



RUTGERS-NEW BRUNSWICK
School of Environmental
and Biological Sciences



Lesson Ten

Food Processing and Packaging



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Lesson Overview

In the previous lesson, students learned about the environmental impacts of food traveling from one place to another. In this lesson, students will now learn about how food processing and packaging also impacts the environment. Students will explore how processed food typically requires additional ingredients compared to whole foods and this lesson will help them connect the idea that more ingredients will result in more food miles. Students will get introduced to how food packaging pollutes the earth and will be encouraged to think about how they can reduce, reuse, or recycle food packaging that they come across regularly.

Next Generation Science Standards

5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Science and Engineering Practices

- Developing and using models.
- Obtaining, Evaluating, and Communicating Information.

Cross Cutting Concepts

- Cause and effect
- Systems and system models

Disciplinary Core Ideas

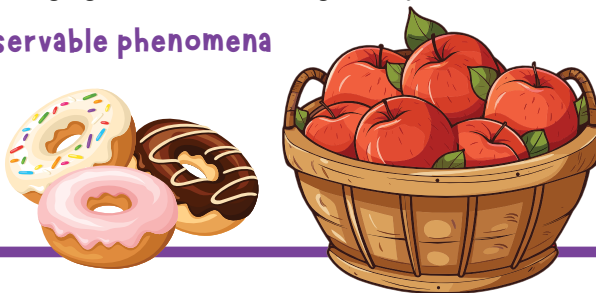
ESS3.C: Human Impacts on Earth Systems.

ESS3.D: Global Climate Change.

Driving Question(s)

- Processed foods are foods that have had ingredients added to them and have been changed from whole ingredients like fruit or vegetables to things like fruit snacks.
- Food processing can involve a lot of travel and a lot of steps depending on how many ingredients are in each food. This can cause the greenhouse gas emissions for these foods to be higher.
- Processed foods tend to be sold in packaging that can be harmful to the environment. To help the environment, we can choose to recycle or reuse that packaging instead of throwing it away in the trash.

Observable phenomena



Purple italicized words are web links for more information.



Learning Objectives

Students will be able to:

- Identify what processed foods are and how they are different from whole foods.
- Identify and explain how and why processed foods have higher greenhouse gas emissions than non-processed foods.
- Explain why processed food packaging is harmful for the environment.

Behavior Change Objectives

Student will be able to:

- Set a goal to recycle or reuse at least one item.
- Consider how their food choices impact the environment.

Keywords

Food processing | packaging | processed foods | pollution

Before you Begin

- Prepare to show slides to class.
- Make enough copies of handouts .

Materials

- Presentation Slides and Worksheets
- Computer/Chromebook/Technology
- Video: [youtube.com/watch?v=vnLXBQoaj9s&list=PLKx8NLAujm_nCPmzHM3eU-KiaqMvaH55Zw&index=5](https://www.youtube.com/watch?v=vnLXBQoaj9s&list=PLKx8NLAujm_nCPmzHM3eU-KiaqMvaH55Zw&index=5)
- Exit Ticket

Lesson

1st Recap and Lesson Introduction

1. Review what was discussed last class:
 - A. Food miles are the number of miles it takes for a food to get to the consumer.
 - B. Food traveling across the world adds to greenhouse gas emissions.
2. Introduce today's lesson: Today's lesson will be on processed foods and how processing adds greenhouse gases to our atmosphere.
 - A. Ask students to identify if they think all foods are processed in the same way and if different forms of food (corn or corn chips) produce the same amount of greenhouse gases.

Purple italicized words are web links for more information.



2nd Observable Phenomena

1. Show students the image of the apple and donut. Have them answer the notice and wonder questions about these two foods and discuss as a class.

3rd Lesson

1. Processed Food Explanation.
 - A. Begin by explaining what processed food means. Explain that processed foods start off from natural whole ingredients but are changed in some way by adding other ingredients or changing the original form of the food.
 - i. Discuss why this might be: processed foods last longer and they appeal to our taste buds.
 - B. Video lesson.
 - i. Show video and have students complete the video guide.
 - ii. Lead a discussion with the students on how they think potatoes are processed into potato chips. Have students list what ingredients are used and where they think those ingredients come from. After students share their ideas, show the slide explaining where the ingredients for the chips come from.

4th Group Activity

1. Have students work on the group activity where they will order foods from least to greatest greenhouse gas emissions then discuss as a class why they chose the order they chose.
2. Ask the class as a whole to discuss the lunch trays slide. Have them identify which tray they think results in more greenhouse gas emissions and why.

5th Processed Foods and Packaging

1. Discuss with the class how processed foods are often sold in different types of packaging and that this packaging can contribute a significant amount to the trash in landfills
2. Discuss how this trash can cause problems for wildlife especially those near beaches and different bodies of water
3. Explain that by changing some of the foods we are eating we can reduce our environmental impact of our food packaging. If we choose to consume these packaged foods, we can make sure we recycle or reuse them.
 - A. Have students identify how they can reuse or recycle some packaging.
 - B. Discuss with students different things they can recycle and then have them complete the my trash journal worksheet if time permits.

Exit Ticket

1. Summarize today's lesson with the students then pass out the Exit Ticket.
2. The teacher collects exit tickets and reviews student answers. Make minor adjustments to the next lesson based on data received.

