

Experiments to do at Home

Explore the Many Faces & Places of Chemistry in Cleveland – NCW 2007

*Make a rocket! (Do outside with an adult.)

Right here in the Cleveland area, since 1944, **NASA Glenn Research Center** is involved in helping us reach the moon and beyond. And **Austin Powder Company**, which makes explosives for mining and construction, is Ohio's oldest manufacturing company.

- 1) Fill a Fuji® film canister, with an inside-fitting lid, $\frac{1}{2}$ of the way with warm water.
- 2) Drop in $\frac{1}{2}$ of an Alka Seltzer® tablet.
- 3) Snap the lid on tightly, invert the canister on a hard surface, and stand back.

A chemical reaction produces carbon dioxide gas; the pressure of it launches the rocket.

*Make a rainbow: an experiment with light!

At what is now Cleveland's **Case Western Reserve University**, Edward **Morley**, chemist, and Albert **Michelson**, physicist, in a famous experiment, measured the speed of light in different directions, which contributed to Einstein's later work.

You can create fantastic rainbow patterns by diffracting visible white light (i.e., splitting light into its various colors) using a CD-ROM. Either hold a flashlight beam at different angles to the CD or tilt the CD at different angles in bright sunlight.

*Make Your Own Lip Gloss!

In a basement in Cleveland, Jesse Bell founded a cosmetics firm in 1927 named for his daughter, **Bonnie Bell**, which now produces the well-known Lip Smackers™.

- 1) Melt 7 teaspoons of castor, jojoba, or sweet almond oil (in craft/candy-making store) along with 2 teaspoons of beeswax or more (in craft/candle-making store).
- 2) Remove the melted mixture from the heat and mix in 1 teaspoon of honey.
- 3) When the mixture is nearly cool, mix in 5 drops of essential oil (lemon, orange, peppermint, etc.). Pour into a lip-gloss container.

*Make Your Own Chocolate Candy Test Tube!

In a basement on Madison Ave. in Lakewood, Mike **Malley** started making Cleveland's famous chocolate candies, in 1935. His 2nd store was America's first retail store to be all-aluminum! Aluminum was first produced cheaply by chemist, **Charles Hall**, at Oberlin College, who started **ALCOA**.

- 1) Make a "mold" out of aluminum foil in the shape of a test tube, beaker, or flask.
- 2) Melt some pieces of melting chocolate in a pan sitting in hot water. Stir constantly.
- 3) Mix in coconut, peanuts, crushed pretzel, or other goodies, stirring thoroughly.
- 4) Spray your mold with PAM and pour in your mixture.
- 5) When it's completely cool; remove the aluminum foil. Enjoy!

*What Foods Can be Successfully Frozen? Be a Food Chemist!

In 1922, Abraham and Mahala **Stouffer** opened a small coffee shop in Cleveland, featuring delicious home-made food. Their sons opened restaurants and began freezing the popular items on the menu. Thus an empire, **Stouffer's Frozen Foods**, was born.

- 1) Slice up your choice of foods into same-size pieces: for example: blueberry, green pepper, apple, lettuce, celery, hot dog, bread, etc.
- 2) Take one piece of each food and put it directly into your freezer, with no covering.
- 3) Take one piece of each food and wrap it in aluminum foil or plastic and then place into your freezer.
- 4) Look at the pieces the next day. How do they compare? Let them thaw. Now how do they compare? Which items look like they can be successfully frozen?