



Ingredient Label Project

Objectives: To identify the various ionic and molecular compounds found in processed food, cosmetics around the home. To correctly name and write the chemical formulas of ionic and molecular compounds. To determine the use of chemicals in everyday life.

Directions:

- 1) Look at the labels of various products (ideas: prepared foods like mac & cheese, canned soup, ice cream, cereal or cake mix; toiletries like perfume, deodorant, hair gel or toothpaste; for ionic or molecular compound names that you recognize from class (for example: calcium chloride, sodium sulfate, sulfur dioxide, etc.). If you are looking at a label and cannot find a compound that you recognize, find another label!
- 2) You will need to find **4 different compounds** (excluding salt) from the labels of everyday products (minimum of **1 each ionic & covalent**)
 - a. Each of your compounds must be from a *different* product! Sometimes, compounds are listed by an industry name; in this case you can use a database like **ChemSpider.com** or Google to find out what the chemical formula is.
- 3) You will need to submit an **image** of the labels with your project.
- 4) Complete the table. Be sure to enter the name of each compound and the name of the product where you found it (ex: Kraft Mac & Cheese).
- 5) Using credible internet sources, fill in the rest of the information about the compound on the table:
 - a) Determine the **chemical formula** of the compound
 - b) Indicate whether it is an **ionic or molecular** (covalently bonded) compound
 - c) Report a **physical property** of the substance
 - d) Report how the **chemical is used** in your product or similar products (is it a preservative, an additive, a flavor enhancer, etc.)
 - e) Report a **risk or benefits** of the chemical to human health and/or the environment
- 6) Keep track of the resources that you use for your information by creating a **reference list**.
- 7) After completing the table, answer the following reflection questions below the chart:
 - a) What do you know or what are you aware of after doing this activity that you did not know or were not aware of before? Explain. [2]
 - b) After researching the chemicals in the products, do the risks outweigh the benefits for using these products? Will you continue to use these products? Explain [2]

SAMPLE ENTRY

Product	Chemical Name	Chemical Formula	Ionic or Molecular	Physical Property	Use/Purpose in Product	Risks and Benefits to Humans and/or the Environment
Ritz Crackers	Sodium chloride	NaCl	Ionic	Cubic crystalline structure clear when pure soluble in water	Used as a seasoning in this product	Too much sodium is bad for health as it is associated with a greater risk of stroke and cardiovascular disease

Grading Rubric:

Criteria	Possible Points
4 different labels identified & included	4
Chemical names written correctly	4
Chemical formulas written correctly	4
Identified as ionic or molecular compounds	4
Physical properties described	4
Uses/purpose in product identified	4
Risks and benefits to humans and/or the environment	4
Reflection questions answered	4
Minimum 2 different websites used	2
Total	/34

TABLE 7.3 COMMON POLYATOMIC IONS

CATION		IUPAC NAME	
NH_4^+		ammonium ion	
ANION	IUPAC NAME	ANION	IUPAC NAME
$\text{C}_2\text{H}_3\text{O}_2^-$	acetate ion	OH^-	hydroxide ion*
CO_3^{2-}	carbonate ion	ClO^-	hypochlorite ion
ClO_3^-	chlorate ion	NO_3^-	nitrate ion
ClO_2^-	chlorite ion	NO_2^-	nitrite ion
CrO_4^{2-}	chromate ion	ClO_4^-	perchlorate ion
CN^-	cyanide ion*	MnO_4^-	permanganate ion
$\text{Cr}_2\text{O}_7^{2-}$	dichromate ion	PO_4^{3-}	phosphate ion
HCO_3^-	hydrogen carbonate ion	SO_4^{2-}	sulfate ion
HSO_4^-	hydrogen sulfate ion	SO_3^{2-}	sulfite ion

Product	Chemical Name	Chemical Formula	Ionic or Molecular	Physical Property	Use/Purpose in Product	Risk / Benefit to Humans and/or the Environment

6) Websites used:

7) After completing the table, answer the following reflection questions:

a) What do you know or what are you aware of after doing this activity that you did not know or were not aware of before? Explain. [2]

b) After researching the chemicals in the products, do the risks outweigh the benefits for using these products? Will you continue to use these products? Explain [2]