The Atomic Mass of Candium Activity

Lab Writeup---> *Write: Title, Theory, Purpose* *Paste in: Procedure, Data Table*

After data is collected, write and show work in the calculation section and answer the discussion questions in complete sentences. Also, compare and contrast the candium isotopes and this experiment compared to the weighted atomic mass calculation in real life.

Theory: In nature most elements occur as a mixture of two or more isotopes. Each

isotope of an element has a fixed mass with a natural percent abundance. The mass of the

element needs to reflect the masses of these isotopes in their respective abundances.

Purpose:

To analyze the isotopes of "candium" and to calculate its atomic mass.

Materials:

sample of candium, balance

Procedure:

Obtain a sample of "candium" that contains three different brands of round, coated candy. Treat each brand of candy as an isotope of candium. Separate the three isotopes into groups labeled, A, B, and C, and measure the mass of each isotope. Count the number of atoms in each sample. Make a table similar to the one below to record your measured and calculated data.

	A	B	C	Totals
Total mass (grams)				
Number of particles				
Average mass (grams)				
Relative Abundance				
Percent abundance				
Relative mass				

Analyze:

Using experimental data, record the answers to the following questions below your data table.

1. Calculate the average mass of each isotope by dividing its total mass by the number of particles of that isotope.

2. Calculate the relative abundance of each isotope by dividing its number of particles by the total number of particles.

3. Calculate the percent abundance of each isotope by multiplying the relative abundance from Step 2 by 100.

4. Calculate the relative mass of each isotope by multiplying its relative abundance from Step 2 by its average mass.

5. Calculated the weighted average mass of all candium particles by adding the relative masses. This weighted average mass is the atomic mass of candium.

6. Explain the difference between percent abundance and relative abundance. What is the result when you total the individual relative abundances? The individual percent abundances.

7. The percent abundance of each kind of candy tells you how many of each kind of candy there are in every 100 particles. What does relative abundance tell you?

8. Compare the total values for rows 3 and 6 in the table. Explain why the totals differ and why the value in row 6 best represents atomic mass.

9. Explain any differences between the atomic mass of your candium sample and that of your neighbor. Explain why the difference would be smaller if larger samples were used.

Discussion:

1. The percent abundance of each kind of candy tells you how many of each kind of candy

there are in every 100 particles. What does relative abundance tell you?

2. Compare the total values for rows 3 and 6 in the table. Why can't the atomic mass in row 6

be calculated the way the total for row 3 is calculated?

3. Explain any differences between the atomic mass of your Candium sample and that of your

neighbor. Explain why the differences would be smaller if larger samples were used.

Resources:

Conclusion: