

SNAKES FROM HELL

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CHEM-135HON - COLLEGE CHEMISTRY 1

THIS EXPERIMENT SHOWS THE POWER OF COMMON MATERIALS TO PRODUCE LARGE, OTHERWORLDLY LOOKING MATERIALS SEEMINGLY OUT OF THIN AIR.

MATERIALS

- SUCROSE
- NaHCO_3 (BAKING SODA)
- SAND (PIT FORMATION)
- BUTANOL
- GRILL LIGHTER
- MORTAR AND PESTLE

INSIDE OF THE SNAKE



PROCESS

- CRUSH GRANULATED SUGAR INTO A FINE POWDER
- WEIGH OUT THE RATIO OF SUGAR TO BAKING SODA
- MIX TWO POWDERS THOROUGHLY
- PREPARE SAND PIT
- DOUSE PIT WITH BUTANOL (ROUGHLY 50-75ML)
- LOAD POWDER MIXTURE INTO SMALL PILE IN THE MIDDLE OF THE PIT
- LIGHT OUTER EDGE OF BUTANOL
- WAIT FOR REACTION TO STOP AND ALL FLAMES TO EXTINGUISH
- WEIGH CARBON SNAKE AND LEFTOVER REACTANTS

• TRIAL 4 (IDEAL CONDITIONS)



• TRIAL 5 (HIGHEST YIELD)



RESULTS BAKING SODA:SUGAR

• TRIAL 1 - 1:1 RATIO

INITIAL: 5 GRAMS B.S. + 5 GRAMS SUGAR

YIELD: 2.212 GRAMS SNAKE + 4.918 GRAMS LEFTOVER = 22.12%

• TRIAL 2 - 1:2 RATIO

INITIAL: 5 GRAMS B.S. + 10 GRAMS SUGAR

YIELD: 4.427 GRAMS SNAKE + 2.759 GRAMS LEFTOVER = 29.51%

• TRIAL 3 - 1:3 RATIO

INITIAL: 5 GRAMS B.S. + 15 GRAMS SUGAR

YIELD: 5.600 GRAMS SNAKE + 9.950 GRAMS LEFTOVER = 28.00%

• TRIAL 4 - 1:4 RATIO (IDEAL)

INITIAL: 5 GRAMS B.S. + 20 GRAMS SUGAR

YIELD: 6.270 GRAMS SNAKE + 14.33 GRAMS LEFTOVER = 25.08%

• TRIAL 5 - 1:5 RATIO

INITIAL: 5 GRAMS B.S. + 25 GRAMS SUGAR

YIELD: 20.40 GRAMS SNAKE + 1.153 GRAMS LEFTOVER = 68.01%

• TRIAL 6 - 1:5.5 RATIO

INITIAL: 5 GRAMS B.S. + 27.5 GRAMS SUGAR

YIELD: 14.185 GRAMS SNAKE + 17.262 GRAMS LEFTOVER = 43.65%

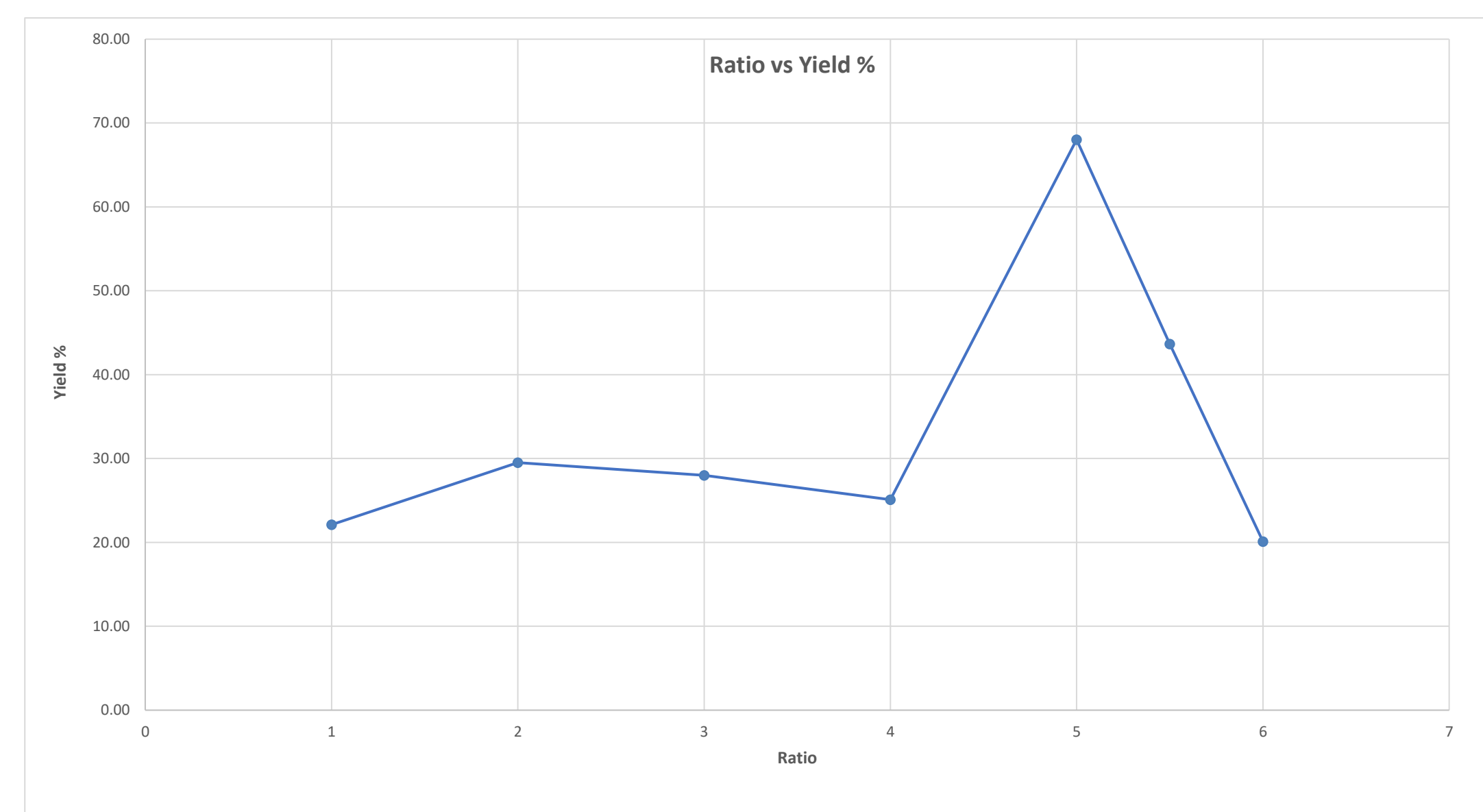
• TRIAL 7 - 1:6 RATIO

INITIAL: 5 GRAMS B.S. + 30 GRAMS SUGAR

YIELD: 7.034 GRAMS SNAKE + 23.928 GRAMS LEFTOVER = 20.10%

CONCLUSION:

OVERALL, THE RESULTS WE OBTAINED WERE SLIGHTLY DIFFERENT THAN WE EXPECTED. THE TRUE WINNING RATIO WAS IN TRIAL 5 WITH A 1:5 RATIO. THIS MAKES US THINK THAT THE ADDED FUEL (SUGAR) IS A CONTRIBUTING FACTOR, HOWEVER TOO MUCH SUGAR CAN MAKE THE REACTION SLOW DOWN. IF WE WERE TO RUN THIS EXPERIMENT AGAIN, WE'D TRY TO CONTROL THE SIZE AND SHAPE OF THE REACTANT PILE BETTER, AS WELL AS TRYING REAL CONFECTIONER'S SUGAR INSTEAD OF OUR MAKESHIFT VERSION. WE'D ALSO LIKE TO TEST DIFFERENT FUELS TO SEE IF THIS AFFECTS THE YIELDS.



OFFICIAL UW-STOUT LOGO, DO NOT STRETCH OR DISTORT.