

# TOBACCO FACT SHEET

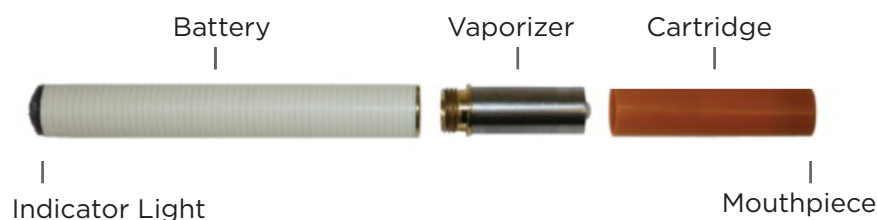
## ELECTRONIC CIGARETTES (E-CIGARETTES)



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.<sup>1</sup> They operate by vaporizing a solution containing nicotine, creating a mist that is then inhaled.<sup>1</sup> The tips of these devices often have an indicator light, designed to emulate the burning ash of a traditional cigarette.<sup>1</sup> According to product manufacturers, e-cigarette cartridges are available in various flavors, such as vanilla,<sup>2</sup> menthol,<sup>2</sup> and piña colada,<sup>2</sup> and varying claimed levels of nicotine.<sup>1</sup> Using an e-cigarette is commonly referred to as “vaping.”<sup>1</sup> 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.<sup>3</sup>
- Some users refill their own cartridges, which may be dangerous because it involves dealing with potentially dangerous concentrations of nicotine.<sup>4</sup> Refill bottles contain up to 7 grams of nicotine;<sup>5</sup> the fatal dose of nicotine in adults is estimated at 30-60 mg while for children it is estimated at only 10 mg<sup>6</sup> – 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.<sup>7</sup>

### 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%).<sup>8</sup>

### 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,<sup>9</sup> was found in one cartridge, while nitrosamines were detected in several cartridges.<sup>10</sup>
- 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.<sup>9</sup>
  - In all but one, the e-cigarette cartridges that were labeled as containing no nicotine had low levels of nicotine.<sup>9</sup>

- 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.<sup>9</sup>
- Studies<sup>11,12</sup> 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.<sup>13,14</sup>
- 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.<sup>12</sup> However, to date, FDA has not asserted its authority over e-cigarettes and they remain unregulated.
- Several state and local governments, including New Jersey<sup>15</sup> and King County, Washington,<sup>16</sup> have included or are in the process of adding e-cigarettes to their smoking bans. Additionally, the U.S. Department of Transportation banned the use of e-cigarettes on planes.<sup>17</sup>
- California, Minnesota, New Hampshire, New Jersey, and Utah have prohibited the sale of e-cigarettes to minors since March 2011.<sup>18</sup>

## MARKETING & COMMERCIAL APPEAL

- The e-cigarette companies advertise their products as a better-smelling, cheaper, and guilt-free alternative to smoking.<sup>19</sup> They are also marketed as a way to circumvent some smoking bans.<sup>20</sup>
- E-cigarettes are promoted heavily online<sup>1,21</sup> and are more widely searched than snus and NRTs (nicotine replacement therapy).<sup>19</sup>
- 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.<sup>22</sup>

## 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.<sup>23</sup>
- 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.<sup>24</sup>
- In addition to the health concerns cited above, recent studies suggest that e-cigarettes could be worrisome regarding relapse of former smokers,<sup>25</sup> the "re-normalization" of tobacco,<sup>23</sup> and a gateway for cigarettes.<sup>23,26</sup> 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).<sup>22</sup> 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.<sup>27</sup>

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<sup>2</sup>Flavored cartridges (2012). blu Cig Web site. Available at: <http://www.blucigs.com/cartridges>. Accessed June 29, 2012.

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- <sup>4</sup>Yamin, CK, Bitton, A, Bates, DW. E-cigarettes: A rapidly growing internet phenomenon. *Ann Intern Med.* 2010;153:607-609.
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- <sup>10</sup>U.S. Food and Drug Administration, Division of Pharmaceutical Analysis. Evaluation of e-cigarettes. [www.fda.gov/downloads/Drugs/ScienceResearch/UCM173250.pdf](http://www.fda.gov/downloads/Drugs/ScienceResearch/UCM173250.pdf). Accessed June 13, 2012.
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- <sup>12</sup>McCauley, L, Markin, C, Hosmer, D. An unexpected consequence of electronic cigarette use. *CHEST.* 2012;141:1110-1113. doi: 10.1378/chest.11-1334
- <sup>13</sup>*Sottera v. FDA*, 627 F. 3d 891 (D.C. Cir. 2010)
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