Electronic Cigarettes

What are they?

Electronic cigarettes (or e-cigarettes) produce a mist or aerosol upon each inhalation that resembles and tastes like the smoke produced by combustible tobacco products.

These products are designed with a rechargeable battery-operated heating element that volatilizes the chemical constituents contained within replaceable cartridges. These cartridges may or may not contain nicotine.

The amount of nicotine varies widely based on cartridge brand and strength, but is generally 6-18mg nicotine per cartridge, equivalent to about ½ of a pack to 1 ½ packs of cigarettes. Cartridges claiming to contain zero nicotine are also available; however, preliminary testing of some samples of electronic cigarettes by the FDA has revealed inconsistencies with product labeling and nicotine content. [i]

Electronic nicotine delivery systems (ENDS) also include electronic cigars (e-cigars) and electronic hookahs (e-hookahs).

The concerns about e-cigarettes

- E-cigarettes are being promoted as a less dangerous alternative to cigarettes or smoking cessation aid, however e- cigarettes have not been approved as safe by the U.S. Food and Drug Administration (FDA). The FDA has warned the public that e-cigarettes contain various toxic and carcinogenic (cancer causing) chemicals.

- A laboratory analysis of electronic cigarette samples conducted by the U.S. Food and Drug Administration has found that they contain carcinogens and toxic chemicals such as diethylene glycol, an ingredient used in antifreeze.[ii]

- E-cigarettes emit an aerosol through a process similar to passive tobacco smoking called *passive vaping*. The health effects of exposure to aerosol from e-cigarettes are currently unknown; however research shows that the aerosol releases measurable amounts of carcinogens and other toxins into the air, including nicotine, formaldehyde and acetaldehyde. [iii]

- Recent research has demonstrated that e-cigarette aerosol has a high concentration of ultrafine particles. Exposure to fine and ultrafine particles may exacerbate respiratory conditions and constrict arteries.[iv] [v]

- Companies sell flavored nicotine solutions in wide array of flavors, many of which are candy/fruit flavors, including vanilla, banana, almond, vanilla ice cream, cherry, mint, peach cobbler, and mint chocolate, which may appeal to youth.

- The solutions can be very concentrated. A 30ml (about 1 oz) bottle of e-cigarette solution can easily contain 500+ mg of nicotine. This creates a risk of overdosing or poisoning, because the lethal dose of nicotine for adults is 30-60mg if swallowed, and for children is just 10mg. In 2007, e-cigarette exposure accounted for less than 1% of e-cigarette and cigarette exposure calls. By February, 2014, they accounted for 42% of combined monthly e-cigarette and cigarette exposure calls to poison control centers.[vi]

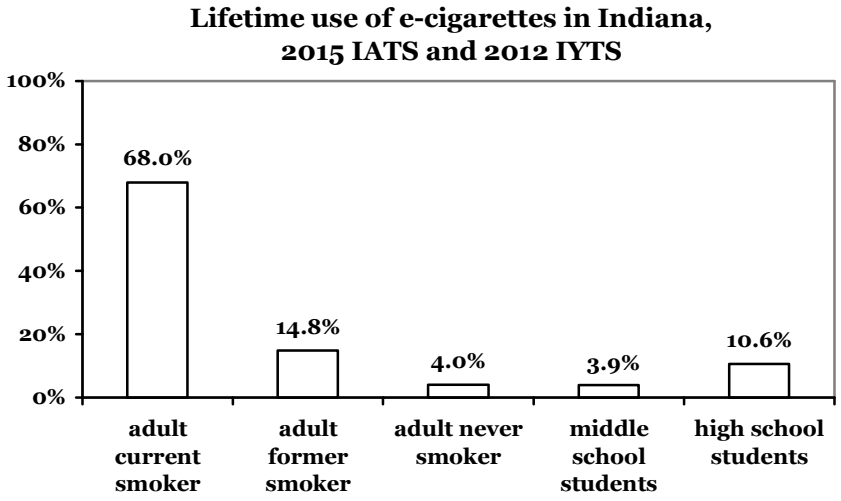
E-cigarette use and popularity

- A study published by the CDC found that about 1 in 5 (21%) adult cigarette smokers tried an e-cigarette in 2011, an increase from about 1 in 10 adults in 2010. In both 2010 and 2011 e-cigarette use was significantly higher among current smokers compared to both former and never smokers.[vii] The health effects of dual-use of e-cigarettes and combustible tobacco are unknown.

- Among adults in Indiana, sharp increases were found in the percentage of smokers and former smokers who report ever having used e-cigarettes between 2013 and 2015. Current smokers (68.0%) were significantly more likely to have used e-cigarettes than never smokers (4.0%). Former smokers (14.8%) were significantly more likely than those who have never smoked to have used e-cigarettes,[viii] suggesting that e-cigarettes appeal to former smokers who have successfully quit smoking and that these products may prompt relapse.

- In 2014, e-cigarettes were the most commonly used tobacco product among middle and high school students in the U.S. The percentage of youth in the U.S. who currently use e-cigarettes tripled among high school students from 2013 (4.5%) to 2014 (13.4%). Among middle school students, prevalence increased by a similar magnitude, from 1.1% to 3.9%.[ix]

- In Indiana, 4% of middle school students and 11% of high school students reported ever using e-cigarettes in 2012. Among current smokers, 16% of middle school students and 19% of high school students reported currently using e-cigarettes. [x]



The FDA released the proposed deeming rule to regulate additional tobacco products, including e-cigarettes in April, 2014.[xi] Visit this page to access information on e-cigarettes from the FDA, and progress with regulation: http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm172906.htm

States, communities, businesses and schools have the authority to prohibit e- cigarettes use in smoke-free air policies. Over 100 municipalities and three states prohibit e-cigarettes from use in smoke-free environments. In Indiana, e-cigarettes are included in the Indianapolis and Hancock County smoke-free air laws and the Indianapolis International Airport's smoke-free air policy.

Marketing tactics

- E-cigarettes are being marketed as better smelling, cheaper, and flavorful alternatives to combustible tobacco products.
- These products are also being advertised in misleading ways. The picture (right) of a mall kiosk advertises the e-cigarette as a "safe alternative to smoking."
- Some e-cigarette brands are available at mall kiosks where youth are present and are promoted heavily online as well, receiving celebrity endorsements.
- The tobacco industry owns some brands of e-cigarettes, such as Blu, MarkTen and Vuse. MarkTen, manufactured by Philip Morris, was test-marketed throughout Indiana in 2013 and is now available nationwide. Vuse, manufactured by RJ Reynolds, is being heavily promoted through television commercials that air during prime time programming.

Want to quit smoking?

- There are methods for treating tobacco use addiction that have been thoroughly researched and are endorsed by health care professionals, specifically, the U.S. Public Health Service Clinical Practice Guideline: http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/index.html
- There are seven first line medications that FDA has approved for treating tobacco use addiction, and e-cigarettes are not one of them.
- Consumers need to know that e-cigarettes are not an FDA-approved device. Promotion of these products as a cessation aid without approval of the FDA is prohibited.[xii]
- Tobacco users should contact a health care provider for assistance and call 1-800-Quit-Now or visit www.QuitNowIndiana.com for evidence-based support, advice and resources.

Additional resources

CDC Tips page on Use of Multiple Tobacco Products:
http://www.cdc.gov/tobacco/campaign/tips/diseases/dual-tobacco-use.html

National Business Group on Health: http://www.ctri.wisc.edu/Smokers/ecigs/bgh.pdf

Americans for Nonsmokers' Rights: http://no-smoke.org/learnmore.php?id=645

[i] Summary of Results: Laboratory Analysis of Electronic Cigarettes Conducted by the FDA: http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm173146.htm

[ii] Summary of Results: Laboratory Analysis of Electronic Cigarettes Conducted by the FDA: http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm173146.htm

[iii] Goniewicz, M.L.; Knysak, J.; Gawron, M.; Kosmider, L.; Sobczak, A.; Kurek, J.; Prokopowicz, A.; Jablonska-Czapla, M.; Rosik-Dulewska, C.; Havel, C.; Jacob, P.; Benowitz, N., "Levels of selected carcinogens and toxicants in vapour from electronic cigarettes," Tobacco Control [Epub ahead of print], March 6, 2013.

[iv] Fuoco, F.C.; Buonanno, G.; Stabile, L.; Vigo, P., "Influential parameters on particle concentration and size distribution in the mainstream of e-cigarettes," Environmental Pollution 184: 523-529, January 2014.

[v] Grana, R; Benowitz, N; Glantz, S. "Background Paper on E-cigarettes," Center for Tobacco Control Research and Education, University of California, San Francisco and WHO Collaborating Center on Tobacco Control. December 2013.

[vi] CDC MMWR: Notes From the Field: Calls to Poison Centers for Exposure to Electronic Cigarettes – United States, September 2010-February 2014; 63(13); 292-293.

[vii] King, B.A.; Alam, S.; Promoff, G.; Arrazola R, Dube SR. Awareness and ever-use of electronic cigarettes among U.S. adults, 2010–2011. Nicotine Tob Res 2013;15:1623–7.

[viii] 2015 Indiana Adult Tobacco Survey

[ix] CDC MMWR: Tobacco Use Among Middle and High School Students – United States, 2011-2014; 64(14); 381-385.

[x] 2012 Indiana Youth Tobacco Survey

[xi] See FDA press release at: http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm394667.htm

[xii] Under the Federal Food, Drug and Cosmetic Act, a company cannot claim that its drug can treat or mitigate a disease, such as nicotine addiction, unless the drug's safety and effectiveness have been proven. Federal Food, Drug and Cosmetic Act (FD&C) available here: http://www.fda.gov/RegulatoryInformation/Legislation/FederalFoodDrugandCosmeticActFDCAct/ucm2005640.htm