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SCIENCE PROJECT 2

JULY 8, 2020

LEMON VOLCANO

The Science Behind Lemon Volcano

Lemon juice contains citric acid which when mixed with baking soda (sodium bicarbonate) reacts to form carbon dioxide and sodium citrate, which causes the liquid to fizz and bubble. Citric acid is a common food additive used in soft drinks as a preservative and flavoring.

These are not giant volcanic eruptions but rather bubbly small eruptions you can make harnessing the chemical reaction of citric acid, found in citrus fruits, and baking soda. Agitating the reaction by stirring it creates for frothy fun!

[Joseph Priestley](#) Joseph Priestley was an 18th century jack-of-all-trades: a clergyman, educator, and chemist to name a few. He is credited with inventing soda water, water in which carbon dioxide is dissolved causing it to be effervescent or bubbly. Mr. Priestley published a pamphlet about his discovery and his invention was later used by J.J. Schveppes in his company Schveppes to mass produce carbonated beverages. Ponder Mr. Priestley the next time you crack open a Coke or sip on gin and tonic (adults only!). Mr. Priestley also studied optics, wrote a history of electricity in which he performed experiments by his friend Benjamin Franklin, and later helped another friend found the Unitarian church. No, he wasn't very busy....ahem....and those just a FEW of his exploits! You have to read all about his illustrious career [here](#).

Bonus

- Did you know that citric acid is also found in drink mixes like Kool Aid? You can alternatively watch this chemical reaction by mixing powdered Kool-Aid and baking soda in a cup, then adding water.
- Make your own fizzy drink by mixing baking soda into your next batch of homemade lemonade!

You'll Need:

- 2 Lemons per volcano
 - Baking Soda
 - Food Coloring (or washable liquid water colors)
 - Craft Stick
 - Dish Soap
 - Tray
 - Cup
 - Spoons
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- **Step One** (Adults only) Prep your lemon by slicing the bottom off to make them sit flat. Flip the lemon over and slice out the core. If you are making an open faced volcano, slice the lemon in half.
 - **Step Two** Prepare extra lemon juice by slicing a second lemon in half and juicing it. Pour juice into a cup and set aside.
 - **Step Three** Place your cored lemon on a tray. Use your craft stick to mush the center of the lemon and bring out the juices. Be sure to keep the juice in the lemon!
 - **Step Four** Place a few drops of food coloring or liquid watercolors (do not dilute) in the center of the lemon.
 - **Step Five** Add in a good squeeze of dish soap to the lemon. This is not necessary but causes the bubbles to ooze and froth more and longer.
 - **Step Six** Add a spoonful of baking soda into the lemon. It should start to fizz. Take your craft stick and stir the lemon and lemon juice. It should start foaming really well as you stir it!
 - **Step Seven** To keep the reaction going alternatively add more baking soda, coloring, dish soap and the reserved lemon juice to the reaction. Squeezing the lemon to release the juices also enhances the reaction. Or if you are like my kids, just stick your whole hand in there and give it a good squeeze...ha!