

## FREQUENTLY ASKED QUESTIONS

### *Q: What are e-cigarettes?*

- E-cigarettes come in many forms and are known by different names, including “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” “tank systems,” and “electronic nicotine delivery systems” (ENDS). These products are battery-operated devices designed to deliver nicotine, flavorings and other chemicals in the form of an aerosol that users inhale.

### *Q: What are the major conclusions of the 2016 Surgeon General's Report, Electronic Cigarette Use Among Youth and Young Adults?*

- E-cigarettes are a rapidly emerging and diversified product class. These devices typically deliver nicotine, flavorings, and other additives to users via an inhaled aerosol. These devices are referred to by a variety of names, including “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” and “tank systems.”
- E-cigarettes are now the most commonly used tobacco product among youth, surpassing conventional cigarettes in 2014. E-cigarette use is strongly associated with the use of other tobacco products among youth and young adults, including combustible tobacco products.
- E-cigarette use among youth and young adults has become a public health concern. In 2014, current use of e-cigarettes by young adults 18-24 years of age surpassed that of adults 25 years of age and older.
- The use of products containing nicotine poses dangers to youth, pregnant women, and fetuses. The use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe.

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents including nicotine. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.
- E-cigarettes are marketed by promoting flavors and using a wide variety of media channels and approaches that have been used in the past for marketing conventional tobacco products to youth and young adults.
- Action can be taken at the national, state, and local levels to address e-cigarette use among youth and young adults. Actions could include incorporating e-cigarettes into smokefree policies, preventing access to e-cigarettes by youth, price and tax policies, retail licensure, regulation of e-cigarette marketing likely to attract youth, and educational initiatives targeting youth and young adults.

### *Q: Why does this report focus on youth and young adults?*

- This report focuses on e-cigarette use among youth and young adults because research indicates that this is a critical period for influencing tobacco use and related behaviors.
- Nearly all adult tobacco users first initiated tobacco use in youth or young adulthood.
- Previous Surgeon General's Reports ([1994](#) and [2012](#)) have highlighted the effectiveness and importance of interventions to prevent and reduce tobacco use among youth and young adults.
- This is the first Surgeon General's Report focused on the issue of e-cigarettes and young people.

*Q: What is the composition of editors and contributors to this report and how were they selected?*

- The Surgeon General's Report on E-cigarette Use Among Youth and Young Adults was written and reviewed by more than 150 experts. The compilation of the report was led by a senior scientific editorial team of experts internal and external to government, and peer-reviewed by leading scientific and public health experts from the U.S. and abroad.
- This is the 33rd Report of the Surgeon General on tobacco, and it continues these reports' tradition of considering the most rigorous evidence to inform conclusions and leveraging subject matter experts from a range of disciplines and with a range of perspectives as authors, editors, and reviewers.

*Q: Are e-cigarettes tobacco products?*

- E-cigarettes typically contain nicotine derived from tobacco.
- Generally, e-cigarettes that contain nicotine that comes from tobacco meet the definition of a "tobacco product" under the **Federal Food, Drug, and Cosmetic Act**.
- A federal appellate court decision (**Sottera, Inc. v. Food & Drug Administration, 2010**) ruled that FDA must regulate e-cigarettes and other products made or derived from tobacco as tobacco products under the Family Smoking Prevention and Tobacco Control Act (2009), unless they are marketed for therapeutic purposes (e.g., marketed as products that help smokers quit).

*Q: Are e-cigarettes regulated at the federal level?*

- Yes. In August 2016, the regulatory authority of the Food and Drug Administration was extended to cover e-cigarettes through the agency's "**deeming rule**."

- FDA currently enforces a ban on sales to minors, free samples, and vending machine sales of e-cigarettes except in adult-only facilities.
- Additional provisions of the FDA "deeming rule" will phase in over the coming months and years.
- Through authority granted by the **Family Smoking Prevention and Tobacco Control Act**, FDA has authority to develop regulations that address the manufacture, import, packaging, labeling, advertising, promotion, sale, and distribution of e-cigarettes.

*Q: Is e-cigarette use by young people similar across age, gender, and racial/ethnic groups?*

- **Among youth ages 12-17:** older students, Hispanics, and Whites are more likely to use e-cigarettes than younger students and Blacks.
- **Among young adults ages 18-25:** males, Hispanics, Whites, and those with lower levels of education are more likely to use e-cigarettes than females, Blacks, and those with higher levels of education.
- Prevalence of current e-cigarette use among high school students and young adults is similar, with 16% of high school students and 13.6% of young adults being past-30-day users.
- Middle school students use e-cigarettes at about the same rate as adults age 25 and older, with 5.3% of middle school students and 5.7% of adults age 25 and older being past-30-day users.

*Q: Why are e-cigarettes so popular with young people?*

- Youth and young adults say they use e-cigarettes for a variety of reasons, including:
  - » Curiosity. Young people say they are curious about the products and are interested in trying them.

» Flavors. E-cigarettes are available in hundreds of flavors, and both youth and young adult e-cigarette users overwhelmingly select flavored e-cigarettes over unflavored ones. About 9 out of 10 young adult and 8 out of 10 youth e-cigarette users used flavored e-cigarettes in 2014 and 2015, respectively. In addition, according to the Population Assessment of Tobacco and Health (PATH) study, the primary reason that youth ages 12-17 reported they used e-cigarettes was because “they come in flavors I like” (81.5%).

» Belief that e-cigarettes are safer than other tobacco products, especially conventional cigarettes. More than 3 of 5 American teens believe that e-cigarettes cause little or only some harm as long as they are used sometimes but not every day. Nearly 1 of 5 young adults believe e-cigarettes cause no harm.

- E-cigarettes are marketed using themes, product designs, and approaches that have been used to market conventional tobacco products to young people.

### *Q: What are the report's findings regarding the health effects of e-cigarette aerosol?*

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine.
- Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.
- E-cigarettes typically contain nicotine, a highly addictive drug that is proven to harm brain development; chemicals such as diacetyl, a flavoring agent that can cause a serious lung disease when inhaled; ultrafine particles that can be inhaled deep into the lungs; heavy metals such as nickel, lead, and tin; and other chemicals such as volatile organic compounds that can be harmful to health.

### *Q: How do e-cigarettes harm brain development?*

- The brain is the last organ in the human body to develop fully. Brain development continues to about the early to mid-20s.
- E-cigarettes typically contain nicotine. Nicotine disrupts the development of brain circuits that control attention and learning, and young people who use e-cigarettes and other tobacco products are at risk for deficits in these areas.
- Adolescence is a critical period for brain development, and brain development continues into young adulthood. Young people who use e-cigarettes and other tobacco products are uniquely at risk for long-term, long-lasting effects of exposing their developing brains to nicotine. In addition to learning and cognitive deficits, and susceptibility to addiction, these risks include mood disorders and permanent lowering of impulse control.
- The nicotine in e-cigarettes and other tobacco products can also affect the development of the brain's reward system, priming the adolescent brain for addiction to other drugs such as cocaine and methamphetamine.

### *Q: What is the impact of nicotine use during pregnancy on fetal development?*

- Based on a comprehensive review of the existing scientific literature, the 2014 Surgeon General's Report concluded that “the evidence is sufficient to infer that at high-enough doses, nicotine has acute toxicity,” and that “the evidence is sufficient to infer that nicotine adversely affects maternal and fetal health during pregnancy.”
- Research shows that adults who use e-cigarettes can achieve plasma nicotine concentrations similar to those found among smokers of equivalent amounts of conventional cigarettes.

- Nicotine has been shown to cross the placenta and has been found in placental tissue as early as 7 weeks of embryonic gestation, and nicotine concentrations are higher in fetal fluids than in maternal fluids.
- This report concludes that “Nicotine can cross the placenta and has known effects on fetal and postnatal development. Therefore, nicotine delivered by e-cigarettes during pregnancy can result in multiple adverse consequences, including SIDS, and could result in altered corpus callosum, deficits in auditory processing, and obesity.”

*Q: What are the report's findings regarding e-cigarette aerosol?*

- E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents including nicotine. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.
- Scientists are still working to understand more fully the health effects and harmful doses of the contents of e-cigarettes when they are heated into an aerosol. However, e-cigarette aerosol generally contains fewer toxicants than smoke from combustible tobacco products.
- Given the existing science on e-cigarette aerosol, the **Call to Action** in this report includes diverse actions, modeled after evidence-based tobacco control strategies that can be taken at the state, local, tribal, and territorial levels to address e-cigarette use among youth and young adults, including incorporating e-cigarettes into smoke-free policies.

*Q: Are e-cigarettes less harmful than cigarettes?*

- Cigarettes and other combusted tobacco products are the leading cause of preventable death and disease in the U.S. and the world; they kill half of all long-term users.
- The **2014 Surgeon General's Report on the Health Consequences of Smoking**, and this report, note that,

based on current understanding, noncombustible tobacco products including e-cigarettes are less dangerous than continued smoking if used by combustible tobacco smokers as a complete substitute for all combustible tobacco products.

- However, e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine. Nicotine exposure during adolescence can harm the developing adolescent brain.
- A major conclusion of this report is that the use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe. Therefore, young people should be strongly discouraged from using any type of tobacco product, including e-cigarettes.

*Q: FDA-approved medications for quitting smoking contain nicotine. Is it harmful for youth and young adults to use any product containing nicotine, including nicotine replacement therapy (NRT)?*

- The brain is still developing into early adulthood and doesn't complete until the early to mid-20's. Nicotine exposure during this period of growth can disrupt the formation of brain circuits that control learning, memory, and attention.
- Over-the-counter nicotine replacement products, such as the nicotine patch and gum, are approved for sale to persons 18 years of age and older.
  - » Youth who smoke should consult with their health care professional for assistance with quitting.
  - » Young adults who smoke should consult with their health care professional for assistance with quitting and the use of proven quit aids.
  - » In addition, <https://teen.smokefree.gov> walks young people through the steps to quit and also offers a free texting program to provide continued encouragement along the way.



- There are seven FDA-approved quit aids, including both nicotine replacement therapy and non-nicotine containing medications, that are proven safe and effective when used as directed. The use of nicotine in the context of nicotine replacement therapy is therapeutic and intended for short term use to treat tobacco dependence in smokers as a means of weaning one from nicotine dependence.

**Q: Do all e-cigarettes contain nicotine?**

- E-cigarettes are designed to deliver nicotine and other additives to the user in the form of an aerosol. Many but not all e-cigarettes contain nicotine.
- Until recently, e-cigarettes have not been regulated at the federal level, and there have not been requirements for ingredient testing or disclosure. Some e-cigarette labels do not disclose that they contain nicotine, and some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.
- Young people have been found to believe that e-cigarettes deliver “harmless water vapor” and may not realize the products can contain nicotine.
- According to the 2015 and 2016 Monitoring the Future studies, the majority of teens who use e-cigarettes think there is “just flavoring” in them. However, many e-cigarettes on the market contain both nicotine and flavoring, and no studies have investigated how many youth use e-cigarettes that contain both flavors and nicotine.
- In addition, this report identifies that there are harmful elements in e-cigarettes besides nicotine. E-cigarette aerosol can contain heavy metals, volatile organic compounds, and cancer causing agents like acrolein. It also finds that e-cigarettes are being used to deliver illicit substances such as marijuana.

**Q: Does this report investigate whether e-cigarettes help adult smokers quit?**

- There are important issues related to e-cigarette use among adult smokers, including their potential for use as a smoking cessation tool. However, given that the report focuses on youth and young adults, those issues are not addressed in this report.
- E-cigarettes are not an FDA-approved quit aid and there is no conclusive scientific evidence on the effectiveness of e-cigarettes for long-term smoking cessation. However, there are seven FDA approved quit aids that are proven safe and effective when used as directed.
- To date, the few studies on the issue are mixed. A Cochrane Review found evidence from two randomized controlled trials that e-cigarettes with nicotine can help smokers to stop smoking in the long term compared with placebo e-cigarettes. However, existing research is subject to some limitations, including the small number of trials, small sample sizes, and wide margins of error around the estimates.
- More research is needed to explore this issue, and several efforts are underway at the Federal level to help answer this important question. For example, the FDA and NIH are fielding the Population Assessment of Tobacco and Health, or PATH, study. Additionally, NIH and FDA are funding Tobacco Centers of Regulatory Science, or TCORS, across the country who are working to study many topics related to tobacco regulatory science, including the effects of e-cigarettes on cessation among adult smokers.
- Any e-cigarette manufacturer who wants to market the products as a cessation aid (e.g., as a product that helps smokers quit) can submit an application, with supporting data, to FDA asking for approval.



Centers for Disease Control and Prevention  
Office on Smoking and Health

