

**Carbon Footprint: Focus on Food**

**Time:** Three 45-minute class periods over one-two weeks

**National Benchmarks:** Benchmarks 5A: Diversity of Life; 5D Interdependence of Life; 5E: Flow of Matter and Energy; 9B: Symbolic Relationships; 9D: Uncertainty; 12B: Computation and Estimation; 12D: Communication Skills; 12E: Critical-Response Skills.

**National Science Content Standards:** *Science as Inquiry: A; Life Science: C:* Biological Evolution; The Interdependence of Organisms; Matter, Energy, and Organization in Living Systems; *Science and Technology: E:* Abilities of Technological Design; Understandings about Science and Technology; *Science in Personal and Social Perspectives: F:* Population Growth; Natural Resources: Environmental Quality; Natural and Human-induced Hazards; Science and Technology in Local, National, and Global Challenges

**New York State Standards:** 1, 2, 4, 5, 6, 7

**Objective:** Students will determine their overall carbon footprint, and then focus in on food choices, and be able to describe how changing their diet can reduce carbon emissions.

**Lesson Outline:**

1. Students learn try an online carbon calculator, or use the provided handout
2. Students discuss the different sources of carbon in their daily lives
3. Students research the carbon impact of their food choices using the “Supermarket Hunt” activity
4. Students determine ways to reduce their carbon footprint

**Materials:**

Computers for online carbon footprint calculation, or handout  
Supermarket Hunt worksheet  
Graph of household carbon sources (at end of lesson plan)

**Engage:** Ask students to brainstorm a list of the ways that they release carbon in their daily lives. Ask them to rank the most important sources. Although some students may think that their individual activities aren’t important, the Northeast states emit more carbon than the entire country of Canada or the United Kingdom.

**Explore:**

**Part 1:** Students research their personal carbon footprint using one of the following websites, or the carbon calculator provided with the materials for this lesson:

[www.nativeenergy.com](http://www.nativeenergy.com) (includes separate lifestyle, travel, and event calculators)

[www.climatefriendly.com](http://www.climatefriendly.com)

[www.myclimate.org](http://www.myclimate.org)

[www.empowermentinstitute.net/lcd](http://www.empowermentinstitute.net/lcd)

[www.footprintnetwork.org](http://www.footprintnetwork.org) (includes lots of data to back up the results)

[http://www.epa.gov/climatechange/emissions/ind\\_calculator.html](http://www.epa.gov/climatechange/emissions/ind_calculator.html)

**Part 2:** Once students have a general idea of their carbon footprint, they can begin the “Supermarket Hunt” activity. This involves going to a supermarket and selecting a range of products, estimating where each of the products was shipped from, and calculating the impact of that travel in terms of tons of carbon. While most students find this activity simple, you may need to provide some guidance about how to estimate distances to other countries. If a country is listed on a package without any additional guidance, students should find the capital of that country, and then determine the distance traveled by using an atlas or an online service.

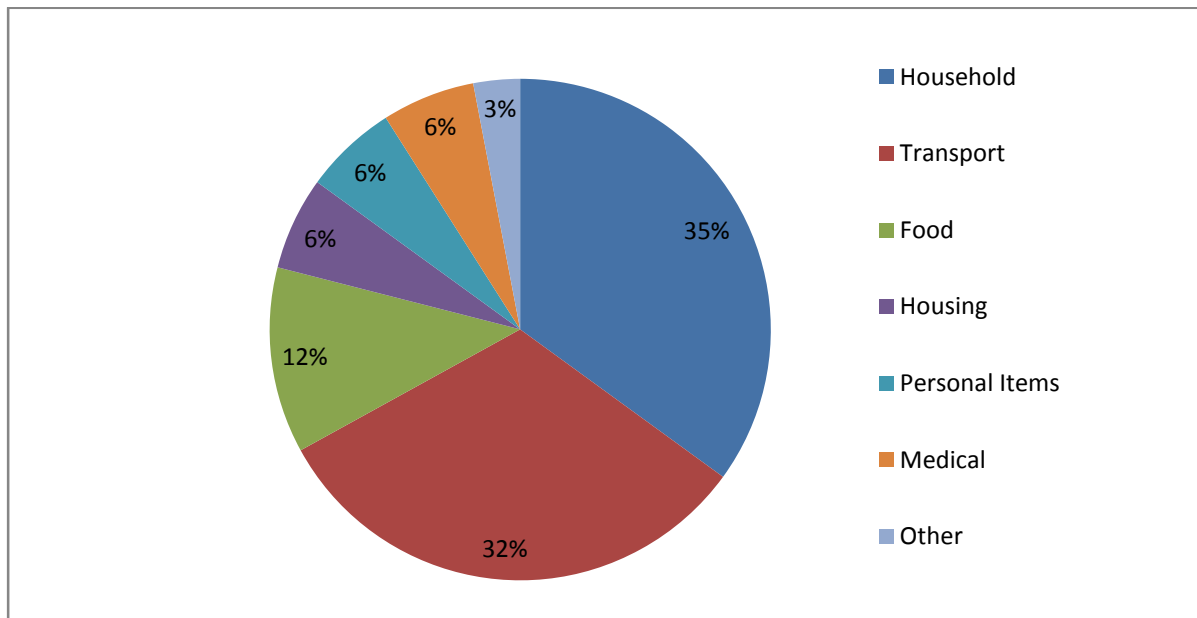
**Explain:** For the average American, the most significant impact on the environment comes from household heating & cooling and electrical use, followed by transportation. The average American releases 11.9 tons of carbon dioxide per year. To compare with some other countries: Brazil: 0.9; Canada: 8.2; China: 0.7; German: 5.6; Japan: 3.2; Mexico: 2.8; South Africa: 2.8 (data from Meet the Greens, a PBS kids website with resources from Zero Footprint)

Our agricultural practices currently account for about 18% of carbon emissions, which includes the land needed for growing food for our animals, their waste and water costs, and the emissions related to butchering & transporting our food. Changing the way we eat can have substantial benefits for reducing our collective carbon footprint.

**Extend:** Students can research additional ways to reduce their carbon footprint.

**Evaluate:** Collect Supermarket Hunt worksheet.

### Comments:



**Carbon emissions from the average American household** (data from the Union of Concerned Scientists, Consumer's Guide to Effective Environmental Choices by Michael Brower and Warren Leon, 1999).

Household operations: 35% (includes heating & cooling, appliances, waste, cleaning...)

Transportation: 32%

Food: 12%

Housing: 6% (includes the building of your home, maintenance, and repair, including the impact of clearing the land initially)

Personal Items: 6% (toiletries, clothing, toys, books, etc)

Medical: 6%

Other: 3%