

# How Tobacco Affects the Body

## Guide to Reading

### ● Building Vocabulary

As you read this lesson, write each term and its definition in your notebook.

- nicotine (p. 230)
- tar (p. 231)
- carbon monoxide (p. 231)
- alveoli (p. 234)
- emphysema (p. 234)

### ● Focusing on the Main Ideas

In this lesson you will be able to

- **identify** the harmful ingredients in tobacco smoke.
- **describe** how tobacco affects the body.
- **apply** the skill of advocacy to encourage someone to be tobacco free.

### ● Reading Strategy

**Predicting** Look over the headings in this lesson. Then write a question that you think the lesson will answer. After reading, check to see if your question was answered.

**FOLDABLES** Study Organizer Use the Foldable™ on p. 229 as you read this lesson.

## Quick Write

Write a few sentences to explain why you think tobacco use might be harmful.

## Facts About Tobacco

A single puff of tobacco smoke contains more than 4,000 harmful chemicals! Most of those chemicals hurt your body's ability to work properly. Several of them can cause cancer in people who smoke. In the United States, more than 400,000 people die every year from smoking-related illnesses. Even if you aren't the one using tobacco, the smoke from cigarettes can still be harmful.

## What Is in Tobacco?

Natural tobacco contains harmful substances that are released when a person smokes or chews it. Tobacco companies add more harmful ingredients when they prepare tobacco to be sold. Some of the same ingredients you would find in cleaning products or pest poisons are added to tobacco products. Deciding not to take poisons into your body is a healthful decision.

## Nicotine

One harmful substance found in tobacco is called nicotine. **Nicotine** is an addictive, or habit-forming, drug found in tobacco. Once you are addicted to nicotine, your body has a strong need, or craving, for it. As a result, you want to smoke again and again.

A person can become addicted to nicotine very quickly. Nicotine has other effects, too. It makes your heart beat faster and raises your blood pressure. It causes dizziness and an upset stomach and reduces the amount of oxygen your blood carries to the brain.

## Tar

When tobacco burns, it produces tar. **Tar** is a thick, dark liquid that forms when tobacco burns. Tar coats the airways and the linings of the lungs. Lungs coated with tar can become diseased.

## Carbon Monoxide

Tobacco smoke contains another substance called carbon monoxide. **Carbon monoxide** is a colorless, odorless, poisonous gas produced when tobacco burns. When carbon monoxide enters the body, it damages the brain and the heart by reducing the amount of oxygen available to these organs. Too much carbon monoxide can kill you.

## Other Deadly Substances

Tobacco smoke and smokeless tobacco contain even more dangerous chemicals. For example, cyanide is a deadly poison. It is a common ingredient in pest-control products. Formaldehyde is a burning, stinging gas that is used as a preservative in the laboratory and also causes nasal cancer. Methyl ethyl ketone is used in solvents and harms the central nervous system. Polonium 210, an element known to cause cancer, is found in some tobacco products. These are only a few of the thousands of harmful ingredients contained in cigarettes and other forms of tobacco.

## Reading Check

**Describe** What is the main harmful effect of nicotine?



◀ Tobacco products contain many harmful substances. Using tobacco puts people at risk for lung cancer and other health problems.

**Name three harmful substances found in tobacco.**

## Forms of Tobacco

Tobacco companies harvest leaves from tobacco plants. They dry the leaves and prepare them for people to smoke or to chew. Tobacco products come in different forms. The most common ones are cigarettes, cigars, pipe tobacco, smokeless tobacco, clove cigarettes, and flavored tobacco.

### Cigarettes

Cigarettes contain shredded tobacco leaves. They may also have filters. A filter blocks some of the chemicals that the smoker breathes in. Still, most of the chemicals pass through. So even cigarettes with filters allow dangerous chemicals to reach a smoker's mouth and lungs. Even if a tobacco user does not inhale the smoke, the smoke still can affect the person's health, such as by causing heart problems.

People can buy flavored cigarettes, which may taste and smell sweet. However, they have even more chemicals than regular cigarettes. Some people smoke clove cigarettes, which contain tobacco and ground spices called cloves. Others smoke flavored tobacco placed in water pipes. Clove cigarettes and flavored tobacco are just as harmful as regular cigarettes because they contain the same substances that damage the body.

### Cigars and Pipes

Cigars and pipes also contain shredded tobacco leaves. Cigar smoke contains up to 90 times more of the cancer-causing chemicals found in cigarette smoke. People who smoke cigars or pipes are more likely to develop mouth, tongue, or lip cancer than people who don't smoke.

### Smokeless Tobacco

Smokeless tobacco comes in two forms: chewing tobacco and snuff. People often call chewing tobacco "dip" or "spit tobacco." Chemicals in chewing tobacco and snuff do not pass into the lungs because they are held in the mouth rather than inhaled as smoke. Nicotine is absorbed into the tissues and the bloodstream through the digestive tract.

Smokeless tobacco contains the same chemicals as cigarettes. Nicotine in smokeless tobacco has the same effects as nicotine in cigarettes. So smokeless tobacco is just as harmful and addictive as cigarettes.

**Reading Check** Name List two common forms of tobacco besides cigarettes.

▼ Tobacco contains many of the chemicals found in poisonous household products. **How can these chemicals damage your health?**



## Tobacco Affects Body Systems






When you smoke, your skin, breath, hair, and clothes smell of smoke. Tobacco use affects the senses of smell and taste. As a result, food doesn't smell or taste the same.

Tobacco use also has serious consequences. It is a risk factor that can cause diseases and other health problems. You have already learned that nicotine raises the heart rate and blood pressure. Smokers can't run as long or as fast as they did before they started smoking. They also get sick more often and tend to stay sick longer. Smoking tobacco can cause diseases in your mouth or lungs. It also affects your entire body. In fact, tobacco use damages each of the five main body systems. **Figure 8.1** lists some of the effects of tobacco on your body systems. Many of these problems and illnesses can be prevented if a person chooses the positive health behavior of staying tobacco free.

▼ **FIGURE 8.1**

### TOBACCO'S EFFECTS ON BODY SYSTEMS

Using tobacco harms many body systems, causing many health problems. **What does tobacco use do to the nervous system?**

| Respiratory System   | Digestive System  | Nervous System  | Excretory System  | Circulatory System  |
|--|---|---|---|---|
|   |    |  |    |  |
| Tobacco smoke damages the air sacs in the lungs. This damage can lead to a life-threatening disease that destroys these air sacs. Smokers are also between 12 and 22 times more likely than nonsmokers to develop lung cancer. | All forms of tobacco increase the risk of cavities and gum disease. Tobacco dulls the taste buds and can cause stomach ulcers. Tobacco use is linked to cancers of the mouth, throat, stomach, esophagus, and pancreas. | Tobacco use reduces the flow of oxygen to the brain, which can lead to a stroke.      | Smokers have at least twice the risk of developing bladder cancer as nonsmokers. Smokeless tobacco can also put users at risk of developing bladder cancer. | Tobacco use is linked to heart disease.   |

# Health Skills Activity

## Advocacy

### Convincing Others Not to Smoke

Molly and her dad decided to spend their Saturday shopping at the mall. They took a break for lunch at the food court. During lunch, Molly tells her dad that she would like to help her Aunt Kate quit smoking. Aunt Kate is Molly's favorite aunt, and Molly is concerned for her health. Molly's dad suggests that Molly have a talk with her aunt to influence her to make the healthful choice to quit smoking.

### What Would You Do?

What would you say to Aunt Kate if you were in Molly's situation? Write a few sentences about what you would say. Use the following steps to help you:

- Have a clear, health-focused stand.
- Be ready to support your position with information.
- Remember your audience.
- Urge others to make healthful choices.

## Respiratory System

Breathing in tobacco smoke affects your respiratory system. Tobacco smoke damages the **alveoli** (al-VEE-oh-lye), the tiny air sacs in the lungs. When this happens, your lungs are less able to supply oxygen to your body. In fact, damage to the alveoli can cause **emphysema**, a disease that results in the destruction of the alveoli in the lungs. When this disease affects a large part of the lungs, it can cause death.

## Digestive System

Smoking can damage your digestive system. It can lead to mouth and stomach ulcers, which are painful, open sores. Smoking also harms teeth and gums, causing teeth to yellow and making it more likely that you will get cavities and gum disease.

## Nervous System

Your brain needs oxygen. Tobacco smoke contains carbon monoxide, which can cut down the amount of oxygen that the blood can carry to the brain. Nicotine reaches the brain in only a few seconds and attaches to special receptors in brain cells. The brain adapts to nicotine by increasing the number of nicotine receptors. This causes tobacco users to need more tobacco.

## Circulatory System

Smoking affects the circulatory or cardiovascular system which, includes the heart and blood vessels. As a person smokes, blood vessels constrict, or squeeze together. Over time, the blood vessels can harden. When this happens, the blood vessels cannot send the body cells enough blood and oxygen. This increases the chances of a heart attack or stroke. People with hardened or clogged blood vessels have *coronary heart disease*. Smoking is a leading cause of this disease. Smoking also raises blood pressure and heart rate. Both side effects hurt the circulatory system.

## Excretory System

Tobacco smoke and smokeless tobacco can harm your excretory system. Smokers and tobacco users are much more likely to develop bladder cancer than nonsmokers. Chemicals in tobacco smoke are absorbed from the lungs and get into the blood. From the blood, the chemicals get into the kidneys and urine. These chemicals damage the cells that line the inside of the bladder and increase the risk of cancer. Smoking tobacco is also a factor in the development of colorectal cancer.

### Reading Check

**Explain** Describe how tobacco use affects the teeth.

## Health Online

Visit [health.glencoe.com](http://health.glencoe.com) and complete the Interactive Study Guide for Lesson 1.

# Lesson 1 Review

## After You Read

Review this lesson for new terms, major headings, and Reading Checks.

### What I Learned

1. **Vocabulary** Define *tar*.
2. **Explain** Describe the ways in which smoking harms the body.
3. **Identify** Name five substances in tobacco smoke that are harmful to the body.
4. **List** Name three forms of tobacco.

### Thinking Critically

5. **Hypothesize** How might you influence a peer to make the healthful choice to quit chewing tobacco?

6. **Analyze** Why do you think it is important for a teen to never try tobacco?

## Applying Health Skills

7. **Accessing Information** Do research to find more information about the harmful effects of tobacco. Use health journals, magazines, and Web sites of national organizations to help you. Write a short report about the information you found.