What Is Rotten and What Is Not?

SKILLS MENU

- Questioning
- Hypothesizing
- Predicting
- Planning
- Controlling Variables
- Performing
- Observing
- Analyzing
- Evaluating
- Communicating

Think back to the garbage that you buried in soil in Try This: To Rot or Not to Rot in Section 5.3. Now it is time to dig it up and find out what has happened! As you recall, some of the items that you chose to bury were natural: a plant or animal produced them naturally. Other items were synthetic: made using a chemical process, possibly in a factory, from raw materials such as fossil fuels.

Purpose

To observe the degree of decomposition of natural and synthetic items.

Equipment and Materials

- lab apron
- rubber gloves
- an old spoon or other digging instrument
- old newspapers
- container of composted material from Try This: To Rot or Not to Rot in Section 5.3

Procedure

1. Put on your lab apron and rubber gloves.
2. Take the container of soil and buried items that you set up in Section 5.3 to a table or an area on the floor.
3. Spread out several layers of old newspaper.
4. Carefully transfer the contents of the container onto the newspaper using a spoon or other instrument.
5. Use the spoon to look through the poured-out contents and sort the buried items into two piles:
   - items that have not decomposed
   - items that show some evidence of decomposition
6. Make a list of the items that did not decompose. Create a table to classify each item as natural or synthetic.
7. Repeat step 6 for the items that showed signs of decomposition.
8. When you have finished, follow your teacher's instructions for the disposal of all materials. You may be able to add some of the contents to a compost container.

Analyze and Evaluate

SKILLS HANDBOOK 9.

(a) From your results, describe the degree of decomposition of buried items that are
- natural
- synthetic T/I

(b) Research and explain the meaning of the prefix *bio–* as it is used in the words biology, biotechnology, and biodegradable. T/I

(c) Based on what you observed in this activity, which materials, natural or synthetic, are more likely to decompose? T/I

(d) Did any of the synthetic materials show signs of decomposition? If so, explain why you think these particular materials decomposed. T/I

(e) Look back to the physical properties you recorded for the materials in the Try This activity. Does the degree of decomposition depend more on physical properties or on whether the material is synthetic or natural? Explain your reasoning. T/I

(f) Were the predictions you made in the Try This activity accurate? Explain. T/I

WRITING TIP

Analyze and Evaluate Your Results

When you analyze and evaluate your results, explain how they support your prediction. For observations that do not support your prediction, suggest an explanation. Describe any problems you experienced and suggest ways to improve the procedure.

Apply and Extend

(g) Most dog owners take responsibility and "stoop and scoop" after their pet during walks. However, this commendable practice has created a related environmental problem—mountains of non-biodegradable plastic bags containing biodegradable organic waste (Figure 1). Research the biodegradable options that are available.

GO TO NELSON SCIENCE

Figure 1 How else could we dispose of this biodegradable waste?

(h) Write a headline and a news report for your local daily newspaper based on the photo in Figure 1. Inform your readers about the problems with disposal of plastic bags, particularly those used in dog parks, and the environmentally sound options that are available. A C

(i) Polyethylene is a versatile, flexible, and durable compound that is made from fossil fuels. Its versatility and flexibility make it ideal for a variety of uses. However, its durability prevents it from being broken down when it has served its function and is discarded. Research the applications of polyethylene and options for its reuse, reduction, recycling, disposal, and substitution.

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(j) Copy Table 1 and record your findings about at least ten items that you or your family might purchase that are made of polyethylene. T/I

Table 1 The Uses and Disposal of Polyethylene

Polyethylene items and their function	Estimated duration of useful life	Options for disposal after useful life	Suggested natural or synthetic substitutes for this function

UNIT TASK Bookmark

You can apply what you learned about the disposal of natural and synthetic materials to the Unit Task on page 286.