

TOBACCO FACT SHEET

ELECTRONIC CIGARETTES (E-CIGARETTES)



Electronic cigarettes (e-cigarettes or e-cigs), known formally as electronic nicotine delivery systems (ENDS), are devices designed to look similar to cigarettes in shape, size, and general appearance.¹ They operate by vaporizing a solution containing nicotine, creating a mist that is then inhaled.¹ The tips of these devices often have an indicator light, designed to emulate the burning ash of a traditional cigarette.¹ According to product manufacturers, e-cigarette cartridges are available in various flavors, such as vanilla,² menthol,² and piña colada,² and varying claimed levels of nicotine.¹ Using an e-cigarette is commonly referred to as “vaping.”¹ Popular brands of e-cigarettes, sold at convenience stores and gas stations, include “blu” and “NJOY.”

BACKGROUND

- The components of a typical e-cigarette are illustrated below:



- Cartridges generally contain up to 20 mg of nicotine.³
- Some users refill their own cartridges, which may be dangerous because it involves dealing with potentially dangerous concentrations of nicotine.⁴ Refill bottles contain up to 7 grams of nicotine;⁵ the fatal dose of nicotine in adults is estimated at 30-60 mg while for children it is estimated at only 10 mg⁶ — or approximately 4 drops of a maximum strength refill solution. This risk is more consistent with nicotine-based pesticides, rather than traditional tobacco products and pose a danger via inhalation, ingestion, and skin contact.⁷

PREVALENCE

- Between 6.4% and 7.1% of current smokers have ever used an e-cigarette, compared to ever use of e-cigarettes among never smokers (less than 1.0%).⁸

SAFETY & QUALITY

- On July 22, 2009 the U.S. Food and Drug Administration’s (FDA) Division of Pharmaceutical Analysis analyzed the ingredients in a small sample of cartridges from two leading brands of e-cigarettes and found that the tested products contained detectable levels of known carcinogens and toxic chemicals. Diethylene glycol, a potentially lethal organic compound,⁹ was found in one cartridge, while nitrosamines were detected in several cartridges.¹⁰
- Other important findings from the FDA include the following:
 - The quality control processes used to manufacture e-cigarettes seem to be inconsistent or non-existent. Three different e-cigarette cartridges with the same label were tested and each emitted a distinct amount of nicotine with each puff.⁹

- In all but one, the e-cigarette cartridges that were labeled as containing no nicotine had low levels of nicotine.⁹
- The vapor from one high-nicotine cartridge delivered twice as much nicotine when inhaled than was delivered by the control, a sample of FDA-approved nicotine inhalation products.⁹
- Studies^{11,12} suggest adverse effects associated with e-cigarettes, but additional non-biased national and international research is needed to understand the effects of both short- and long-term use.

LEGAL STATUS & REGULATION

- The FDA attempted to regulate e-cigarettes as drug-delivery devices but failed after the courts determined that e-cigarettes were properly regulated under the FDA's tobacco authority pursuant to the 2009 Family Smoking Prevention and Tobacco Control Act (FSPTCA) and not the FDA's drug delivery device authority.^{13,14}
- In April 2011, the FDA issued a statement announcing that they intend to regulate e-cigarettes as "tobacco products." This includes: (1) marketing restrictions, (2) mandated ingredient listing, and (3) pre-market review.¹² However, to date, FDA has not asserted its authority over e-cigarettes and they remain unregulated.
- Several state and local governments, including New Jersey¹⁵ and King County, Washington,¹⁶ have included or are in the process of adding e-cigarettes to their smoking bans. Additionally, the U.S. Department of Transportation has proposed banning the use of e-cigarettes on planes.¹⁷ However, several airlines have prohibited smoking e-cigarettes on their aircrafts on their own accord.^{18,19}
- California, Minnesota, New Hampshire, New Jersey, New York, Kansas, Vermont, and Utah have prohibited the sale of e-cigarette to minors since March 2011.²⁰

MARKETING & COMMERCIAL APPEAL

- The e-cigarette companies advertise their products as a better-smelling, cheaper, and guilt-free alternative to smoking.²¹ They are also marketed as a way to circumvent some smoking bans.²²
- E-cigarettes are promoted heavily online^{1,23} and are more widely searched than snus and NRTs (nicotine replacement therapy).¹⁹
- There is concern that e-cigarettes may appeal to youth because of their high-tech design, easy availability online or via mall kiosks, and the wide array of flavors of cartridges.²⁴

ATTITUDES & CONCERNS

- A nationally-representative survey found that 40.2% of Americans have heard of e-cigarettes and more than 70.0% of smokers believe that e-cigarettes are less harmful than regular cigarettes.²⁵
- The most commonly cited reasons for use by e-cigarette users include: the perception that they are healthier/less toxic than traditional cigarettes, aid in tobacco craving/withdrawal symptoms, smoking cessation facilitator, and relapse avoidance.²⁶
- In addition to the health concerns cited above, recent studies suggest that e-cigarettes could be worrisome regarding relapse of former smokers,²⁷ the "re-normalization" of tobacco,²³ and a gateway for cigarettes.^{23,28} It is also thought that e-cigarettes can contribute to tobacco use by allowing smokers to use nicotine despite ever-increasing smoking bans (dual use).²² Since they recently emerged on the market, however, more research must be done to fully understand the consequences.
- The World Health Organization (WHO) expressed concern with e-cigarettes, stating they may undermine tobacco control efforts, such as smoking bans and FDA-approved NRTs. Several countries, including Australia, China, and Brazil have banned the sale and marketing of e-cigarettes.²⁹

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- ⁵ 100ml titanium ice 72mg unflavored - single bottle (5/29/2012). Totally Wicked E-Liquid Web site. Available at: <http://www.totallywicked-eliq.com/products/totally-wicked-eliq/titanium-ice-72mg-eliq/100ml-titanium-ice-72mg-unflavored-2-product.html>. Accessed June 20, 2012.
- ⁶ International Programme on Chemical Safety, INCHEM. Nicotine. [http://www.inchem.org/documents/pims/chemical/nicotine.htm#SubSectionTitle:7.2.1 Human data](http://www.inchem.org/documents/pims/chemical/nicotine.htm#SubSectionTitle:7.2.1%20Human%20data). Published March, 1991. Accessed June 15, 2012.
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