Student 6: High Not Achieved

Intended for teacher use only

Sample A The anion present is: SO_4^{2-}

Description of test(s) carried out	Observations	Name (or formula) of any precipitate(s) or complex ions formed	Balanced Equations
Add red Litmus to unknown sample... Add $Ba(NO_3)_2$ Solution.	Litmus stayed Red White precipitate formed.	—<br~~Sulphate~~. Barium Sulphate.	— $Ba^{2+} + SO_4^{2-} \rightarrow BaSO_4$

Explanation for deciding on the anion:

Sonbility rules state that all Sulphates are Soluble except for Ca, Ba and Pb Sulphate - (SO_4)

1

Sample A The cation present is: Cu^{2+}

Description of test(s) carried out	Observations	Name (or formula) of any precipitate(s) or complex ions formed	Balanced Equations
Add 2 drops dilute NaOH solution. new sample. add 2 drops NH_3, then excess.	Blue Precipitate formed. Blue precipitate formed, then became a deep blue ~~with~~ solution ~~excess Solution~~. with excess.	Copper Hydroxide Copper Hydroxide Copper Ammonium.	$Cu^{2+} + 2OH^- \rightarrow Cu(OH)_2$ ~~Copper Hydroxide~~ $Cu^{2+} + 2OH^- \rightarrow Cu(OH)_2$ ~~Copper Hydroxide~~ $Cu^{2+} + 4NH_3 \; [Cu(NH_3)_4]$

Explanation for deciding on the cation:

Sonbility rules states that all Ammonium compounds Are Soluble. and that all Hydroxides are Insoluble except for those in Group one or with NH_4^+ ion

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Solution A.

The Cation found in solution A was Cu^{2+} (Copper (II)ion) and the anion present in solution a was $SO4^{2-}$ (Sulphate ion).

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What does having copper in our water mean?

FOR US:
Copper is actually a mineral/metal that we need to consume. Although it is a small amount (2-3 mg in an adult human per day) most of the copper our body obtains is through food, and a small amount (around 10% of our daily intake) is obtained from drinking water.

Although intaking large amounts of copper can be dangerous for the human body.
"Consumption of high levels of copper can cause nausea, vomiting, diarrhoea, gastric (stomach) complaints and headaches."
-https://ww2.health.wa.gov.au/Articles/A_E/Copper-in-drinking-water
Long term exposure to large amounts of copper could lead to liver failure. And potentially even death
Copper can be found naturally in all water sources. Although drinking water runs through old copper pipes can have a higher content of copper.

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"A high level of copper in your drinking water will leave a metallic or bitter taste. This water may not be safe to drink and you should contact your drinking water provider or have the water professionally tested."
-https://ww2.health.wa.gov.au/Articles/A_E/Copper-in-drinking-water

Copper is found naturally in water sources, and the amount of copper that we intake through water is not lethal or unhealthy unless you're piping or waterways have a higher than normal copper content.
FOR ENVIRONMENT:
Copper is a requirement for many marine animals and life. Which also need a daily intake of the substance. Therefore for our environment small manageable concentrations of copper in our water is absolutely necessary.
Copper can also be found in brake pads, which copper dust/residue could end up in waterways and streams (ie. Witherford reserve and shepard's park beach) leading to an unusually high concentration of copper in the water.