



# Berkshiremuseum

## Animals Undercover *Pre & Post Visit Activity*

### The World of Earthworms

#### **Description**

Students experiment with common substances with distinctive scents like vinegar in order to observe the reactions of live earthworms. This can serve as a springboard for other worm experiments exploring other questions students may have.

*Developed by the Cincinnati Museum Center; used here with permission.*

**Time** 20 minutes

#### **Materials**

- paper towel
- water
- earthworms
- nail polish remover (acetone)
- cotton balls
- optional: mashed fruits & vegetables, vinegar

#### **Objectives**

Students will test the reaction of earthworms to different chemicals to demonstrate the importance of "smell" or chemoreception to these animals.

#### **Background**

Earthworms are important creatures in soil. Their activities aerate soil, mix it, and provide organic debris, which fertilizes plants. In this activity we will see that earthworms can react to potentially harmful chemicals in their environment.

Please remind your students that earthworms are living animals with nervous systems. Nervous systems enable animals to respond to harmful things in their environment. In humans, the nose is a structure with a moist environment to trap the chemicals that we perceive as odors. Nerves then

transmit information about these chemicals to the brain. In earthworms, the whole outer surface of the skin is moist and functions in much the same way as does our nose.

A chemical such as acetone will "burn" a worm's skin, so students must take care not to put a cotton ball containing this material too close to the worm's skin. Also, worms must be kept moist or they will die. Worms should be returned to a moist place when students are finished with the experiments.

### **Procedure**

- 1 Place earthworms in the center of a damp paper towel.
- 2 Place a drop or two of acetone (nail polish remover) on a cotton ball.
- 3 Place the ball near the earthworm, but be careful it doesn't touch the earthworm. Observe the earthworm's reaction.
- 4 Place a dry cotton ball near the earthworm. Observe the earthworm again.

### **Questions**

- 1 How did the earthworm react to the acetone? *The earthworm will move away from it.*
- 2 What does this tell you about earthworms? *They have a sense of "smell" that protects them from harm.*
- 3 Why was it necessary to use a dry cotton ball in this test? *This is called a "control." It is used to test whether the worm is reacting to the acetone or to the cotton ball.*

### **Further Activities**

- 1 Repeat, using different chemicals like vinegar and alcohol. What do the earthworms do and why? *They move away from the chemicals that are harmful.*
- 2 Repeat, using mashed fruits and vegetables instead of simple chemicals. What do the earthworms do now and why? *They move toward the fruit and vegetables, which represent food.*
- 3 Construct a maze of pieces of cardboard. Place on a moist towel. Help direct the worm's path through the maze by placing acetone-soaked cotton balls in the areas that you do not want the earthworms to enter. Is this exercise successful?