

## Name That Compound

### Pre-Lab Discussion:

In this activity, we will investigate how ions, when mixed together, can form new compounds. After combining the solutions of different ions we will attempt to predict the formulas of these new compounds and name them.

### Purpose:

Observe the formation of various ionic compounds. Keeping in mind that ionic compounds have no charge, write formulas and name the new compounds.

### Materials:

24 well plate

Safety glasses

Solutions of the following ions:

1)  $\text{Pb}^{2+}$  and  $(\text{NO}_3)^{1-}$

2)  $\text{K}^{1+}$  and  $\text{I}^{1-}$

3)  $\text{Na}^{1+}$  and  $(\text{OH})^{1-}$

4)  $\text{Fe}^{3+}$  and  $\text{Cl}^{1-}$

5)  $\text{K}^{1+}$  and  $(\text{CO}_3)^{2-}$

6)  $\text{Zn}^{2+}$  and  $(\text{C}_2\text{H}_3\text{O}_2)^{1-}$

7)  $\text{K}^{1+}$  and  $(\text{SCN})^{1-}$

8)  $\text{Fe}^{3+}$  and  $(\text{NO}_3)^{1-}$

9)  $\text{Pb}^{2+}$  and  $(\text{NO}_3)^{1-}$

10)  $\text{Cu}^{2+}$  and  $(\text{SO}_4)^{2-}$

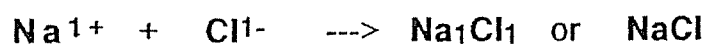
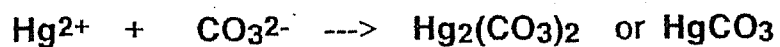
### Procedure:

- 1) Fill the first well one third full with solution #1 and add another third of solution #2.
- 2) Fill the second well one third full with solution #3 and add another third of solution #4.
- 3) Repeat with: #5 and #6  
#7 and #8  
#9 and #10
- 4) Predict the formula of the new compound using the Criss-Cross method. Remember the total charge on a compound must be zero. Also remember Opposites Attract.

5) Name the compound.

6) The following will serve as examples:

When a solution of  $\text{Hg}^{2+}$  and  $\text{Cl}^{-}$  is mixed with a solution of  $\text{Na}^{1+}$  and  $\text{CO}_3^{2-}$  the following compounds would be formed:



**Questions:**

1) Make a Table like the one below of the ions that combined to form new compounds then the formula of the new compounds and finally, the name.

Cation (+)	Anion (-)	Formula	Name
$\text{Pb}^{2+}$	$\text{I}^{-}$	$\text{PbI}_2$	Lead(II) iodide

2) What did you observe that could signify that new compounds were formed ?

Chemistry Lab

Name That Compound

Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

Purpose \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Observations

Trial	Solutions	Color of first solution	Color of second solution	Color of product
1	1 & 2			
2	3 & 4			
3	5 & 6			
4	7 & 8			
5	9 & 10			

Questions:

1.

Trial	Cation	Anion	Formula	Name of compound
1				
2				
3				

Trial	Cation	Anion	Formula	Name of compound
4				
5				

2.

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Post Lab Questions

- \_\_\_ 1) What is the correct IUPAC name for the compound  $\text{NH}_4\text{Cl}$ ?
  - A) nitrogen chlorate
  - B) ammonium chlorate
  - C) ammonium chloride
  - D) nitrogen chloride
- \_\_\_ 2) Which formula represents a binary compound?
  - A)  $\text{CH}_4$
  - B)  $\text{CaCO}_3$
  - C)  $\text{CH}_3\text{COCH}_3$
  - D)  $\text{NH}_4\text{NO}_3$
- \_\_\_ 3) What is the formula for sodium thiosulfate?
  - A)  $\text{Na}_2\text{SO}_3$
  - B)  $\text{Na}_2\text{S}_2\text{O}_3$
  - C)  $\text{Na}_2\text{S}_2\text{O}_4$
  - D)  $\text{Na}_2\text{SO}_4$
- \_\_\_ 4) Which of the following is an empirical formula?
  - A)  $\text{H}_2\text{O}$
  - B)  $\text{C}_6\text{H}_{12}\text{O}_6$
  - C)  $\text{C}_2\text{H}_2$
  - D)  $\text{H}_2\text{O}_2$
- \_\_\_ 5) A chemical formula is an expression used to represent
  - A) compounds and elements
  - B) compounds, only
  - C) elements, only
  - D) mixtures, only
- \_\_\_ 6) The correct formula for the thiosulfate ion is
  - A)  $\text{SO}_3^{2-}$
  - B)  $\text{SCN}^-$
  - C)  $\text{SO}_4^{2-}$
  - D)  $\text{S}_2\text{O}_3^{2-}$
- \_\_\_ 7) In a sample of solid  $\text{Ba}(\text{NO}_3)_2$ , the ratio of barium ions to nitrate ions is
  - A) 1:6
  - B) 1:3
  - C) 1:2
  - D) 1:1
- \_\_\_ 8) What is the formula for titanium (III) oxide?
  - A)  $\text{TiO}$
  - B)  $\text{Ti}_2\text{O}_3$
  - C)  $\text{Ti}_2\text{O}_4$
  - D)  $\text{Ti}_3\text{O}_2$
- \_\_\_ 9) What is the formula for the compound that forms when magnesium bonds with phosphorus?
  - A)  $\text{MgP}_2$
  - B)  $\text{Mg}_2\text{P}_3$
  - C)  $\text{Mg}_3\text{P}_2$
  - D)  $\text{Mg}_2\text{P}$
- \_\_\_ 10) What is the total number of oxygen atoms in the formula  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ ? [The  $\cdot$  represents seven units of  $\text{H}_2\text{O}$  attached to one unit of  $\text{MgSO}_4$ .]
  - A) 4
  - B) 5
  - C) 11
  - D) 7