

Plinian Eruption

Required:

- 2 ltr bottle of diet coke
- Tube of mint mentos
- Piece of card or folded paper
- Piece of paper rolled into a tube

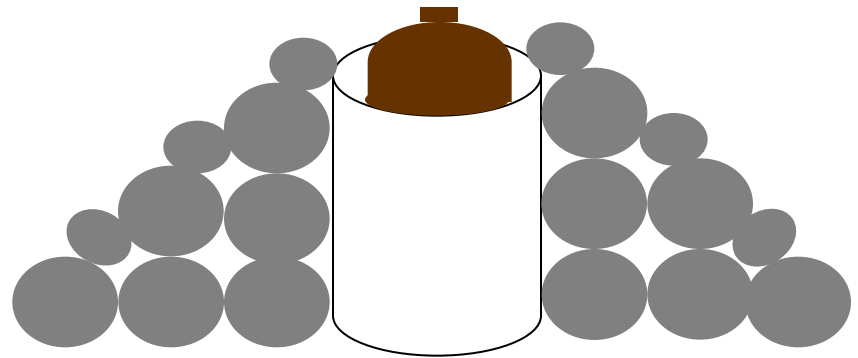
Optional:

- 1 x piece of drainpipe wide enough to fit around coke bottle
- Pebbles, gravel, or dirt; alternatively plastic sheeting or foil

Warning: if you don't use the drainpipe, make sure the bottle won't tip over and erupt coke over your spectators!

Place the drainpipe on the ground and pack pebbles or screwed up sheeting around it to simulate the flanks of a volcano. Lower the unopened coke bottle into the hole preserved by the drainpipe.

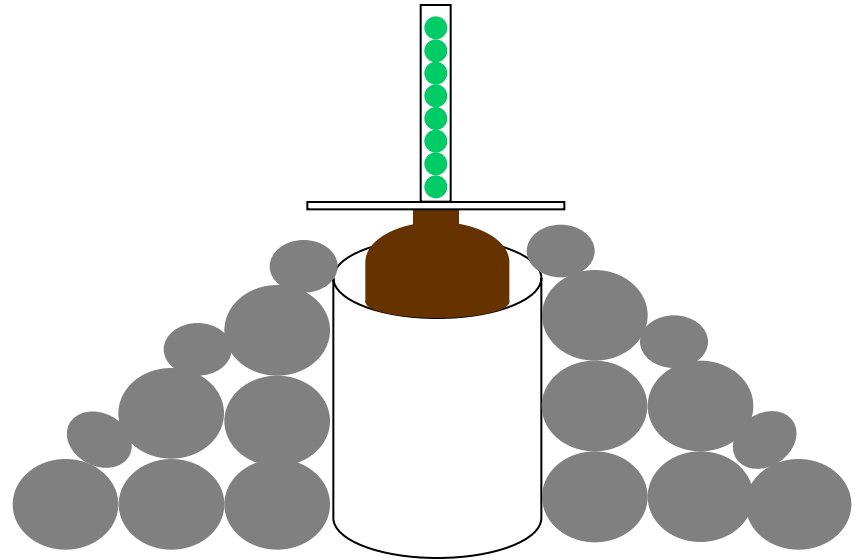
This set-up allows you to replace the bottle to re-run the activity many times without disturbing the “flanks” of the volcano.



Take the cap off the coke bottle.

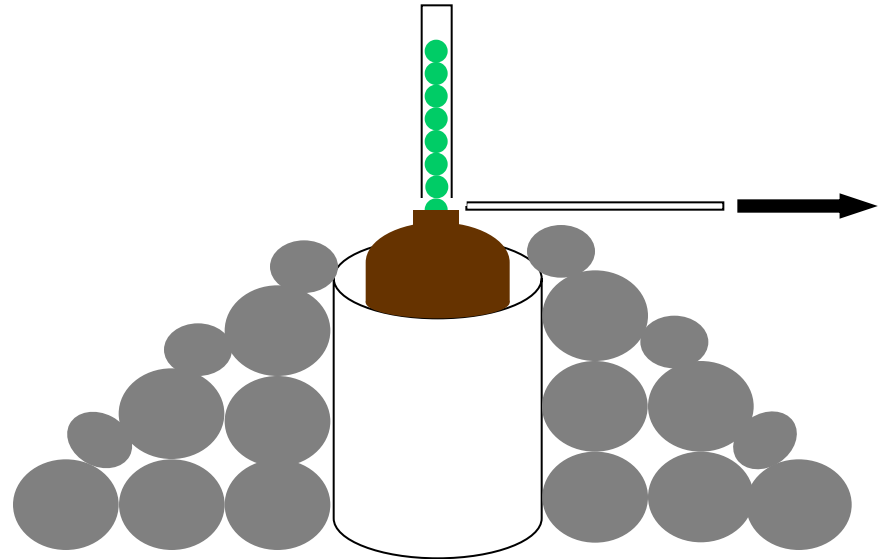
Place the card over the opening and hold the rolled tube of paper directly over the neck of the bottle.

Tip the entire tube of mentos into the paper tube.



Make sure the tube of paper is lined up with the neck of the bottle.

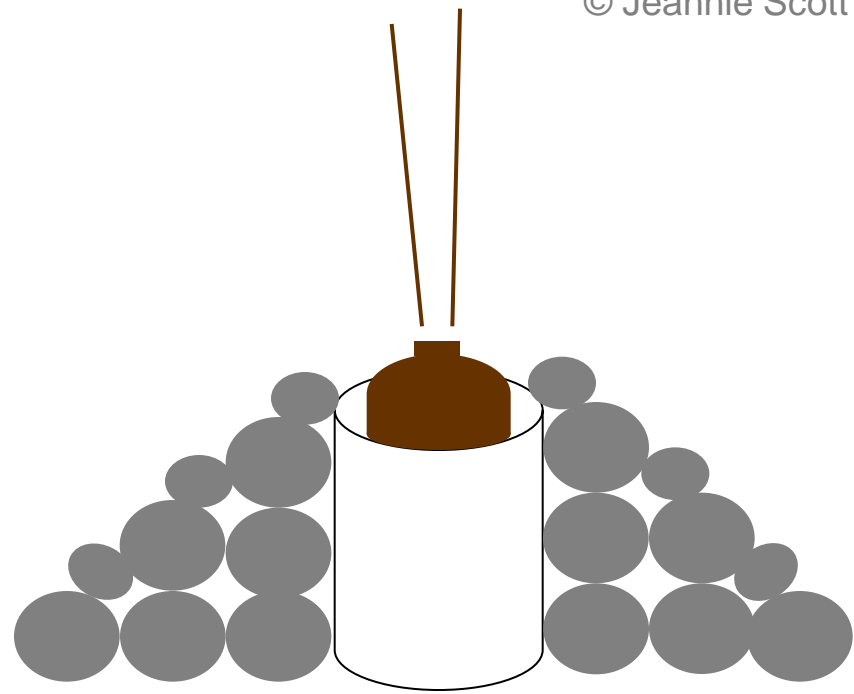
Holding the paper tube in place, slide the card out and allow the mentos to drop into the bottle.



Tip: if the mentos get stuck and don't all drop, stand back! The "eruption" will be smaller, but there can be several "pulses" as the sweets drop into the coke. You can use this by saying real eruptions can have explosive pulses.

The “eruption” starts after a couple of seconds, so stand clear. It can reach up to ~2 m. The scale of the “plume” and the “volcano” is realistic – actual plinian columns can reach 30,000 km.

Tip: the coke column will collapse as it loses momentum. This happens in real life – it causes pyroclastic flows down the flanks of the volcano.



Tip: link the wet area around the bottle to the area devastated by pyroclastic flows in real life – most people in this area would be killed.

Useful information

Plinian columns are named for Pliny, who observed and wrote about the AD79 eruption that buried Pompeii. Pliny Snr was killed trying to get a better look – Pliny Jnr finished and published the work.

Plinian columns and pyroclastic flows are hot gas, ash, and pumice, with some rock.

Pyroclastic flows can travel over 100 km per hour; temperatures can be several hundred °C. They are the most deadly volcanic hazard.