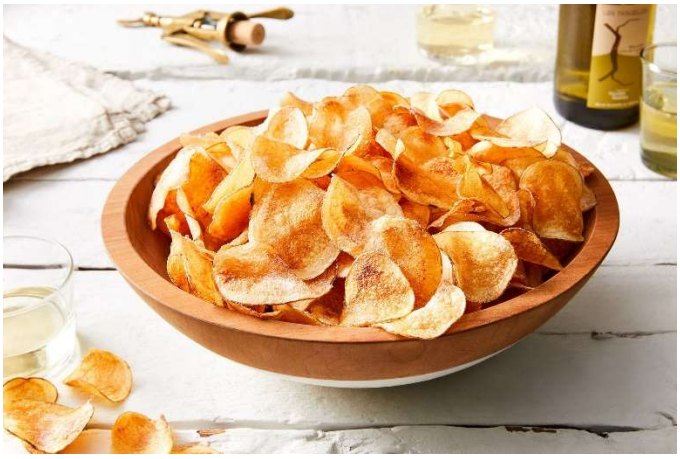
Science: How Greasy Are Your Potato Chips?

Ages: 7 - 13

Hello everyone. This is Bill from the Okanagan Regional Library System. Welcome to the fun and inventive world of making STEAM projects in your own home. Each month, I will share a fun and interesting project that you can make using materials commonly found in your own home.

This month's project: How Greasy Are Your Potato Chips?

How Greasy Are Your Potato Chips?



Do you like to snack? Most people enjoy having a snack between lunch and dinner. One of the more popular snacks is potato chips. Potato chips come in a variety of tasty flavors, including salt and vinegar, ketchup, and barbecue. It takes 10,000 pounds (lbs.) of potatoes, to make 3,500 lbs. of potato chips. The average person eats about 6 lbs. of potato chips a year.

It's actually pretty easy to make a potato chip from a potato. Simply cut the potato into thin slices, fry them in a deep fryer, drain the grease, and add salt. Some potato chips are not really potato chips at all. Pringles™ are an example of this. Pringles are made from potato flakes that are combined with rice flour to make potato dough. The dough is then shaped and fried. Since Pringles are not made only of potatoes, they are called potato *crisps.*

One thing that some people think about when buying potato chips and potato crisps is the amount of **fat** in them. Although eating fat is necessary for your body to function, eating too much fat is not good for you. Children older than 2 years old should get 30 percent of their daily **calories** from fat. Many people get more than that, which is why there are many kinds of reduced fat potato chips and potato crisps available in stores. In this project, you will investigate how much fat is in some typical potato chips. You will take a look at four different kinds of chips and crisps. Have fun, but be sure not to not eat your project before you are done!

Materials Needed:

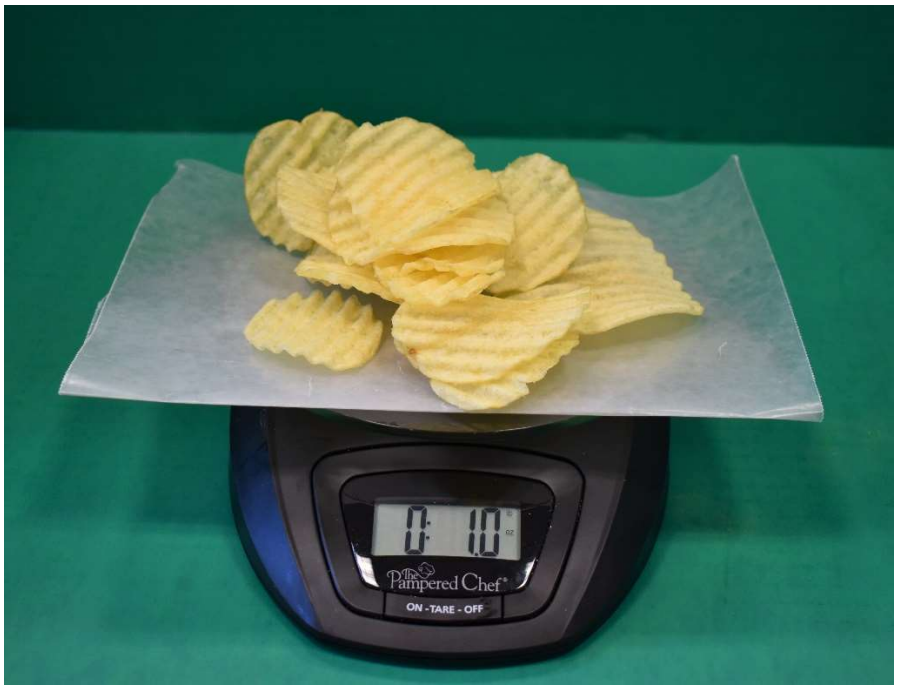
- Clean Table
- Graph Paper
- Clear Tape
- 4 types of potato chips and crisps
- Digital Kitchen Scale
- Wax Paper
- Rolling Pin
- Timer
- Paper to record your results on

Time: Approximately 1 hour

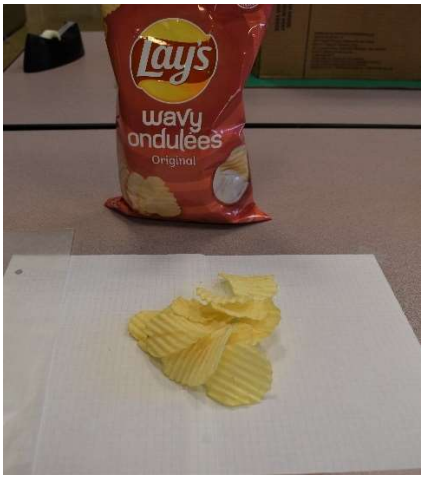
Steps:

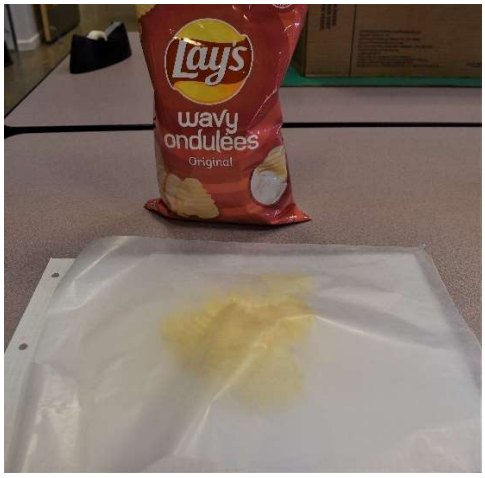
1. To start this project, lay two pieces of graph paper together on the table. Try to match up the squares as best you can. Tape the pieces of graph paper together. Turn the graph paper over.

2. Open the first bag of potato chips. Lay a piece of wax paper on the scale. Turn on the scale and place a handful of potato chips on the scale. Weigh the potato chips. Record the weight of the potato chips in your lab notebook. You should try to have between 0.5 oz. and 1 oz. of potato chips, so either add or remove some if your handful of chips isn't within that range.

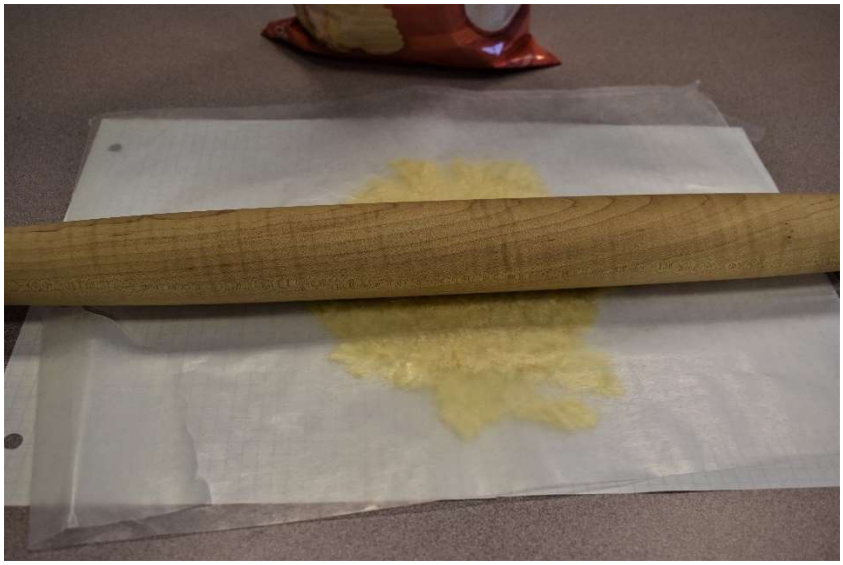


3. Now take the potato chips and mound them in the middle of the graph paper. Place a piece of clean wax paper on top of the chips. The wax paper should be about the same size as the graph paper.

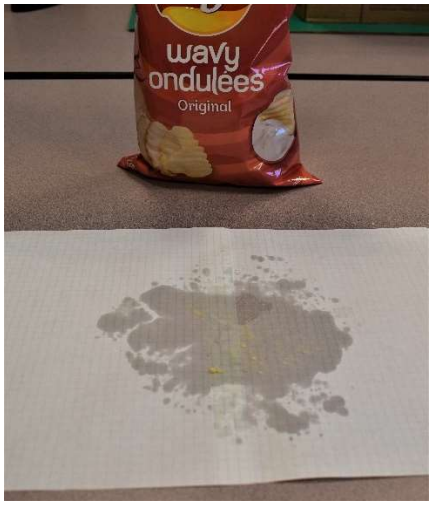




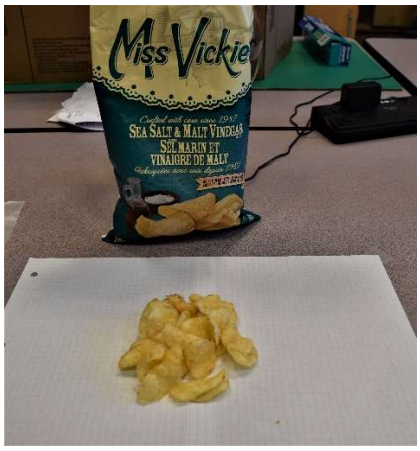
4. Carefully press down on the wax paper and crush the potato chips. Try to keep all of the potato chips and pieces in the center of the paper. Use the rolling pin to crush the chips into small pieces.

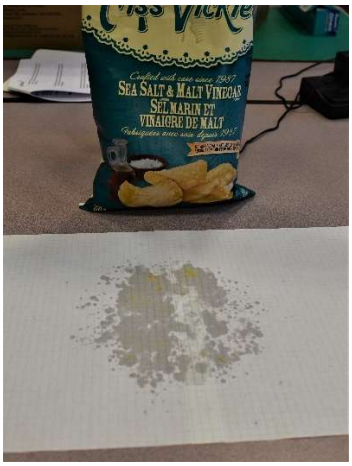


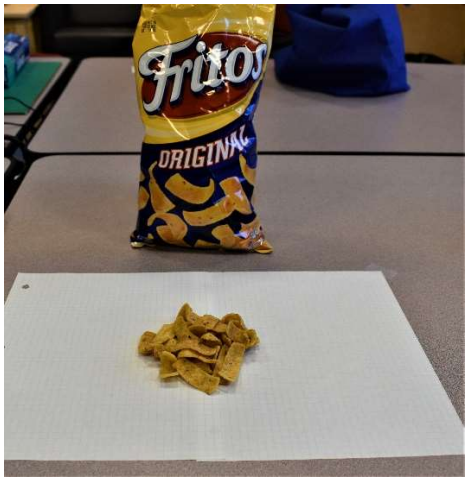
5. Let the potato chips sit on the paper for 1 minute. After 1 minute has passed, put the wax paper and the potato chips into the trash. Try to remove all of the extra bits from the graph paper, too. Do you notice a grease stain on the graph paper?

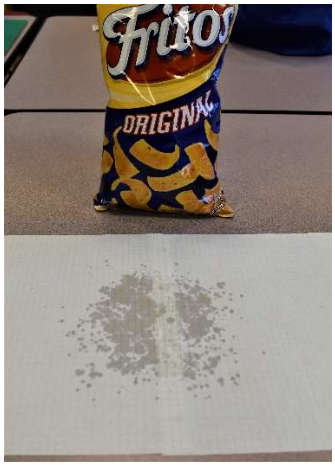


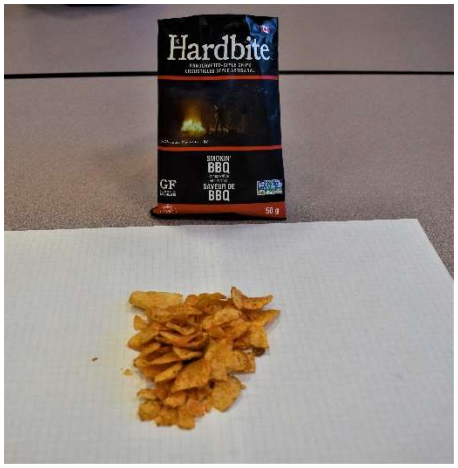
6. Repeat steps 1-5 for the other three varieties of potato chips and potato crisps. Be sure that you use the same weight of potato chips for all of the varieties. Also, use new graph paper and fresh wax paper on the scale and on top of the potato chips or potato crisps.











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7. Record the amount of fat per serving for each potato chip or potato crisp. This information is located either on the side or on the back of the bags or canisters. How does this information compare with the size of the grease stains?

Lay's Wavy Original Chips
* 50 grams chips
* 18 grams of fat
* 28% of daily total

Miss Vickie's Sea Salt & Vinegar
*50 grams chips
*15 grams of fat
*23% of daily value

Fritos Corn Chips
* 50 grams chips
* 18 grams of fat
*24% of daily value

Hardbite Smokin' BBQ
* 50 grams chips
*12 grams of fat
* 16 % of daily value

8. Count the number of squares covered by fat for each type of potato chips. Record your observations on a chart like this. You can then lot your data. Label the x-axis *Potato Chip Variety* and Label the y-axis *Size of Grease Stain.*

Variety of Potato Chip	Fat per Serving	Observations/ Number of Squares Covered with Grease
		Trial 1:
		Trial 2:
		Trial 3:
		Trial 1:
		Trial 2:
		Trial 3:
		Trial 1:
		Trial 2:
		Trial 3:

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Read World Science: Potato Chips

Russet potatoes have been dubbed the best for making chips, because this type of potato has a higher starch content and higher density, which stops oil from penetrating too deeply, compared to the rest of the potato family. The process of frying potatoes goes back to the 1800s, when they were first fried in lard. Today it's common to use regular cooking oils, which have to be heated to at least 185 C. As soon as the raw potato slice hits the scolding oil, any moisture on its surface instantly evaporates. Once the outside of the chip is dry, that familiar crispy crust starts to form.