Soda Explosion

We all know that one of the best traditions of Fourth of July is the fireworks show. Throughout the day, as everyone chomps on corn cobs and sips their icy drinks, they're waiting for night to fall and the sky to light up. Fireworks are often the highlight of the holiday for adults and children alike. But you don't have to wait until dark for the firework fun to begin. With just a few ordinary supplies, you and your child can make some fabulous firework explosions of your own, and even learn a bit of science while you're at it. This is an experiment that most of us are familiar with, but this time it has a Fourth of July twist, making it the perfect activity for you and your child to do together to celebrate the summer holiday.

What You Need:

- 2-liter bottle of diet soda
- Roll of mint mentos (original flavor—not the fruit coated or other kinds!)
- Optional: more kinds of soda and more rolls of mentos, so that you can do some scientific comparisons and observations!
- Open, outdoor area that can handle getting sprayed with some soda!

What You Do:

1. Find an open area where you can place both of your 2-liter bottle of soda upright, with plenty of space around for a big sticky mess!
2. Have your child remove the mentos from the wrappings. You will need to use one whole package for each 2-liter bottle, and drop each package into the mouth of the soda bottle all at once. This can be tricky! Some folks like to do it by hand; others roll up a paper tube or use a left over paper towel roll to feed the mentos into the bottle.
3. Working as fast as possible, unscrew the lid of your soda bottle (make sure it hasn't been recently shaken!) and help your child drop all of the mentos into it. Then make sure everyone stands back! (You can do each soda bottle one at a time, or you can do the red and blue soda together!)
4. Right before your eyes, you'll see an explosion of soda come streaming out of the bottle! Various experimenters have reported soda geysers rising as high as several meters into the air. See how high your soda fireworks can get.  But no matter what the result, this activity is sure to be a crowd pleaser.
5. While this project is loads of fun, it's also great opportunity to do a little investigative science along the way. For that, you'll need some more soda and mentos. (Note: The people who developed this experiment have found that diet soda, perhaps because of the molecular structure of its artificial sweeteners, seems to bubble higher, and that fruit flavored mentos are too smooth to get a good bunch of bubbles going.)
6. Using your first blowup as the “control experiment,” try exploring different variables. You and your child can find out if there's a difference between chilled and room-temperature soda and test the difference between diet and regular soda as well. The sky's the limit! (Literally!) You can test as many different variables as you and your child can think of. You may even want to have your child record and graph her results and observations. Be sure to approach one variable at a time, and to discuss the different steps along the way.

What's Going On:

The “why” behind this explosion is actually two-fold - both physical and chemical - and has been the subject of some spirited debate among scientists. When you drink “soda pop,” you’re enjoying a sugary liquid into which carbon dioxide has been pumped at high pressure. Water molecules in the soda have form a “mesh” of surface tension around the liquid, keeping it relatively stable. The mentos disrupt that surface tension, while simultaneously providing a rough surface ideal for carbon dioxide bubbles to form and fizzle. Drop in a full roll of mentos, and wham! You get a massive explosion, right out of the top of your bottle. This is a great way to celebrate the holiday with some science!