

Discussion:  $\text{Cu}(\text{NO}_3)_2$  is the unknown liquid that was given to my instructor. I was able to identify the unknown chemical through the similar types of reactions that occurred in the five known chemicals, such as  $\text{Fe}(\text{NO}_3)_3$ ,  $\text{Ni}(\text{NO}_3)_2$ ,  $\text{Mg}(\text{NO}_3)_2$ , and  $\text{Cu}(\text{NO}_3)_2$ , which are reacted based on different chemicals that were added. Unknown and  $\text{Cu}(\text{NO}_3)_2$  have similar reactions with other chemicals such as 7.5% NaI will react and form a yellowish liquid with some precipitate,  $\text{Na}_4\text{Fe}(\text{CN})_6$  is reacted and forms dark brown with a higher amount of precipitate, Dimethylglyoxime doesn't change its appearance or create precipitate, and 1 M NaOH reacts and changes its color of light blue with no precipitate. These are reactions that include the unknown chemical  $\text{Cu}(\text{NO}_3)_2$ .

Conclusion: The experiment's purpose is to determine the known and unknown ions so that precautions can be performed before the experiments. Goals were achieved by observing several types of chemicals react to the known to determine the unknown. And see if it can be a precaution before an experiment that will be conducted in the future. Expect that chemicals can change their physical appearance and form some or higher level of precipitation. The most of solutions reacted and changed their colors but some of them were clear when they reacted with 0.25 Dimethylglyoximes. The Unknown had related the same types of reaction as  $\text{Cu}(\text{NO}_3)_2$  which has been predicted as the unknown solution. In future experiments, there Needs to be careful and mindful about the types of chemicals that react and strictly follow the table content.