

Name: _____ Class: _____ Date: _____

Bury Your Garbage

Learner Outcomes:

- Describe mechanisms for biodegradation, and interpret information on the biodegradability of different materials.

Key Terms:

Biodegradation

Anaerobic

Phyto-remediation

Composting

Aerobic

Photolysis

Background Information: Bio-degradation is an important biological process that helps remove wastes from the environment. Micro-organisms found in soil such as bacteria, fungi, and protozoa can use the molecules in garbage for food, thus breaking down and bio-degrading the garbage. A variety of factors may influence this process. In this investigation, you will select and test one of the following factors to determine its effect on the bio-degradation of waste: temperature, moisture, surface area, type of waste.

Research Question: Write a research question for the factor you have selected.

Hypothesis: (select one of the above factors to research and write an hypothesis)

This investigation / activity has been adapted from:

Mah K, Martha J, McClelland L, et al. *Science in Action 9*. Toronto, ON: Addison Wesley.

Experimental Design: for your specific research question, identify:

Manipulated Variable:

Responding Variable;

Controlled Variables (at least 3):

Materials:

Potting Soil

Balance

Popsicle sticks

Types of waste

Ruler

Refrigerator

materials

Heat lamp

Plastic wrap / baggies

Clear plastic cups

Thermometer

Water

Procedure:

1. Design and write out a detailed procedure for your experiment. You may use a flowchart or write it in a numbered, point form.

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Observations: Create a data table to record your observations.

Analysis:

1. Was your hypothesis correct? Explain why or why not.

2. What effect did the manipulated variable have on the rate of bio-degradation? Suggest reasons for this.

3. How did you know your materials bio-degraded?

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4. Write a summary of the results from the rest of your class. Did you get the same results as others? Why or why not?

Conclusion: Summarize the effects of each of the variables your class investigated on the rate of bio-degradation.

Extension:

Design an 'environmentally friendly' waste management site for your local community. Create a labeled poster, drawing or model of your site. Identify the factors you considered when designing and determining the location of your site.

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