

Gas Laws

1. Bromthymol blue (Acid-base demonstration)
Blow into a straw (exhale CO_2) to make solution acidic
(blue to yellow color change)
2. Air Pressure - (14.7 lb/in^2)
 - a. Crushing Can – boil water in aluminum can; invert over cold water
Vacuum created in can will cause can to crush from air pressure
 - b. Break stick with newspaper (36 in. x 36 in = 10 tons of pressure)
 - c. Water balloon in Erlenmeyer flask – oil on side of balloon
 - d. Drink “pop” from fully stoppered bottle
 - e. Barometer (32 feet tall with water) Have students blow water up a tube.
3. Bell Jar
 - a. Balloon expanding – explosion is “quiet” without air sound won’t carry
 - b. Shaving cream expanding
 - c. Cold boil of water – talk about or show with a syringe
 - d. Marshmallow Man – shrivels and expands
4. Hydrogen gas generator
 - a. Fill mylar balloon with air and hydrogen and “explode”
 - b. Exploding egg (burn until mix of hydrogen and oxygen – then explode)
5. Nitrogen Oxides
 - a. Diffusion tubes
 - b. Penny in nitric acid to make smog
6. Methane Bubbles with glycerin
7. Liquid Nitrogen
 - a. Balloons
 - b. Rubber bands (Space Shuttle Challenger Accident “O-ring”)
 - c. ball – crack
 - d. banana peel and frozen chocolate covered bananas
 - e. liquefy and solidify nitrous oxide compounds
 - f. “pop” rubber stopper off of a bottle as gas expands
 - g. cryogenic freezers (bioethics)
 - h.

MATERIALS:

Marshmallows

Mylar Balloons

Aluminum Cans

Chocolate syrup
Balloons
Tooth picks
Shaving creme

Plastic Table Cloth
Eggs
Paint stir sticks

Full bottle of pop
Liquid Nitrogen
Bananas