

# Activity 6



## NATURAL PACKAGING



**STUDY QUESTION:**

How are natural coverings similar to our commercial packaging systems?

**THE ACTIVITY:**

Students conduct simple experiments on the skin and peels of various food products.

**CURRICULUM FIT:**

**DIVISION ONE - SCIENCE**

- Living things.

**DIVISION ONE - LANGUAGE ARTS**

- Describe events orally and in writing.

**AGRICULTURE CONCEPTS:** Production, Processing and Distribution System

**PURPOSE:**

To illustrate the functions of natural covering and show how they resemble the functions of commercial wrap.

**MATERIALS REQUIRED:**

4 apples, 4 oranges, 4 potatoes  
vegetable peeler

**TIME REQUIRED:**

30 minutes to set up and once per hour for the rest of the first day.

10 minutes per day for 5 days to observe.



# BACKGROUND - For the Teacher

The principle that technology is a repetition and extension of natural phenomena has been accepted for many years. Through this activity your students will be able to draw conclusions about the functions of some natural coverings and consider how we mimic these functions with our commercial packaging materials.

## NOTES FOR INTERPRETATION

1. The browning of the peeled apple is caused by oxidation on exposure to air. One purpose of the peel is to limit air exchange.
2. The mold formation at the wound site in each sample is caused by airborne spores present in the room. One function of the peels is to block the entry of disease spores.
3. The shrivelling that occurs over time is due to water loss by evaporation. One function of the peel is to slow water loss.
4. The green color that develops in the potato skins is due to chemical changes caused by light energy.

## SPECIAL NOTE:

The new chemicals giving the green color are toxic and extend into the outer layer of the potato flesh. Do not eat these potatoes or send them home with your students.

## PROCEDURE

### Part 1

#### Preparation

1. Decide on how many task groups you need. You will want at least one for each test food and group sizes of 3-5 students.
2. Make one copy per group of Student Resource Sheet One, one copy per student of Student Resource Sheet Two and two copies per student of Student Resource Sheet Three.
3. For each group you will need four samples of one of the testing samples: apples, oranges, potatoes.

### Part 2

#### Introduction

4. Explain that students are going to be looking at some of the things that peels do.
5. Divide the class up into working groups according to the plan you had established.

### Part 3

#### Activity

6. Pass out Student Resource Sheet One and read through it with your class.
7. Pass out Student Resource Sheet Two and the test samples to each group and have students fill in the initial conditions sections.
8. Have each group set up their test foods according to the instructions on Student Resource Sheet One.
9. Once per hour on Day 1 and once on each of the next five days have a member of each group complete a Changes Over Time section. You can make extra copies of Student Resource Sheet Three for recording observations.

### Part 4

#### Conclusion

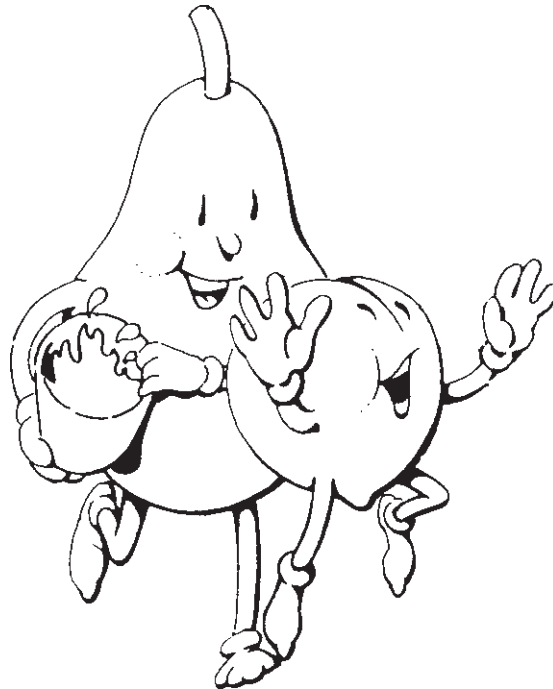
10. After the observations of Day 6, have each group meet and tell the class what happened to each of their samples.
11. As a class, list the things that peels affect in these experiments.

## DISCUSSION QUESTIONS

1. How does our skin function when it comes in contact with air, water, germs and light?
2. How do our wrappings like newsprint, wax paper, stretch plastic and aluminum foil function when they come into contact with air, water, germs and light?
3. How are potatoes protected from light as they grow? How do we protect them from light?
4. From what we saw in potatoes why do you think some drinks are sold in clear glass bottles and some only in dark glass bottles?

## RELATED ACTIVITIES

1. Have students place an egg in vinegar and observe how the shell changes over time. Ask them to guess what causes this change.
2. Have students make observations or pictures of how skins, peels and bark function. Do the same for living things that pierce skins, peels and bark.



# STUDENT RESOURCE

## SHEET ONE - what to do



1. You will receive four whole apples, oranges or potatoes. Before you do anything with them read this sheet and the sheet you will get next.
2. After you have written the information you need under "Starting Conditions", choose one of your samples and put it in a dark place at room temperature.
3. The remaining three samples will be kept side-by-side in the light
  - a) Set one sample in the storage place without doing anything to it.
  - b) Peel one sample and place it in the storage place.
  - c) Use a pencil or similar-sized object to poke 3 holes in the skin of the remaining sample. Place it with the others.

NOTE:  
Do not poke yourself or any other student.

4. Observe each sample once per hour for the rest of the day, and once each day for the next week.
5. Record any things that occur in any of the samples. Include the date and time of each observation.

# STUDENT RESOURCE

## SHEET TWO



NAME \_\_\_\_\_

TEST  
FOOD \_\_\_\_\_

### ORIGINAL CONDITIONS

	#1	#2	#3	#4
weight				
color of peel				
color of inside				
thickness of peel				
other observations				



# STUDENT RESOURCE

## SHEET THREE



NAME \_\_\_\_\_  
TEST \_\_\_\_\_  
FOOD \_\_\_\_\_

CHANGES OVER TIME				
	date _____		time _____	
	PEELED SAMPLE	PUNCTURED SAMPLE	DARK SAMPLE	LIGHT SAMPLE
weight				
color of peel				
color of inside				
thickness of peel				
other observations				

CHANGES OVER TIME				
	date _____		time _____	
	PEELED SAMPLE	PUNCTURED SAMPLE	DARK SAMPLE	LIGHT SAMPLE
weight				
color of peel				
color of inside				
thickness of peel				
other observations				

