

6th Grade Food Waste Lesson: Rotten Food and Rising Gas 🌱💧🍎

Driving Question

What happens to food when it rots, and why does it create methane that harms the environment?

Vocabulary

- **Decompose:** The process of food breaking down into smaller parts after it's no longer fresh.
- **Microorganisms:** Tiny living things (like bacteria) that eat old food and cause it to rot.
- **Methane:** A powerful gas released when food breaks down without oxygen, often in landfills.
- **Landfill:** A place where trash is buried under the ground.
- **Greenhouse Gas:** A type of gas (like methane or carbon dioxide) that traps heat in Earth's atmosphere and warms the planet.

Modifications for Special Needs (SPED) and Multilingual (ML) Learners

- **For Reading Disabilities/Low Reading Levels:** Provide simple comic-style visuals showing a banana peel decomposing in soil vs. in a landfill, with arrows labeled "oxygen" and "methane." Use icons for gas (💧), bacteria (🦠), and landfill (🗑️).
- **For Behavioral Disabilities:** Break the activity into short steps (Step 1: Observe the jars, Step 2: Record changes, Step 3: Share observations). Give each student a specific role such as "Observer," "Recorder," or "Presenter."
- **For Multilingual Students (ML):** Provide bilingual vocabulary cards (English/Spanish or other relevant languages). Allow students to explain decomposition in their home language before sharing in English.

Co-Teaching Plan

Teacher A: Explains decomposition and methane using visuals and a short demo.

Teacher B: Leads the group activity (the "Rotten Food Gas Race") and helps students record observations.

Relevant NJ Student Learning Standards

- **MS-PS1-2:** Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- **MS-ESS3-3:** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- **MS-ESS3-4:** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Learning Objectives

Students will be able to:

- Explain how food waste decomposes.
- Describe how methane is produced in landfills.
- Identify why methane is harmful to the environment.

- Work in teams to model food decomposition and methane production.

Instructional Plan

LAUNCH (5 minutes)

- **Visual Hook:** Hold up a fresh apple and a brown, mushy apple slice. Ask: “Which one would you rather eat?” (Students usually say the fresh one.)
- **Then ask:** “But what happens to the mushy one if we throw it away?”
- **Food Waste Intro:** Short video introducing food waste and its environmental harm

EXPLORE (20 minutes)

Activity: Rotten Food Gas Race

1. **Setup:** Each group receives two small zip-top bags or bottles with food scraps (like banana peels or bread pieces). One bag is left with small holes (oxygen in), the other sealed tightly (no oxygen).
2. **Observation:** Students lightly squeeze the bags to feel for gas buildup after some time (teacher can prep samples ahead so gas is already noticeable).
3. **Connection:** Teacher explains that the sealed bag is like a landfill: no oxygen, so methane builds up. The open bag is like composting – the food still breaks down, but with oxygen, which produces much less methane.

SUMMARIZE (15 minutes)

- **Group Sharing:** Students compare their sealed vs. unsealed samples.
- **Discussion:** Ask, “Why is methane a problem for Earth?” (It traps heat in the atmosphere and speeds up climate change).
- **Connection:** Link to solutions: composting, repurposing, or donating food instead of sending it to landfills prevents methane.

I Can Statements (for K-5)

- I can explain what happens to food when it rots.
- I can describe how methane is made in landfills.
- I can suggest a way to reduce methane from food waste.

Exit Ticket

Why is composting better for the environment than throwing food waste in the trash?