

# What about vaping (e-cigarettes)?

Vaping products, also called e-cigarettes, are fairly new products. They've only been around for about ten years, so researchers are in the early stage of studying how they affect your health.

## How Vaping Products Work

Vaping products are designed to deliver nicotine without the other chemicals produced by burning tobacco leaves. Puffing on the mouthpiece of the cartridge activates a battery-powered inhalation device (called a vaporizer). The vaporizer heats the liquid inside the cartridge which contains nicotine, flavors, and other chemicals. The heated liquid turns into an aerosol (vapor) which the user inhales—referred to as “vaping.”



Some e-cigarettes are made to look like regular cigarettes, cigars, or pipes. Some resemble pens, USB sticks, and other everyday items.

## How Vaping Affects the Brain

Nicotine from vaping products activates the brain's reward circuits and increases levels of a chemical messenger in the brain called dopamine. Dopamine causes the brain to remember the behavior associated with that increase and reinforces the desire to vape nicotine. This can cause a

person to seek out nicotine and use it again and again, despite the risks to their health.

## Why Do Teens Vape?

Public health experts have been studying why so many teens are vaping. One recent study showed that teens are enticed by the flavors offered by the vaping companies---especially mint and fruity flavors like mango. NIDA's 2019 Monitoring the Future survey asked teens why they vape and more than 40% said they tried it for the flavors. Others said they tried vaping just to experiment, or to have a good time with friends. However, more than 8% said they tried it because they are "hooked."

The government has taken steps to discourage teens from using vaping products. In early 2020, the government banned mint and fruity flavors in hopes of discouraging teens from using vaping products. At about the same time, the government raised the [legal age to purchase all tobacco products to 21](#).

## Is Vaping Worse Than Smoking?

Regardless of how vaping compares to cigarette smoking, it is important to recognize that nicotine vaping has its own risks, which include addiction and other potentially harmful health effects. Research so far suggests that nicotine vaping might be less harmful than cigarettes when people who regularly smoke switch to them completely and no longer use tobacco cigarettes.<sup>10</sup>

However, nicotine in any form is a highly addictive drug, and health experts have raised many questions about the safety of vaping devices, particularly for teens:

- Testing of some vaping products found the aerosol (vapor) to contain known cancer-causing and toxic chemicals. The health effects of repeated exposure to these chemicals are not yet clear.
- Some research suggests that nicotine vaping may increase the likelihood that teens will try other tobacco products, including cigarettes. A study showed that students who have vaped nicotine by the time they start 9th grade are more likely than others to start smoking traditional cigarettes and other smoked tobacco products within the next year.<sup>11</sup> Another study has also shown a connection

between vaping nicotine and smoking traditional cigarettes.<sup>12</sup> These studies suggest that using vaping products can lead to cigarette smoking in adolescents.

- Some research suggests that certain vaping products contain metals like nickel and chromium, possibly coming from the heating of coils, that may be harmful when inhaled.<sup>13</sup>

<sup>10</sup> U.S. Department of Health, and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease, Prevention and Health Promotion, Office on Smoking and Health. E-Cigarette Use Among Youth And Young Adults: A Report of the Surgeon General — Executive Summary.; 2016. [https://e-cigarettes.surgeongeneral.gov/documents/2016\\_SGR\\_Exec\\_Summ\\_50...](https://e-cigarettes.surgeongeneral.gov/documents/2016_SGR_Exec_Summ_50...) Accessed February 21, 2017.

<sup>11</sup> Rigotti NA. e-Cigarette use and subsequent tobacco use by adolescents: new evidence about a potential risk of e-cigarettes. *JAMA*. 2015;314(7):673-674.

<sup>12</sup> Chaffee BW, Watkins SL, Glantz SA. Electronic Cigarette Use and Progression From Experimentation to Established Smoking. *Pediatrics*. March 2018:e20173594. doi:10.1542/peds.2017-3594.

<sup>13</sup> Hess CA, Olmedo P, Goessler W, Cohen E, Rule AM. E-cigarettes as a source of toxic and potentially carcinogenic metals. *Environmental Research*. 2017;152:221-221.