



THE HEALTH IMPACTS OF E-CIGARETTES

Discover the truth about how these devices can harm you.

Few high school students smoke conventional cigarettes, but e-cigarette use by high schoolers remains a public health crisis. Some teens assume that using these devices—also known as *vaping*—is a safe alternative to smoking. After all, e-cigarettes can come in flavors, and the mist they produce looks different from the toxic smoke from traditional cigarettes. So how bad can e-cigarettes really be?

The truth is that using e-cigarettes exposes teens to very real—and very scary—health risks. Vaping nicotine (found in most devices) can harm your brain and cause addiction.¹ There is

also growing evidence that the chemicals found in e-cigarettes can cause serious damage to your lungs.

Lung Damage and Chemicals

E-cigarettes are battery-operated devices that create an aerosol a user inhales. When a person uses an e-cigarette, a liquid inside heats up and becomes an aerosol mixture typically containing nicotine, flavorings, and toxic chemicals like acrolein. The e-liquids often come in flavors, but the chemicals used to create these flavors can be harmful to your lungs. E-cigarette aerosol may also contain metals such as nickel, lead,

chromium, tin, and aluminum, and chemicals like formaldehyde, which is known to cause cancer. Breathing in e-cigarette aerosol delivers these chemicals to your lungs where they can cause damage. The effects may be long-lasting—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.² 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 devices, including all Juuls, contain a drug called *nicotine*. This is the same highly addictive chemical found in other tobacco products like traditional cigarettes and smokeless tobacco ("dip"). In fact, one Juul pod contains as much nicotine as a whole pack of cigarettes.³

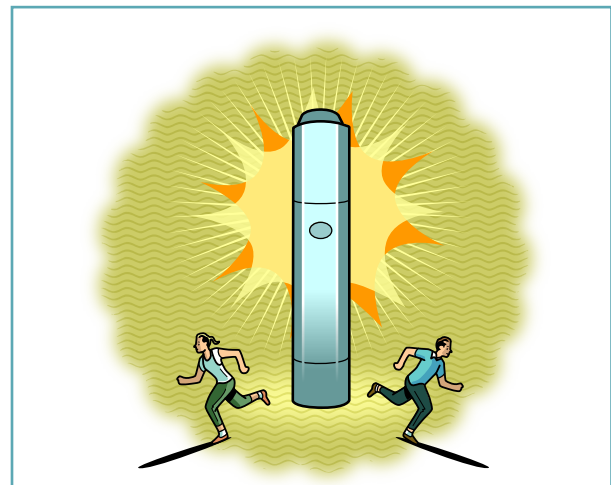
Using nicotine causes changes in the brain that make a person crave more of the drug. When someone vapes, nicotine gets into their bloodstream through their lungs and travels to their brain within 10 seconds.⁴ The drug causes a surge of a brain chemical called dopamine, which is known as a reward chemical. That means it makes the person feel good, encouraging them to vape some more. This can lead to addiction.

Teens are even 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 problems with 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 teens are becoming addicted. About one in nine high school students currently use e-cigarettes.⁵ 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 being exposed to the health hazards of vaping.



STAY SAFE

Some high 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. Hiler, 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. Centers for Disease Control and Prevention (2021) *Morbidity and Mortality Weekly Report (MMWR)*, 1387-1389.