

Elephant Toothpaste Cheat Sheet...

Safety is a concern for elephant toothpaste portion of the station: the reaction is exothermic (releases heat), so tell audience not to touch glassware or bubbles after performing reaction. Also, bubbles contain both peroxide and iodide which will stain clothes, hands, etc. Make sure the person in each family performing reaction is wearing gloves and goggles. If someone gets potassium iodide or 30% hydrogen peroxide on them, have them go to the restroom and rinse it off (nothing to freak out over, but still want to wash hands).

The demos:

Ask audience questions as you proceed from demo to demo...

Introduce yourself...

Graduate student studying _____ at UCSB...

This station deals with chemical reactions...which are...

rearrangement of atoms...

How do you know a chemical reaction took place...

Color change...phase change i.e. gas/solid/liquid produced...heat absorbed or released...

Let's try some chemical reactions:

Demo this one...

Add vinegar (acetic acid) – 30 mL to baking soda (sodium bicarbonate) ~3 spoonfuls...forms carbon dioxide = gas

So, some chemical reactions produce a gas...which we saw as bubbles...

Color change...

Could demo test tube color change and not before passing test tubes out...add phenolphthalein, detergent + water solution will change color...basic solution causes color change...acid vs. base...orange juice vs. milk...

Hand out test tubes with water and water + detergent...most will have water, 2 will have water + detergent ...have them share/mix/re-divide with 3 different people...may want to demo the sharing/mixing/recombining...could use analogy of spreading a cold...then leader goes around and adds a drop or two of phenolphthalein to each test tube to see who was infected with soap...

Elephant toothpaste...

Another reaction that produces a gas...this time oxygen...hydrogen peroxide (H_2O_2) is decomposed into water and oxygen catalyzed by potassium iodide...

Give safety warning...peroxide and KI stain...leader put peroxide into cylinder...families put soap and food coloring (on side)...warn that heat will be released, person putting KI should wear gloves...everyone else take a step back...all at once, one person from each family put KI into beaker...

Don't let them touch soap...it will stain them and is hot...

Could show what happens if you use 3% hydrogen peroxide (this is what you buy at the drug store) instead of 30%...reaction happens much slower...

Potassium iodide = catalyst = something that speeds up chemical reaction...

Clean up...

Use gloves to clean beakers, test tubes, and graduated cylinder...all can be rinsed down sink...you'll have to be on your game to get this done between each group (maybe one person could be cleaning and other person start making chemistry introduction etc).