

Decoding Elements and Compounds

Video Narrative

The Periodic Table is a representation of the currently known elements in the world. The first 92 elements found on the Periodic Table occur naturally on Earth. The other elements on the Periodic Table have been created by man. Elements chemically combine to form compounds. You can use the Periodic Table to help determine what elements are found in a particular compound. The Periodic Table is like a secret decoder that helps you determine the elements found in compounds. Let's learn how to decode the elements in a compound!

Let's try this compound—sodium chloride, also known as table salt. Its chemical formula is NaCl. The first thing we need to do is determine the elements in the compound. Recall that an element's symbol always begins with a capital letter. If there is a second letter in an element's symbol, it will always be lowercase. So we know this compound has two elements because there are two capital letters. The elements are Na and Cl. Now we need to decode the symbols. Let's look at our element decoder, the Periodic Table! Our first element symbol is Na. Find Na on the Periodic Table. It's in the first column. Do you see it? The name of the element is located within the box. Na is the symbol for sodium. Now let's look at the second element—Cl. Again, use the Periodic Table to find Cl. Do you see it? Cl is located on the right side of the Periodic Table. Cl is the chemical symbol for chlorine. So we know that the compound NaCl contains 2 elements—sodium and chlorine.

Let's try this compound—carbon monoxide. How many elements does carbon monoxide contain? How many capital letters does it contain? There are two elements in carbon monoxide—C and O. Notice on the Periodic Table that there is an element with the symbol Co—cobalt. Notice that cobalt is capital C and lowercase O (o), not capital C and capital O. There is a difference. Be sure to write these symbols correctly so that they can be decoded correctly!

Let's decode the formula! Find C on the Periodic Table. It is in the column that is labeled 14. Did you locate C? C is the symbol for carbon. What do you need to do next? That's right! Find O on the Periodic Table. O is located in the sixteenth column. O is the symbol for oxygen. So carbon monoxide contains one atom of carbon and one atom of oxygen. Let's try one more!

This is water. Let's decode the formula! How many elements does water contain? Two—H and O. Can you find H on the Periodic Table? It is in the first column. H is the symbol for hydrogen. What do you do next? That's right! Find O on the Periodic Table. Remember its location? Column 16. O is the symbol for oxygen.

Water contains the elements hydrogen and oxygen. Do you see the 2 located next to the hydrogen? Is there a number located next to oxygen? No. That tells us there are two parts of hydrogen and one part of oxygen in water. We could also say there are 2 atoms of hydrogen and one atom of oxygen in water. This is an example or a model of what water might look like. Can you identify the elements in water? Two hydrogen atoms and one oxygen atom.

This is the chemical formula for chalk. Let's decode the compound! I would like for you to work this one on paper with me! If I move too fast, simply pause the presentation.

First, copy the formula on your paper. How many elements does chalk contain? Underline each element on your paper. There are three elements in chalk—Ca, C, and O. Remember each element begins with a capital letter. What's next? That's right! Locate the symbols on the Periodic Table. Ca is located in the second column. Did you find it? Ca is the symbol for calcium. Now locate C on the Periodic Table. C is located in Column 14. There it is! C is the symbol for carbon. Now find the last element, O. O is located in the sixteenth column. There it is. And O is the symbol for oxygen.

Now, here is another question for you. Which one of these pictures might illustrate a model of chalk? Do you need a hint? Recall that in chalk, there are three different elements: calcium, carbon, and oxygen. Which of these diagrams would best represent chalk? The middle diagram! This diagram has three different colors for calcium, carbon, and oxygen.

Which of these diagrams best represents a model of an element? The first diagram! Remember that elements are made up of only one pure substance. In the first diagram, all the circles are the same. So now you have learned to decode elements and compounds using the Periodic Table.