

## Basic Water Quality Monitoring (grades 4-8)



Engage your students in challenging laboratory activities designed to help them develop an understanding of important natural and human-caused water quality factors. Students will use scientific equipment including pH meters, conductivity meters, alkalinity test kits, and thermometers, and follow **GLOBE** protocols to measure the water quality of various water samples. Students will learn how these and other water quality factors can affect drinking water and aquatic life.

**This kit is only available to teachers who have completed appropriate training through GLOBE, Inquiry and Water Issues, or WATER.**

### Activities & Equipment

#### **GLOBE The Hydrologic Cycle & Riparian Areas**

Understand the Hydrologic cycle, riparian areas, watersheds, ecosystems, surface water, aquatic life, factors affecting riparian areas and aquatic life.

#### **GLOBE Water Temperature - Thermometers**

Studying water temperature allows students to better understand other hydrology measurement such as pH, dissolved oxygen, and conductivity. Students will learn how to use a thermometer, examine reasons for temperature change in water, and how changes affect aquatic life.

#### **GLOBE Electrical Conductivity - EC Pens**

Students will calibrate and take EC measurements using an EC meter. Students will be able to estimate the total dissolved solids from the EC measurements. Students will examine reasons for changes in the EC of a water body.

#### **GLOBE pH - pH Pens**

Students will use a pH meter to measure the pH of water. Students will understand the differences among acid, basic, and neutral pH values.

### **GLOBE Alkalinity - Alkalinity Test Kit**

Students will measure the alkalinity of a water sample using an alkalinity kit. Students will examine the reasons for changes in the alkalinity of a body of water and be able to explain the difference between alkalinity and pH.

### **GLOBE Transparency - Transparency Tubes (field kit only)**

Students examine reasons for changes in water transparency and learn to use a Secci disk or transparency tube.

### **Discover a Watershed The Blue Traveller**

Students simulate the movement of water within and between natural and constructed systems. Students will learn how water's movement on the planet affects water conservation measures.

### **Healthy Water Healthy People Mapping It Out**

The class's current knowledge of water quality will be depicted on a concept map. Students will gain a stronger visual understanding of the learning process.

### **Healthy Water Healthy People Grab a Gram**

Students use common objects to learn about size and weight (grams, milligrams, and micrograms), and determine whether drinking water contaminants are always visible. Students compare metric measurements, and learn about national drinking water standards.

### **Healthy Water Healthy People Hitting the Mark**

Students use targets and playdough to learn about accuracy and precision as it relates to water quality data collection.

### **Healthy Water Healthy People A Snapshot in Time**

Students learn about the concept of a watershed by studying topographic maps. Students will be able to discern the differences in value between an individual data set collected at one place and time versus a series of water quality data sets collected at various points over time. Graphing and writing exercises are utilized.

### **Healthy Water Healthy People Turbidity or Not Turbidity**

Students explore the concepts of sedimentation, erosion, and turbidity using soil, rocks, and water. Students learn about the negative effects of artificial erosion and methods used to reduce or correct erosion problems.

### **Healthy Water Healthy People There is no Point to this Pollution**

Students analyze data to solve a mystery, interpret a topographic map, and analyze and compare water quality data to learn about the cumulative impacts of nonpoint source pollution.

### **Healthy Water Healthy People Water Quality Windows**

Students explore the different water quality ranges required for the survival of aquatic and marine organisms by interpreting water quality data; sorting and classifying organisms according to their water quality requirements; and applying their knowledge to determine the effects of changes in water quality on organisms.

## Advanced Water Quality Monitoring and Analysis-grades 7-12



This kit contains all the materials included in the Introduction to Water Quality Monitoring kit, plus more complicated chemical test kits, dissolved oxygen and nitrate, and more advanced curricular materials.

**This kit is only available to teachers who have completed appropriate training through GLOBE, Inquiry and Water Issues, or WATER.**

### **Activities & Equipment:**

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### **GLOBE Transparency - Transparency Tubes (field kit only)**

Students examine reasons for changes in water transparency and learn to use a Secci disk or transparency tube.

### **GLOBE Dissolved Oxygen - Dissolved Oxygen Test Kit**

Students learn to measure dissolved oxygen with the testing kit. Students learn about the importance of dissolved oxygen, how it is affected by temperature, and how dissolved oxygen affects aquatic life.

### **GLOBE Nitrate - Nitrate Test Kit**

Students learn to use testing kits to measure nitrate levels in water samples. Nitrate is the most important inorganic form of nitrogen because it is an essential nutrient for the growth and reproduction of algae and other aquatic plants.

### **Discover a Watershed The Blue Traveller-**

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