

# ENVIRONMENTAL ENCOUNTERS

## Lesson Plans for the Science of Water



### Microorganisms

#### Suggested grade level:

Sixth grade

#### Objective:

Students will create a report about microorganisms and water resources.

#### Curriculum ties:

- ✓ Sixth grade Science standard 5 Objective 1 a-c, Objective 2 a-e, Responsible and Healthy Living
- ✓ Consumer and Community Health Standard 7 Objective 1 a-c.

#### Time needed:

- ✓ Prep: 1 hour
- ✓ Pre trip: 2-3 hours over the course of several weeks
- ✓ Garden: 1-2 hours
- ✓ Post trip: 2-4+ hours

#### Materials needed:

- ✓ Potting soil, divided in half with one half of the soil baked in a hot oven
- ✓ Pots
- ✓ Seeds
- ✓ Yeast, water, and sugar
- ✓ Small plastic containers
- ✓ A microscope (one is available at the Garden)

#### Teacher notes:

In this activity, students will learn about microorganisms in soil and water. Students should understand what microorganisms are, what they need to survive, and that microorganisms can both help and harm us.

#### Procedures:

##### Preparation

To demonstrate that microorganisms can be helpful, take some potting soil and divide it. Bake part of the soil in a hot oven to kill all the microorganisms in the soil. Fill a couple of pots with the baked soil and a couple of pots with the regular soil.

Call 801-565-4314 to schedule your visit to the Conservation Garden Park at Jordan Valley.

##### In the classroom

Explain to the students that the soil in half of the pots contains microorganisms and the soil in the other half does not. Help the students plant seeds in both of the soil samples and grow them in the exact same way. Notice the differences that occur.



For another example, use yeast for an experiment. Explain that yeast is a helpful microorganism that causes bread to rise. Take a little yeast and mix it with water and sugar, then observe it under a microscope so students can see it growing. With the teacher's help, students should brainstorm questions about microorganisms that might be answered by observation at the Garden. Such questions might include: Will you find more microorganisms in the soil or in the water? Which soil types at the Garden are home to the most microorganisms? The fewest microorganisms?

#### Field trip

The Garden guide will tell the students more about good and bad microorganisms in the water and soil at the Garden and show students the "Rain Gardening," "Composting," "Outsmarting Invaders," and "Signature Soils" exhibits. They will also learn about water conservation and how it can be achieved through plant health. Students should conduct their observations/experiments about microorganisms and learn about the role they play in a garden and in water quality. Use a microscope to observe microorganisms in the water, the soil, and the compost at the Garden.

#### Follow up

The groups should create a report about their microorganism experiment or observation. Based on what they learned at the Garden, the class can then identify a water-related environmental service project and carry it out.

#### **Assessment:**

The students' reports will indicate whether they have successfully carried out an experiment about microorganisms.