

ELECTRONIC CIGARETTES: VAPING

What are e-cigarettes?

Electronic cigarettes, also known as e-cigarettes or e-vaporizers, are battery-operated devices that people use to inhale an aerosol, which typically contains nicotine, flavorings, and other chemicals. Some common nicknames for e-cigarettes are:

- JUULs
- Vapes
- E-cigs
- Vape pens
- E-hookahs
- Mods (customizable, more powerful vaporizers)
- Hookah pens

How do e-cigarettes work?

Most e-cigarettes consist of four main components, including:

- a cartridge or reservoir, which holds a liquid solution (e-liquid or e-juice) containing varying amounts of nicotine, flavorings, and other chemicals
- a heating element (atomizer)
- a power source (usually a battery)
- a mouthpiece that the person uses to inhale

In many e-cigarettes, inhaling activates the battery-powered heating device, which vaporizes the liquid (sometimes called “e-juice,” “e-liquid,” “vape juice,” or “vape liquid”) in the cartridge. The person then inhales the resulting aerosol or vapor (called vaping). Users inhale e-cigarette aerosol into their lungs and innocent bystanders can also breathe in this aerosol when the user exhales it into the air. E-cigarette devices can also be used to consume marijuana and other drugs.

E-cigarettes and nicotine

Nicotine is highly addictive and has a wide range of side effects. The nicotine in e-liquids is readily absorbed from the lungs into the bloodstream when a person uses an e-cigarette. Upon entering the blood, nicotine stimulates 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 activates the brain’s reward circuits and also increases levels of a chemical messenger in the brain called dopamine, which reinforces rewarding behaviors. Pleasure caused by nicotine’s interaction with the reward circuit motivates some people to use nicotine again and again, despite risks to their health and well-being.

Not all nicotine is the same. According to JUUL’s website, a single JUULpod contains 40 mg of nicotine, which is similar to “the nicotine yield of a pack of cigarettes.” However, it’s difficult to describe a single pod as a “serving” as a person might consume one pod in a week, while another may consume more than one a day.

Health effects

E-cigarette use exposes the lungs to a variety of chemicals, including those added to e-liquids, and other chemicals produced during the heating and vaporizing process (Sleiman, 2016). A study titled “Emis-

sions from Electronic Cigarettes: Assessing Vapers’ Intake of Toxic Compounds, Secondhand Exposures, and the Associated Health Impacts” found that e-cigarette vapor contains known carcinogens and toxic chemicals, as well as potentially toxic metal nanoparticles from the device itself (Logue, 2017). The study showed that the e-liquids of certain brands contain high levels of nickel, chromium and may also contain low levels of cadmium, a toxic metal found in cigarette smoke that can cause breathing problems and disease (Hess, 2017). More research is needed on the health consequences of repeated exposure to these chemicals.

E-cigarette use in teens

E-cigarettes are popular among teens and are now the most commonly used form of tobacco among youth in the United States. Their easy availability, alluring advertisements, various e-liquid flavors, and the belief that they’re safer than cigarettes have helped make them appealing to this age group.

Nicotine can harm the developing adolescent brain, as the brain keeps developing until about age 25. Using nicotine in adolescence can harm the parts of the brain that control attention, learning, mood, and impulse control (CDC, 2019; Surgeon General Report, 2016). Young people who use nicotine products in any form, including e-cigarettes, are uniquely at risk for long-lasting effects. Because nicotine affects the development of the brain’s reward system, continued e-cigarette use can not only lead to nicotine addiction, but it also can make other drugs such as cocaine and methamphetamine more pleasurable and appealing to a teen’s developing brain (Surgeon General Report, 2016). Additionally, young people who use these products are more likely to smoke cigarettes in the future (CDC, 2019).

Wisconsin Teens

According to Youth Tobacco Survey, a survey conducted by the Centers for Disease Control and Prevention (CDC) in 2018, found that 1 in 5 Wisconsin high schoolers use e-cigarettes.

Are e-cigarettes safer than cigarettes?

The use of any tobacco product, including e-cigarettes, is unsafe for young people. Some people believe e-cigarettes may help lower nicotine cravings in those who are trying to quit smoking. However, e-cigarettes are not an FDA-approved quit aid, and there is no conclusive scientific evidence on the effectiveness of e-cigarettes for long-term smoking cessation. It should be noted that there are seven FDA-approved quit aids that are proven safe and can be effective when used as directed.

E-cigarettes haven’t been thoroughly evaluated in scientific studies. Presently, not enough data exists on the safety of e-cigarettes, how the health effects compare to traditional cigarettes, or whether they are helpful for people trying to quit smoking.

Resources

Resources for parents:

Tobacco Free Kids: <https://www.tobaccofreekids.org>

Partnership for Drug-Free Kids: <https://drugfree.org/>

Healthy Children: <https://www.healthychildren.org>

For more information on electronic cigarettes, please visit:

Food and Drug Administration at:

<https://www.fda.gov/tobacco-products/products-ingredients-components/vaporizers-e-cigarettes-and-other-electronic-nicotine-delivery-systems-ends>

Center for Disease Control and Prevention: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm

Surgeon General: <https://e-cigarettes.surgeongeneral.gov/default.htm>

For more information on how to quit smoking, call

1-800-QUIT-NOW

a FREE tobacco quit line

In Wisconsin, it is illegal to use e-cigarette products where smoking is prohibited.

Literature References:

Centers for Disease Control and Prevention. Quick Facts on the Risks of E-cigarettes for Kids, Teens, and Young Adults. Smoking and Tobacco Use. Accessed 9/9/219

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