

The fats people eat can come from either plants or animals. Fats from plants and animals are similar in some ways but different in others. In the activity below, you can do some simple experiments to learn some fat facts!

## Materials:

- Tablespoon of butter
- Tablespoon of vegetable oil
- Brown paper bag
- Wax paper
- Blunt-end scissors
- Water
- Masking tape
- Plastic straw
- 3 zip-closing plastic bags
- 2 clear plastic cups
- Cotton swabs
- Bowl
- Ballpoint pen

## Procedures:

1. Cover your work surface with newspaper. Use your masking tape and pen to label three zip-closing plastic bags water, butter, and oil. Ask your adult partner to pour hot tap water into a bowl until it is about 1/2 full. Place about 1 tablespoon of butter, vegetable oil, and water into their labeled bags.
2. Make sure all three bags are sealed. Place the bags in the bowl of hot water and leave them there until the butter becomes liquid.
3. Place a piece of a brown paper bag flat on your work surface. Use your pencil to divide the paper into three sections. Label the sections water, butter, and oil.
4. Dip a separate cotton swab into the liquid in each bag and place the wet end of the swab on its labeled area on the paper. Reseal the bags and put them back into

the water. Go on to the next step; we'll come back to these cotton swabs later.



5. Tape a piece of wax paper flat on your newspaper. Use separate straws to place a drop of water, a drop of oil, and a drop of butter on the wax paper. Observe each drop for similarities and differences. Try dragging each drop along the paper with a straw. What do you observe?
6. Again on your wax paper, use a straw to try mixing a few drops of oil with a few drops of water. Try the same thing with butter and water. How well did they mix? Now try mixing some oil and butter. Did they mix any better?



7. Pour cold tap water into a bowl until it is about 1/4 filled. Pour about 1/2 the butter and about 1/2 the oil from their bags into separate small plastic cups. Place the cups in the water and hold them there so they do not spill. What do you notice happening to either the butter or the oil?
8. Let's look back at your brown paper bag. Do you see any similarities or differences in the way the liquids look on the brown paper? Do the butter and oil marks look similar, or does either one look like the water?
9. Fill 2 clear plastic cups about 2/3 full of tap water. Pour the rest of the oil into one cup and the rest of the butter into the other cup. What did you observe about each liquid? How are they similar or different?

## Think about this ...

Corn oil, olive oil, and peanut oil are all fats that come from plants. The fat on a steak or piece of chicken is, of course, animal fat. If you think about these plant and animal fats, what is something similar about them? What is something different? Now think about the characteristics of three other common substances: cheese, soap, and bees wax. Do you think these are made of some of the same things as the other fats? Why or why not?

## Where's the Chemistry?

The butter and oil you compared are both made from fat. The butter is made from cow's milk which makes it animal fat. The oil is made from corn, making it plant fat. Both types of fat are made from almost identical chemicals arranged in very similar ways. These similarities cause them to soak through a brown paper bag, feel greasy, and not dissolve in water. There are also some differences between them. The milk fat has a structure that allows it to be shaken until it becomes solid butter. Butter can be melted and resolidified over and over again. The same thing cannot be done with oil.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at [www.acs.org/kids](http://www.acs.org/kids).

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## Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

### Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

**Never** eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

**Never** experiment on your own!

**For more detailed information on safety go to [www.acs.org/education](http://www.acs.org/education) and click on "Safety Guidelines".**

