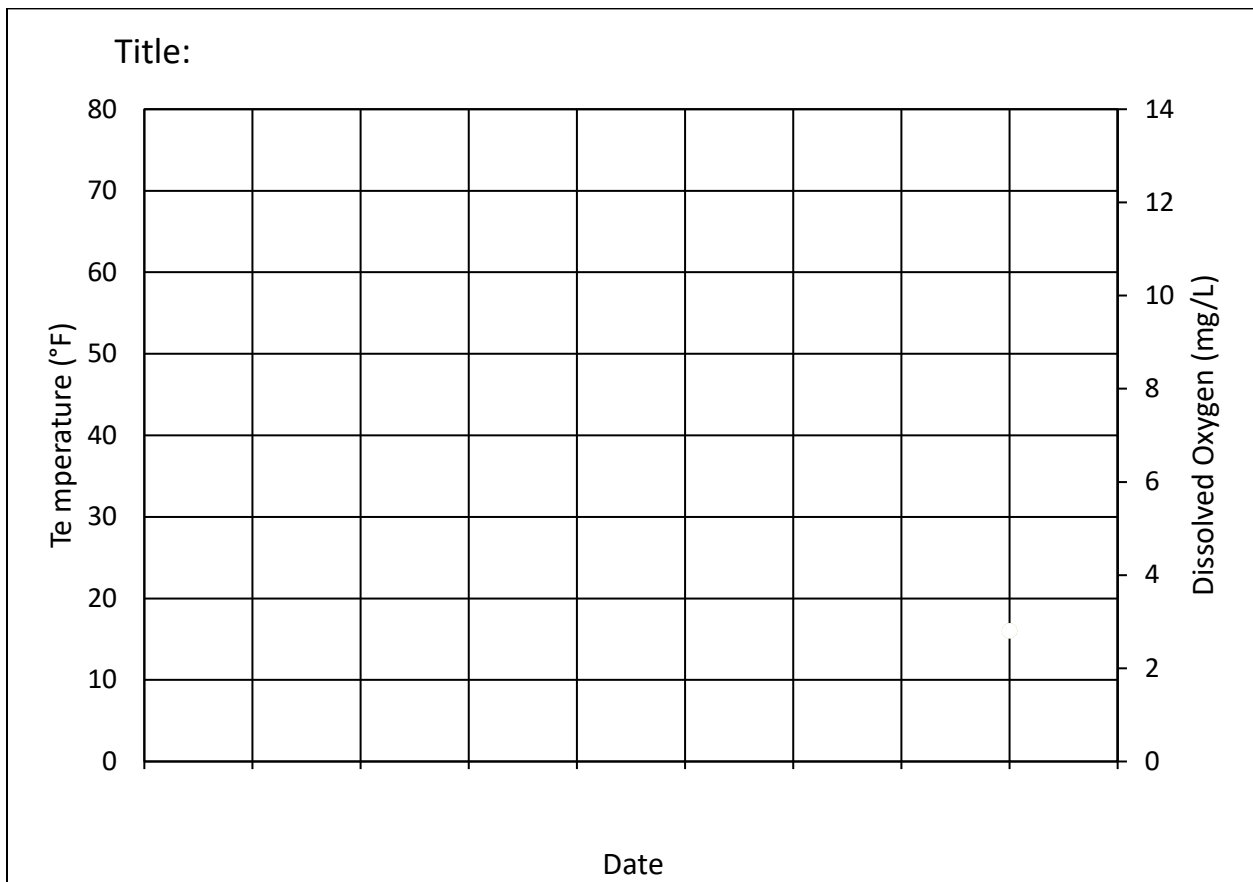
### Measuring Dissolved Oxygen

How can we get data for temperature and dissolved oxygen? Show Sonde and explain the data it can take. Explain that sometimes, if the Sonde isn't calibrated, that it can give incorrect data. So another way we can take data of dissolved oxygen is by using a test kit. Introduce the test kit and briefly go through the directions found in every kit. Have students get into small groups and practice testing the water for dissolved oxygen. Have them record their findings.

Location	Date	Temperature (°F)	DO (mg/L)
Pokegama River	4/30/2014	34	13
Pokegama River	5/30/2014	66	5
Pokegama River	6/30/2014	66	5
Pokegama River	7/30/2014	72	3
Pokegama River	8/30/2014	66	3
Pokegama River	9/30/2014	59	4
Pokegama River	10/30/2014	45	7
Pokegama River	11/10/2014	36	10

Table 1: Data for the Pokegama River from 2014 for Temperature and Dissolved Oxygen.

### Temperature vs. Dissolved Oxygen Student Graph:



## 2014 Temperature and DO for Pokegama River in the St. Louis Estuary

