

5. Describe an additional activity or experience you have had that demonstrates that
 - a. air is matter.
 - b. air exerts pressure.
6. Perform the following activity at home (or in the lunchroom at school): Put one end of a straw in a glass of water. Hold another straw outside the glass. Place the ends of both straws in your mouth and try to drink the water through the straw in the glass. See Figure 3.
 - a. Describe what happens.
 - b. Based on your observations, what makes it possible to drink liquid through a straw?



Figure 3 What will happen when you try to drink water through a straw inside the glass?

A.2 STRUCTURE OF THE ATMOSPHERE

Most of the atmosphere's mass and all of its weather are within 10 to 15 km of Earth's surface. This region is called the troposphere. Gases mix continuously in the troposphere, leading to a reasonably uniform composition around the world. The table in Figure 4 lists the components of tropospheric air. Chemical analysis shows that ancient air trapped in glacial ice has about the same chemical makeup as the current atmosphere, suggesting that there has been little change over very long periods of time.

As you know, air is a mixture of gases. Nitrogen is the most abundant gas, followed by oxygen, argon, and carbon dioxide. In addition to the gases listed in Figure 4, air samples can contain up to 5% water vapor, although in

The word *troposphere* comes from the Greek words *tropos*, which means turn, and *sphaira*, which means ball.



Structure of the Atmosphere

Tropospheric Air		
Substance	Formula	Percent of Gas Molecules
Major components		
Nitrogen	N ₂	78.08
Oxygen	O ₂	20.95
Minor components		
Argon	Ar	0.93
Carbon dioxide	CO ₂	0.033
Trace components		
Neon	Ne	0.0018
Ammonia	NH ₃	0.0010
Helium	He	0.0005
Methane	CH ₄	0.0002
Krypton	Kr	0.0001

Figure 4 Gaseous components of dry tropospheric air.