

Toothpaste Activity

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Toothpaste Kit Contents:

Baggie

two 2 oz. cups w/lids

½ teaspoon of calcium carbonate in one cup (marked with sticker)

1/4 teaspoon baking soda in the other cup

Spoon or utensil for stirring

wet nap

Artificial Sweetner packet

You will also need:

Rock Sample (granite is great!)

Mineral Sample

Water

Food Coloring

Flavor Extracts (one or two types will do)

Activity

Hand out toothpaste kits

Has Everyone brushed their teeth this morning?

Why do we brush our teeth?

What exactly does toothpaste do?

What is in toothpaste?

How does toothpaste work?

Let's make toothpaste

Describe what is in the "kit"

Two small cups with white powder

One cup has Baking Soda

One cup has Calcium Carbonate (the one with a sticker)

a spoon for stirring

a wet wipe for cleanup

a packet of artificial sweetner

a baggie to put our finished toothpaste cup in

You might begin mentioning here that we are going to make real toothpaste they can take home and use if they'd like. Once the toothpaste is prepared, snap the lid back on the cup and put it in the baggie. This way if the cup should leak, the baggie will catch the spill.

Have students open the baggie and get the cups out

Have students take the lids off the cups and take a look and compare contents of both cups.

Discuss the difference between them and how they are alike.

Both are white powders

Discuss the difference between a rock and a mineral

A **mineral** is a naturally occurring, inorganic solid with a definite chemical composition and a specific crystalline structure.

A **rock** is an aggregate of one or more minerals. (A rock may also include organic remains and mineraloids.)

One looks like salt (the baking soda)

One looks like flour (calcium carbonate)

The difference in the way they look is due to their crystalline structure

Have students dump the contents of one cup into the other so that all powder is in one cup.

Have students add ½ teaspoon of water until they get a paste-y consistency. Too much water will not make a difference in this project.

While students are mixing in the water, have them observe the contents of the cup. While stirring, how does it sound? (Gritty) Why would we want to use something gritty on our teeth? (As Scrubbers to get the gook off our teeth)

Here's a great opportunity to talk about mineral hardness and why mineral properties are important to performing certain tasks. We wouldn't brush our teeth with diamonds would we? Why or why not? The baking soda is for breath "freshness" only. The calcium carbonate is the "scrubber" but is not as hard as your teeth so it cleans without scratching your teeth.

How does it look? It kinda looks like milk, but milk wouldn't sound the same when stirred, would it?

Note the consistency. Some will have a paste-y mix while others will be somewhat watered down. Why does toothpaste need to be thick? (It doesn't, the form we use toothpaste in now is so that it will work with and stick to a toothbrush - nothing to do with toothpaste performance!) I like to remind kids that people used to use sticks, rags, and even their fingers to brush their teeth. They used to use salt, or baking soda, or "tooth powder" to clean their teeth.

Now we have toothpaste! Have the students hold up one pinkie finger and tell them they can now try out their toothpaste with just a tiny, tiny amount on their finger and go ahead and use it on their teeth. **THIS IS MY FAVORITE PART:** Those that do try it will find that it tastes like, well, dirt! At this point it truly is a working product - real toothpaste.

Ask the students if they would buy this toothpaste. Ask how this toothpaste is different from the one they used this morning. Many will point out taste or flavor, color, and consistency. Would they be willing to pay more for toothpaste that tastes better? Do they think that people will do a better job of brushing their teeth if it tastes better?

Now we go into what we could do to make this toothpaste more appealing so people would buy it. Adding flavor extracts (a couple drops) helps, but not a lot. Go ahead and add flavor. Kids normally ask about making it sweeter at this point. Talk about why we wouldn't use sugar in toothpaste, and have them add the packets of artificial sweetener to the toothpaste. Now colors can be added. Two drops of color is plenty - more than that may discolor teeth for a while.

Now they can snap the lid back on their toothpaste, put it back in the baggie and seal it to take home if they want to. Everything else in the kit is trash.

This exercise can be built upon by having student(s) come up with an advertising slogan or campaign about what makes their toothpaste the best one. Artwork can also be incorporated for packaging. Have a competition, individuals or teams!

HAVE FUN!