

# E-Cigarettes: What You Need to Know

As lawmakers and scientists respond to a growing industry, there are many good reasons for teens to take a pass on this latest trend.

**Y**ou may have seen electronic cigarettes (e-cigarettes) in stores, in advertisements, or being used. But e-cigarettes, while increasingly popular, are not harmless. Created as an alternative to tobacco cigarettes, e-cigarettes are sophisticated mechanical devices designed to deliver the same highly addictive nicotine

that is in tobacco cigarettes, without the other harmful effects of tobacco.

## What's Happening

In the past decade, e-cigarettes have become a more than \$1 billion industry in the United States, with over 460 brands on the market. Many adults

## How Do E-Cigarettes Work?

E-cigarettes provide nicotine through an aerosol (instead of through smoke, as with a tobacco cigarette). Puffing on the mouthpiece of the cartridge activates a battery-powered device. A heater then converts a liquid solution, which contains nicotine, flavors, and other chemicals, into an aerosol (commonly called “vapor”) that the user inhales. The act of inhaling this aerosolized solution is sometimes called “vaping.”

**Cartridge** containing a liquid solution made up of propylene glycol, glycerol, water, nicotine, flavorings, and other chemicals

**Battery** that powers the device

**Vaporizer** (heating device) that turns the liquid solution into an aerosol (commonly called vapor), which can be inhaled

► **More Info:** For additional facts about the brain and drugs, visit [scholastic.com/headsup](http://scholastic.com/headsup) and [teens.drugabuse.gov](http://teens.drugabuse.gov).

who use e-cigarettes are current or former smokers looking to stop nicotine cravings, quit smoking, or cut down on tobacco cigarettes. However, e-cigarettes may not be that helpful for quitting, since at least 75 percent of adults who use e-cigarettes also use tobacco cigarettes.<sup>1</sup>

And although most states prohibit the sale of e-cigarettes to people under the age of 18, more and more teens are using them. In fact, recent surveys<sup>2</sup> show dramatic increases each year in the number of teens who have tried an e-cigarette, as well as in the number who have used them in the past month. This is at a time when smoking tobacco cigarettes is at an all-time low among middle and high school students.

### What's Ahead

With e-cigarette use on the rise, the federal government is considering regulation of how e-cigarettes are made and sold. If this happens, rules on safety, advertising, and warning labels may govern e-cigarettes just as they currently do for tobacco cigarettes. At this time, e-cigarettes are not guaranteed to be safe. And consumers should not assume that advertising claims are scientifically proven.

As for the science on the risk of e-cigarettes and the possible benefits for current smokers, research is just beginning. But there is already a growing body of evidence showing that teens would be smart never to start using e-cigarettes.

### What Are the Risks for Teens?

Nine out of 10 adult smokers started smoking tobacco cigarettes before age 18. This is because if people start smoking in their teens, when their brains are still developing, they are especially susceptible to the addictive effects of nicotine (and other drugs as well). Once someone is addicted to nicotine, it's very hard to quit. Early studies show a strong link between teens using e-cigarettes and smoking tobacco cigarettes. Researchers will continue to study e-cigarette and tobacco-cigarette use among teens, to understand the relationship between the two.

### What Is the Effect of E-Cigarette Aerosol (Vapor) on the Body?

E-cigarettes contain propylene glycol, glycerol, nicotine, flavorings, water, and additional chemicals. Tests of the liquid in some e-cigarettes have also found toxic ingredients, such as formaldehyde (a chemical that may cause cancer). Health experts do not yet know the effects of these chemicals on people who use e-cigarettes or who are exposed to secondhand e-cigarette aerosol. Research is under way to measure exposure to nicotine and other chemicals from the aerosol to better understand risks.

### How Does Nicotine Addiction Affect the Brain?

Research studies have found that nicotine may make animals' brains more receptive to the effects of other drugs. Some

experts think this could also be true for people. If so, a young person who uses an e-cigarette or a tobacco cigarette may find other drugs, like cocaine, more rewarding. This "priming effect" on the brain increases the likelihood of further drug use and possible addiction. To further study this possibility, researchers will track young people who use e-cigarettes to see if they are more likely to become addicted to other drugs.

### Do E-Cigarettes Help Smokers Quit?

Some studies show that e-cigarettes help people quit tobacco cigarettes, and others suggest that they interfere with quitting. As more research is conducted, the effectiveness of e-cigarettes as a quitting aid will become better understood. Meanwhile, smokers who want to quit have other good options with proven effectiveness. Find out more at [teen.smokefree.gov](http://teen.smokefree.gov) and [cdc.gov/tobacco/campaign/tips/quit-smoking](http://cdc.gov/tobacco/campaign/tips/quit-smoking).



### Warning! Accidental Poisoning

Calls to poison control centers involving e-cigarettes jumped from one per month in 2010 to 215 per month in 2014.<sup>3</sup> The liquid in e-cigarettes can be toxic if someone drinks it, sniffs it, or touches it. Children under 5 years old made up more than half of the poisoning cases.