



SCIENCE AND GLOBAL ISSUES: BIOLOGY (*SGI: Biology*) makes biology come to life in your classroom. Students see how their studies relate to their own lives and how it impacts their environment and the planet. Field tested in classrooms across the country, the activities in *SGI: Biology* have a proven track record of engaging students in scientific inquiry.

SGI Biology supports many of the Next Generation Science Standards and provides built-in literacy strategies and assessments.

SGI: Biology may be purchased as a full-year discipline based program in one hard bound book or as units to create a customized scope and sequence (on the following pages).

ACCESS TO TEACHER'S ONLINE PORTAL

- Assign homework and communicate with students
- Note taking & highlighting for students
- Online Student and Teacher books
- LABsent sheets & videos for absent students
- Integrated, online assessment system
- Editable PowerPoints for each lesson
- Single Sign-On (SSO) available



- STEM LITERACY
- REFILLABLE AG
- ADD A GROUP

SCIENCE & GLOBAL ISSUES: BIOLOGY FULL-YEAR PROGRAM	ITEM NO.
COMPLETE EQUIPMENT PACKAGE (materials [except electrophoresis chambers] for up to 5 classes of 32 students, mobile storage cart, Online Portal access for one teacher which includes assessments, PowerPoints, online Teacher Edition and Resources, online Student Book, and supplemental resources)	SGI-B-2000
ONLINE PORTAL FOR STUDENTS (online subscription to online book, student sheets, supplemental resources)	SGI-B-20LSP-1
STUDENT BOOK (hardcover)	SGI-B2SB
TEACHER EDITION AND TEACHER RESOURCES (printed)	SGI-B2TETR
LAB-AIDS ELECTROPHORESIS CHAMBER (four needed for a class of 32)	SGI-P011
SCIENCE LAB NOTEBOOK (bulk pricing available)	SLN-1
Small class sizes for 5 sections of 16 students might consider our COMPLETE EQUIPMENT PACKAGE FOR 16 STUDENTS PER CLASS	SGI-BH2000

For custom orders and standards correlations by state please see the "Your State" page on lab-aids.com to contact your state's Science Curriculum Sales Specialist.



PROGRAM COMPONENTS

Individual components combine to form a complete learning system.

- Student book that seamlessly integrates investigations, labs, and readings into the context of the issue's storyline
- Equipment to carry out each embedded activity for 5 classes of 32 students (in groups of four, pairs or individuals)
- Online student and teacher bookshelf portals
- Student Science Lab notebook

Materials needed for embedded labs and activities are part of the Complete Equipment Package

JAFFEY CITY'S PROBLEM • ACTIVITY 5

Challenge

► How can phosphate and nitrate indicators help identify the contamination problem in Jaffrey Lake?

MATERIALS

FOR THE CLASS
40 dropper bottles of Jaffrey Lake water (locations 1-40)

FOR EACH GROUP OF FOUR STUDENTS
Chemplate™
dropper
set colored pencils

FOR EACH PAIR OF STUDENTS
12 phosphate- or nitrate-test strips
phosphate or nitrate color-comparison chart
cup with rinse water
paper towels
white scrap paper

FOR EACH STUDENT
Student Sheet 5.1, "Jaffrey Lake Water Testing"
safety goggles

Safety ⚠️
Wear safety eyewear and avoid skin contact with the solutions.

Procedure

- Of the 40 possible locations to test in the lake, your group was paid to conduct 12 tests for each substance. Create a data table in your science notebook where you will record the results of the tests. You will record the water location number, the Chemplate cup number, and the test results for nitrate and phosphate.
- In your group, decide which pair of students will test for nitrate and which will test for phosphate.

SCIENCE 4 GLOBAL ISSUES/BIOLOGY • SUSTAINABILITY

- With your group, look at Student Sheet 5.1, "Jaffrey Lake Water Testing" and select three of the locations numbered 1-40 on the map to test first. Choose locations you think will most likely contain high concentrations of the substances. Record in your notebook why you predicted these locations.
- To begin the testing, take your Chemplate to the "lake area" and find the three bottles with the matching location numbers. Place 5 drops from each location in separate Chemplate cups and bring it back to your table. Record the location numbers and the corresponding Chemplate cup numbers in your data table.
- Test the three waters for your substance, as described in the testing procedure below. Record the data in your table.

TESTING PROCEDURE:

- Place the white paper on top of the paper towel.
- Label the test strip with the location number.
- Put one drop of location water on the end of the test strip.
- For the phosphate test, compare the test strip to the color chart. For the nitrate test, wait one minute before comparing.
- Record the result in your table.
- Rinse out the dropper with water in the rinsing cup.

- Using the results from your tests, begin to complete Student Sheet 5.1, "Jaffrey Lake Water Testing." Choose different colored pencils to represent the levels of each substance, and fill in the key using the scales shown on the color-comparison chart. Identify your map as either "nitrate" or "phosphate" concentrations, depending on the substance you are testing.
- Share your data with the other pair in your group. As a group, choose three additional locations to test that are based on the results.
- Repeat Steps 4-7 until you have tested 12 locations.
- Compare maps and look for any patterns in the concentration levels and locations of the substances. Compare your data to the county standards shown below:

Phosphate in Jaffrey Lake	
NATURAL CONCENTRATION (PPM)	LOCAL LIMIT (PPM)
0.05	0.1

Nitrate in Jaffrey Lake	
NATURAL CONCENTRATION (PPM)	LOCAL LIMIT (PPM)
<2	10