

## WATER LAB #2

### Indicator Species Inquiry

6.3S.1 Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct an investigation that uses appropriate tools and techniques to collect relevant data.

#### Question/Problem

**Research**

**Hypothesis/Prediction**

**Experiment**

**Data/Results**

**Conclusions**

**Reflection**

#### MATERIALS:

- Water sample from two different water sources
- Microscope
- Slides
- Eye dropper
- Containers

#### QUESTION/PROBLEM

Present students with two water samples and ask: "What type of inquiry can we do with our two samples?"

Try to get the class to create the question/problem for the investigation.

**SAMPLE:**

How do indicator species vary within the two samples given?

## HYPOTHESIS/PREDICTION

Have each student write a prediction to the question posed. Have the students discuss in groups how they think the indicator species may differ and then write their own prediction.

Remember to have them include their reasoning since a hypothesis is an **educated guess**.

## RESEARCH

Have students read about indicator species and what they tell us about the water source. Discuss the terms in groups and make sure students include what they have learned in their lab write-up prior to making their predictions for the lab.

## EXPERIMENT

Have students list the materials being used and then create a step-by-step procedure that each group will follow to maintain the integrity of the inquiry process.

### EXAMPLE:

#### Procedure:

1. Label water samples “#1” and “#2.”
2. Place one drop of water sample #1 onto slide.
3. Place slide cover onto water sample #1.
4. Place slide on microscope.
5. Attempt to locate an indicator species in the water sample.
6. Sketch what you observe.
7. Remove slide.
8. Place one drop of water sample #2 onto new slide.
9. Place slide cover onto water sample #2.
10. Place slide on microscope.
11. Attempt to locate an indicator species in the water sample.
12. Sketch what you observe.
13. Remove slide.

## DATA/RESULTS

Have students use chart to record data collected.

<b>WATER SAMPLE SOURCE</b>	<b>Indicator Species Seen</b>
Sample #1	
Sample #2	

## CONCLUSIONS

Have groups discuss their results and share out to the class. Did all groups see the same things? Why or why not? Discuss the original question and how it relates to where the water samples were collected. What kind of conclusions can be made about the water quality and the organisms that rely on that water source for life?

Each student should then write a conclusion to the experiment that includes what they got as their results and how indicator species are a factor for water quality and animals living in and near that water source.

## REFLECTION

Have students discuss what other questions they may now have about the water sources and the quality of life in and around the water source. If you were to do this experiment again, or work with this water sample, what other questions do you have? What would you do differently? What else would you like to know about this water source in relationship to the quality of the water and/or indicator species?