

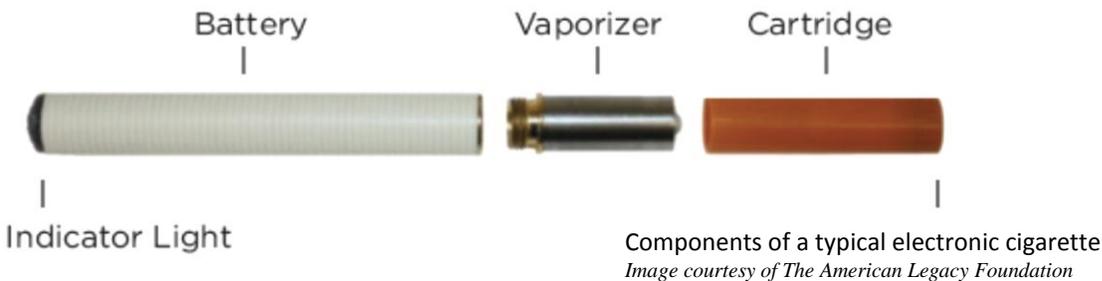
Electronic Cigarette Fact Sheet

The availability, marketing, and use of electronic cigarettes (or e-cigarettes) are growing. Because e-cigarettes are unregulated, limited information is available on their contents, health effects, and health benefits (if any). This fact sheet addresses key questions and some common areas of misunderstanding.

1. What is an electronic cigarette?

Electronic cigarettes (e-cigarettes) are a type of electronic smoking device, resembling cigarettes. They can also look like pipes, pens, or USB memory sticks. E-cigarettes generally consist of three integrated parts: the cartridge which usually contains nicotine (dissolved in propylene glycol and/or glycerin); the vaporizer or atomizer; and a lithium ion battery. The battery powers the vaporizer that heats the nicotine mixture in the cartridge that the user then inhales as a vapor. This is also known as “vaping”. There is usually an indicator light that mimics the burning end of a conventional cigarette.

E-cigarettes cost approximately \$30-60, and refill cartridges cost \$7-\$10.¹ More recently, disposable e-cigarettes that “last up to two packs” are being sold for under \$10 in local and national convenience stores.



2. What are the contents of an e-cigarette?

Cartridges generally contain 10-20 mg of nicotine.² However, as e-cigarettes are unregulated by the Food and Drug Administration (FDA), their contents and the level of these contents can be highly variable.

Early studies by the FDA found varying levels of nicotine and other potentially harmful ingredients, including cancer-causing substances and di-ethylene glycol, which is found in anti-freeze.³ However, these substances were found at much lower levels than in traditional cigarettes.

All the major U.S. tobacco companies are now producing electronic cigarettes, raising the prospect that the companies will modify these products—like they did with cigarettes—to maximize addictiveness.

3. Who is using e-cigarettes?

The awareness and use of electronic cigarettes are increasing. In 2011, 6 of 10 U.S. adults were aware of electronic cigarettes with 21% of smokers having ever used an electronic cigarette. This is compared

to 2010 when 4 out of 10 adults were aware and 10% of smokers had ever used an electronic cigarette. While electronic cigarette usage increased for all groups that were studied, including young adults, the sharpest increases were seen among those aged 45–54 years, non-Hispanic Whites, and both current and former smokers.⁴

4. What are the health effects of e-cigarette use?

Limited independent research has been conducted into both short- and long-term health impacts of e-cigarettes. The most common effects of use include mouth and throat irritation and cough. Short-term negative impacts on lung functions have also been documented.⁵ In addition, acute nicotine administration increases heart rate, blood pressure, and impairs circulation.⁶ Adverse events related to e-cigarettes that were reported to the FDA include hospitalizations for pneumonia and heart failure, second degree burns, and a possible infant death from choking on a cartridge.⁷ Based on the limited research available, e-cigarettes are likely to be substantially less harmful than traditional cigarettes.

Refill bottles for e-cigarettes contain 10-20 mg of nicotine, and the fatal dose of nicotine for children is 10 mg.⁸ This presents concerns over children accidentally ingesting refill bottles or cartridges in the homes of e-cigarette users.

5. Is secondhand e-cigarette smoke or vapor harmful?

Nicotine is found in both inhaled and exhaled vapor of electronic cigarettes.⁹ Studies have also found heavy metals, silicates, and cancer-causing compounds in exhaled e-cigarette vapor.^{10,11} Again, from the limited, available literature, secondhand vapor is likely much less harmful than secondhand cigarette smoke.

Use of e-cigarettes in indoor spaces can also create confusion about smoke-free policies, as they closely resemble the act of smoking cigarettes. Some state and local health departments have included e-cigarettes in indoor and outdoor smoke-free laws.

6. Are smokers using e-cigarettes to try to quit? And are e-cigarettes effective in helping people quit?

The most common reasons for using e-cigarettes, as stated by consumers, are to help with cravings, to use less toxic alternatives to regular cigarettes, to avoid relapse, and to attempt to cut down or quit smoking.¹² Despite this, the evidence that e-cigarettes can help users quit is mixed, and e-cigarettes are not an FDA-approved treatment for smoking cessation.

One recent study showed that e-cigarette usage in a real-world setting was not associated with successful quit attempts, while a controlled treatment study found e-cigarettes to be as effective as nicotine patches in helping smokers quit.^{13,14,15} Moreover, while e-cigarette users may decrease their conventional cigarette consumption, individuals may persist in using both e-cigarettes and conventional cigarettes, or what is known as “dual use”, possibly increasing their risk of harm.^{16,17} More research on this topic is certainly needed.

For help with quitting, visit www.smokefreephilly.org or call **1-800-QUIT-NOW** (1-800-784-8669). Smokers who use FDA-approved medications or counseling are twice as likely to quit successfully.

7. How are e-cigarettes being marketed?

Currently, e-cigarettes are being marketed similarly to cigarettes in the past. For example, electronic cigarette companies have used celebrity spokespeople, sponsorship, and candy flavoring, and have advertised their products on television, in corner stores, gas stations, and online.^{18,19} Due to this advertising, e-cigarettes are more widely searched for online than quit-smoking medications and may discourage those trying to quit from using proven methods.²⁰ E-cigarettes are also marketed as a way to circumvent smoking bans.

8. What about e-cigarettes and youth?

The use of electronic cigarettes by youth is of particular concern. Electronic cigarettes can appeal to kids with their high-tech design, easy availability (online and via mall kiosks), and variety of flavors.²¹ E-cigarette companies have also used celebrity spokespeople and placed their products near candy in retail outlets.²² Restrictions on sales of e-cigarettes to underage youth vary across cities and states. Currently in Philadelphia, youth can legally purchase e-cigarettes.

A recently released study found that electronic cigarette use has sharply increased among youth.²³ From 2011 to 2012, the rate of students grades 6-12 having ever used electronic cigarettes doubled from 3.3% to 6.8%. Also, current electronic cigarette use nearly doubled, from 1.1% to 2.1%. Because electronic smoking devices contain nicotine and other potentially harmful substances, the sale of these products to minors should be prohibited.

9. How are e-cigarettes regulated? And what are the possible impacts of regulation?

As of December 2013, the FDA has stated its intention to extend tobacco control regulation to e-cigarettes; however, there is no U.S. federal regulation of e-cigarettes as of the date of this fact sheet. Some states and localities have prohibited e-cigarette sales to minors and e-cigarette use in indoor spaces such as workplaces, bars, and restaurants. The state of Minnesota has extended its tax on cigarettes to include e-cigarettes; the tax is 95% of the wholesale price.

In some countries, such as the United Kingdom and New Zealand, e-cigarettes are regulated as medicines and can be purchased only in pharmacies. In Denmark, Canada, and Australia, they are subject to restrictions on sale, import, and marketing. Complete bans are in place in Brazil, Norway, and Singapore. Federal regulation of e-cigarettes in the U.S. is strongly supported and may enable fuller assessment of ingredients, health harms, and any possible health benefits.²⁴

¹ Misha Davenport, *Electronic Cigarettes in Legal Limbo*, CHICAGO SUN-TIMES (Feb. 1, 2011, 11:32 AM), <http://www.suntimes.com/lifestyles/3490015-423/cigarette-cigarettes-smoking-traditional-tobacco.html>

² Cobb NK, Abrams DB. E-cigarette or drug-delivery device? Regulating novel nicotine products. *N Engl J Med*. 2011;365(3):193-195.

³ US Food and Drug Administration, Division of Pharmaceutical Analysis. Evaluation of e-cigarettes. www.fda.gov/downloads/Drugs/ScienceResearch/UCM173250.pdf. Accessed May 3, 2013.

⁴ Brian A. King, Suhana Alam, Gabbi Promoff, Rene Arrazola, and Shanta R. Dube. Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010–2011 *Nicotine Tob Res* 2013 : ntt013v1-ntt013.

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