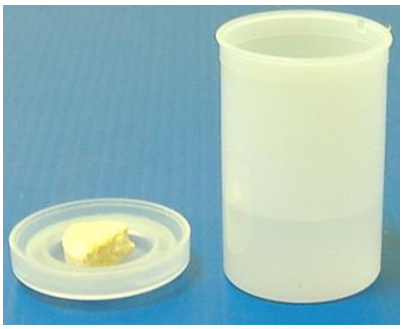
Film Canister Rockets Experiment



(Adapted from SSERC instructions)

Supplies Needed:

- Film canister
- Effervescent Vitamin C Tablet
- Blu-tac
- Eye protection

Setting up the Experiment: *This experiment should be done outside!*

1. Put on the safety eyewear (even plastic sunglasses would do!)
2. Break a vitamin C tablet into quarters and blu-tac one quarter to the inside of the lid.
3. Fill the film canister about one-third full of water.
4. Attach the lid.
5. Quickly invert the canister and place on a flat surface/the ground and WAIT
   ****SAFETY**: Step back at least one metre.****

What happens?

If it does not work for you: The tub and lid are the main things to check. Make sure water or gas isn't seeping out. You'll see bubbles on the outside if the lid isn't a good enough seal. Try a different kind of canister if it does leak.

An additional Experiment:

You can investigate any change in performance of the rocket (time to lift off or height attained) using smaller or larger bits of vitamin C tablet or by varying the volume or temperature of the water

Key Word(s): chemical reaction, force, pressure

How it Works:

Rockets, jets and propellers all work by pushing something away in one direction (usually backwards). Doing that gives the craft itself a push in the opposite direction (that'll be forwards).

Here, when the pressure inside the tub is enough to push the lid off, the force of the gas escaping downwards gives the tub a mighty shove upwards.

What generates the pressure? The main ingredients of effervescent vitamin C tablets are citric acid, sodium bicarbonate and calcium carbonate. As the tablets dissolve, the sodium bicarbonate splits apart to form sodium and bicarbonate ions. The bicarbonate ions react with hydrogen ions from the citric acid to form carbon dioxide gas (and water). The carbon dioxide mixes with the air contained in the tub. With more and more gas building up - in a volume that can't increase - the pressure inside the plastic tub rises until…

CfE Links: Investigative & Inquiry Skills and SCN 2-19a/2-07a

On-line Links:

Please Note: There are lots of websites showing how to make various kinds of rockets – please make sure you consider the SAFETY of these rockets before attempting them.

The Royal Institution ExpeRimental (http://www.rigb.org/families/experimental/about) has lots of science videos to help you bring science home with simple and inexpensive experiments.

The Dad Lab on YouTube (https://www.youtube.com/channel/UCc_-hy0u9-oKlNdMKHBudcQ) also has lots of simple experiments to try at home with videos showing you how to do them.

https://www.britishscienceweek.org/ has activity packs and citizen science projects with new ones each year for the annual British Science week in March.