WHAT'S MY CARBON FOOTPRINT?

- Grade Level: 4-6
- Subjects: Science, Social Studies
- Suggested Time: 1 hour

Students will calculate their environmental impact.

Materials

Chalk/whiteboard, computers with internet access (ideally one per student), Carbon Footprint Worksheet, large paper or poster and markers (optional).

National Standards

Science:

- Regulation and behavior.
- Population and ecosystems.
- Structure and function in living systems.
- Science as inquiry.

Social Studies:

- Environment and society.
- Roles of the citizen.
- Scarcity.
- Human systems.

Ohio 2010 Standards

Science:

- Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful. (4)
- Organisms perform a variety of roles in an ecosystem. (5)
- Science inquiry and applications. (4-6)

Social Studies:

- People have modified the environment since prehistoric times. There are both positive and negative consequences for modifying the environment in Ohio and the United States. (4)
- Variations among physical environments in Eastern and Western hemispheres influence human activities. Human activities also influence the physical environment. (5, 6)
- The choices people make have both present and future consequences. (5, 6)

Objectives

The student will be able to:

- Define greenhouse gas and carbon footprint.
- Identify ways carbon dioxide is emitted.
- Calculate individual carbon footprint.
- Brainstorm ways to reduce carbon footprint.

Teacher Preparation

Carbon footprint is a calculation of the amount of greenhouse gas emissions (like carbon dioxide) an entity is responsible for. An entity may be a country, business, industry, or individual. The footprint measures the direct and indirect amounts of greenhouse gas emissions, which trap heat in the earth's atmosphere. Carbon dioxide emissions also lower the quality of the air we breathe and contribute to other forms of pollution. The average American's individual carbon footprint is over 20 metric tons, which is double that of people in other industrialized nations. To find out what your carbon footprint measures, try the EPA's online calculator at http://www.epa.gov/climatechange/ghgemissions/individual.html. Knowing the size of your footprint is a good first step toward reducing carbon emissions.

Introduction

- Draw a footprint on the board and write "Carbon Footprint" above it.
- Write the definition on the board: carbon footprint is the amount of greenhouse gases that are let into the atmosphere by a person or organization.
- Explain that greenhouse gases, such as carbon dioxide, are harmful to the earth when too much is let into the atmosphere. Draw or display a diagram of the greenhouse effect, explaining that these gases cause the earth's temperature to slowly rise. This can affect human, animal, and plant life. These gases can also pollute the air we breathe.
- Explain that everyone has a carbon footprint, but some people's carbon footprint is much larger. American's carbon footprints are usually twice as big as people in other countries, which is bad for the earth. Tell students they will be calculating their personal carbon footprints and learning ways to shrink their carbon footprints.

Activities

- Distribute the Carbon Footprint Worksheet to each student. Review the definitions of carbon footprint and greenhouse gas while students write them down.
- To help students understand the last web site, you may need to tell them the chemical abbreviation of carbon dioxide, and the standard abbreviation for pounds.
- Assign students to computers. They should write their answers on the Carbon Footprint Worksheet. Help students follow the worksheet instructions to log onto the web sites and answer the questions.
- Regroup as a class. Ask students what causes greenhouse gases to be let into the atmosphere. Students may write these causes inside the drawing of the footprint.

- Ask students to share their answers to the other questions on the worksheet. Students may write reduction strategies on a large paper or poster to hang in the classroom.

Extensions

- Students may draw diagrams illustrating the greenhouse effect.
- Students may research global warming to form an opinion on the issue.
- Students may encourage their family members to calculate their carbon footprints using the web sites on the worksheet or the EPA's carbon footprint calculator.

Closing

Ask students how they plan to change their carbon footprint.

Worksheet

See: Carbon Footprint Worksheet