



## Vaping

“Vaping” is the act of inhaling vapor produced by a vaporizer or electronic cigarette containing a liquid, concentrate or dry herb that is vaporized to form an aerosol mist.

### What does it look like?

Electronic cigarettes, or e-cigarettes, are battery-operated devices used to inhale a liquid solution, which typically contains nicotine, flavorings, and other chemicals. They can resemble traditional tobacco cigarettes, cigars, or pipes, or even everyday items like pens or USB memory sticks.

### How does it work?

Most e-cigarettes consist of four different components, including: a cartridge or reservoir, which holds the liquid solution (e-liquid or e-juice), a heating element (atomizer), a power source (usually a battery), and a mouthpiece.

In many e-cigarettes, puffing activates the battery-powered heating device, which vaporizes the liquid in the cartridge. The person then inhales the resulting aerosol or vapor (called vaping).

### What are the effects?

The nicotine in e-liquids readily absorbs into the bloodstream stimulating the adrenal glands to release the hormone epinephrine (adrenaline). Epinephrine stimulates the central nervous system and increases blood pressure, breathing, and heart rate. As with most addictive substances, nicotine increases levels of a chemical messenger in the brain called dopamine, which affects parts of the brain that control reward. The more nicotine a person uses, the greater the potential for addiction.

E-cigarette use also exposes the lungs to a variety of chemicals, including those added to e-liquids, and others produced during the heating/vaporizing process. Studies have found ingredients used in antifreeze and formaldehyde. Others have found high levels of nickel and chromium as well as low levels of cadmium, a toxic metal found in cigarette smoke that can cause breathing problems and lung disease.

Researchers also found that the liquid in e-cigarettes may contain artificial flavorings that, while safe to ingest, are toxic to inhale. This chemical, called diacetyl, is found in as much as 75% of e-cigarettes and is linked to a disease referred to as “popcorn lung” or bronchiolitis obliterans.

The teen years are critical for brain development, which continues into young adulthood. Nicotine affects the development of the brain's reward system, so continued e-cigarette use can not only lead to nicotine addiction, but can also make other drugs more appealing to teens. Nicotine also affects the development of brain circuits that control attention and learning. Other risks include mood disorders and permanent problems with impulse control.



E-cigarettes are also referred to as vapes, vaporizers, vape pens, hookah pens, e-cigs, and e-pipes.

## Trends & Statistics

More than 2 million middle and high school students use e-cigs.

16.2% of 12th graders in the U.S. report e-cigarette use in the past month.

66% of teens who report using e-cigarettes say they smoke just flavoring, not nicotine.

Nicotine levels in e-cigarettes are often mislabeled. Studies show wide-ranging nicotine levels in e-cigarettes and inconsistencies between the listed and actual nicotine levels in these products.

Contrary to popular belief, the FDA hasn't found e-cigarettes to be safe and effective in helping smokers quit. Instead of quitting, many e-cigarette users continue to use e-cigarettes while still smoking conventional cigarettes.

*Sources: National Institute on Drug Abuse, American Lung Association, U.S. Food and Drug Administration, Milwaukee Journal Sentinel*