Greetings - February 17, 2008

Several people have emailed about the table and graphs. Because I'm getting back to you so late, you have an extension until Friday Feb. 22, if you need it. The formal report needs to be turned in before 4:30pm to room 142 Schrenk on Friday, Feb. 22, in order not to be considered late.

1. This is the type of table that we are expecting. It does not have to be identical to this. This is just an example.

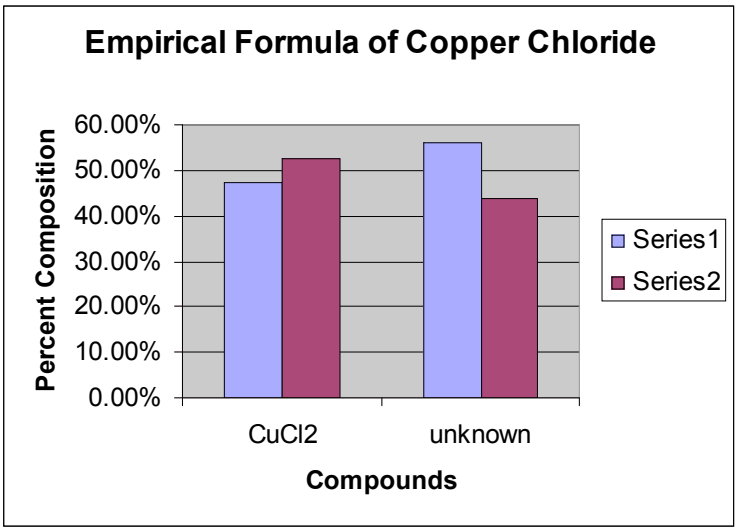
Table 1: Calculated Percentages of Copper and Chloride.

Compound	Formula Mass (g/mole)	%Cu	%Cl
CuCl	98.999	64.19%	35.81%
Cu_2Cl	162.545	78.19%	21.81%
$CuCl_2$	134.452	47.26%	52.74%
Cu_2Cl_3	233.451	54.44%	45.56%
Cu_3Cl_2	261.544	72.89%	27.11%
unknown	***	55.99%	44.01%

Based on the calculated values, the unknown was presumed to be Cu_2Cl_3. However, it was learned that the actual composition of the unknown was $CuCl_2$. The calculated percent error for the unknown versus $CuCl_2$ was 18.47%. This is a fairly high percent error. Any percent error less than 5% is considered reasonable. It is presumed that the high percent error is the result of the sample not being completely dry. Another possibility is that the copper may have been overheated and started to oxidize.

2. This is the type of graph that we are expecting. The known composition was $CuCl_2$. It does not have to be identical to this. This is just an example.

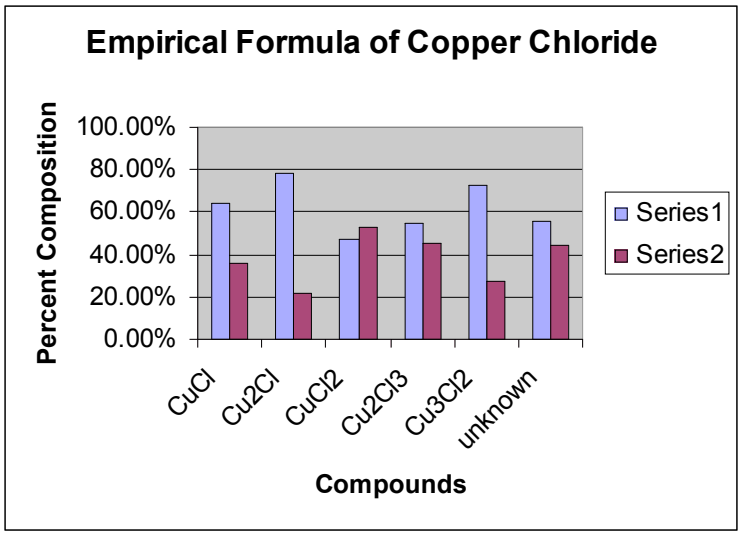
Graph 1: Percentage of copper and chloride in $CuCl_2$ and unknown.



Series 1 is percent copper. Series 2 is percent chloride. It is easy to see that the percentage of copper is significantly higher in the unknown than that in $CuCl_2$. It is presumed that the copper in the unknown was contaminated with either water or copper oxide.

3. If you want you can graph all of the data. This graph is more than we are expecting. The known composition was $CuCl_2$. Your graph does not have to be identical to this. This is just an example.

Graph 1: Percentage of copper and chloride in given compounds and unknown.



Series 1 is percent copper. Series 2 is percent chloride. It is easy to see that the percentage of copper is significantly higher in the unknown than in $CuCl_2$. The percentage of copper is most similar to Cu_2Cl_3. Originally it was presumed that the unknown compound was Cu_2Cl_3. However, it was later learned that the compound was $CuCl_2$. The percent error for the unknown versus Cu_2Cl_3 was only 2.85%, whereas the percent error for the unknown versus Cu_2Cl_3 was 18.47%. It is presumed that the copper in the unknown must have been contaminated with either water or copper oxide.

4. Some people have asked about the standard deviation. You do not have to calculate a standard deviation or included error bars on the graph. These were general directions given for all graphs. You should probably calculate a percent error in order to justify your results. Less than 5% is considered acceptable and could be due to calibration errors; 5-10% is fair and there might be some minor contamination or loss of sample due to transfer errors (if the mass is too high or too low, respectively); anything greater than 10% is considered unacceptable.

If one of your runs was drastically different than the other, you might want to base your answer on the better looking product. That is, if one sample was muddy and tacky, it may have still contained water, whereas one that had distinct chunks of free-flowing copper should have been drier and given more reliable results. You would need to explain then why you went with one run instead of the average of the two runs.

If you have any other questions, please let your TA or me know.

Thank you – Cyndie Bolon