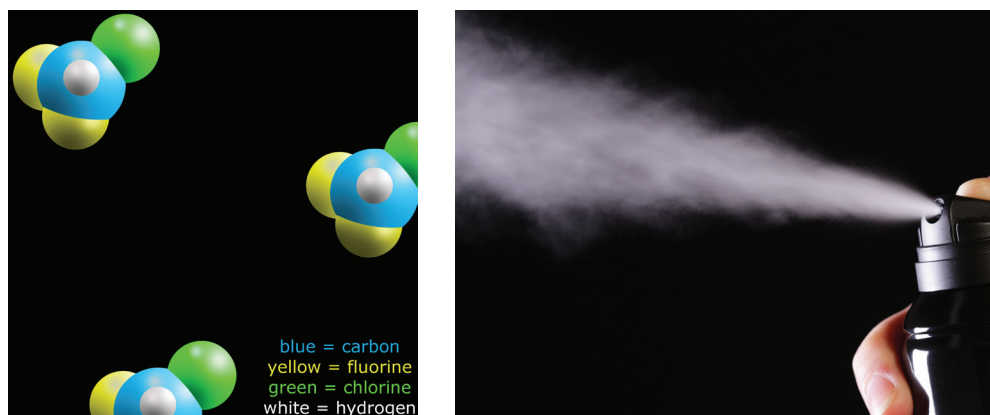


**Figure 7.4.3****Model of Molecules in a Gas**

This diagram shows a typical molecule distribution for a gas, which in our example below is a chlorofluorocarbon gas molecule. Gas molecules are packed less tightly together than either solids or liquids. Since they are very spread out from one another compared to solids and liquids, they are free to move wherever they can within any container. Gases are all around us but usually you can't see them. Other times, you can, such as when spraying something from an aerosol can or when steam comes from the surface of something that is boiling.



A **liquid** is matter that cannot maintain its own shape. That means that it takes on the shape of the container in which it is placed (or it just runs all over the place if it isn't in a container). Like a solid, the atoms/molecules of a liquid are packed tightly together. Because of this, like solid matter, liquid matter can't be compressed, and so chemists say that liquids and solids are—generally—incompressible forms of matter. The main thing that makes liquids different from solids is that the atoms/molecules of a liquid can move freely around one another. This ability to freely move from one place to another is what makes liquids take on the shape of the container they are in, just as the inability of a solid's atoms/molecules to move around each other is what makes them maintain their own shape.

**Figure 7.4.4****Gas Versus Vapor**

There is a slight difference between gas and vapor. The matter that fills the balloon on the left and makes it float is a gas composed of the element helium. At room temperature, helium is normally in the gaseous state; therefore, we refer to it as a "gas." On the right, we see steam—water vapor—rising from a hot spring in Wyoming where the water is heated so much it boils. As can be seen, this releases a lot of water vapor, which is water in the gas form. Since water is usually a liquid at room temperature, we refer to it as "water vapor" when it is in the gaseous state. There is a distinction between a gas and a vapor. Matter that is usually a gas at room temperature is referred to as a "gas," while matter that is usually not a gas at room temperature, but exists as a gas when you observe it (because its liquid or solid phase has been heated), is called "**vapor**."

