

# THE HEALTH IMPACTS OF E-CIGARETTES

Discover the truth about how these devices can harm you.

**Y**ou may have seen or heard about kids in your school or town using e-cigarettes. Some tweens and teens assume that using e-cigarettes—also known as *vaping*—is a safe alternative to smoking traditional cigarettes. After all, e-cigarettes can come in flavors, so how bad can they really be? The truth is that vaping exposes you to very real—and very scary—health risks. These include lung-damaging chemicals, as well as the drug nicotine, which can harm your brain and cause addiction.<sup>1</sup>

## Lung Damage and Chemicals

E-cigarettes are battery-operated and create an aerosol for a user to inhale. When a person puffs on an e-cigarette, the liquid inside heats up and becomes the aerosol,

which typically contains nicotine, flavorings, and chemicals, some of which are toxic. The e-liquids often come in flavors, but the chemicals used to create flavors can be harmful to your lungs. E-cigarette aerosol can also contain other chemicals like formaldehyde, which can cause cancer, and metal particles such as nickel, lead, chromium, tin, and aluminum. Breathing in e-cigarette aerosol delivers these chemicals to your lungs where they can cause damage. The effects may be long-lasting—and even deadly.

In 2019, the Centers for Disease Control and Prevention (CDC) and the U.S. Food and Drug Administration (FDA) reported an outbreak of serious lung illnesses in nearly every state.<sup>2</sup> Thousands of people, including

many teens and young adults, got sick after using vaping products, including e-cigarettes. Patients reported symptoms like difficulty breathing and chest pain. Some people ended up with permanent lung damage, and multiple people died. As the CDC and FDA continue to investigate the cause or causes of the outbreak, one finding is clear: Using any type of vaping product can seriously harm your health.

### Delivering Dangerous Nicotine

Toxic chemicals aren't the only harmful thing a person breathes in when they vape. Most vaping devices, including all Juul models, also contain the drug *nicotine*. This is the same highly addictive chemical found in other tobacco products like traditional tobacco cigarettes and smokeless tobacco ("dip"). In fact, one Juul pod contains as much nicotine as a whole pack of cigarettes.<sup>3</sup>

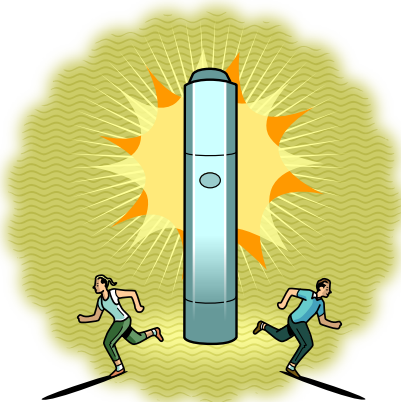
Using nicotine causes changes in the brain that make a person crave more of the drug. When someone vapes, nicotine gets into their bloodstream through their lungs and travels to their brain within 10 seconds.<sup>4</sup> The drug causes a surge of a brain chemical

called dopamine, which is known as a reward chemical. That means it makes the person feel good, encouraging them to vape some more. This can lead to addiction.

Teens and tweens are more vulnerable to addiction than adults because the brain continues to develop through a person's mid-twenties. Exposing an adolescent's brain to nicotine can cause effects on attention, learning, and memory that promote addiction to nicotine. Studies also show that teens who vape are more likely to start smoking traditional cigarettes. One likely explanation is that they've become addicted to nicotine.

### What's Being Done?

Health experts are concerned about youth vaping because these products are dangerous, and tweens and teens are becoming addicted. One in 10 middle schoolers currently use e-cigarettes.<sup>5</sup> Health officials continue to crack down on illegal sales to minors and hold retailers and manufacturers accountable for marketing practices. The goal: to reduce the number of teens exposed to the health hazards of vaping.



## STAY SAFE

Some middle schoolers say they vape because their friends do—either to feel cool or because they're afraid to say no. What would you do if another kid offered you an e-cigarette? Here are four ways to handle the pressure—and stay safe.

- Say "No, thanks," or "Nah, that's not my thing."
- Make a joke or change the topic.
- Say you're supposed to be somewhere and walk away.
- Talk to a friend, parent, or trusted adult.

1. Hiller, M, et al. (2017) *Exp Clin Psychopharmacol*. 25, 380-392. 2. Centers for Disease Control and Prevention (2019) [cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html). 3. Wynne C, et al. (2018). Poster presented at Annual Meeting of the Society for Research on Nicotine and Tobacco, Baltimore, MD. 4. St Helen, G, et al. (2016) *Addiction*. 111, 535-544. 5. Cullen KA, Gentzke AS, Sawdey MD, et al. (2019). *JAMA*.