Tobacco and Vaping

Essential Question ?

How is nicotine hazardous to the human body?

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Reading Activity

In what ways do you think tobacco products are harmful to your health? Before reading the chapter, write a two-paragraph essay explaining some of the health effects of tobacco products. After you finish reading the chapter, consider what information you might add to your essay. Share your essay and any additions with a partner.

How Healthy Are You?

In this chapter, you will be learning about tobacco products. Before you begin reading, take the following quiz to assess your current tobacco habits.

Healthy Choices	Yes	No
Do you refuse to use tobacco products, such as cigarettes, vaping devices, cigars, pipes, or chewing tobacco?		
Do you avoid exposure to secondhand smoke and aerosol whenever possible?		
Can you identify the many, severe health hazards of using tobacco products?		
Do you understand the social, physical, and mental costs of using tobacco products?		
Are you confident in your ability to say "no" to friends or peers who ask if you want to smoke or vape?		
Can you recognize the signs and symptoms of nicotine addiction?		
Do you understand the danger of beginning to "experiment" with tobacco products?		
Can you identify the symptoms of withdrawal from nicotine?		
Do you know the best techniques for quitting tobacco use?		
Can you evaluate the messages you see in tobacco advertisements and the products sold by tobacco companies to avoid manipulation?		

Count your "Yes" and "No" responses. The more "Yes" responses you have, the more healthy tobacco habits you exhibit. Now, take a closer look at the questions with which you responded "No." How can you replace your unhealthy habits with healthy ones? Identify a SMART goal you would like to achieve to help improve your overall health and well-being. Refer to Figure 1.11 to help you set up your SMART goal. If you do not understand the instructions, ask for clarification from your teacher.

Tobacco Products and Your Health

Key Terms

tobacco plant with leaves that contain the chemical nicotine

nicotine toxic substance that gives tobacco products their addictive quality

toxic poisonous

vaping device tobacco product that heats tobacco or synthetic nicotine without burning it, producing an aerosol

e-liquid substance made of nicotine and other chemicals; is heated during vaping

aerosol suspension of fine particles or droplets in the air

dopamine chemical released by the brain that produces feelings of pleasure

carcinogens cancer-causing substances

tar residue produced by burning tobacco; consists of small, thick, sticky particles

secondhand smoke tobacco smoke released into the environment by people who smoke; other people nearby inhale secondhand smoke

secondhand aerosol aerosol released into the environment by people who vape; other people nearby inhale secondhand aerosol

thirdhand smoke particles and gases left over after someone smokes

thirdhand aerosol particles and gases left over after someone vapes

Learning Outcomes

After studying this lesson, you will be able to

- **identify** various forms of tobacco products.
- **assess** the hazardous effects of nicotine on the body.
- **explain** the health risks of cigarettes, vaping devices, and smokeless tobacco.
- **describe** the mental, social, and legal consequences of tobacco use.
- **explain** the health impact of tobacco use on others.

Graphic Organizer

Tobacco Cause and Effect

Create a graphic organizer like the one shown to connect information about tobacco products to the effects they can have on your health and others. Add as much information as you can, and make your columns as long as you need them to be.

Stuart miles/Shutterstock.com

Nicotine
Health Effects of Use:
Health Effects on Others:

Cigarettes
Health Effects of Use:
Health Effects on Others:

Vaping Devices
Health Effects of Use:
Health Effects on Others:

Smokeless Tobacco
Health Effects of Use:
Health Effects on Others:

Using any form of a tobacco product increases risk of developing many health conditions. It can also lead to a substance use disorder, which you will learn about in the next lesson. This lesson examines the different types of tobacco products, the effects of tobacco use on the body, and the health impact of being around others who smoke or vape.

Types of Tobacco Products

According to the Food and Drug Administration (FDA), a *tobacco product* is any product made or derived from tobacco and intended for human consumption. **Tobacco** is a plant used to create tobacco-related products such as cigarettes, vape pens, and chewing tobacco. Tobacco leaves contain the chemical *nicotine*. **Nicotine** is a toxic substance that gives tobacco products their addictive quality. Types of tobacco products include cigarettes, vaping devices, and smokeless tobacco.

Cigarettes

A *cigarette* consists of finely cut tobacco, chemical additives, a filter, and a paper wrapping. It is an example of a *combustible* tobacco product, or a product that is burned then inhaled. Someone who smokes a cigarette inhales 7,000 chemicals and **toxic** (poisonous) substances that harm the body (**Figure 9.1**).

Chemicals Found in Cigarettes

Chemical	Other Locations
Acetic acid	Ingredient in hair dye
Acetone	Found in nail polish remover
Ammonia	Common household cleaner
Arsenic	Used in rat poison
Benzene	Found in rubber cement
Butane	Used in lighter fluid
Cadmium	Active component in battery acid
Carbon monoxide	Released in car exhaust fumes
Formaldehyde	Embalming fluid
Hexamine	Found in barbecue lighter fluid
Lead	Used in batteries
Methanol	Main component in rocket fuel
Naphthalene	Ingredient in mothballs
Nicotine	Used as insecticide
Tar	Material for paving roads
Toluene	Used to manufacture paint

Figure 9.1
Cigarettes are made of deadly chemicals that can all cause harm to the body.

The purpose of the filter on a cigarette is to minimize the smoke a person inhales. Modern filters, however, only hold back a small portion of smoke. These filters do not make cigarettes healthier or safer.

Vaping Devices

Today, vaping devices are the most common form of tobacco product among teens. **Vaping devices** are tobacco products that heat tobacco or synthetic (manmade) nicotine without burning it. These devices are sometimes called *electronic nicotine delivery systems (ENDS)*. **Figure 9.2** shows examples of vaping devices.

Vaping devices contain either tobacco or an **e-liquid**, which is a substance made of nicotine or another drug and other chemicals. E-liquid is also known as *e-juice*, *vape juice*, or *vape liquid*. E-liquids are sometimes flavored with chemicals to taste like peppermint, fruit, or coffee.

A battery is used to heat the e-liquid or tobacco to create a vapor that is inhaled. Many people believe that vaping produces a water vapor. In reality, heating the e-liquid or tobacco creates an **aerosol**, or suspension of fine particles or droplets in the air—like dust, smoke, or deodorant spray.

Some people believe vaping devices are safer, healthier, or less addictive than cigarettes. The reality, however, is vaping devices contain nicotine, just like cigarettes. Nicotine, even when vaped, is still a harmful substance that can cause serious health issues and lead to substance use disorder.

Figure 9.2
Vaping devices come in various shapes and forms.
What is a substance made of nicotine and other chemicals that vaping devices contain?

Types of Vaping Devices

E-cigarettes   E-pipes   E-cigars

Hookah pens   Vaporizers (vapes and vape pens)

E-cigarette: gmstockstudio/Shutterstock.com; All other devices: United States Food and Drug Administration

Smokeless Tobacco

Smokeless tobacco is a type of tobacco product a person chews, inhales, or dissolves rather than smokes or vapes. It is a *noncombustible*, or not burned, tobacco product. People absorb the nicotine in smokeless tobacco through their mouth tissues. Like cigarettes, smokeless tobacco contains many chemicals and toxic substances that can harm the body. **Figure 9.3** shows forms of smokeless tobacco.

Health Effects of Tobacco Use

Tobacco use, misuse, and addiction increase a person's risk for developing a number of major health conditions. These include cancer, heart disease, and respiratory conditions. In the following sections, you will learn how nicotine affects the body, as well as the health effects of each type of tobacco product.

Smokeless Tobacco Products

Chewing Tobacco
Cured tobacco
Comes as loose leaf, plug, or twist

Dry Snuff
Loose, powdered tobacco
Sniffed through the nostrils

Moist Snuff/Snus
Cut tobacco, loose or pouched
Placed in the mouth

Dissolvables
Dissolve in the mouth
Come as lozenges, strips, or sticks

Top to bottom: J.A. Dunbar/Shutterstock.com; Rob Hainer/Shutterstock.com; gopixgo/Shutterstock.com; Goodheart-Willcox

Figure 9.3 Smokeless tobacco products include chewing tobacco, snuff, snus, and dissolvables, and can be ingested in a variety of ways.

Health Effects of Nicotine

Tobacco products introduce nicotine into a person's body. Cigarettes, vaping devices, and smokeless tobacco all contain nicotine. Even some e-liquids that claim to be nicotine-free can contain nicotine.

On entering the body, nicotine acts as a stimulant, which causes short-term signs and symptoms such as increased heart rate, blood pressure, and breathing. It also causes the release of the chemical *dopamine*. **Dopamine** leads to an enjoyable feeling that people crave when using nicotine products. Exposure to nicotine harms the lung and brain development of a fetus. Long-term, the body develops a tolerance to nicotine. This means people have to consume higher amounts of nicotine to experience the same effects they felt when consuming lower amounts.

Nicotine is a highly addictive substance, which means it is difficult to stop using. In fact, in 2010, the US Surgeon General identified that nicotine was as addictive as cocaine and heroin. As a result, a person who uses nicotine is at serious risk for becoming addicted and developing a *substance use disorder*. Once someone has an addiction to nicotine, that person will experience unpleasant withdrawal symptoms without the substance.

In addition to being addictive, nicotine is toxic and extremely harmful to a person's health. Nicotine severely affects multiple body systems (**Figure 9.4**).

Health Effects of Cigarettes

On average, long-term users of cigarettes die 13–15 years earlier than people who do not use cigarettes. According to the US Surgeon General, people who smoke have a higher risk of developing type 2 diabetes, vision loss, tuberculosis, and arthritis. Smoking cigarettes leads to short- and long-term signs such as stained teeth, sagging skin, and hair and clothes that smell like smoke. It also changes the shape of taste buds. Some people who smoke long-term may lose their appetite and interest in eating.

Cigarettes and cigarette smoke contain thousands of chemicals and toxic substances that harm the body. They also contain more than 70 **carcinogens**, or cancer-causing substances. These carcinogens increase a person's risk for developing cancers of the mouth, throat, esophagus, lungs, and bladder. This is why people who smoke have higher rates of cancer than people who do not. Smoking is also linked to harm to fetal growth, premature births, and stillbirths.

Smoking cigarettes also affects the respiratory system, which includes the lungs. Smoking damages the respiratory system and makes breathing more difficult. Burning tobacco produces a residue known as **tar**. This substance consists of small, thick, sticky particles. As smoke repeatedly passes through the respiratory system, tar builds up in the lungs. Smoking-related damage to the

Effects of Nicotine on the Body

Respiratory System
- Lungs become inflamed and less able to protect against foreign particles and long-term damage
- Can cause shortness of breath, cancer, and other respiratory conditions

Nervous System
- Causes release of dopamine
- Rewires brain, making it easier to develop an addiction to other drugs
- Makes it hard to concentrate, learn, and control impulses

Digestive System
- Decreases body's ability to process food
- Increases risk of heartburn, gastroesophageal reflux disease, and ulcers

Circulatory System
- Heart rate and blood pressure increase
- Blood vessels narrow, making the heart work harder
- Fatty substances build up in arteries, increasing risk of heart attack or stroke

Skeletal System
- Can cause bones to become weak and brittle
- Increases risk of osteoporosis in females

Lymphatic System
- Weakens immune system
- Increases risk of becoming ill from colds, the flu, and other infections
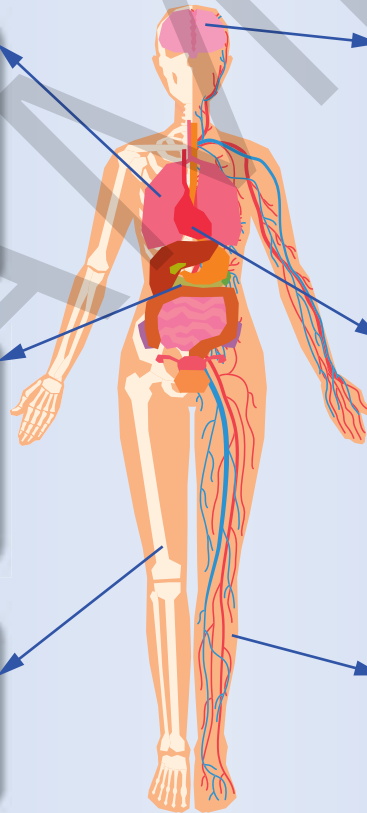
Lilanakani/Shutterstock.com

Figure 9.4 Nicotine is highly toxic to a person's body systems, and its harmful effects are not always reversible.

lungs contributes to the development of chronic respiratory diseases and triggers asthma attacks (**Figure 9.5**).
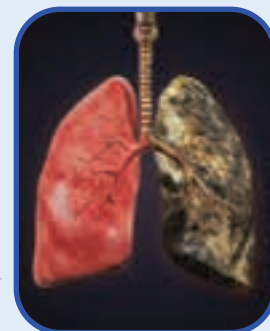
Health Effects of Vaping Devices

Some people see vaping, or the use of vaping devices, as a harmless alternative to smoking cigarettes. They may also see these devices as less addictive than cigarettes. In reality, vaping is *not* harmless.

Vaping introduces nicotine (or another drug) into a person's body. E-liquids with nicotine contain large amounts of nicotine. For example, one e-liquid pod can contain as much nicotine as a pack of 20 regular cigarettes. Even e-liquids that claim to be nicotine-free contain nicotine.

Most of the time, when people vape, they are consuming an e-liquid made of many chemicals (**Figure 9.6**). Scientists know that inhaling the chemicals in aerosol can lead to respiratory conditions, including inflammation and long-term lung disease. One rare lung disease related to vaping is *popcorn lung*.
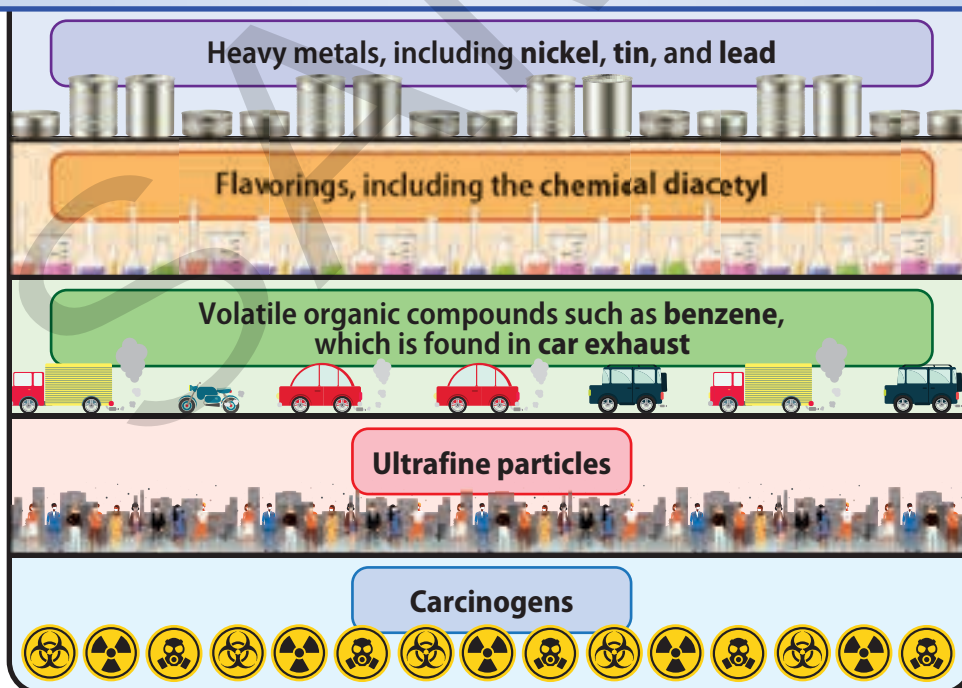
Respiratory Conditions Caused by Smoking

- **Chronic bronchitis:** ongoing condition in which small tubes in lungs become swollen and irritated
- **Emphysema:** causes airways in lungs to become permanently enlarged and decreases amount of oxygen entering the lungs and bloodstream
- **Asthma:** chronic disease caused by blockages of airflow to and from the lungs; can lead to asthma attack
- **Lung cancer:** abnormal cells grow rapidly along the air passages to form a tumor that affects lungs' ability to transport oxygen to bloodstream

iStock.com/Nerthuz

Figure 9.5 Smoking-related damage to the lungs can have long-term effects on the respiratory system. *What residue from cigarettes damages the lungs?*

Harmful Chemicals Found in Vaping Devices

Heavy metals, including **nickel, tin, and lead**

Flavorings, including the chemical diacetyl

Volatile organic compounds such as **benzene, which is found in car exhaust**

Ultrafine particles

Carcinogens

Figure 9.6 Aerosol created by vaping devices contains many harmful chemicals which are connected to serious health conditions. *What is one rare lung disease related to vaping?*
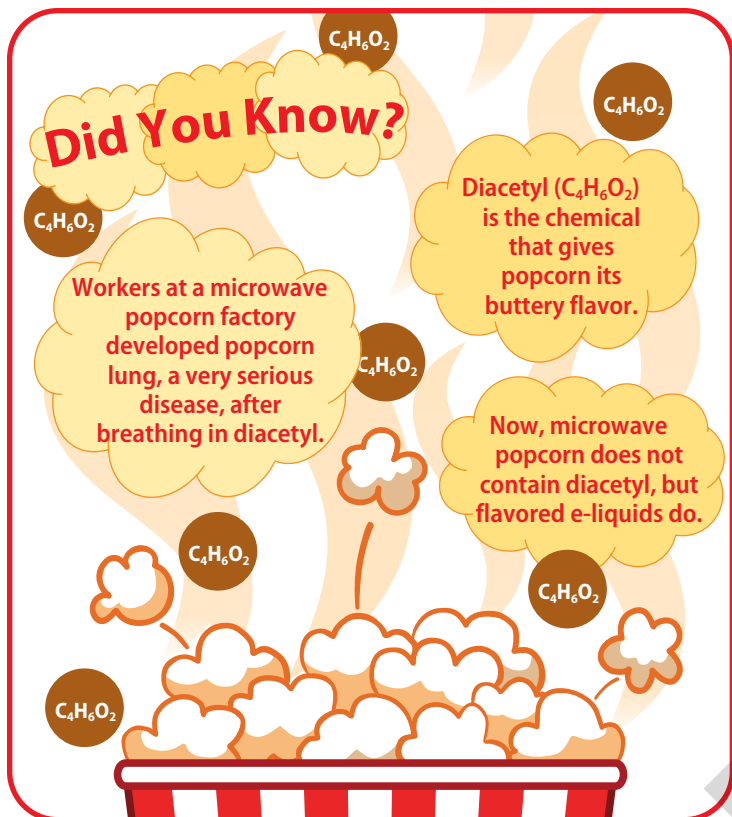
Top to bottom: Macrovector/Shutterstock.com; Ivan Feoktistov/Shutterstock.com; (vehicles) drical/Shutterstock.com; Antonov Maxim/Shutterstock.com; (signs) ThanasStudio/Shutterstock.com

Did You Know?

Diacetyl ($C_4H_6O_2$) is the chemical that gives popcorn its buttery flavor.

Workers at a microwave popcorn factory developed popcorn lung, a very serious disease, after breathing in diacetyl.

Now, microwave popcorn does not contain diacetyl, but flavored e-liquids do.

Popcorn bucket: Finka/Shutterstock.com; Smoke: Arcady/Shutterstock.com

Figure 9.7 The chemical diacetyl ($C_4H_6O_2$), an ingredient in flavored e-liquids, was removed from microwave popcorn because breathing it in caused factory workers to develop a serious disease called *popcorn lung*.

Diacetyl, a flavoring found in more than 75 percent of flavored e-liquids, causes this disease (**Figure 9.7**). Popcorn lung causes scarring and inflammation in the bronchioles, the smallest airways in the lungs. This can cause coughing, shortness of breath, and wheezing.

Vaping also harms health in other ways. For example, vape battery explosions can cause serious injury and even death. Some people also use vaping devices to consume other drugs such as marijuana.

Health Effects of Smokeless Tobacco

Smokeless tobacco contains nicotine and carcinogens. The harmful effects of these substances are the same as if they were smoked. In fact, because smokeless tobacco is placed directly into the mouth, people who use these products actually absorb even more nicotine than people who smoke.

People who use smokeless tobacco are less likely to develop lung diseases than people who use cigarettes or vaping devices. They do increase their risk of developing other serious diseases, however. **Figure 9.8** shows the health risks of smokeless tobacco.

Figure 9.8 Smokeless tobacco is just as harmful as cigarettes or vaping devices, and can put users at risk for certain cancers, leukoplakia, heart disease, and dental diseases.

Health Risks of Smokeless Tobacco

Cancers of the mouth, throat, cheek, gums, lips, tongue, pancreas, and esophagus

Leukoplakia, a condition characterized by thickened, white, leathery spots inside the mouth, which can develop into oral cancer

Heart disease

Dental disease, including teeth staining, bad breath, tooth decay and loss, gum disease, and gum recession

The Myths and Facts of Vaping

When I vape, I am just inhaling water vapor.

FACT:
Vaping does not create water vapor. It creates an aerosol that can contain harmful substances such as lead.

Vaping does not hurt anyone else.

FACT:
Bystanders also breathe in the harmful chemicals in secondhand aerosol exhaled by people who vape.

My e-liquid is just flavoring.

FACT:
E-liquids contain harmful chemicals, including some that have been linked to serious diseases.

Everyone I follow on social media vapes.

FACT:
Vaping companies sell their products and make money through social media campaigns.

Vaping is not addictive since there is no nicotine.

FACT:
One e-liquid pod can contain as much nicotine as 20 cigarettes. Even nicotine-free e-liquids may contain nicotine.

Vaping has nothing to do with cigarettes.

FACT:
Young people who use vaping devices may be more likely to smoke cigarettes in the future.

Mental, Social, and Legal Consequences

Tobacco products do more than affect the human body. They impact a person's mind and social relationships and can lead to legal consequences. The effects of tobacco use and misuse are long lasting and can affect your future in serious ways.

Mental Consequences

Most young people believe they can smoke, vape, or chew tobacco occasionally or even regularly for a few years and then easily quit. The reality, however, is most people become dependent on the nicotine. For example, young people are especially sensitive to the effects of nicotine because their brains are still developing until 25 years of age, which makes it easier to develop an addiction. A dependence on nicotine makes it very difficult to stop using tobacco products.

Nicotine makes it harder to learn, concentrate, and control impulses. People who use nicotine are more likely to engage in other risky behaviors, such as sexual activity and illegal drug use. Nicotine can also make mental health conditions and mental illnesses worse if people use nicotine to relieve symptoms instead of seeking professional treatment.

Social Consequences

The use of tobacco can harm a person's social relationships. When people feel dependent on nicotine, getting more of that substance can seem like the only important thing to them. As a result, young people may lie to their parents, guardians, or friends about their use of tobacco products. They may steal money to buy cigarettes, vaping devices or e-liquids, or smokeless tobacco. Lying and theft can cause long-term trust issues.

Because tobacco use harms people's health, people may withdraw from someone who uses tobacco products. A person who uses tobacco products may have to leave a social situation to smoke, vape, or chew. This may cause the person to feel left out or miss special moments.

Zoart Studio/Shutterstock.com

Figure 9.9 Tobacco products are illegal to purchase under 21 years of age in the United States, including online purchases.

Legal Consequences

Young people who use and misuse tobacco can experience serious legal consequences. In the United States, the federal government recently increased the legal age for buying tobacco products, including vaping products, from age 18 to age 21 (**Figure 9.9**). Some cities, such as Beverly Hills in California, have banned the sale of tobacco products altogether.

Some people under the legal age limit try to buy or ask someone else to buy tobacco products for them. If they are caught doing this, they may have to pay fines or perform community service.

Many schools have policies that forbid the use of cigarettes, vaping devices, and smokeless tobacco. Students who bring these products to school or use them in the

classroom or at school-sponsored events may face disciplinary actions and even suspension. In communities, young people can also face legal consequences for using tobacco products in public places, such as restaurants.

Health Effects on Others

People who use tobacco products are not the only ones at risk for negative health outcomes. Smoking and vaping both release substances into the air other people breathe. **Secondhand smoke** refers to the tobacco smoke released into the environment by people who smoke. People who regularly inhale secondhand smoke because they live or socialize with people who smoke have a greater risk of developing lung cancer or heart disease. Secondhand smoke is especially dangerous for children, as it can cause ear infections, asthma attacks, bronchitis, and pneumonia.

Vaping devices release aerosol that others nearby can inhale. Aerosol inhaled involuntarily by others is called **secondhand aerosol**. Secondhand aerosol from vaping can contain harmful chemicals, such as diacetyl and heavy metals. If you socialize with a person who vapes, you are exposing yourself to similar health risks as if you were vaping.

Thirdhand smoke and aerosol also affect people who are around others who use tobacco products. **Thirdhand smoke** refers to the particles and gases left over after a cigarette is extinguished. Similarly, the particles and gases left over from a vaping device are called **thirdhand aerosol**. The particles in thirdhand smoke and aerosol land and remain on virtually any surface in the area where someone has smoked or vaped (**Figure 9.10**).
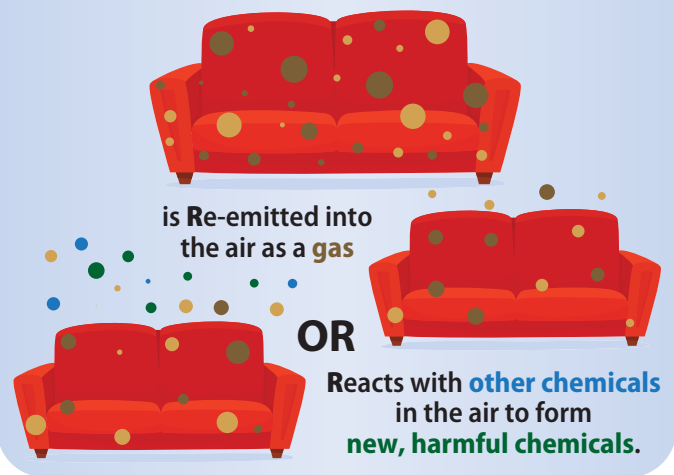

Places Where Smoke and Aerosol Particles Stick

Furniture

Hair

Clothing

Dust

Curtain/Drapery

Carpet

Figure 9.10 Particles left over from cigarettes and vaping devices can remain on a variety of surfaces.

The Three R's of Thirdhand Smoke and Aerosol

Thirdhand smoke and aerosol **R**emains on surfaces and in dust after smoking or vaping, and…

is **R**e-emitted into the air as a **gas**

OR

Reacts with **other chemicals** in the air to form **new, harmful chemicals.**

Elvetica/Shutterstock.com

Figure 9.11 Thirdhand smoke and aerosol remains on surfaces even after smoking or vaping, and can become harmful as it is re-emitted into the air or combines with other chemicals to form harmful carcinogens.

Exposure to thirdhand smoke and aerosol can lead to serious diseases such as asthma and cancer. These chemicals can even become more dangerous over time. It is very difficult to remove thirdhand smoke and aerosol from spaces. Simple actions such as vacuuming and wiping down surfaces do not eliminate the residue. Particles remain behind, even after the smell fades (**Figure 9.11**). This means that people often are not aware of their exposure to thirdhand smoke and aerosol.

To maintain good health, avoid exposure to secondhand and thirdhand smoke and aerosol whenever possible. Choose restaurants and other public places that do not allow smoking or vaping. If someone is smoking or vaping near you, leave the area or ask the person to stop. If family members or friends smoke or vape, consider explaining the health risks to them and ask them to stop. You might just convince them to quit.

Lesson 9.1 Review

1. What is created when the e-liquid or tobacco is heated in a vaping device?

2. List three major health conditions that a person is at risk of developing through tobacco use or misuse.

3. People who smoke have higher rates of cancer due to the _____ in tobacco smoke.

4. Which chemical in vaping aerosol can cause popcorn lung?

   A. Nicotine.   **C.** Carcinogens.
   B. Diacetyl.   **D.** Nickel.

5. **Critical thinking.** Consider the health effects on your body from secondhand smoke and aerosol. How often are you exposed to secondhand smoke and aerosol? How can you set boundaries about smoking or vaping with your family and friends?

Hands-On Activity

In small groups, create an anti-vaping or anti-tobacco message to encourage students at your school to say "no" to tobacco use and misuse. Possible formats include a message for the morning announcements, a poster or flyer, an article for your school newspaper, a brochure, or a social media post. Include the following in your message: harmful chemicals found in the product; health issues associated with vaping or tobacco use and misuse; social, mental and legal consequences; and other relevant information and images to enhance your message.

Understanding Tobacco Use

Learning Outcomes

After studying this lesson, you will be able to

- **explain** what is a substance use disorder.
- **analyze** the stages of substance use disorder in relation to tobacco use.
- **give examples** of withdrawal symptoms people with a nicotine addiction may experience.
- **summarize** individual factors that cause teens to try tobacco products.
- **describe** how family members, peers, and the media are factors that cause tobacco use among adolescents.

Graphic Organizer

Tobacco Use

Create a KWL chart similar to the one shown. Before reading the lesson, list facts of what you know and what you want to know about people's tobacco use. After reading the lesson, write what you have learned. If you have any question about what you are reading, raise your hand and ask your teacher. Then, team up with a classmate and discuss each other's lists. Are there items you would add to your list?

GrungeElfz/Shutterstock.com

K: What I Know
- *People may be pressured by friends to use tobacco products.*
-

W: What I Want to Know
- *How does the media influence tobacco use?*
-

L: What I Have Learned
- *Withdrawal describes unpleasant symptoms people experience when quitting.*
-

Key Terms

substance use disorder mental illness in which a person continues using a substance despite negative effects on health and life

co-occurring disorder two or more mental illnesses that occur together

tolerance body's need for an increased amount of a substance to experience effects once felt with smaller amounts

dependence effect that occurs when the body needs an addictive substance in its system to function normally or avoid cravings and anxiety

triggers reminders that cause people to feel a strong desire for a substance

addiction physical and psychological need for a substance or behavior

withdrawal unpleasant symptoms that occur when someone with an addiction to a substance tries to stop using that substance

peer pressure influence that people your age or status have on your actions

You learned about health issues and mental, social, and legal consequences associated with tobacco use in the previous lesson. You also learned that secondhand and thirdhand smoke and aerosol puts family members and friends at risk for health conditions. Given these facts, you may wonder why anyone would start to use tobacco products. Despite the health risks, the number of youths who used vaping devices increased by 1.5 million in 2018.

In this lesson, you will learn about how using tobacco products can lead to a substance use disorder. This lesson also discusses several factors that may cause someone to try tobacco products.

Substance Use Disorder

Most people cannot use tobacco products in a casual way. It is much more likely that a person will develop a substance use disorder from using tobacco products. A **substance use disorder** occurs when a person continues consuming a substance, such as nicotine, regardless of its negative effects on the body and areas of a person's life. It involves a person's recurrent use of substances, repetition of behaviors that lead to health issues, and an inability to meet responsibilities at home, school, or work.

When a person has a substance use disorder, this is a mental illness that requires professional treatment to break. It sometimes occurs with other mental illnesses, such as major depressive disorder and anxiety disorders. Two or more mental illnesses that occur together are called **co-occurring disorders**.

Stages of Substance Use

Substances such as nicotine cause short- and long-term changes in the brain and body that negatively affect a person's health. People with substance use disorders often feel like they cannot stop using a substance, even if they want to. The stages of substance use lead to addiction and a substance use disorder (**Figure 9.12**).

Stages of Substance Use Disorder

Stage 1: Experimentation

Stage 2: Regular Use

Stage 3: Tolerance

Stage 4: Dependence

Stage 5: Addiction

Figure 9.12   People can move through the five stages of substance use disorder more quickly than they might think.

Experimentation

People often choose to use a tobacco product "just to try it." This is the stage of experimentation. In this stage, a person is trying a substance. Most substances that lead to substance use disorders cause pleasant feelings, such as happiness and relaxation. These feelings cause a person to want to use more of the substance, which often leads to the regular use of a substance.

Regular Use

After experimentation, people usually increase their substance use. Over time, people may slowly increase the number of times they use a tobacco product per week. They are then likely to develop a regular pattern of using tobacco products, as the pleasant feelings associated with the substance reinforce behavior. For example, people may

vape at a certain time of day or while performing a certain activity.

Tolerance

As a person regularly uses a substance like nicotine, the body develops a tolerance for that substance. **Tolerance** describes an increase in how much of a substance the body needs to experience certain effects. The body can quickly develop a tolerance to nicotine and require more of it to achieve the original effect of pleasurable feelings.

For example, during experimentation, a person may smoke one cigarette a week. This may increase to one cigarette each day with regular use. Once a tolerance develops, a person may need to smoke three cigarettes each day to feel the original effects of nicotine (**Figure 9.13**).

A tolerance to nicotine is dangerous because it causes people to use tobacco products more as they pursue the pleasant feelings associated with the substance. This increases the damage done to the body. Even if someone is not feeling the effect of the nicotine, the substance is still entering the body. The more a person uses tobacco, the more damage that person causes.

Vaping Device Warning:

Young people may be especially sensitive to nicotine, making it easier for them to become addicted.

Figure 9.13 Young people are extra vulnerable to many unhealthy habits, including an addiction to nicotine.

Dependence

After repeated use, the body becomes dependent on the way nicotine makes it feel. This means the body adjusts to the feelings that nicotine causes. **Dependence** occurs when the body needs an addictive substance in its system to function normally or avoid cravings and anxiety. There are two types of dependence—physical and psychological.

A *physical dependence* occurs when the body adjusts to a substance and requires it to function normally. For example, nicotine causes the release of dopamine, which causes feelings of happiness. Long-term, the brain produces less of these chemicals on its own. This means the body requires nicotine or other substances to reach normal levels of these chemicals. Without the substance in the body, a person feels uncomfortable and even sick.

People can also develop a *psychological dependence*. Short-term, this causes cravings and anxiety that a person feels when not using or trying to quit the substance. Psychological dependence relates to mental and emotional factors. If a person is unable to use a tobacco product, this person may feel irritable. For example, a person who regularly vapes may feel anxious and irritable if a vape pen is not available when a craving occurs.

People may develop long-term patterns for using a substance, such as vaping after dinner every day. Patterns such as this can connect a substance with certain triggers (**Figure 9.14**). **Triggers** are like reminders that cause people to feel a strong desire for a substance. In this case, the end of the meal becomes the trigger to vape. When people who use tobacco encounter triggers that they connect with tobacco use, they feel a strong psychological need to use a tobacco product.

Triggers That Can Lead to a Desire to Use a Tobacco Product

Emotional
Experiencing stress, anxiety, excitement, boredom, loneliness, satisfaction

Pattern
Connecting a nicotine habit with an activity such as talking on the phone or watching TV

Triggers

Social
Going to a party or social event and seeing or spending time with people who smoke, vape, or chew tobacco

Withdrawal
Smelling smoke, handling vaping devices or lighters, feeling like you need to do something with your hands

Addiction

Addiction develops when a person continues using a substance despite negative effects on health. **Addiction** is the physical and psychological need for a given substance or behavior. For example, people may continue smoking or vaping, even if they experience social isolation or have to turn to other measures to afford the substance. At this point, a person has developed a substance use disorder.

Withdrawal Symptoms

Withdrawal occurs when someone with an addiction to a substance tries to stop using that substance. The term *withdrawal* describes unpleasant symptoms. These symptoms vary based on the addictive substance. In the short-term, people with an addiction to nicotine may experience irritability, difficulty concentrating, fatigue, nausea, and weight gain during withdrawal. They also experience intense cravings for nicotine. This occurs because the body is physically dependent on this substance.

Withdrawal is one of the reasons people who use tobacco have such difficulty quitting. The withdrawal symptoms for tobacco last several weeks or even months. Some people who quit tobacco use have occasional tobacco cravings for years after quitting.

Factors Affecting Tobacco Use and Addiction

Most young people who begin to smoke, vape, or use smokeless tobacco do plan to quit. They believe that quitting will be easy. They soon find out, however,

CASE STUDY

Kevin's Decision to Vape

Kevin did not think it was that big of a deal when he tried vaping for the first time. It was at the beginning of last school year. He was waiting after school for his mom to pick him up, and an older group of boys dared him to vape. His friend Max was standing next to him and he chose to walk away. Kevin recognized two of the boys from his neighborhood, so he did not think it was a big deal. Secretly, he hoped that he would fit in with the older boys and maybe they would think he was cool.

The older boys did ask Kevin if he wanted to hang out with them several more times during the school year. Kevin always said yes. Sometimes they would just hang out, while other times they would vape or do other stuff that Kevin never would have done with his old friends like Max.

Today, Kevin is grounded and his parents are so disappointed. Kevin and the older boys were caught vaping at school. Upon investigation by school administration, they uncovered that the group of boys were also selling vaping devices at school. Kevin knew it was a bad idea but went along anyway. He was suspended from school and eventually confessed everything to his parents.

iStock.com/yacobchuk

Kevin was tired of keeping secrets. If he could go back in time, he would not have given into the pressure to vape. Instead, he would have just walked away with Max.

Thinking Critically

1. Why does experimenting with one risky behavior, such as vaping, often lead to unsafe situations and risky behaviors?

2. Kevin wanted to fit in and be accepted by older boys. What are positive ways to fit in and feel accepted within a group?

3. If you were Max, what could you have said to Kevin before he accepted the dare to vape?

4. What are two ways that Kevin could have respectfully and assertively refused vaping?

that tobacco use is very difficult to stop. The majority of young people who use tobacco become adults who regularly use tobacco products (**Figure 9.15**).
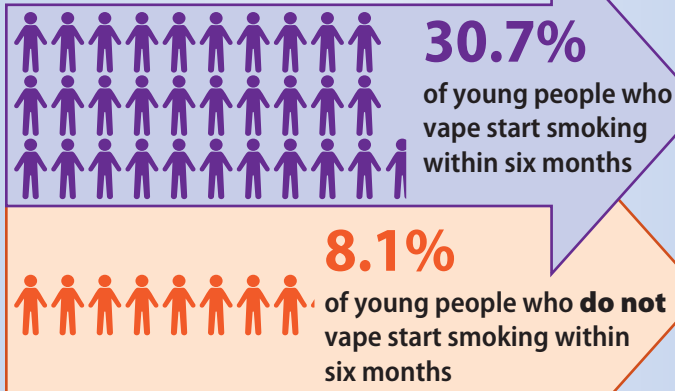
Various factors may cause a young person to try tobacco or develop a substance use disorder. These include individual factors and external factors such as family, peer pressure, and the media.

Individual Factors

Individual factors are the factors related to your identity and behaviors. These factors include genetic makeup, mental health, and stage of development. Genetic makeup influences how likely a person is to develop an addiction to nicotine. For example, having a family history of nicotine addiction increases a person's risk for developing an addiction to nicotine.

Some young people use and misuse tobacco in an attempt to manage their mental health. They may feel stressed and turn to tobacco use as a way to relax. People may try tobacco to cope with a long-term health condition. They may be trying out a new identity. Young people may associate using tobacco

Young People Who Vape Are More Likely to Start Smoking

30.7% of young people who vape start smoking within six months

8.1% of young people who **do not** vape start smoking within six months

AlexHliv/Shutterstock.com

Figure 9.15 Using vaping devices increases the risk of also using cigarettes.

with maturity, glamour, rebellion, or toughness. They may believe that tobacco use will make them seem older or cooler. Mental health conditions can increase the risk of nicotine addiction in young people. Rather than turning to tobacco products, people with mental health conditions need to seek professional treatment.

Another individual factor that influences risk is stage of development. Young people are especially sensitive to the effects of nicotine because their brains are still developing. If a young person uses tobacco at an early age, this person is more likely to develop an addiction to nicotine.

Family

Family members' attitudes and behaviors about tobacco use influence whether young people use tobacco. Young people are much less likely to start using tobacco products or develop a substance use disorder if their families set clear expectations, discuss their views on tobacco products, and follow through on consequences for using tobacco (**Figure 9.16**).

Families' attitudes toward tobacco use create an environment that influences young people's behavior. Some families are strongly against the use of tobacco products. These family members do not use tobacco products and may tell guests not to use cigarettes, vaping devices, and smokeless tobacco in the house. In this environment, young people are less likely to use tobacco. Other families are more accepting of tobacco use and may even use tobacco products in the home environment. Young people in this environment are more likely to try using cigarettes, vaping devices, or smokeless tobacco and develop a substance use disorder.

iStock.com/MachineHeadz

Figure 9.16 Parents who set clear rules and consequences to smoking are less likely to have children experiment with smoking.

Peer Pressure

During the school-age years, the influence of friends can be strong. This may lead young people to make unhealthy decisions to be accepted. The people you spend your time with have a big influence on whether you try tobacco products and develop a substance use disorder.

Many young people use their first tobacco product with a friend. Young people with friends who use and misuse tobacco are also much more likely to choose to use tobacco products and develop substance use disorders themselves. Young people whose friends smoke or vape are offered a tobacco product much more often than those whose friends

do not smoke or vape. It is important to learn how to say "no" when someone offers you tobacco.

Young people may experience peer pressure to use or misuse a tobacco product. **Peer pressure** is the influence that people your age or status have on your actions. Peer pressure is negative if used to encourage an individual to do something unsafe, unhealthy, or uncomfortable. Peer pressure is positive if it is respectful and encourages healthy behaviors (**Figure 9.17**).

Young people may worry that not using or misusing tobacco products means others will not like or accept them. If someone pressures you to try a cigarette, vaping device, or smokeless tobacco, that person is not really your friend. Real friends do not want their friends to engage in unhealthy behaviors. You can use positive peer pressure to encourage your friends to practice healthy behaviors.

Media Messages

The media is a factor affecting tobacco use. Originally, tobacco companies advertised their products on television, the radio, and in magazines and newspapers. After scientific data demonstrated the serious health consequences of tobacco use, bans forced tobacco companies to stop these types of advertising.

Today, tobacco companies still cannot advertise on TV or the radio, or in print publications. Instead, they try to avoid these laws by using social media. Some tobacco companies pay *ambassadors* and *influencers* to post content and link followers to tobacco products. Sometimes, posts by influencers do not even mention tobacco, but advertise upcoming events where people promote or give away tobacco products. Young people may see these posts and not even recognize they are sneaky attempts at getting people to try tobacco products (**Figure 9.18**).

People often look to celebrities on social media for ideas about new hairstyles, fashionable clothing, and lifestyle choices, such as using tobacco. Young people also imitate the behaviors of their peers on social media. Social media only tells a small portion of a person's story, however. It may not capture the serious health consequences of tobacco use immediately and in the future. Young people are more likely to try new products after seeing ads or their role models using them.

Television shows and movies also expose many young people to tobacco products. In fact, 26 percent of movies rated G, PG, or PG-13 show tobacco use. It may seem harmless to see smoking or vaping in a TV show or movie. Research shows, however, that young people who see tobacco use in movies are more likely to start smoking or vaping.

Using Peer Pressure to Promote Healthy Behaviors

- Be Honest
- Be Physically Active (Together!)
- Avoid Alcohol
- Positive Characteristics to Encourage in Friends
- Work Hard
- Avoid Doing Drugs
- Be Kind to Others

Figure 9.17 There are many ways peer pressure can be used to inspire healthy behaviors. Encouraging your friends not to vape is one example. *Give an example of a time when you influenced someone, or were influenced by someone else, with positive peer pressure.*

Types of Vaping Ads to Which Young People Are Exposed

52.8% of ads are from retail

34.1% of ads are from movies and television

NEWSPAPER
25.0% of ads are from newspapers and magazines

35.8% of ads are from the Internet
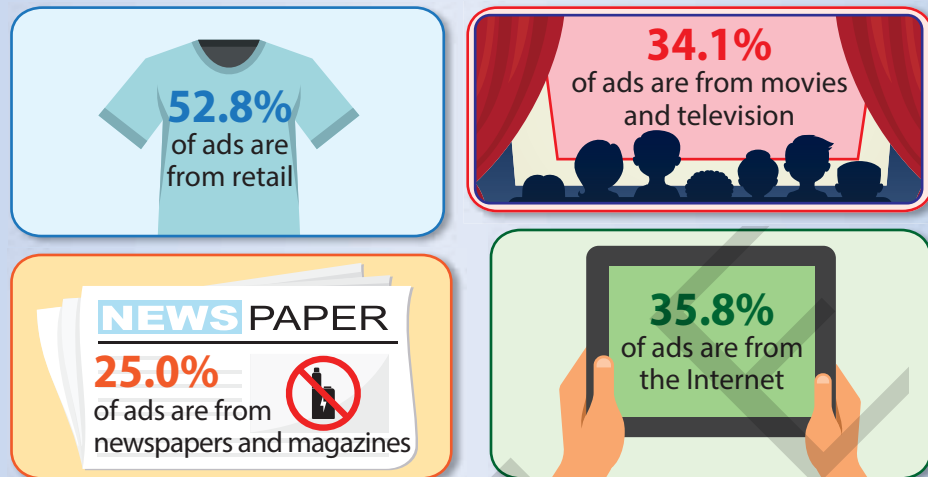
Shirt: Rvector/Shutterstock.com; Movie screen: Margarita Levina/Shutterstock.com; Newspaper: yekaterinalim/Shutterstock.com; Anti-vape symbol: Siberian Photographer/Shutterstock.com; Tablet: Marish/Shutterstock.com

Figure 9.18 Young people are exposed to various forms of advertisements that advertise tobacco products.

Lesson 9.2 Review

1. List three individual factors that could affect tobacco use.

2. Young people are much _____ (more/less) likely to start using tobacco if their parents or guardians discuss and follow through on consequences for tobacco use.

3. **True or false.** Some tobacco companies pay ambassadors and influencers to post content and link followers to tobacco products.

4. What are the five stages of a substance use disorder?

5. **Critical thinking.** Compare and contrast a physical dependence and a psychological dependence in the fourth stage of a substance use disorder.

Hands-On Activity

Recall the information that you learned on factors that may affect a young person's decision making and problem solving and cause a young person to try a tobacco product. Based on these factors, reflect on the positive and negative influences in your life that could impact your chances of using and misusing tobacco products. Create a two-column chart. Label one column "Positive Influences" and the other "Negative Influences." Write the influences in your life in the appropriate column. Then, write one or two sentences for each influence explaining how you will increase positive influences and reduce the effect of negative influences.

Preventing and Treating Tobacco Use

Learning Outcomes

After studying this lesson, you will be able to

- **identify** skills someone can use to prevent tobacco use.
- **demonstrate** refusal skills.
- **describe** treatment methods for nicotine addiction.

Graphic Organizer

KWL Chart: Preventing and Treating Tobacco Use

Create an organizer like the one shown. Before you read the lesson, outline what you know and what you want to know about preventing and treating tobacco use. After you have read the lesson, outline what you learned.

Pedro Bento/Shutterstock.com

K: What I Know

- *Nicotine gum or the nicotine patch can help curb withdrawal symptoms for tobacco users*
-

W: What I Want to Know

- *How can refusal skills help prevent tobacco use?*
-
-

L: What I Have Learned

- *Using nicotine does not help manage stress. It actually increases stress.*
-
-

Key Terms

public service announcement (PSA) media message that supports public health

nicotine replacement smoking cessation technique that involves the use of nicotine gum or the nicotine patch to lessen withdrawal symptoms

stimulus control smoking cessation technique that involves avoiding tempting situations and managing feelings that lead to tobacco use

response substitution smoking cessation technique that involves responding to difficult feelings and situations with behaviors other than smoking
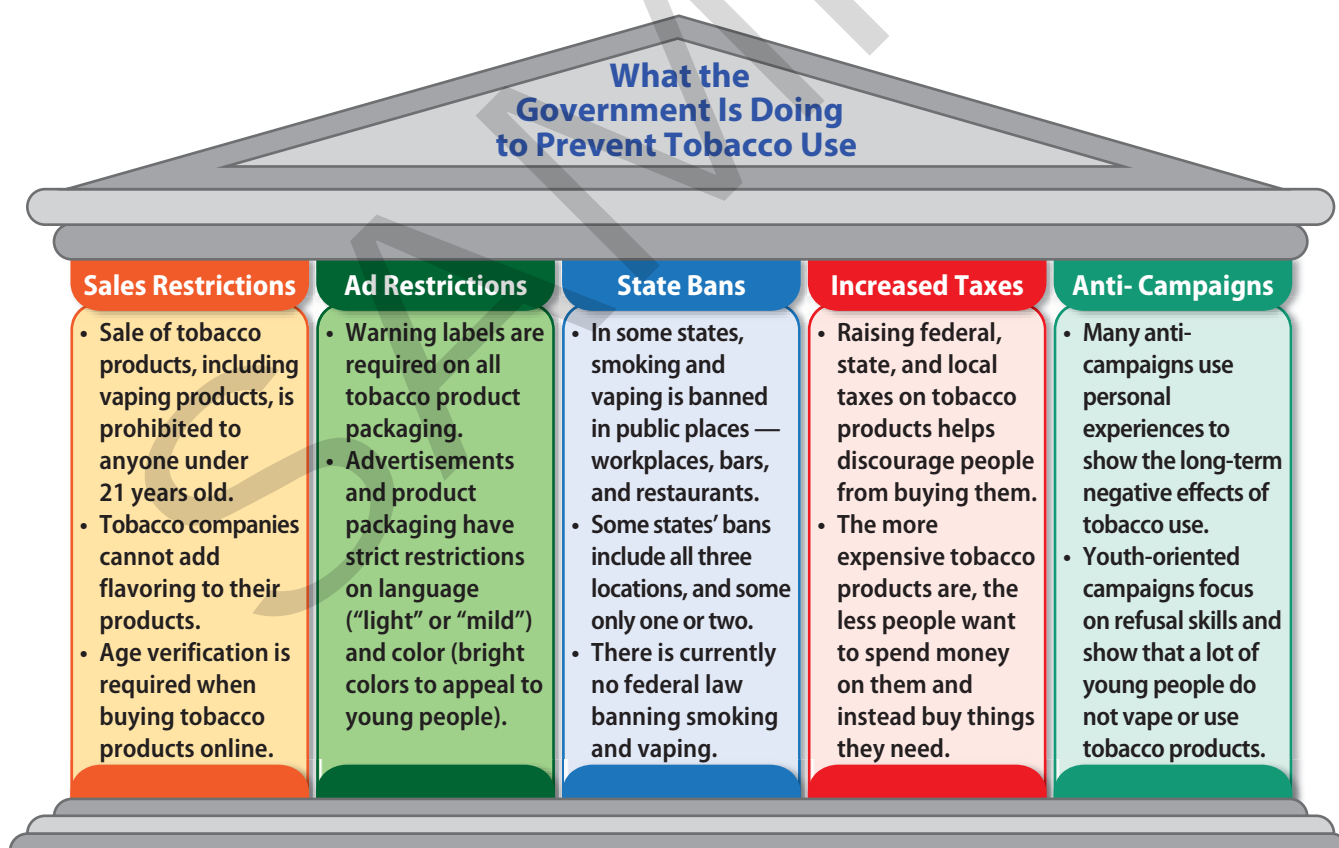
L esson 9.1 discussed how tobacco products harm the body and negatively affect a person's health, as well as other people's health. In Lesson 9.2, you learned that tobacco products are very addictive, and it can be difficult to quit using them. Quitting is possible, however.

Of course, the best option to prevent tobacco use is never to begin using tobacco products. If someone who uses a tobacco product wants to quit, there are different methods to help with withdrawal symptoms. In this lesson, you will explore ways to prevent tobacco use as well as some strategies for breaking a nicotine addiction.

Preventing Tobacco Use

Did you know that most adults who use tobacco products started this habit when they were teens? Avoiding a lifetime of tobacco use starts now, based on the decisions you make today.

In the United States, smoking costs society an estimated $289 billion a year in healthcare costs. Given the serious threat to public health, both federal and state governments have strategies to regulate the sales, use, cost, and advertisements of tobacco products (**Figure 9.19**). Organizations have created mass media campaigns and public service announcements discouraging

What the Government Is Doing to Prevent Tobacco Use

Sales Restrictions	Ad Restrictions	State Bans	Increased Taxes	Anti- Campaigns
• Sale of tobacco products, including vaping products, is prohibited to anyone under 21 years old. • Tobacco companies cannot add flavoring to their products. • Age verification is required when buying tobacco products online.	• Warning labels are required on all tobacco product packaging. • Advertisements and product packaging have strict restrictions on language ("light" or "mild") and color (bright colors to appeal to young people).	• In some states, smoking and vaping is banned in public places — workplaces, bars, and restaurants. • Some states' bans include all three locations, and some only one or two. • There is currently no federal law banning smoking and vaping.	• Raising federal, state, and local taxes on tobacco products helps discourage people from buying them. • The more expensive tobacco products are, the less people want to spend money on them and instead buy things they need.	• Many anti-campaigns use personal experiences to show the long-term negative effects of tobacco use. • Youth-oriented campaigns focus on refusal skills and show that a lot of young people do not vape or use tobacco products.

Figure 9.19 The United States government focuses on preventing nicotine use and helping tobacco users quit by using a variety of methods. *What is the name for media messages that support public health?*

tobacco use. **Public service announcements (PSAs)** are media messages that support public health. Successful campaigns emphasize short- and long-term health effects, strategies for refusing tobacco, and the fact that most young people do not use tobacco. Young people who regularly see these campaigns are less likely to use tobacco products.

The decision about whether or not to use tobacco products ultimately lies with you. You can use several skills to protect yourself from tobacco use. These skills include building healthy relationships, learning to manage stress, thinking critically about the media you see, and using refusal skills.

Build Healthy Relationships

Young people may feel pressured to use tobacco if they have close friends who use these products. Fitting in during social situations if other people are smoking, vaping, or chewing tobacco can be difficult. In healthy friendships, however, your friends respect the choices you make and do not pressure you to engage in unhealthy behaviors. People choose friends because they enjoy spending time with them, not because they use tobacco products.

If your friends do not respect your decision to avoid tobacco products, focus on developing other friendships. Perhaps you have grown apart from some of your other friends. Try to form friendships with people who respect you and accept your choices (**Figure 9.20**).

In addition to friendships, building healthy relationships with your family can help prevent tobacco use. Have open conversations with family members to know their views of tobacco use. If you have family members who use tobacco, talk to them about the dangers of tobacco on their health and the health of others and offer to help them quit.

Learn to Manage Stress

Some people start using tobacco products to relieve stress, help them relax, or not worry about a difficult situation. Using tobacco actually increases stress, however. A nicotine addiction causes more issues than it solves. It also has negative mental and social consequences. Fortunately, there are many ways of managing stress that are more effective than relying on cigarettes, vaping devices, or smokeless tobacco. Instead of using tobacco products, try using a stress

Characteristics of Good Friends Versus Toxic Friends

Good Friends	Toxic Friends
Respect your choices	Do not respect or accept your choices
Do not pressure you to try unhealthy behaviors	Pressure you to try unhealthy behaviors
Trust each other	Talk badly about you to others
Are honest	Lie often
Are attentive	Frequently change your friendship status
Stay loyal through good times and bad times	Spill your secrets
Care about your well-being	Knowingly give you bad advice
Are good listeners	Take advantage of you
Do not judge you	Constantly judge you
Support you	Put you down
Forgive you	Hold long grudges
Are helpful	Are never there when you need them

Figure 9.20 It is important to form friendships with people who show characteristics of a good friend, such as respecting your choices and being supportive.

management technique that works for you, such as talking with a friend or getting physical activity.

Think Critically

Advertisements for cigarettes, vaping devices, and smokeless tobacco try to make these products look attractive. Companies that sell tobacco products cannot advertise on television, the radio, or print publications. Instead, tobacco companies have to use sneaky strategies to persuade people to use their products. Using critical thinking skills can help you recognize the tobacco industry's practices and avoid being tricked.

Today, most people know that cigarettes are dangerous. Since this knowledge is widespread, tobacco companies have changed the types of products they sell to appeal to young people. For example, some tobacco products look like electronic devices, breath strips, and flavored candy.

BUILDING Your Skills

Addiction Prevention

Many factors determine the likelihood that a young person will use tobacco products. Most people form these habits at a young age. One of the most important ways to prevent addiction is never to use tobacco products in the first place.

There will be many negative influences in a young person's life that may influence someone to try vaping or smoking, including peer pressure and representations of it in the media. There are also positive influences that may convince young people *not* to vape or smoke. The power of positive peer pressure can weigh heavily on someone's decision. You have the power to be a positive influence on your friends' (and classmates') decision to say no to tobacco products.

Nicotine-Free Pledge and Personal Promise

Design a Nicotine-Free Pledge and encourage your friends and classmates to sign one, too. See the basic example below to better understand the wording in a pledge. Do additional research to get ideas for what a pledge could look like. In addition to the pledge statement, add the following extra information to make your pledge special:

- an inspirational quote
- at least one image
- at least three harmful effects of tobacco use
- at least two benefits of being nicotine-free
- other relevant information or images (if applicable)

If you are choosing to be nicotine-free, sign the pledge. With teacher permission, hang the pledges at your school to advocate for nicotine-free youth.

Nicotine-Free Pledge

I Am Saying NO to Tobacco Products!

I, _____, pledge to be nicotine-free.
        (person's name)

These products have names that sound like sugary snacks more than addictive tobacco products. To advertise these products, some tobacco companies copy popular social media trends to appeal to young people.

To resist these strategies, use critical thinking skills to analyze tobacco products and the messages from tobacco companies (**Figure 9.21**). People who understand the manipulative nature of tobacco advertisements are able to resist them better. Analyzing advertisements can remind you about the serious consequences of tobacco use.

Use Refusal Skills

Resisting pressure to begin smoking, vaping, or chewing tobacco can be challenging. You may feel this pressure from your peers and from the media. Luckily, refusal skills can help you prepare for and respond to situations that may involve tobacco use.

Refusal skills are strategies you can use to stand up to pressures and influences that want you to engage in unhealthy behaviors. These skills can help you in situations when you feel pressured to try tobacco. Strong refusal skills help you stick to your own beliefs and values in the face of peer pressure.

If you do not want to use tobacco products, spend time with people who feel the same. Make sure these people know you do not want to use tobacco products or inhale their secondhand smoke and aerosol. Firmly explain the reasons behind your decision. Then stick to your decision and refuse to give in (**Figure 9.22**).

Analyzing Tobacco Advertisements

1 Identify that the content is an ad. What is being sponsored?

2 Identify the products or service being sold. Do you notice any reference to a tobacco product?

3 Identify the target audience for the ad. How old are the actors?

4 Identify the advertising techniques used. What mood is portrayed? Does the ad use fun music and flashy graphics?

Figure 9.21 Smoking and vaping advertisements are designed to make tobacco products appear cool and harmless.

Examples of Responses to Refuse Tobacco

Change the Subject	Share Your Reasons	Emphasize Health Risks	Exit the Situation
Have you seen this video? It's hilarious!	I don't want my breath to smell.	Vaping has nicotine, and I don't want to get addicted.	I'm meeting a friend to work on a class project.
Is anyone else hungry? I could go for tacos.	No thanks. I want to keep my lungs clear for swim season.	My uncle got lung cancer from smoking, so no thanks.	My brother just texted. He is here to pick me up, so I need to go.

Figure 9.22 Saying no to your friends can be extremely difficult, but having a few practiced responses in mind can help when faced with peer pressure. *What skills help a person stand up to peer influences and pressures?*

For example, suppose that when you hang out with a certain group of friends, several of them offer you a vaping device. Your response may be "No thanks. I want to keep my lungs healthy for band."

Remember that practice makes perfect. Imagine situations in which someone offers you tobacco, and then practice your responses. Play out each situation in your mind so you are ready to respond firmly. With time, your refusal skills will become stronger. Eventually, you will feel confident when you tell people that you choose to stay tobacco-free.
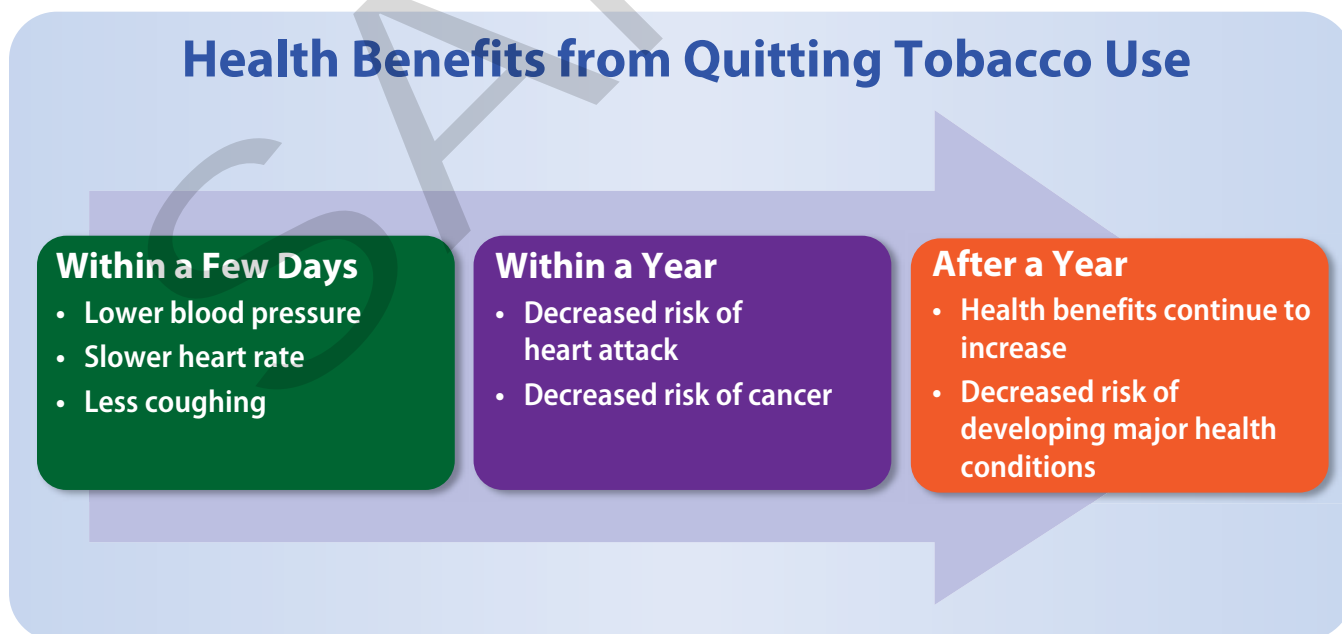
Treating Tobacco Use

Because nicotine is addictive, tobacco use and misuse can often lead to a substance use disorder, which requires professional treatment. When this occurs, even the threat of serious health conditions often is not enough to make someone stop using tobacco products. More than half of people who have had a heart attack or surgery resulting from lung cancer continue to smoke. Fortunately, it is never too late for someone to stop using tobacco. People who quit successfully experience a number of health benefits (**Figure 9.23**).

Quitting tobacco use and misuse is a difficult task to undertake. If you or someone you know is trying to quit tobacco, the following steps may help:

- Attend individual or group counseling.
- Talk to a school counselor, doctor, teacher, or other trusted adult.
- Call a helpline that provides free counseling to people trying to quit using tobacco.
- Research online resources that have information on quitting.

Although quitting tobacco can be difficult, nicotine addiction is treatable. Treatment strategies include nicotine replacement, medication, and self-management techniques.

Health Benefits from Quitting Tobacco Use

Within a Few Days
- Lower blood pressure
- Slower heart rate
- Less coughing

Within a Year
- Decreased risk of heart attack
- Decreased risk of cancer

After a Year
- Health benefits continue to increase
- Decreased risk of developing major health conditions

Figure 9.23 The body experiences long-term health benefits when a person quits using tobacco, but it also shows benefits within a few days.

Nicotine Replacement

Some approaches to quitting nicotine rely on nicotine replacement. In **nicotine replacement**, people who use and misuse tobacco continue to put nicotine into their bodies. People do not do this, however, through the use of tobacco products. Instead, they typically use *nicotine gum*, *nicotine lozenges*, or the *nicotine patch* as replacements (**Figure 9.24**). These replacements lessen withdrawal symptoms. In this way, nicotine replacement makes tobacco use and misuse easier to quit.

Nicotine replacement treatment enables people to gradually use smaller and smaller amounts of the substance. Eventually, people find they are no longer dependent on nicotine.

Companies sometimes market vaping devices such as e-cigarettes as a nicotine-replacement tool for people who want to quit smoking. Unlike nicotine gum, lozenges, and patches, vaping devices have not been approved by the United States government as a successful and safe form of smoking cessation.

bikeriderlondon/Shutterstock.com

Figure 9.24 Nicotine patches can help tobacco users quit using tobacco products. *What treatment method involves nicotine patches?*

Medications

Sometimes medications prescribed by a doctor help people quit using and misusing tobacco. These medications usually simulate dopamine. People who take these medications cope better with withdrawal from nicotine.

Self-Management Strategies

Self-management strategies often involve developing ways to resist temptation (**Figure 9.25**). First, people must identify situations that trigger their desire for tobacco. Once they have that information, they can respond with two techniques—stimulus control and response substitution.

Steps to Use Self-Management Strategies to Quit Tobacco

1. Set a "quit date" within the next month and note that date on your calendar.
2. Tell friends and family members about your quit date and ask them to support your efforts.
3. Get rid of tobacco products and their accessories in your environment. Avoid exposure to tobacco advertisements on social media.
4. Develop strategies for coping with nicotine cravings, such as getting physical activity, chewing gum, or keeping busy with other activities.
5. Develop strategies for refusing offers of tobacco products from other people.
6. Remind yourself of the benefits of quitting, including a longer life, more spending money, and increased stamina.
7. Reward yourself for quitting. For example, buy something with the money you saved by not using tobacco.
8. If you slip up, quickly renew your focus on the goal of quitting. Do not let one lapse lead to a return of the unhealthy behavior.

Figure 9.25
If you or someone you know is trying to quit using tobacco, you can take the following steps to use self-management strategies.

Stimulus control involves trying to avoid tempting situations and managing feelings that lead to tobacco use. Through stimulus control, people learn to avoid or manage each stimulus that causes them to use and misuse tobacco. A *stimulus* is a thing or event that causes a specific reaction in the body. In this case, the reaction is a craving for tobacco. The stimulus can be anything from a stressful day to seeing someone else using a cigarette, vaping device, or smokeless tobacco product.

With stimulus control, the goal is to avoid triggers that cause a desire to use and misuse tobacco. People may not always be able to avoid their triggers, however. If someone feels triggered to use tobacco, this person can use response substitution.

Through **response substitution**, people learn to respond to difficult feelings and situations with behaviors other than using tobacco. They may use stress management, relaxation, and coping skills. For response substitution to work, the first step is to recognize the stimulus that triggers the desire to smoke, vape, or chew tobacco. Then, a person can respond with an appropriate substitution for the behavior.

Lesson 9.3 Review

1. What are public service announcements (PSAs)?
2. **True or false.** Using tobacco decreases stress.
3. _____ skills are strategies you can use to stand up to pressures and influences that want you to engage in unhealthy behaviors.
4. What are three forms of nicotine replacements people could use to help quit tobacco?
5. **Critical thinking.** Explain how someone can use stimulus control and response substitution to quit tobacco.

Hands-On Activity

On a separate sheet of paper, write refusal responses to the statements below. Then, team up with a partner and share your responses with each other. Practice your responses out loud using clear and assertive language.

Come on. It's just one puff, not a big deal.

Try it. You won't know if you like it until you try it.

Stop being boring for once. I dare you to smoke it.

One time won't kill you. Don't worry so much.

Vaping is not as bad as smoking and your parents won't smell it on your clothes.

Review and Assessment

Summary

Lesson 9.1 Tobacco Products and Your Health

- *Tobacco* is a plant used to create tobacco products. Tobacco leaves contain the chemical *nicotine*, which is a toxic substance that gives tobacco products their addictive quality.
- Cigarettes are made of 7,000 chemicals and toxic substances.
- *Vaping devices* heat an e-liquid that produces an aerosol containing nicotine and harmful substances.
- Smokeless tobacco is chewed, inhaled, or dissolved but still contains toxic substances.
- Nicotine affects all body systems. Each tobacco product also harms the body. Cigarettes and vaping devices harm the respiratory system. Smokeless tobacco causes oral damage.
- Using tobacco impacts a person's mind and social relationships. Young people who use tobacco can also experience serious legal consequences.
- Secondhand and thirdhand smoke and aerosol release harmful substances into the air that other people breathe. Even brief exposure to the toxins in tobacco can cause health issues.

Lesson 9.2 Understanding Tobacco Use

- A *substance use disorder* occurs when a person continues consuming a substance regardless of its negative effects on the body and areas of a person's life. The stages of substance use lead to addiction and a substance use disorder.
- People may develop patterns for using a substance, which can connect a substance with certain triggers, causing people to feel a strong desire for a substance.
- When someone addicted to a substance tries to stop using that substance, they go through withdrawal.
- Common reasons young people start to smoke include individual factors such as genetic makeup, mental health, and stage of development or external influences such as their family, peers, or the media.

Lesson 9.3 Preventing and Treating Tobacco Use

- To prevent and discourage nicotine use in the United States, federal and state governments have strategies to regulate the sales, use, cost, and advertisements of tobacco products.
- People can use several skills to prevent tobacco use. These include building healthy relationships, learning strategies for managing stress, thinking critically about media messages, and using refusal skills.
- Quitting tobacco can be difficult, but nicotine addiction is treatable.
- Some approaches to quitting rely on nicotine replacement through products such as nicotine gum, nicotine lozenges, or a nicotine patch, which help lessen withdrawal symptoms, or medication. *Stimulus control* and *response substitution* rely on the user developing a way to resist the temptation to smoke.

Check Your Knowledge

Record your answers to each of the following questions on a separate sheet of paper.

1. The toxic substance that gives tobacco products their addictive quality is called _____.
2. What is an e-liquid?
3. The chemical the brain releases in response to nicotine is called _____.
4. **True or false.** The particles in thirdhand smoke and aerosol land and remain on virtually any surface in the area where someone has smoked or vaped.
5. Peer pressure is a positive influence if it is respectful and encourages _____ behaviors.
6. Besides social media and advertisements, what other two forms of media expose many young people to tobacco products?
7. **True or false.** A substance use disorder is *not* considered a mental illness.
8. _____ describes an increase in how much of a substance the body needs to experience certain effects.
9. What is the physical and psychological need for a given substance or behavior?
10. List four examples of skills a person can use to prevent underage tobacco use.
11. What is the goal of a stimulus control?
12. Which tobacco treatment method involves the use of stress management, relaxation, and coping skills?

Use Your Vocabulary

addiction	peer pressure	thirdhand aerosol
aerosol	public service	thirdhand smoke
carcinogens	announcement (PSA)	tobacco
co-occurring disorder	response substitution	tolerance
dependence	secondhand aerosol	toxic
dopamine	secondhand smoke	triggers
e-liquid	stimulus control	vaping device
nicotine	substance use disorder	withdrawal
nicotine replacement	tar	

13. Working with a partner, write definitions for the terms above based on your current understanding. Then, use the terms to write a summary about what you have learned about tobacco. Team up with another pair of students to discuss your definitions, summaries, and any differences between them. Afterward, discuss the definitions and summaries with the class. Ask your instructor for any correction or clarification.
14. Choose three of the terms above. Use the Internet to locate photos, graphics, or videos that show the meanings of these three terms. Create a digital presentation of these photos, graphics, or videos and show them to the class. Explain how they show the meanings of the terms and answer any questions your classmates have. While listening to your classmates' presentations, write down any terms or explanations you do not understand.

Think Critically

15. **Predict.** If an adolescent chooses to vape or smoke cigarettes with peers and this behavior continues, predict the impact of this decision on the person's body, family, and future generations.

16. **Identify.** List some reasons a young person might decide to try a vaping device or try to solve a problem with vaping. Why is it difficult for a young person to just say "no" to risky behaviors like vaping or smoking?

17. **Compare and contrast.** Compare and contrast a cigarette or smokeless tobacco product to a vaping device in terms of short- and long-term health consequences and addiction. Analyze specific impacts to the brain and body systems.

18. **Assess.** Research and calculate the financial cost of a tobacco addiction. How much would it cost to buy two packs of cigarettes every week for one year? What else could you purchase with this amount of money?

DEVELOP Your Skills

19. **Analyze influences.** Think about a time you saw tobacco use being glamorized on television, in social media, in magazines, in movies, or in music. What message about tobacco use was being portrayed? Reflect on the influence of this message and write a summary describing the post, picture, show, movie, or song. Based on what you learned in this chapter, how might this message negatively affect young people?

20. **Communication skills.** Imagine you have a friend or family member who currently smokes, vapes, or chews tobacco. Consider this person's potential reasons for starting and reasons for potentially continuing use. Using basic, everyday language, write a letter to this person about the harmful effects it has on the body, reasons for quitting, strategies used to quit, and the immediate as well as long-term benefits of quitting. As you write, use respectful language and display empathy.

21. **Access information and advocacy skills.** Create a flyer or brochure that provides information on steps for quitting nicotine. Include a description of when to seek treatment, motivation such as financial and health benefits, behaviors that will help, who you can ask for help, and local resources that can assist. Consider the difficulty of overcoming nicotine addiction and include strategies for doing so. Include vocabulary from the chapter. Present your flyer or brochure to the class.

22. **Teamwork and advocacy skills.** In small groups, create a public service announcement (PSA) discouraging vaping or tobacco use and misuse at your school. Include the following information in the PSA: short- and long-term health effects, signs and symptoms of use, legal consequences, and strategies to refuse. Emphasize that most young people are not using tobacco. Practice and record a video of your PSA. With teacher permission, request that your PSA be shown during the morning announcements.