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Science in the Kitchen ~ Easy Experiments for Kids

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Friends Iain Anderson and Jefferson Wake compare two soaps from experiment Photo Jennifer Wake

Did you ever think about how your microwave works?

Microwaves are a kind of light energy that you can't see called electromagnetic radiation (ER). Microwaves, like all ER, travel in the form of waves, like the waves you see at the beach. These waves heat things by moving the water molecules inside your food. They are very handy to use in a kitchen because they are not absorbed by the glass, or ceramic or plastic that you cook with. Here are a couple of experiments that you can safely do with a microwave. You might have to adjust the times in these experiments depending on the power of your microwave.

1. Gather these supplies to find your microwave's hot spots:
Chocolate Bar
Plate

Remember that ER travels in waves? When two waves come together, and the top or crest of a wave hits another crest, the two combine and you get a wave that's twice as big. When a crest hits a trough (the lowest point of a wave) the two waves cancel each other out. You can see where the big waves are with the chocolate bar.

2. Start your first experiment:

If your microwave has a turntable, take it out. Put the chocolate bar on the plate and into the microwave. Heat it for 30 seconds on High, then take it out and put back in the turntable.

What happened?

The chocolate bar will have melted unevenly. The spots where the bar is melted are where the bar was hit by the double-big waves. (The turntable is to spin your food so it cooks more evenly. In this case we wanted our experiment to cook unevenly.)

Don't eat your chocolate yet!

3. Gather these supplies for gas experiments in the microwave:

Bowl of water

Plate

Paper towel

Bar of Ivory brand soap

Marshmallow

4. Start your second experiment

Step A:

Put the marshmallow in the bowl of water. You should notice that it floats. Take it out and put in the soap bar. It floats too, right?

That's because there are lots of little air bubbles trapped in the marshmallow and the soap, making them buoyant.

Step B:

Put the soap on a paper towel and microwave it on High for 1 minute.

What happened?

As the tiny water molecules in the soap heated up, they heated the air around them. The air expanded, or pushed out, enlarging the soap.

Can you guess what will happen to the marshmallow?

Step C:

Put the marshmallow on the plate and into the microwave. Heat it on High for 30 seconds

What happened?

As you may have guessed, the marshmallow expanded just like the soap, due to the heating of the air inside it. If you have any graham crackers nearby, you can combine the marshmallow and chocolate on one to make a delicious s'more. Then you can use your expanded soap to wash up in the bathtub!

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