

Build a Backyard Volcano!

By Linda butler

Combine a backyard adventure with a bit of science by building your own backyard volcano! All you need is dirt (slightly moist soil is best) and the lava mixture, below.

Lava Mixture

Mix together in a plastic 16-20 oz. drink bottle:

2 Tablespoons dish washing liquid

2 Tablespoons water

2 heaping Tablespoons baking soda

5-6 drops red food color

Plug the bottle top with a piece of wadded plastic shopping bag or put on the lid loosely so dirt doesn't fall in while you build your volcano.

Keep separate until eruption time:

$\frac{3}{4}$ C vinegar

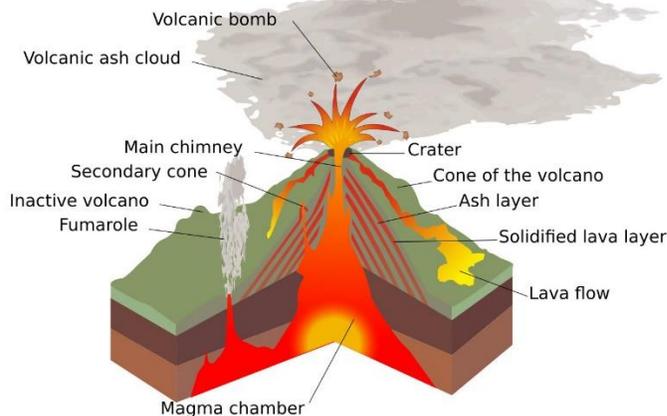
Put the bottle on the ground and pile and pack dirt up around it until the bottle neck protrudes only about $\frac{1}{4}$ " above your mound. Dry dirt works ok, but you can shape your volcano better if it's slightly damp. Make a couple of small indentations as riverbeds to help guide the flowing lava.

Remove the lid or plug and pour about $\frac{2}{3}$ of the vinegar into the crater, or bottle neck. Enjoy your eruption as the lava begins to bubble and flow! After the flow subsides, add a bit more vinegar to continue the eruption.



Talk About Volcanoes

A volcano is a mountain that opens downward to a pool of magma, or molten rock. The magma is under pressure and forces its way through fissures, cracks and weak spots in the earth. When the magma erupts from the volcano to the earth's surface it's called lava.



Lava is HOT! It's melted rock and fresh lava ranges from 1300-2200 degrees Fahrenheit.

There are over 1500 active volcanoes in the world. About 80 of them are under the ocean. The Hawaiian Islands were made from undersea volcanoes.

This SVG image was created by [Medium69](#) William Crochot



When a volcano erupts there's much more than lava that comes out. Clouds of ash and poisonous gasses also emerge from the crater. The gasses can kill people and animals and the ash can bury plants.

How is your backyard volcano similar to and different from a real volcano?

Your volcano is a similar conical shape to a volcano, and the spewing and flowing lava is also very realistic. But it's not an actual volcano. You've produced a chemical reaction that creates the appearance of a physical volcano. A real volcano is produced over thousands of years as heat and pressure build up and are released through a powerful and cataclysmic eruption.

Chemical Reaction

The backyard volcano erupts because of the reaction of the vinegar and the baking soda. The chemical name for vinegar is dilute acetic acid and the chemical name for baking soda is sodium bicarbonate.

Vinegar is an acid, the word comes from the Latin *acere* which means sour. Most acids have a sour taste. Acids have hydrogen ions, the more hydrogen ions, the higher the acidity and lower than 7 pH on the pH scale. Pure water is considered neutral, or 7, on the pH scale.

Baking soda is a base, which is higher than 7 in pH and has a bitter taste. It's the opposite of an acid, and when you mix an acid and a base together, they react to neutralize each other, producing a reaction—in the volcano it's the foaming "lava" and neutral water and salt.

Learn more about Chemistry, Science, and Volcanoes with these books (and more) that can be found at the Pleasant Grove Library.

Chemistry and Science books:

"Chemistry" by Ann Newmark, "Everyday Chemicals" by Kathryn Whyman, "Elements" by Adrian Dingle, "How to Be a Scientist" by Steve Mould.

Volcano books:

"Volcano & Earthquake" by Susanna Van Rose, "Amazing Volcanoes around the World" by Simon Rose, "Volcanoes" by Jennifer Nault, "Volcanoes: Journey to the Crater's Edge" by Philippe Bourseiller, "Volcanologist: The Coolest Jobs on the Planet" by Hugh Tuffen, "Secrets of Pompeii" by Tim O'Shei, "I Survived the Destruction of Pompeii" by Lauren Tarshis.