

LESSON PLAN

LESSON NAME: UNDERSTANDING LANDFILLS & REDUCING EMISSIONS

GRADES: 6+

MEETS CURRICULUM: MATTER, EARTH & SPACE, BIODIVERSITY



OBJECTIVES:

To teach students about greenhouse gases emitted from landfills and how those gases are managed. Increase awareness of reducing food waste.

Vocab words = methane, greenhouse gases (GHG), compost

FACTS:

1. Decomposing matter creates Methane which is a greenhouse gas. Methane must be managed properly by landfills.

2. In 2017, about 139.6 million tons of MSW were landfilled. Food was the largest component at about 22 percent ([Source](#)).

3. Landfills have a capacity and eventually have to close once they are full. This means more land will need to be used to create new landfills.

WHAT YOU WILL NEED:

1. A slideshow presentation to engage students is recommended
2. If available, a worm farm to show decomposing food
3. Sample of finished compost product

DISCUSSION:

1. What are greenhouse gases?
2. What are the effects of gases being emitted into our atmosphere?
3. Do you know what gas is emitted from a landfill and where it is coming from?
4. Does anyone know how methane is handled at a landfill?
5. How can we limit the amount of methane gas coming from a landfill?

LESSON STEPS:

Explain greenhouse gases (GHG)

- The effects GHG's have on our atmosphere
- What is methane and how is it produced in a landfill?
- What we can do to reduce our waste & contributions to GHG's
 - Less food waste
 - Backyard composting/worm farm
 - Organics collection

NOTES:

SUGGESTED ACTIVITIES

Global Warming Example:

- Supplies: two bowls, plastic wrap, a lamp, thermometer.
- At the beginning of the presentation, setup two bowls of water. Only one covered with plastic wrap. Check the temperature of the water in both bowls and have a student record these numbers.
- Turn on the lamp, and place it directly above both bowls.
- At the end of your presentation, check the temperature again. The bowl with plastic wrap should be warmer. Explain that the plastic wrap is acting like methane, and other GHG's, in our atmosphere.

Compost Sample:

- Supplies: compost soil
- Bring finished compost material to show students what food waste and green waste can be turned into. Explain the benefits of compost and how the nutrients in the soil are so valuable to plants.

Worm Farm:

- Supplies: worm farm, gloves
- If you have a worm farm, use this to show students that our waste decomposes with the help of the worms to create a soil rich in nutrients.
- Allow students to touch the soil and visually see what is in the worm farm box.