Energy Awareness at 4-H Camp

Search for Energy

Skill Level
Beginning/ Intermediate
Time Needed
45 Minutes

Learner Outcomes

- Participants/campers will discuss the nature of nonrenewable resources and the issue of eventual depletion of such energy sources.
- Participants/campers will relate the issue of nonrenewable energy resources to their own use of energy
- Participants/campers will identify ways they can save energy both personally and as a group in the camp environment.

Introduction

As we better understand the limited supply of *non-renewable* energy resources we must also recognize the importance of seeking and developing more *Renewable Energy* sources such as: photo voltaic solar, solar thermal, geothermal, bio fuel, wind, hydroelectric and likely others.

Opening Questions

- Are the energy sources that are used to run camp renewable, nonrenewable, or both?
- If camp is here 60 years from now, how will the sources of energy (lights, hot water, heat, food prep) be different than today? Will the trend be to work hard to discover and "mine" more nonrenewable energy, or to move towards more renewable energy?

Experience

1. In preparation, open the "Search for Energy" kit and pull out the fabric pieces and energy supply pieces (various colored beans, pasta, and plastic beads).
2. Spread out the three colors of fabric on an open area to represent the land and sea (blue – water/sea; green- agricultural and/or residential land; brown – mountains and/or nonproductive land)
3. Place beans and beads, which represent renewable and non-renewable energy resources, in and around the fabric. Place some underneath the three colors of fabric.
4. Post the *Search for Energy* chart in an area where the group can help to fill it in as the activity takes place. Find *the Energy over Time* chart on the 4-H Renewable Energy Lab Kit DVD or transcribe the chart illustration below onto a display board or flip chart.
5. Divide participants into (4) four groups, each representing a different generation
6. Group 1 - 1st - current generation (***role play the campers themselves***) - today
7. Group 2 - next generation (***role play children of the 1st generation***) – 20 years from now
8. Group 3 - next generation (***role play grandchildren of the 1st generation***) – 40 years from now
9. Group 4 - next generation (***role play great grandchildren of the 1st generation}*** – 60 years from now
10. Ask each group identify a *Time Keeper*.

Materials Supplied

- Search for Energy Kit (fabric pieces, energy pieces, Energy over Time chart)

Additional Materials Needed

- Marker, flip chart, or other display board
- Timer device (watch, phone, clock)

Energy Awareness at 4-H Camp

Search for Energy

(Continued from page 1)

11. When you are ready to start, ask the Time Keeper to have the current generation (Group 1) collect as many energy resources as possible in 15 seconds.
12. After 15 seconds, stop the "Energy Harvest".
13. Tell the group that the energy they gathered/harvested represents today's *renewable* and *non-renewable* resources being used for home, industry and transportation energy.
14. Sort beans and beads on individual plates or paper towels and count the numbers of each type of energy source; Record the numbers on the first column of the "*Search for Energy*" chart.
15. Replace ONLY the renewable energy sources (beans and/or beads) that were "mined" and counted during the first round. Also add a few extra (5 to 10 each) of the renewable energy sources (wind, solar, hydro-electric, and geothermal).
16. Repeat this three more times, involving each of the different generation groups
17. Record results in the next three columns.

Share

- What is the trend in energy sources that are "mined" over the four generations (60 years)?
- Why were some of the colored "energy source" game pieces placed under the fabric? (to represent sources of energy found underground)
- Describe what happened to the "harvest" or "supply" of oil? Gas? Coal?
- What kinds of energy sources were replaced? Why?
- How does this experience relate to the "real world"?
- Why weren't the non-renewable energy sources added back to the land each time a new generation harvested energy?

Reflect

- Where did the energy come from for to heat your last hot water shower? (Hint: Identify the camp's hot water heating supply, then trace the energy supply type back to a "potential" source [i.e. with propane heat, the propane was purchased from *XYZ energy supply Co*. and mined in *ABC location*.])

(Continued on page 3)

Did You Know...

The sun shines down over **16** Terawatt years of solar energy on the earth's surface each year – more than the total world supply of stored energy in coal, petroleum, and uranium resources combined. We are just beginning to harness some of it. See *Making the Case for Solar Energy* by Richard Perez, Prof. of Atmospheric Science, SUNY Albany. Excellent graphics!

Education Standard

To be aligned with Common Core Standards at CoreStandards.org, in progress.

Search for Energy

(Continued from page 2)

- Have there been any changes in where/how your camp has gotten its energy in the recent past? (Hint: Ask Camp Facility Manager)
- Are there plans to change camp energy management in the future?

Generalize

- What laws or government programs can you think of that relate to conserving non-renewable energy resources or to encourage renewable energy sources?: (Hint: Tax credits for buying energy efficient appliances; household energy surveys are offered "free" though grants; car pool lanes to encourage gas savings.)
- What can you do at camp to conserve non-renewable energy resources? (Hint: Turn off lights when not in use; take shorter showers; use less ice; reduce use of electric appliances, especially ones that produce heat.)
- What step(s) has your camp program taken to reduce energy waste? (Hint: Reusable eating ware; recycling program; composting programs; replaced lighting fixtures with more efficient options.)

Term and Concept Discoveries

- **Mine/ Extract:** The extraction of valuable minerals or other geological materials from the earth, from an ore body, vein or (coal) seam.
- **Renewable Energy Resource:** is energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable (naturally replenished).
- **Nonrenewable Energy Resource:** A natural energy resource which cannot be reproduced or replaced once used.
- **Sustainable Energy:** Provision of energy that meets present needs without taking away the ability of future generations to meet their energy needs.
- **Sustainability (or Environmental Sustainability):** The long-term maintenance of the environmental, a necessary condition for the well-being of people and our environment.

Success Indicator

- Commitment to reduce use of electric appliances, shorter showers.

Glossary

Terrawatt: 1×10^{12} watts or one trillion watts or 1,000,000,000 Killowatts.

References

- New York State Energy Research & Development Authority (NYSERDA). www.nyserda.ny.gov

SEARCH FOR ENERGY

Search Period	Oil/Petroleum (brown beans)	Coal (black beans)	Natural Gas (white beans)	Uranium (red beans)	Bio Fuel (Green)	Wind Pasta	Hydro (blue)	Solar (Yellow)
1 (today's generation - you) 2010								
2 (Your children) 2025								
3 (Your Grandchildren) 2045								
4 (Your Great Grandchildren) 2065								

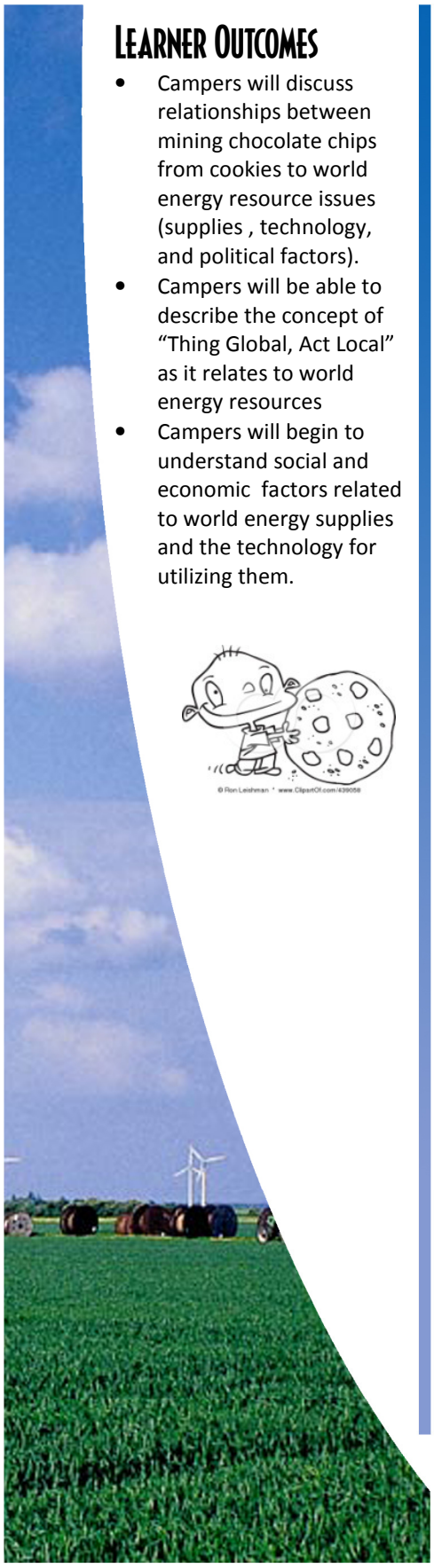
SEARCH FOR ENERGY

Energy Awareness at 4-H Camp

Energy Awareness at 4-H Camp

Mining ChoCOALate

Skill Level
Beginning/ Intermediate
Time Needed
45 Minutes



Learner Outcomes

- Campers will discuss relationships between mining chocolate chips from cookies to world energy resource issues (supplies , technology, and political factors).
- Campers will be able to describe the concept of "Thing Global, Act Local" as it relates to world energy resources
- Campers will begin to understand social and economic factors related to world energy supplies and the technology for utilizing them.

Introduction

In today's world there are various types of *non-renewable* energy resources that are mined (harvested) to generate power and provide transportation (sources like: petroleum, oil, and natural gas). However, since the supply of these energy sources are limited and vary in quantity, quality, and location, availability to people groups can vary. This influences political and economic decisions, and often relationships among nations. We may not think about it, but even in a camp setting a significant amount of energy is required to run lights, heat water, prepare food, operate cars/ truck, and even to have a campfire.

Opening Questions

- Where does the energy use at camp come from? (Hint: General – electricity, natural gas, gasoline, firewood. Specific – gas company, electric company, from the woods.)
- What are the forms of energy you use each day? Name some. (Hint: Electricity [from coal, nuclear, or hydroelectric sources], gasoline, oil.)
- Does most of your energy supply come from *nonrenewable* or *renewable* sources?

Experience

Prior to activity:

- Prepare a plate (or paper towel) with varying amounts of chocolate chip cookies for each participant. Place a generous amount of cookie(s) on some plates and little or no cookies for others.
- Place varying types and quantities of "mining tools" (tooth picks, stirrers, and/or paper clips) for each participant. Be sure some get little or none and others get more than an ample supply of mining tools.

After campers arrive:

- Explain that each person has to "mine" his/her ***ChoCOALate*** energy reserves to the best of his/her ability in only 10 minutes.
  Rules:
  1. May not use fingers OTHER THAN TO HOLD THE COOKIE.
  2. Time allowed is only 10 minutes (note – this time frame can vary according to needs)
  3. It is allowable to trade or give away cookies, parts of cookies and/or mining tools
- Invite everyone to eat their ***ChoCOALate*** energy as a snack as you discuss the "Share" questions

Note: Be sure you have extra cookies for those who received little or no cookies

Materials Supplied

- Mining ChoCOALate Activity Guide

Additional Materials Needed

- 2-3 kinds of chocolate chip cookies
- Toothpicks
- Paper clips
- Coffee stirrers
- Paper plates or paper towels

Energy Awareness at 4-H Camp

Mining ChoCOALate

(Continued from page 1)

Share:

- How did you feel about the "resources" and "technology" you were given?
- Did you do anything do deal with your situation?
- How does your experience relate to the "real world"?

Reflect:

- What factors influence the amount of energy resources available to a people group/country? (Hint: Amount of resources available to mine; technology available to process the energy resource(s); economic status of the country.)
- How does technology relate to amount of energy supplies (resources) available to community/country (Hint: Modern technology is needed to process and market energy resources like coal, gas, petroleum; technology often relates to a country's economic state.)
- How might personal consumption of goods and materials relate to energy consumption? (Hint: Natural resources and energy production are required for higher personal consumption. See Personal Consumption by Country at the end of this lesson.)
- Describe/name some technologies we use in this country to mine or extract nonrenewable energy resources. (Hint: Drilling, mining, hydro-fracturing)
- Where did the energy come from for to heat your last hot water shower? (Hint: Identify the camp's hot water heating supply, then trace the energy supply type back to a "potential" source [i.e. propane heat. The propane was purchased from *XYZ energy supply Co*. and mined in *ABC location*.])

Generalize

- What laws or public programs can you think of that relate to conserving non-renewable energy resources or to encourage renewable energy sources? (Hint: Tax credits for buying energy efficient appliances; household energy surveys are offered "free" though grants; car pool lanes to encourage gas savings.)
- What can you do at camp to conserve non-renewable energy resources? (Hint: Turn off lights when not in use; take shorter showers; use less ice; reduce use of electric appliances, especially ones that produce heat.)

Did You Know...

- Coal supplies 42% of the entire world's electricity. The United States is second only to China in coal production producing a staggering 1.1 billion tons in comparison to the UK's 51.5 million tons of coal.
- There are 119 billion tons of coal reserves in Montana making it the US state with the most coal reserves. However the biggest coal producing state in the US goes to Wyoming which extracted a whopping 400 million tons in 2004.
- The state of Texas consumes about 100 million tons of the black stuff each year making it the biggest coal consuming state of the US.
- Before being transported coal needs to be cleaned, sorted and broken down into varying sizes. Almost 60% of US coal is transported by rail road.
- Mountain top removal mining is usually associated with coal mining in the Appalachian Mountains. The United States Environmental Protection Agency (EPA) estimates that 2,200 square miles of Appalachian forests will be cleared for mountain top removal mining by 2012.

(Continued on page 3)

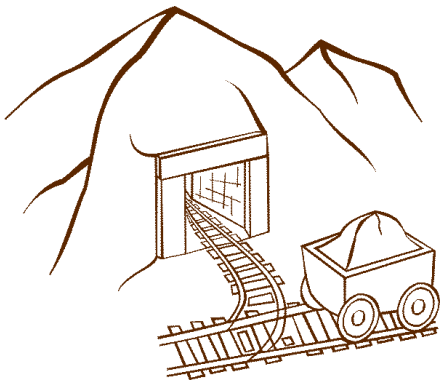
Education Standard

To be aligned with Common Core Standards at CoreStandards.org, in progress.

Mining ChoCOALate

(Continued from page 2)

- What step(s) has your camp program taken to reduce energy waste? (Hint: Reusable eating ware; recycling program; composting programs; replaced lighting fixtures with more efficient options.)



Related Activities

- Campfire "Chatter Session" : Set up a campfire session where the conversation relates only to "World Energy – Thinking Global, Acting Local".

Term and Concept Discoveries

Mine/ Extract: The extraction of valuable minerals or other geological materials from the earth, removal from an ore body, vein or (coal) seam.

Renewable Energy Resource: Energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable (naturally replenished).

Nonrenewable Energy Resource: A natural energy resource which cannot be reproduced or replaced once used.

Mining Technology: The knowledge and use of tools, machines, techniques, and systems, in order to solve a problem, in this case, a solution to extract energy resources from the earth.

Success Indicator

- Commitment to reduce use of electric appliances, shorter showers.
- Reduced garbage taken from camp to the landfill.

References

- New York State Energy Research & Development Authority (NYSERDA). www.nyserda.ny.gov
- Discovery UK, Energy Facts. http://www.discoveryuk.com/adventure/blog/outback-facts
- World Salaries: WorldSalaries.org

Energy Awareness at 4-H Camp

Mining ChoCoALate

Personal Consumption by Country – Measured in US Dollar Value

Worldsalaries.org © 2007, 2008

Country	Total	Health	Housing	Food	Apparel	Education	Transport
U.S.	15,816	1,068	6,072	2,543	754	372	3,336
Canada	15,094	575	5,613	2,271	823	387	2,886
Germany	14,868 (1)	579	5,632 (1)	2,752 (2)	767	136	2,012
UK	14,786	168	5,162	2,802	802	223	2,463
Switzerland	14,763	979	4,788	3,414 (2)	663	112	1,764
Norway	14,530	492	3,484	3,053	913	53	2,973
Australia	14,036	724	4,240	2,429	557		2,217
Netherlands	13,282 (1)	474	4,571 (1)	2,299	904	563	2,223
Finland	12,880 (1)	458	4,330 (1)	2,285 (2)	441	23	1,892
Austria	12,789	460	2,976	2,706	815	116	2,368
Belgium	12,668	704	2,647	2,364	719	120	1,958
Sweden	12,403	315	3,814	2,081	834	49	2,717
France	12,069	542	2,758	2,901	802	55	1,938
N. Zealand	11,524	378	4,551	1,978	421	275	1,967
Taiwan	10,727	1,581	2,110	2,575	401		1,481 (3)
Israel	10,683	530	3,866	1,741	412		2,178 (3)
Japan	9,632	400	1,707	2,188	421	328	1,255 (3)
Hong Kong	9,057	288	2,009	1,248	508	416	1,040
Korea	8,927	476	1,117	2,362	428	904	1,476 (3)
Singapore	8,001	459	947	1,934	326	711	1,941
Slovakia	5,011	103	1,290	1,290	368	32	451
Hungary	4,679	187	1,095	1,376	257	37	547
Brazil	4,637	302	1,646	962	263	189	854
Lithuania	4,390	190	815	1,354	425	57	428
Poland	4,107	202	1,090	1,335	223	69	377
Mexico	3,034	87	484	827	166	264	397
Romania	2,807			1,447			
Thailand	2,565	76	657	954	94	73	461 (3)
China	2,292	159	440	932	191		249
Philippines	2,130	48	562	928	63	87	161

(1) Including owner-imputed rent.

Energy Awareness at 4-H Camp

Solar S'mores

Skill Level
Beginning/ Intermediate
Time Needed
45 Minutes

Learner Outcomes

- Campers will discuss renewable energy resources and experience ways they can work for us in a camp environment
- Campers will relate the issue of nonrenewable energy resources to their own use of energy
- Campers will build a ***Solar S'more*** maker to utilize solar energy for making a snack at camp

Introduction

The energy we can derive from the sun can be used in many ways from generation electricity through Solar PV panels to heating water using direct solar energy, to cooking food, including snacks at camp. By roasting marshmallows for s'mores using a solar reflecting concave mirror, campers will explore the idea of solar energy, a renewable energy source and how it is used for preparing food.

Opening Questions

- Name two ways we can capture the sun's energy for our daily use. (Hint: generating pv solar electricity, heat and energy from direct solar radiation – i.e. reflector stove, direct solar heat with a concave mirror)

Experience

Build solar s'more roasters from the materials in the 4-H Renewable Energy Lab (see Materials Supplied)

1. Plan for a sunny day!!
2. Using the 3" concave mirror and half round cut piece of log, attach the mirror to the flat surface of the log so that it is perfectly flat against the log. Use Sticky Tack to secure the mirror. Place the 8 – 12" dowel through the ¼ " hole in the log. In a moment you will push the dowel through the hole and anchor it to the ground so that the mirror is oriented directly into the sun.
3. If the dowel is perpendicular to the flat surface of the log and the mirror/log assembly is aimed correctly, it should cast little or no *shadow*.
4. Now you are ready to roast your first marshmallow.
5. Try experimenting with this a few times.
6. When you are ready to roast a marshmallow for a S'more, simply hold the marshmallow on a stick and place it in the focal point of the reflected sunlight so that it in in the in the area where the sunlight is concentrated the most.

Share

- What is the name of the specific area where all of the sunlight merges into one very hot location? (Hint: Focal Point.)
- About how long is the distance to the focal point? What things (conditions) would change the location of the focal point? (Hint: The magnification of the mirror – the stronger the magnification the shorter the distance to the focal point)·

Materials Supplied

- **Making Solar S'mores Kit:** (3 – 5 wooden logs cut in half; sticky tack; 3 – 5 3" cosmetic mirrors; (3-5)8 – 12" Dowels slightly pointed)
- **Instructions on *Making Solar Smores*** (on DVD provided with lab and in 3-ring binder)

Additional Materials Needed

- Mini Marshmallows
- Extra wooden skewers
- Chocolate melting wafers
- Graham Crackers or Vanilla Wafers

Solar S'mores

(Continued from page 1)

- What happens when the marshmallow is moved below the focal point? Out beyond the focal point? (Hint: the sun rays are dispersed and not as hot/ intense.)

Reflect

- How practical might this kind of "cooking" food be for regular household use?
- What could we do to make solar cookers more effective
- What other kinds of solar cookers are available? (Hint: reflector ovens)

Generalize

- What safety aspects can you think of that should be especially adhered to when using solar energy? (Hint: do not look directly at the mirror; hot surfaces, including the roasted marshmallow).
- What can you do at camp to conserve non-renewable energy resources? (Hint: turn off lights when not in use; take shorter showers; use less ice; reduce use of electric appliances, especially ones that produce heat.)
- What step(s) has your camp program taken to reduce energy waste? (Hint: Reusable eating ware; recycling program; composting programs; replaced lighting fixtures with more efficient options.)

Term and Concept Discoveries

Focal Point: The point at which all sun rays reflecting from a concave mirror converge to one point location. This is where the energy is concentrated and becomes very hot. Hot enough to roast a marshmallow.

Direct Solar Radiation: Energy coming directly from the sun and utilized without transforming the energy into another form such as heat or electricity. "Direct sunlight".

Success Indicator

- Campers successfully create their own S'more treat(s).

Did You Know...

The sun shines down over **16** Terawatt years of solar energy on the earth's surface each year – more than the total world supply of stored energy in coal, petroleum, and uranium resources combined. We are just beginning to harness some of it. See *Making the Case for Solar Energy* by Richard Perez, Prof. of Atmospheric Science, SUNY Albany. Excellent graphics!

Glossary

Terrawatt: 1×10^{12} watts or one trillion watts or 1,000,000,000 Killowatts.

Education Standard

To be aligned with Common Core Standards at CoreStandards.org, in progress.

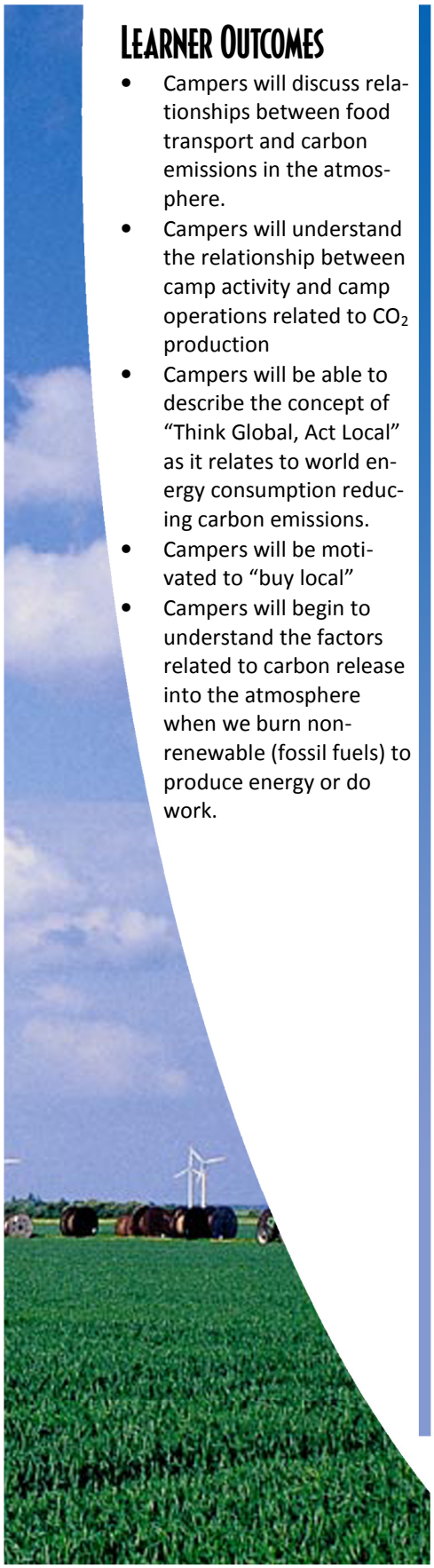
References

- New York State Energy Research & Development Authority (NYSERDA). www.nyserda.ny.gov

Energy Awareness at 4-H Camp

Cookies, Miles & CO_2

Skill Level
Beginning/ Intermediate
Time Needed
45-90 Minutes



Learner Outcomes

- Campers will discuss relationships between food transport and carbon emissions in the atmosphere.
- Campers will understand the relationship between camp activity and camp operations related to CO_2 production
- Campers will be able to describe the concept of "Think Global, Act Local" as it relates to world energy consumption reducing carbon emissions.
- Campers will be motivated to "buy local"
- Campers will begin to understand the factors related to carbon release into the atmosphere when we burn non-renewable (fossil fuels) to produce energy or do work.

Introduction

Campers are learning to "Think Global & Act Local". It is a way to help ensure a more sustainable environment. In this activity campers will make different batches of cookies to compare the carbon footprint of those made from local ingredients to those made with name brand ingredients.

Opening Questions

- What relationship is there between how and where we get our food and the amount of energy required to get it to us? (Hint: the further we transport our food and other products, the more fuel energy is required, therefore depleting our non-renewable energy supplies.)
- When we burn *fossil fuels*, what chemicals are released into the atmosphere that effect the amount of heat energy maintained in the earth's atmosphere? (Hint: CO_2)
- If burning fossil fuels produces CO_2 emissions, what would be some of the greatest sources of CO_2 being produced at camp?

Experience

1. Divide campers into two groups (A and B). Both groups will use the exact same recipe to calculate the amount of CO_2 given off by transporting the cookie ingredients to camp. BUT group (A) will make the cookies with *brand name* ingredients from throughout the country. Group (B) will use ingredients found more *locally*. The two groups will then compare the amount of CO2 emitted to transport the ingredient for their batch of cookies.

2. Using the cookie recipes provided in the activity guide (also on the 4-H Energy Lab DVD), choose a type of cookie you'd like to "bake" to learn about the carbon footprint created by transporting the cookie ingredients. Then record the mileage information for each ingredient in the table below.

3. Find where each ingredient comes from. Use the pages from the document Cookie Ingredients.ppt. A hard copy is provided in the Energy Lab Activity Guide. It will provide information on various locations where the recipe ingredients are grown/ processed.

4. Use one of the following methods to determine the number of miles each ingredient travels to get to your "Camp Kitchen".

   a. Use ***Google Earth*** and find each location (city and/or country) where the ingredients you need are located.

   *For additional Google Earth help refer to a **YouTube** video tutorial http://www.youtube.com/watch?v=LhvXnILwCHQ Use the "Add a Path" feature to find out how far each ingredient traveled to make it*

Materials Supplied

4-H Energy Smart Camp and Campers DVD with:

- *Energy Food Miles folder Excel Spread sheet*
- *Power Point of cookie ingredients*
- *Six 3-minute movie clips on Carbon Dioxide*

4-H Energy Smart Camp and Campers Activity Guide with:

- *Cookies, Miles and CO_2 Activity Guide*
- *Cookie Recipes*
- *US & World Maps for the Cookies, Miles and CO_2 exercise.*

Additional Materials Needed

- Computer and Projector
- Flip Chart and Markers
- Ingredients for Cookies (optional)
- Oven, baking utensils and kitchen facilities (optional)
- String and Marker
- Gobe (optional)

Cookies, Miles & CO_2

(Continued from page 1)

to you. There is a distance function in the "make a path" properties box. Find the distance each ingredient traveled. Record the distance each ingredient "traveled" in the table below.

b. Measure distance using the **US and/or World Maps** *(attached)*. On a piece of white string or yarn, mark off approximately 50 or 100 mile segments using the scale bar on the US and world maps for reference. Record the distance each ingredient "traveled" in the table provided.

c. Use a ***globe*** to estimate distances. On a piece of white string or yarn, mark off approximately 50 or 100 mile segments using the scale bar on the globe for reference. Record the distance each ingredient "traveled" in the table, attached.

Note 1: Use the table/worksheet at the end of this document for campers.

Note 2: It may work better to transcribe the table at the end of this lesson to a flip chart or drawing board for larger groups. Or you may simply choose to use the Excel spread sheet directly without using the chart below.

5. Complete the *Camp Cookies, Miles, and CO_2 Footprint* Excel Spreadsheet (find it on 4-H Energy Lab DVD). Enter the miles according to *form* of transportation. Ask participants why you would want to explore this. Hint: Air travel of products is extremely energy costly. The spread sheet is designed to take this into consideration.

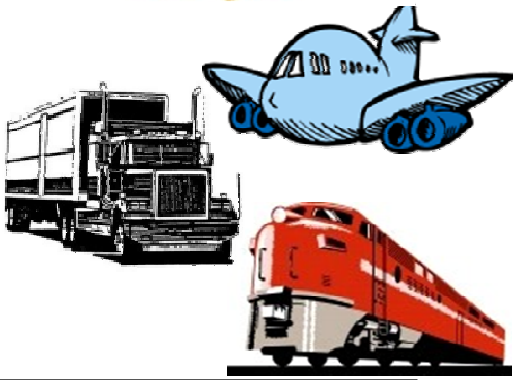
Food miles give a quick and easy way to compare how far ingredients have to travel. However, alone they do not quantify the amount of carbon dioxide emitted by transporting goods. Emissions from food miles are calculated by the weight of goods used in the cookie recipe and the miles they travel. The mode of transportation also affects the amount of CO_2 released during transport.

Detailed instructions for using the spread sheet

1. Open the MS Excel file "***Camp Cookies, Miles, and CO_2 Footprint***"
2. In the yellow boxes add the amount of each ingredient your cookies require. If the recipe doesn't call for one of the listed ingredients enter "0" into the yellow box. Amounts should all be entered in units of cups, teaspoons or whole unit (for example, 1 egg)
3. In each of the blue boxes, insert the amount of miles each ingredient travels to get to your home town. There are four different columns for the four main forms of freight transport, choose the method of transport that is most likely for each ingredient.

Once the information is entered for your batch of cookies, the amount of carbon dioxide emissions will be calculated automatically. Table A is for a group who is assigned to make a batch of cookies for name brand ingredients. Table B is for a group who is assigned to

(Continued on page 3)



Education Standard

To be aligned with Common Core Standards at CoreStandards.org, in progress.

Cookies, Miles & CO_2

(Continued from page 2)

make a batch of cookies using products found as locally as possible. (Note: some ingredients, like vanilla, must be transported from another country). But ask why that doesn't make much difference in the overall carbon emission in these batches of cookies. Hint: such a small quantity of vanilla is used that the mass/weight requires very little energy for transport.

Share

- Does buying as few as one or two ingredients locally make a significant difference? Explain. Hint: It may depend on how heavy the one ingredient is, since weight counts significantly in transportation fuel needs.
- Are there any other steps in making cookies that would emit greenhouse gases? What are these steps? What causes greenhouse gases to be emitted? Hint: Processing the product wherever it is manufactured; baking the cookies uses electricity or gas.
- Is there a significant difference in food miles between types of cookies? Explain your answer. Hint: look at the CO_2 Totals on the spread sheet.

Reflect

- What can you do to reduce the amount of food miles your ingredients have to travel to make the cookies?
- Imagine trying to explain this project to your parents or family. How would you explain your results? What recommendations would you make that could affect your everyday food purchases?

Generalize

- Name some other activities that you do at camp that affect your carbon footprint. Hint: Shower, use lights, food preparation, fans, travel to and from camp.

Related Activities

- Go to the camp kitchen and ask the staff to give you information on the size of a batch of cookies they make for campers. Plug that information into the Excel spread sheet and determine the CO_2 factors for enough cookies for all campers.
- Place a "Cookie & CO_2 Graffiti Chart" in a prominent camp area and jot

(Continued on page 4)

Glossary Words

fossil fuels – Fossil fuels have formed the basis of man's energy consumption for countless years. These resources, however, are non-renewable, and their supplies are dwindling at a rapid rate as they are being consumed by the Earth's population.

Read more: Facts About Fossil Fuels | eHow.com http://www.ehow.com/facts_4743673_facts-fossil-fuels.html#ixzz1wmJxiBgR

mass - The mass of something refers to the amount of matter that makes up an object. There is often a lot of confusion between mass and weight. Although they are similar, the weight of an object is dependent on gravitational pull (askkids.com)

Tags

carbon; footprint; greenhouse; gas; climate; change; global; warming.

References

- New York State Energy Research & Development Authority (NYSERDA). www.nyserda.ny.gov

Cookies, Miles & CO_2

(Continued from page 3)

down your findings. Have an "after dinner" discussion to tell other campers your discoveries and experience.

- Write a short essay below about food miles for cookies and your findings. Include responses to the discussion questions posed below

Term and Concept Discoveries

- **Carbon Footprint -** Your carbon footprint is the total amount of greenhouse gases "produced to support your lifestyle" according to ecomii.com. Basically, the carbon footprint measures how much of an impact a person's activities have on the planet.

  Read more: What Is the Definition of a Carbon Footprint? | eHow.com http://www.ehow.com/facts_5880835_definition-carbon-footprint_.html#ixzz1wmBxZFS4 (Ehow.com)

  Note: in this case the impact is the production of CO2 from transporting Cookie baking ingredients.

Success Indicator

Campers will:

- Describe other ways one's lifestyle can effect his/her carbon footprint.
- Indicate interest and/or describes ways to buy local.

Energy Awareness at 4-H Camp

Cookies, Miles & CO_2

Worksheet Table

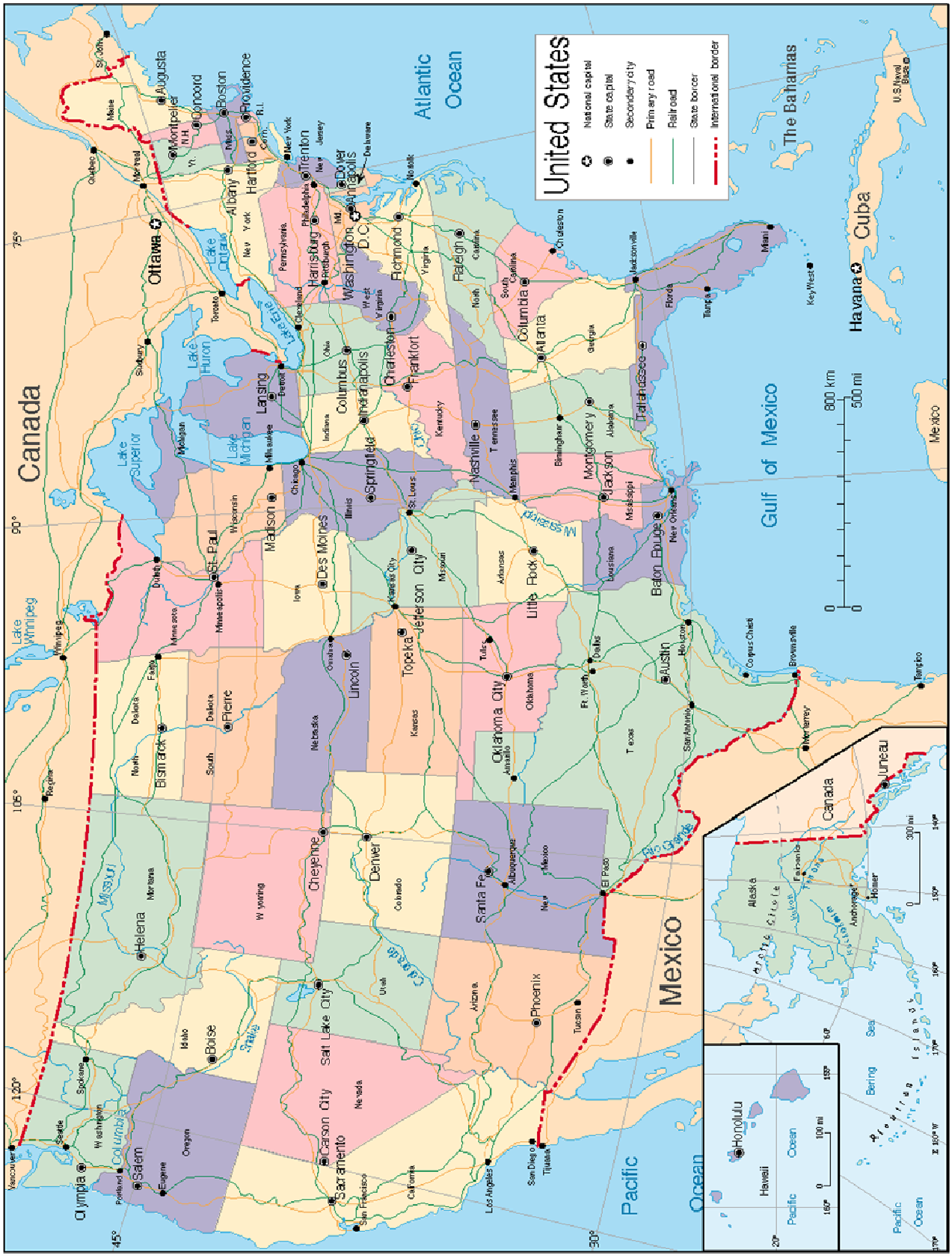
Group name: _____ (check one) __ Brand Name Ingredients or __ Local Ingredients

Ingredient	Miles by Truck	Miles by Train	Miles by Ship	Miles by Air
Total Miles:				

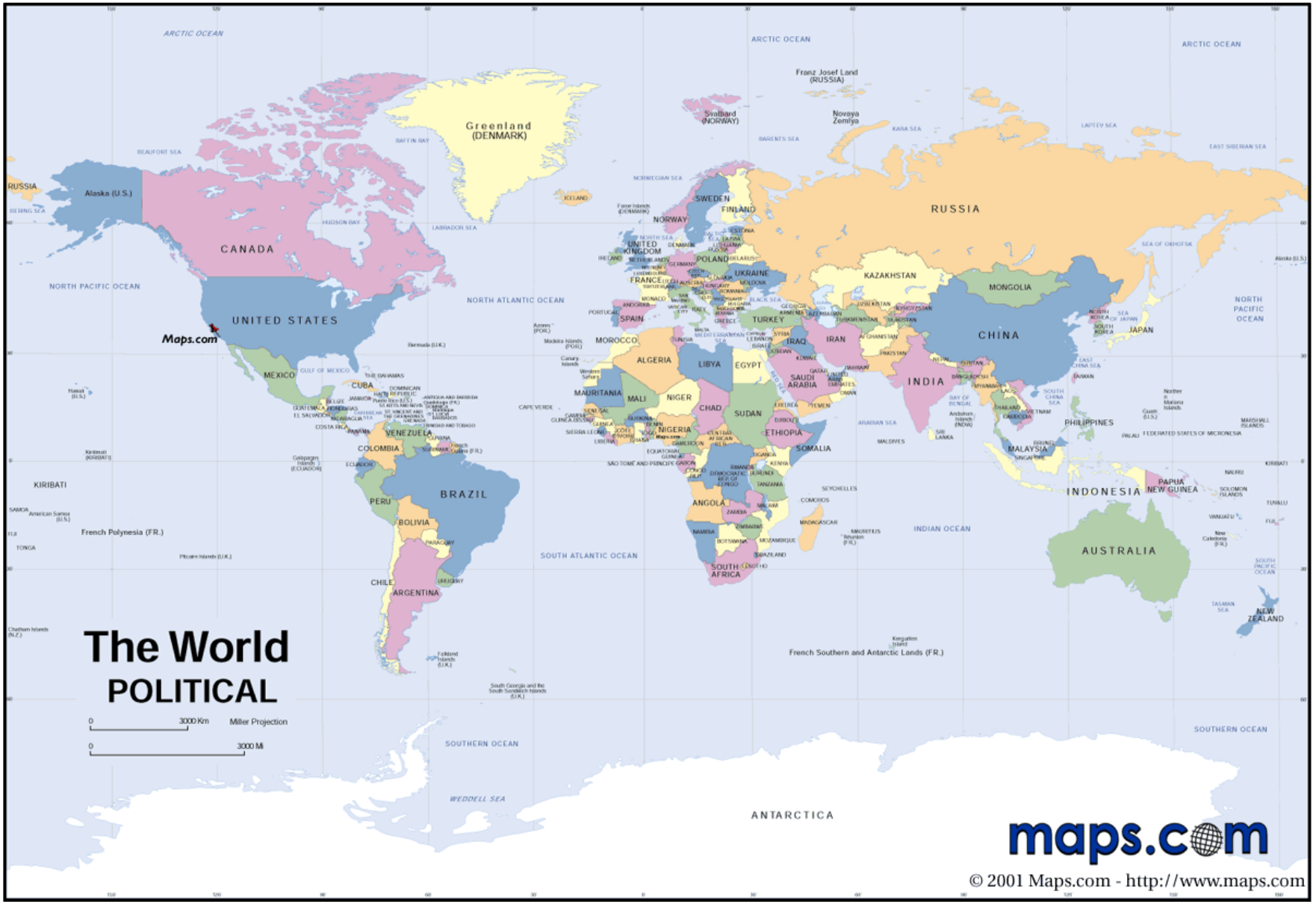
Energy Awareness at 4-H Camp

Cookies, Miles & CO_2

United State Map



World Map

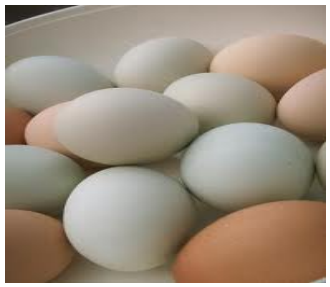


Energy Awareness at 4-H Camp

COOKIES, MILES & CO_2

Cookie Ingredients

Click on the ingredients your cookies require to learn more about where they come from.

Flour 	Eggs 	Sugar 	Baking Soda 	Chocolate 
Peanut butter 	Butter 	Salt 	Brown Sugar 	Vanilla Extract 
Macadamia Nuts 	Oatmeal 	Raisins 	Walnuts 	Pecans 

FLOUR

About Flour: Flour is a powder made from grinding cereal grains, seeds or roots. Flour is the main ingredient in bread and cookies. Its important role in making bread makes the availability of adequate supplies of flour a economic and political issue throughout history.

History: Flour was discovered in 900BC when it was realized that it can be created when wheat seeds could be crushed between simple stones. Romans were the first to grind seeds on a cone mill. In the beginning of the Industrial era in 1879 the first steam mill was erected in London.

Fun Fact: Flour dust suspended in the air is explosive. Some devastating explosions have occurred at flour mills, such as the explosion in 1878 at the Washburn "A" Mill, in Minneapolis.

Nutrition Facts

Serving Size 1/4 cup (40g)
Servings Per Container 1

Amount Per Serving	
Calories 170	Calories from Fat 50
	% Daily Value*
Total Fat 6g	9 %
Saturated Fat 1g	4 %
Cholesterol 0mg	0 %
Sodium 15mg	0 %
Total Carbohydrate 11g	4 %
Dietary Fiber 0g	0 %
Sugars 1g	
Protein 18g	
Vitamin A 0% • Vitamin C 0%	
Calcium 10% • Iron 60%	

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Sat Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrates 4 • Protein 4

Example flour brands and where they come from:

King Arthur Flour: Norwich, Vermont

Pillsbury Best Flour: Minneapolis, Minnesota

New Hope Mills Flour: New Hope, New York

BACK

EGGS

About Eggs: Eggs are laid by the females of many species such as birds, reptiles, amphibians and fish. Eggs have been eaten by mankind for many millennia. The most common eggs currently eaten and used in cooking are chicken eggs.

History: Bird eggs have been valuable food sources since prehistory. Recent cultures have domesticated the egg production process. It is predicted that the chicken originated as a jungle foul in Southeast Asia before it traveled throughout the world. In 1911 the first egg carton was invented in British Columbia. It was made of paper.

Fun Fact: During the second World War the New York Times reported that housewives in Boston preferred brown eggs and housewives in New York preferred white.

BACK

Examples of Egg 'brands' and where they come from:

Nutrition Facts

Per 1 large egg (53 g)

Amount	% Daily Value
Calories 70	
Fat 5 g	8 %
Saturated 1.5 g + trans 0 g	8 %
Cholesterol 195 mg	
Sodium 65 mg	3 %
Carbohydrate 1 g	1 %
Fibre 0 g	0 %
Sugars 0 g	
Protein 6 g	

Vitamin A	10 %	Vitamin C	0 %
Calcium	2 %	Iron	6 %
Vitamin D	15 %	Vitamin E	15 %
Riboflavin	15 %	Niacin	8 %
Vitamin B_{12}	50%	Folate	15%

Eggs from California

Local Eggs from your neighborhood farmer Ex: Windy Ridge Dairy in Norwood New York

Use Google to find a local farm close to you!

SUGAR

About Sugar: Sugar is a term referring to a class of edible crystalline carbohydrate structures that are characterized by their sweet taste. Sugar in the food industry often refers to sucrose which is fully refined from sugar cane or sugar beet. Currently Brazil has the largest sugar production per capita.

History: Sugar has been produced in India since prehistoric times. It was very expensive and not plentiful so often honey was substituted as a sweetener. Sugar remained relatively unimportant until Indians found a way to convert the raw sugar into crystals that could be easily stored and transported.

Fun Fact: Sugar is one of the oldest baking ingredients. It was called "white gold" until the late 1700's . Sugar was a luxury that European nobility used to validate their rank.

Nutrition Facts

Serving size 1 Teaspoon (4g)

Amount Per Serving	
Calories 15	
	% Daily Value*
Total Fat 0g	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 4g	**1%**
Sugars 4g	
Protein 0g	

*Percent Daily Values are based on a 2,000 calorie diet.

Examples of sugar brands and where most sugar come from:

Sugar is refined in many locations throughout the U.S. and the World however the top sugar cane producing country is **Brazil**. Sugar cane can be found in the United States in **Florida** (Domino Sugar) and **Hawaii**

BACK

BAKING SODA

About Baking Soda: Baking soda, commonly known by its chemical name sodium bicarbonate is a white solid. It often appears as a fine powder and is slightly salty. Baking soda is primarily used in baking as a leavening agent; baking soda's reaction with the acidic components in the batter releases carbon dioxide causing an expansion in batter.

History: The ancient Egyptians used natural deposits of natron, a mixture consisting mostly of sodium carbonate. This natron was used as a cleaning agent. In 1791 a French chemist produced sodium carbonate in the lab and was known as soda ash. In 1846 a pair of New York bakers established the first factory to develop baking soda from sodium carbonate.

Fun Fact: Sodium bicarbonate can be used to extinguish small grease or electrical fires by throwing it over the fire. Sodium bicarbonate is used in BC dry chemical fire extinguishers

Nutrition Facts Per 1/8 tsp (0.6 g)	
Amount	% Daily Value
Calories 0	
Fat 0 g	0 %
Saturated Fat 0 g + Trans Fat 0 g	0 %
Cholesterol 0 mg	0 %
Sodium 160 mg	7 %
Potassium 0 mg	0 %
Carbohydrates 0 g	0 %
Fibre 0 g	0 %
Sugars 0 g	0 %
Protein	0 %
Vitamin A	0 %
Vitamin C	0 %
Calcium	0 %
Iron	0 %

Baking Soda brand examples and where they come from:

Arm & Hammer Baking Soda: Princeton, New Jersey

Bob's Red Mill: Milwaukee, Oregon

Baking Powder (while similar to baking soda) is slightly different and the two largest producers are in Terra Haute, IN and Chicago, IL

BACK

CHOCOLATE

About Chocolate: Chocolate is a raw or processed food produced from the seed of the tropical Theobroma cacao tree. Cacao has been cultivated for at least three millennia in Mexico, Central and South America. Unsweetened baking chocolate (bitter chocolate) contains primarily cocoa solids and cocoa butter in varying proportions.

History: Cocoa mass was originally in Mesoamerica both as a beverage and as an ingredient in foods. The Maya civilization grew cacao trees in their backyards and used the cacao seeds for a frothy, bitter drink. The first chocolate solid was invented in 1847 when it was discovered that mixing some of the cocoa butter back into the Dutched chocolate and added sugar would create a paste that can be molded.

Fun Fact: Switzerland is one of the top countries when it comes to chocolate consumptions. They eat roughly 22 lbs of chocolate per person per year. The U.S. consumers 11 lbs per person each year.

BACK

Nutrition Facts

Serving Size: 1/2 bar (14g)

Amount Per Serving	
Calories 70	Calories from Fat 35
	% Daily Value*
Total Fat 4 g	**6%**
Saturated Fat 2.5 g	**12%**
Trans Fat	
Cholesterol 0 mg	**0%**
Sodium 0 mg	**0%**
Potassium	
Total Carbohydrate 9 g	**3%**
Dietary Fiber	
Sugars 8 g	
Sugar Alcohols	
Protein 1 g	
Vitamin A 0 IU	0%
Vitamin C 0 mg	0%
Calcium 0 mg	0%
Iron 0.36 mg	2%

Examples of baking chocolate and where it comes from:

Most Cacao beans are grown in
West Africa – Ivory Coast

Closer to home you can find them in
Dominican Republic

PEANUT BUTTER

About Peanut butter: Peanut butter is a food paste made primarily of ground dry roasted peanuts. Peanut butter may protect against a high risk of cardiovascular disease due to its large amount of monounsaturated fats.

Currently the United States and China are the leading exporters of peanut butter.

History: Peanuts are native to the tropics of the Americas where they were mashed to make a pasty substance by the Aztec Native Americans hundreds of years ago.

Fun Facts: It takes about 850 peanuts to make an 18oz jar of peanut butter.

The average American child will eat 1,500 peanut butter sandwiches by the time he or she graduates high school.

BACK

Examples of peanut butter brands and where they come from:

Nutrition Facts

Serving Size 1/2 cup (108g)
Servings Per Container 4

Amount Per Serving

Calories 190	Calories from Fat 50
	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 28g	**9%**
Dietary Fiber 1g	4%
Sugars 25g	
Protein 5g	

Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 4%

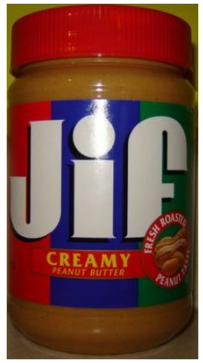
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Skippy Peanut butter: Little Rock, Arkansas

Jif Peanut butter: Lexington, Kentucky



Saratoga Peanut Butter: Saratoga Springs, New York

BUTTER

About Butter: Butter is a dairy product made from churning fresh or fermented cream or milk. Most frequently butter is made from cow's milk. Butter comes in all forms, whipped, sticks, tubs of creamy butter as well as salted and unsalted. Butter plays several roles in baking. It's used as a leavening agent as well as a flavor additive.

History: The earliest butter was made from goat or sheep's milk. Cows were not yet domesticated for another thousand years. Until the 19th century the vast majority of butter was made by hand. The first butter factories appeared in the United States in the early 1960's.

Fun Fact: In Quebec, Canada, a law existed until July 2008 that stated that margarine must be a different color than butter

Examples of butter brands and where they come from:

Nutrition Facts

Calories 102		(426kJ)
Butter-unsalted (1tbsp.)		% Daily Value [1]
Total Fat	11.5g	**18%**
Sat. Fat	7.3g	**36%**
Cholesterol	31mg	**10%**
Sodium	2mg	**<0.1%**
Total Carbs.	<0.1g	**<0.1%**
Dietary Fiber	0g	0%
Sugars	<0.1g	
Protein	0.1g	
Calcium	3.4mg	
Potassium	3.4mg	

Land O Lakes Butter: Arden Mills, Minnesota

Local Dairy Farms, Ex: Mark Brown Dairy Farm, Canton, NY

Use Google to find a dairy farm close to your home

BACK

SALT

About Salt: Salt, also known as table salt or rock salt is a mineral composed of sodium chloride (NaCl). Salt in small amounts is essential for animal and human life. Salt is produced by the evaporation or seawater or brine, and by mining rock salt. The world production of sodium chloride in 2002 was estimated at 210 million tonnes. The top five producers of salt are the United States, China, Germany, India and Canada (in descending order)

History: For the last 100 years or so salt was the best known food preservative, especially for meat. The practice of preserving food with salt was used for thousands of years.

Fun Fact: Completely raw, unrefined sea salt is bitter. This is because of the magnesium and calcium compounds.

Nutrition Facts

Serving Size 1 g
Servings Per Container 80

Amount Per Serving	
Calories 1	Calories from Fat 0
	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 200mg	**8%**
Total Carbohydrate 0g	**0%**
Dietary Fiber 0g	**0%**
Sugars 0g	
Protein 0g	
Vitamin A	0%
Vitamin C	0%
Calcium	0%
Iron	15%

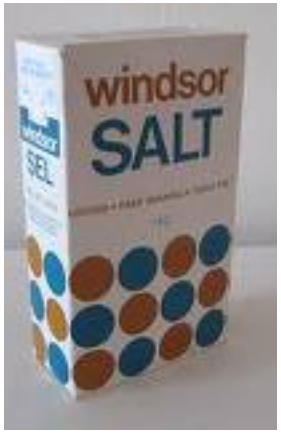
*Percent Daily Values are based on a 2,000 calorie diet.

Examples of brands of salt and where it comes from:

Morton Salt: An American company with their saline operation in Matthew Town, The Bahamas

Morton Salt is the owner of the second largest solar operated saline operation in North America

Windsor Salt: Windsor currently mines their salt out of Windsor, Ontario, Canada



BACK

BROWN SUGAR

About Brown Sugar: Brown sugar is a sucrose sugar product with the presence of molasses. It is either unrefined or partially refined soft sugar with residual molasses or refined white sugar with added molasses. There are two different types of brown sugar, light brown sugar with 3.5% molasses or dark brown sugar with 6.5% molasses.

History: In the late 1800's the refined white sugar industry started a smear campaign against the companies producing brown sugar. They reproduced and enlarged photos of the harmless but repulsive-looking microbes living in brown sugar. By 1900 the campaign was so successful that best-selling cookbooks warned that brown sugar was superior quality and was susceptible to infestation.

Fun fact: If you're baking and run out of brown sugar a suitable substitute is 1 tbsp of molasses for every cup of white (granulated) sugar. No molasses? Try maple syrup.

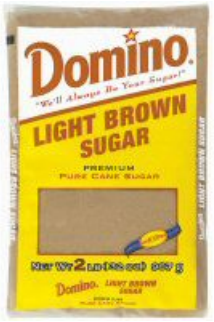
Nutrition Facts

Serving size 1 Teaspoon (4g)

Amount Per Serving	
Calories 15	
	% Daily Value*
Total Fat 0g	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 4g	**1%**
Sugars 4g	
Protein 0g	

*Percent Daily Values are based on a 2,000 calorie diet.

Examples of brown sugar brands and where they come from:



Sugar is refined in many locations throughout the U.S. and the World however the top sugar cane producing country is **Brazil**. Sugar cane can be found in the United States in **Florida** (Domino Sugar) and **Hawaii.**

BACK

VANILLA EXTRACT

About Vanilla Extract: Vanilla extract is a solution containing the flavor compound vanillin. Vanilla extract is the most common form of vanilla used today. There are four main varieties, Mexican, Tahitian, Indonesian, and Bourbon (Bourbon vanilla was named for the period when the island of Reunion was ruled by the Bourbon Kings of France, it does not contain Bourbon Whiskey). Natural vanilla flavoring is derived from real vanilla beans with little to no alcohol.

History: The Totonac people who inhabited the Gulf Coast of Mexico were the first to cultivate Vanilla. Until the mid-19th Century Mexico was the chief producer of vanilla, when the French shipped vanilla beans to the island of Reunion in 1819.

Fun Fact: While Mexico always lead in vanilla production historically, the current top producer globally is Madagascar.

BACK

Nutrition Facts

Serving Size: 1 tsp (4g)

Amount Per Serving	
Calories 2	Calories from Fat 0
	% Daily Value*
Total Fat 0 g	**0%**
Saturated Fat 0 g	**0%**
Trans Fat 0 g	
Cholesterol 0 mg	**0%**
Sodium 0.13 mg	**0%**
Potassium 0 mg	**0%**
Total Carbohydrate 0.6 g	**0%**
Dietary Fiber 0 g	**0%**
Sugars 0.61 g	
Sugar Alcohols	
Protein 0 g	
Vitamin A 0 IU	0%
Vitamin C 0 mg	0%
Calcium 0.13 mg	0%
Iron 0 mg	0%

Examples of brands of Vanilla extract and where they come from:

The top two countries that Vanilla is imported from are: **Madagascar** and **Indonesia**. Following in third and fourth is **China** and **Mexico.**

MACADAMIA NUTS

About Macadamia Nuts: Macadamia nuts come from a the macadamia tree. It is a small to large evergreen tree. There are two species of edible nuts and they readily hybridize. This threatens the wild growth. After the macadamia nut is picked it undergoes an extensive drying process

History: In 1828 the first Macadamia nut was discovered by an European by the name of Allan Cunningham. In 1910 an experimental crop of macadamia was planted in Hawaii and in 1922 Ernest Tassel formed the Hawaiian Macadamia Nut Co and leased 75 acres to start the crop.

***Fun Fact*:** In 2003 human nutrition research in Australia shows that the macadamia nut can lower total and LDL Cholesterol levels

Nutrition Facts

Serving Size: 1 cup, whole or halves (132g)

Amount Per Serving	
Calories 945	Calories from Fat 904
	% Daily Value*
Total Fat 100.43 g	**155%**
Saturated Fat 15.77 g	**79%**
Trans Fat	
Cholesterol 0 mg	**0%**
Sodium 349.8 mg	**15%**
Potassium 479.16 mg	**14%**
Total Carbohydrate 16.94 g	**6%**
Dietary Fiber 10.56 g	**42%**
Sugars 5.47 g	
Sugar Alcohols	
Protein 10.28 g	
Vitamin A 0 IU	0%
Vitamin C 0.92 mg	2%
Calcium 92.4 mg	9%
Iron 3.5 mg	19%

Where macadamia nuts come from:

Macadamia Nuts are produced in **Hawaii** and **Australia**

BACK

OATMEAL

Oatmeal Facts: Oatmeal comes from the ground grain called oats. Oats are a two to five foot tall plant very similar to wheat. The main use for oats is to feed livestock. The oats that people eat are milled and the hard outer covering of the seed is removed.

History: Oatmeal has a long history in Scottish cooking tradition. The state of Vermont oatmeal making is a long tradition that originating from the Scottish settlement in the state.

Fun Fact: Oatmeal month is celebrated in January. More oatmeal is bought in January than every other month of the year.

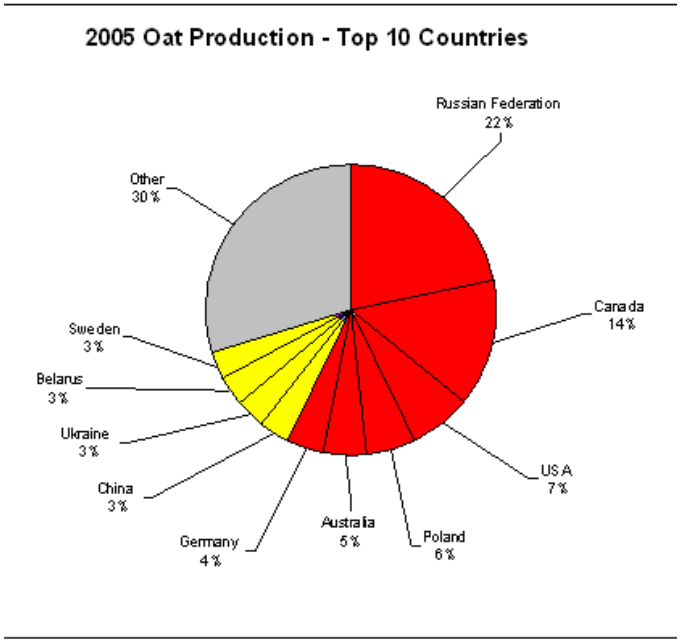
Nutrition Facts

Serving Size: 1 bowl (334g)

Amount Per Serving	
Calories 185	Calories from Fat 27
	% Daily Value*
Total Fat 3 g	**5%**
Saturated Fat 0 g	**0%**
Trans Fat	
Cholesterol 0 mg	**0%**
Sodium 301 mg	**13%**
Potassium	
Total Carbohydrate 34 g	**11%**
Dietary Fiber 5 g	**20%**
Sugars 1 g	
Sugar Alcohols	
Protein 7 g	
Vitamin A	
Vitamin C	
Calcium	
Iron	

Examples of oatmeal Brands and where they come from:

Top Oat Production:
Russia
Canada - Saskatchewan
U.S – Minnesota



http://www.gramene.org/species/avena/oat_maps_and_stats.html

BACK

RAISINS

About Raisins: Raisins are dried grapes and produced in many regions of the world. The type of raisin depends on the type of grape that was dehydrated to make the grape. Raisins are used in many types of cooking, baking and brewing. Raisins are 67% to 72% sugar making them a very sweet addition to cookies.

History: People have enjoyed raisins since early civilization. The Egyptians and Phoenicians are credited with the growing popularity. Because they're small and long-term storage capability they've accompanied many voyagers on their journeys' to remote locations, such as space, and the north pole.

Fun facts: Half of the world's supply of raisins are grown in California. But don't share this Golden State treat with your dog. Raisin's are poisonous to dogs.

Nutrition Facts

Serving Size: 1/4 cup (40g)
Servings Per Container 1

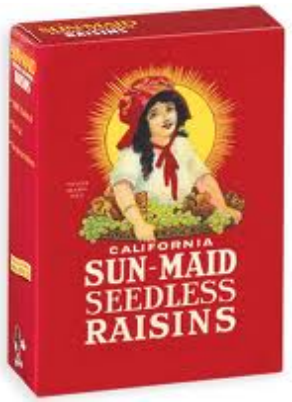
Amount Per Serving	
Calories 130	Calories from fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 10mg	0%
Potassium 310mg	9%
Total Carbohydrate 31g	10%
Dietary Fiber 2g	9%
Sugars 29g	
Protein 1g	
Vit A 0%	Vit C 0%
Calcium 2%	Iron 6%

*** Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.**

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Examples of raisin brands and where they come from:



Sun-Maid Raisins & Del Monte: Great Central Valley of California

BACK

WALNUTS

Examples of walnut brands and where they come from:

About Walnuts: Walnuts are the seed of a tree called Juglan. The Juglan tree is a deciduous tree that grows 10-40 meters tall (30-130 feet). Walnuts are light-demanding species that benefits from the protection from wind. They are also a very drought tolerant tree.

History: Walnuts are the oldest tree food known to man kind, dating back to 7000 BC. The Roman's called the walnut 'Jupiter's royal acorn'. Walnuts soon became a valuable commodity and were traded all along the Silk Road route from Asia to the Middle East.

Fun Fact: The average walnut tree produces nuts for 45 years.

Nutrition Facts

Serving Size: 1 cup, chopped (125g)

Amount Per Serving	
Calories 772	Calories from Fat 664
	% Daily Value*
Total Fat 73.75 g	**113%**
Saturated Fat 4.21 g	**21%**
Trans Fat	
Cholesterol 0 mg	**0%**
Sodium 2.5 mg	**0%**
Potassium 653.75 mg	**19%**
Total Carbohydrate 12.39 g	**4%**
Dietary Fiber 8.5 g	**34%**
Sugars 1.38 g	
Sugar Alcohols	
Protein 30.08 g	
Vitamin A 50 IU	1%
Vitamin C 2.13 mg	4%
Calcium 76.25 mg	8%
Iron 3.9 mg	22%

The United States is the leading producer of Nuts, more specifically the Great Central Valley in **California**

Canada is the Second leading producer of walnuts

BACK

PECANS

About Pecans: Pecan trees are large deciduous trees. The pecan, like the fruit of other members of the hickory genus, it not truly a nut. It is technically a drupe which is a fruit with a single stone or pit surrounded by a husk. The nuts of a pecan tree are edible with a rich buttery flavor.

History: Before European settlement pecans were widely consumed and traded by Native Americans. The Europeans were first introduced in the 16th century by Spanish explorers in what is now Mexico, Texas, and Louisiana.

Fun Fact: Pecans provide for nearly 10% of your daily zinc needs.

Nutrition Facts

Serving Size 1 ounce, about 15 halves (28g)
Servings Per Container

Amount Per Serving

Calories 200	Calories from Fat 180
	% Daily Value*
Total Fat 20g	**31%**
Saturated Fat 2g	**10%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 0mg	**0%**
Total Carbohydrate 4g	**1%**
Dietary Fiber 3g	**12%**
Sugars 1g	
Protein 3g	

Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 4%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300 mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Examples of Pecans and where they come from:

Top pecan producing states:
Georgia
Texas
New Mexico
Arizona

BACK

Chocolate Chip Cookies

Ingredients:
- All-purpose flour - 2 ¼ cups
- Baking Soda - 1 tsp.
- Salt - 1 tsp.
- Butter - 1 cup (2 sticks)
- Granulated Sugar - ¾ cup
- Brown Sugar - ¾ cup
- Vanilla Extract - 1 tsp.
- Eggs - 2 eggs
- Semi-Sweet Chocolate Morsels – 2 cups
- Chopped nuts (optional) – 1 cup

Peanut butter Cookies

Ingredients:
- Granulated Sugar – ½ cup
- Brown Sugar – ½ cup
- Peanut butter – ½ cup
- Shortening – ½ cup
- Butter – ½ cup
- Eggs – 1 egg
- All-purpose flour – 1 ¼ cup
- Baking Soda – ¾ tsp
- Baking powder – ½ tsp
- Salt - ¼ tsp

Oatmeal Raisin

Ingredients:
- Butter – ½ cup (1 stick)
- Brown Sugar – 2/3 cup
- Vanilla Extract – ½ tsp
- All-purpose flour – ¾ cup
- Baking Soda – ½ tsp
- Cinnamon – ½ tsp
- Salt – ¼ tsp
- Oats - 1 ½ cups
- Raisins – ¾ cups
- Walnuts (optional) – ½ cup

Chocolate Chip Macadamia Nut

Ingredients:
- Butter – ½ cup (1 stick)
- Brown Sugar – 1/3 cup
- Granulated Sugar – 1/3 cup
- Egg – 1 egg
- Vanilla Extract – 1 tsp
- All-purpose flour – 1 1/8 cup
- Baking Soda – ½ tsp
- Salt – ½ tsp
- Macadamia Nuts – 1 cup
- Semi-Sweet Chocolate Chips – 1 ¼ cups