

PARTNER WORK: WHAT KIND OF PARTICLE?





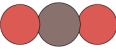


Everything is made of atoms. Atoms are not all identical. In fact, there are over 100 kinds of atoms. About 92 of them occur naturally, and the others have been made by scientists in the laboratory. There are hydrogen atoms, helium atoms, carbon atoms, oxygen atoms, and so on. Substances that are made of just one kind of atom are called elements. Atoms of the same element are all essentially alike, and they're different from atoms of other elements. (Later on, you'll learn more about what makes atoms the same or different.)

Some other elements that may sound familiar are nitrogen, neon, silicon, sulfur, copper, silver, gold, and mercury. Less familiar elements include technetium, tantalum, astatine, and promethium. Don't worry, you don't have to remember all these names!

If atoms were only found in their elemental form, there would only be about 100 different substances in the world. But there are millions of different substances. Chemists study substances and how they change through the rearrangement of their atoms. The great variety of substances in the world is possible because the atoms of different elements join together to form compounds. Together, elements and compounds are called *chemicals*. A chemical does not have to be some fancy substance cooked up in a laboratory. Everything, from the air you breathe to the materials in your body, is made of chemicals.

Some common compounds are water, carbon dioxide (which you exhale with every breath), and ammonia (which is often used in cleaning fluids). Compounds have *definite proportions* of the elements that go into them. For example, water always has twice as many hydrogen atoms as oxygen atoms; carbon dioxide always has one carbon atom for every two oxygen atoms; and ammonia always has one nitrogen atom for every three hydrogen atoms.

Mark the terms that apply for each of the samples below. The first two are done for you:

Each particle is...	... either an element or a compound, and...	...either an atom or a molecule.		
	an element <i>(made of only one kind of atom)</i>	a compound <i>(made of more than one element, in definite proportions)</i>	an atom <i>(the smallest particle of an element)</i>	a molecule <i>(a particle made of more than one atom)</i>
 This particle of water is...		X		X
 This particle of oxygen is...	X			X
 This particle of nitrogen is...				
 This particle of ammonia is...				
 This particle of carbon dioxide is...				
 This particle of oxygen is...				
 This particle of hydrogen is...				