Lab Notebook: September 10, 2016
Sodium Perchlorate 1

Group: Perchlorate Team

In order to measure the conductivity or concentration of a solution, we will be using the TDS-4 Pocket-Size TDS Meter: http://www.tdsmeter.com/products/tds4.html

To make sure the data we record is accurate, we first need to test the accuracy of the TDS meter. The TDS meter can record measurements of concentration in ppm (parts per million or mg/L) or in measurements of electrical conductance in mS (millisiemens). To test the accuracy of the TDS meter, a trial solution must be made. We would compare the measured concentration and electrical conductance of the TDS meter to a calculated theoretical value. The discrepancy between the measured value and the calculated value will indicate how accurate the TDS meter is. If we were to use the TDS is any proceeding experiment, we would have to account for the inaccuracy of the results and extrapolate the measurement to determine what the theoretical yield should be.

Summary:

- We conducted a simple experiment to test the ability of the TDS meter.
- 0.25 g of sodium perchlorate was dissolved in roughly 50 mL of Milli-Q in a 50 mL tube.
- That is 0.5 % (w/v) solution of sodium perchlorate.
- When we measured the concentration of the solution with the TDS meter the results were:
    - ➢ 179 * 10 ppm, 180 * 10 ppm
    - ➢ In other words, the concentration was around 1786 ppm - 1804 ppm
- This is odd because theoretically a 0.5 % concentrated solution should have 5000 ppm or 5000 mg/L. Our solution of 250 mg per 50 mL (multiply by 20) is equivalent to 5000 mg/L.

Lab Notebook: September 14, 2016
Sodium Perchlorate 2

Group: Perchlorate Team

Summary:

- Remeasured the 0.5 % sodium perchlorate solution and received a value of 170 * 10 ppm/ 169 * 10 ppm.
- A roughly 75 mg NaCl was added to about 50 mL of distilled water. Measured to about 1160 ppm - 1200 ppm.
- 450 mg of sodium perchlorate in a little over 50 mL of Milli-Q water. TDS measures 298 * 10 ppm.