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# Lab Write Up

**Title:** Precipitation Lab

# Introduction:

The following experiment will detect which two solutions would create distinguishable change when mixed. The change here doesn’t indicate just a change in color, but whether a solid sediment would form or not. In chemistry, this is referred to as a “precipitate,” and the whole phenomenon is called a “precipitation reaction.” As a result of all experiments, it would be able to determine which combination of ionic solutions form precipitates.

A precipitation reaction results in the formation of an insoluble product. Whether a precipitate, an insoluble solid that separates from the solution, will form depends on the solubility of the solute. Precipitation reactions usually involve ionic compounds.

# Materials:

* Chemical:
  + Sodium chloride (NaCI)
  + Lead (II) sulphate (PbSO4)
  + Copper (II) sulphate (CuSO4)
  + Potassium iodide (KI)
  + Zinc (II) sulphate (ZnSO₄)
* Equipment
  + Tubes
  + Test tube rack
  + Erlenmeyer flasks
  + Beaker
  + A bottle of distilled water
  + Eyes dropper
  + Balance
  + Goggle
  + Lab cloth
  + Graduated Cylinder
  + Spatula
  + Aluminium foil
  + Pipette
  + burble

# Safety and Hazards:

**Sodium chloride**

* Not a hazardous substance or mixture.

# Lead (II) sulphate

* Appropriate Precautions
  + P201 - Obtain special instructions before use.
  + P202 - Do not handle until all safety precautions have been read and understood.
  + P260 - Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling.
  + P270 - Do not eat, drink or smoke when using this product.
  + P271 - Use only outdoors or in a well-ventilated area.
  + P273 - Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
  + P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
  + P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
  + P308 + P313 - IF exposed or concerned: Get medical advice/ attention. P391 Collect spillage.
  + P405 - Store locked up. P501 Dispose of contents/ container to an approved waste disposal plant.
* Risk Assessments
  + H302 + H332 - Harmful if swallowed or if inhaled.
  + H360 - May damage fertility or the unborn child.
  + H373 - May cause damage to organs through prolonged or repeated exposure.
  + H410 - Very toxic to aquatic life with long lasting effects

# Copper (II) sulphate

* Appropriate Precautions
  + P264 - Wash skin thoroughly after handling.
  + P270 - Do not eat, drink or smoke when using this product.
  + P273 - Avoid release to the environment.
  + P280 - Wear protective gloves/ eye protection/ face protection.
  + P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
  + P302 + P352 - IF ON SKIN: Wash with plenty of water.
  + P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  + P332 + P313 - If skin irritation occurs: Get medical advice/ attention.
  + P337 + P313 - If eye irritation persists: Get medical advice/ attention.
  + P362 + P364 - Take off contaminated clothing and wash it before reuse.
  + P391 - Collect spillage.
  + P501 - Dispose of contents/ container to an approved waste disposal plant
* Risk Assessment
  + H302 - Harmful if swallowed.
  + H315 - Causes skin irritation.
  + H319 - Causes serious eye irritation.
  + H410 - Very toxic to aquatic life with long lasting effects

# Potassium iodide

* Appropriate Precaution
  + H372 - Causes damage to organs (Thyroid) through prolonged or repeated exposure if swallowed.
* Risk Assessments
  + P260 - Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
  + P264 - Wash skin thoroughly after handling.
  + P270 - Do not eat, drink or smoke when using this product.
  + P314 - Get medical advice/ attention if you feel unwell.
  + P501 - Dispose of contents/ container to an approved waste disposal plant.

# Zinc (II) sulphate

* Appropriate Precaution
  + P280 - Wear eye protecƟon
  + P264 - Wash hands thoroughly aŌer handling.
  + P305 + P351 + P338 - IF IN EYES: Rinse cauƟously with water for several minutes. Remove contact lenses, if present and easy to do. Continues rinsing.
  + P330 - Rinse mouth.
  + P310 - Immediately call a POISON CENTER/doctor.
  + P391 - Collect spillage.
* Risk Assessments
  + H302 - Harmful if swallowed.
  + H318 - Causes serious eye damage.
  + H410 - Very toxic to aquaƟc life with long lasƟng effects.

# Methods

1. Weight out 2 grams of each chemical by using balance (make sure to put the chemical on the aluminum foil before putting it in the balance)
2. Then mix the chemical with 200 gram of water
3. Get 5 ml from two of the solution and combine two different solution (repeat this for each chemical)

# Prelab Question

* What is solubility and what can affect solubility?
  + Solubility is the maximum amount of a substance that will dissolve in a given amount of solvent at a specific temperature. There are two direct factors that affect solubility: temperature and pressure. Temperature affects the solubility of both solids and gases, but pressure only affects the solubility of gases.
* What are the solubility rules?
  + Most nitrate (NO3-) salts are soluble
  + Most salts containing the alkali metal ions (Li+, Na+, K+, Cs+, Rb+) and the ammonium ion (NH4+) are soluble
  + Most chloride, bromide, and iodide salts are soluble, except those salts containing the ions Ag+, Pb2+, and Hg22+
  + Most sulfate salts are soluble, except BaSO4, PbSO4, Hg2SO4, and CaSO45.Most hydroxide salts are slightly soluble. NaOH and KOH are the important soluble hydroxides while the compounds Ba(OH)2, Sr(OH)2, and Ca(OH)2are marginally soluble
  + Most sulfide (S2-), carbonate (CO32-), chromate (CrO42-), and phosphate (PO43-) salts are slightly soluble
* Can you predict what you might expect to happen with the various combinations? What do you predict?