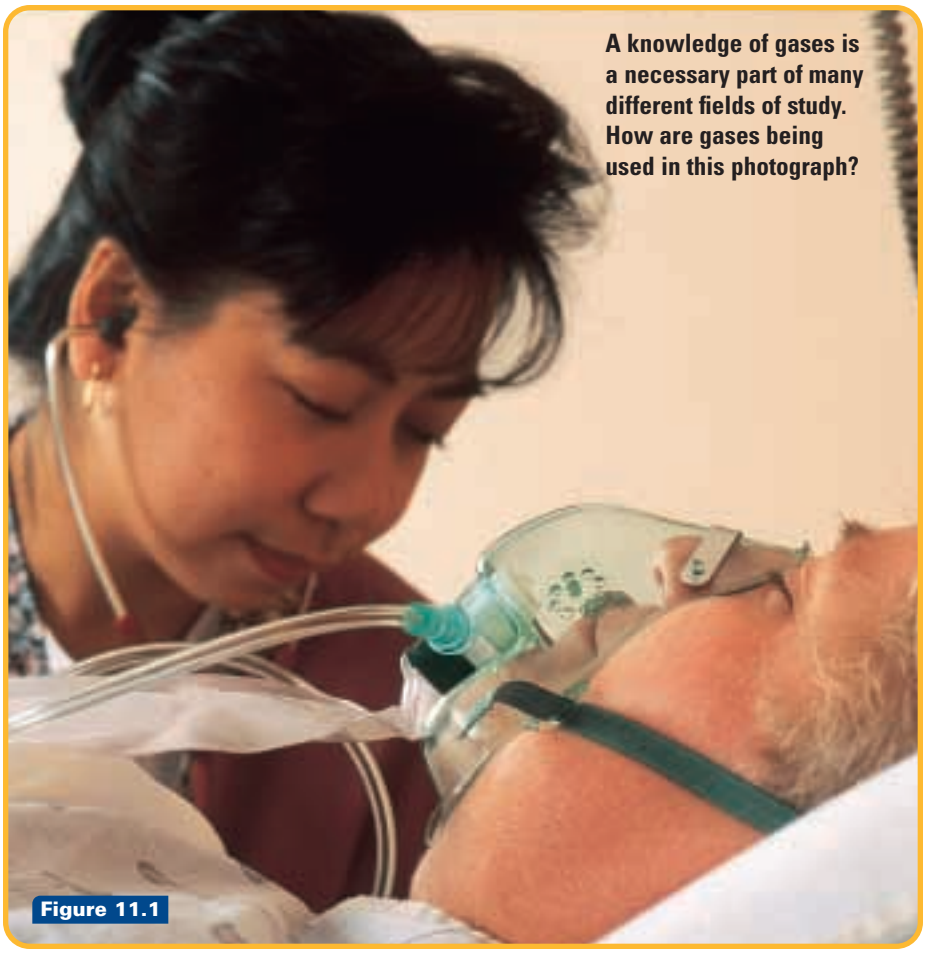
CHAPTER 11

The Behaviour of Gases

How many gases are shown in the main photograph on the opposite page? The only gas you can actually *see* is the water vapour in the clouds. In fact, however, many gases are present. Our atmosphere is made up of a mixture of different gases. The most important of these gases is oxygen, which we need to breathe. But did you know that most of the air you breathe is composed of nitrogen gas? This fact is well known to deep-sea divers, who encounter problems with nitrogen gas when diving far below the surface of the ocean.

Gases are important in many different areas, from medical technology to the food industry. In this chapter, you will learn how particles behave in the gaseous, liquid, and solid states. You will also learn about laws that predict the behaviour of gases under different conditions of pressure, temperature, and volume. As well, you will discover some of the important ways in which gases are used in everyday life.



A knowledge of gases is a necessary part of many different fields of study. How are gases being used in this photograph?

Figure 11.1

Chapter Preview

Concepts and Skills You Will Need

Before you begin this chapter, review the following concepts and skills:

- significant digits (Chapter 1, Section 1.2)
- unit analysis problem solving (Appendix D)
- the behaviour of atoms and molecules (Chapter 3, Sections 3.1, 3.2, and 3.3)