

LESSON PLAN: Mercury in the Environment

Student Handout: Find the Percent Composition of a Coal Sample

Objective: Find the amount of contaminants (sulfur, arsenic, and mercury) in a sample of coal.

Procedure:

1. Write the symbol and atomic mass of each element listed in the table.
2. Divide the colored beads by color. Place the beads into paper cups. BE CAREFUL NOT TO LOSE ANY BEADS!
3. Find the mass of each color.
4. Divide the mass of the beads of each color by the atomic mass. The answer is the number of moles of that element in the sample.
5. Add all of the moles together and record.
6. Divide each elemental mole by the total moles and then multiply by 100. The answer is the percentage of that element to the whole sample.
7. After the lab, answer the concluding questions below.

Color	Symbol	Element	Atomic mass	Mass (g)	Moles	Percent composition
		Carbon				
		Hydrogen				
		Oxygen				
		Calcium				
		Sodium				
		Nitrogen				
		Sulfur				
		Arsenic				
		Mercury				
		Total moles:				

Conclusions:

1. Using the % composition column, draw a graph (bar or pie) that shows the concentration of each element.
2. What is the source of calcium and nitrogen in coal?
3. The bottom three elements, sulfur, arsenic, and mercury are considered contaminants. Are these elements major components of coal?