

# Vaping/Electronic Nicotine Delivery Systems

Vaping is a word used to describe the use of an electronic nicotine delivery system. It's called vaping because of the aerosol cloud given off during use.



Sample of e-cigarette products. Images are not to scale. Vaporizer products are considered "tank systems."

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## What is an Electronic Nicotine Delivery System (ENDS)?

ENDS is a catch-all phrase for the different electronic devices used to vape. These devices may or may not look like a traditional cigarette. ENDS are battery-powered devices that heat a liquid into an aerosol that the user inhales. The liquid usually has nicotine, which comes from tobacco, flavorings, and other additives.

ENDS use have NOT been shown to be effective for stopping smoking. There are increasing concerns about the hazards to health of ENDS use, and of breathing in the emissions from ENDS devices.

ENDS appear to serve as a gateway drug. Their use increases risk for other tobacco product use (including traditional cigarettes) among young people.

ENDS devices are now the most popular tobacco products used by middle and high school students. ENDS products come in many different shapes and sizes and have many different names, often making it difficult for someone to understand what they are. Here is a list of the most common ones you will hear about:

### Electronic cigarette (e-cigarette; e-cig)

These devices look like cigarettes. Some are disposable. Some have rechargeable batteries and replaceable e-liquid cartridges.

### Other devices

There are many other types of electronic nicotine delivery systems in a wide variety of shapes and sizes.

Most of these products do not look like cigarettes. Some of the names for the different products include: Vape Pens, Vape Boxes, Vapes, Tank systems, E-Hookah, Hookah Pen, Hookah Stick, Shisha Stick, Juul, Mechanical Mods, E-Cigar, and E-Pipe.

### Concentrated Nicotine Solution

The concentrated nicotine solution used in some of these devices is called e-liquid or e-juice. Usually the solutions contain either the chemical compound propylene glycol or vegetable glycerin, nicotine, and flavorings. The ingredients often vary by brand and for each type of electronic product. At this time, there are very few rules or regulations that control how these products are made or advertised.

### Are they addictive?

Most of the ENDS products contain nicotine. Nicotine is one of the most addictive substances known. This is the same nicotine that is in tobacco products. Addiction to the nicotine means that you feel the need to keep putting nicotine into your body. Your body depends on it and you will have symptoms that make you uncomfortable—sometimes very uncomfortable—if you don't get enough of it or if you don't get it often enough.

Actual nicotine content in these products may vary from the labeled content. ENDS products labeled as not having nicotine may have nicotine.

Young people who become initiated to nicotine addiction with ENDS are more likely to go on to use of other tobacco products.

**What about the flavors?**

There are hundreds of different flavors available. Fruit and candy flavors are especially popular with younger users. Although these flavors have been labeled as safe to eat there are major concern about what happens when you inhale them into your lungs. Many of the flavorings used are known to cause respiratory irritation. Others are toxic to lung tissue.

**SPECIAL CONCERN—**

E-liquids should be kept well out of reach of children. Nicotine poisoning can be fatal. As little as 1/2 teaspoon of the concentrated liquid nicotine can kill a young child.

**Are they safe?**

The simple answer is—No. Tobacco related toxins (poisonous substances that can cause disease) and carcinogens (cancer causing chemicals) have also been found in the aerosol vapor of ENDS products. Tiny heavy metal particles that are most likely from the casings and heating elements have been found in the aerosols created from device use. Heating of the ENDS solution can create other toxins and carcinogens. There is increasing evidence that inhaled nicotine from ENDS damages lung tissue and lowers the body's natural resistance to infections and to cancers. Although much is as yet unknown about their longterm safety, there is plenty of cause for concern.

**Are they useful in helping someone to quit smoking cigarettes?**

Some people claim they have quit smoking cigarettes by using an e-cig. However, results from recent research studies have not been able to show that they are effective in helping people stop smoking. Other research suggests that smokers who use ENDS are less likely to stop smoking. Young people who use ENDS are more likely to start smoking! Keep in mind that these products have few regulations or standards governing their manufacturing or contents. Products not regulated by the FDA (US Food and Drug Administration) do not hold to the same standards of quality, safety, and effectiveness as products that are regulated and approved for smoking cessation such as the nicotine patch, nicotine gum, and nicotine lozenge.

(For more information on products used to help quit smoking, see ATS patient handouts on Cessation, Over The Counter (OTC) and Prescription medicines.)

**Your use of ENDS can harm people close to you.**

Electronic nicotine delivery systems create aerosols. These aerosols (vapors) can and do expose others nearby. Protect your family and friends. If you do use these devices, only use them outside and well away from other people. Many states have put laws in place that prohibit the use of these devices in places where you cannot smoke. These devices cannot be used on commercial airplanes.

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**R<sub>x</sub> Action Steps**

- ✓ Avoid using ENDS.
- ✓ Do not allow ENDS device use in your home or car.
- ✓ Talk to your children about the dangers of ENDS use and of nicotine addiction.
- ✓ Children learn what they see. Set a good example by being ENDS and tobacco free.
- ✓ Keep all ENDS devices, including concentrated nicotine solutions, out of reach of children.
- ✓ If you are trying to stop smoking, talk with your health care provider about safe and effective medications to treat nicotine addiction and to help you to feel comfortable when not smoking or using tobacco.
- ✓ For help with stopping tobacco use go to [www.thoracic.org/patients/](http://www.thoracic.org/patients/).
- ✓ For additional help in quitting, join a local quit smoking support group or call 1-800-QUIT-NOW

**Resources**

**ATS Patient Information Series on Tobacco at**  
[www.thoracic.org/patients](http://www.thoracic.org/patients)

**FDA (Food and Drug Administration):**  
<http://www.fda.gov/newsevents/publichealthfocus/ucm172906.htm>

**American Legacy Foundation [www.legacyforhealth.org](http://www.legacyforhealth.org)**  
<http://truthinitiative.org/topics/tobacco-products/e-cigarettes>

**American Academy of Pediatrics – Healthy Children**  
<https://www.healthychildren.org/English/safety-prevention/at-home/Pages/Liquid-Nicotine-Used-in-E-Cigarettes-Can-Kill-Children.aspx>

**National Cancer Institute**  
[Smokefree.gov](http://Smokefree.gov)

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