



TDH PUBLIC HEALTH ADVISORY

UPDATED ADVISORY CONCERNING ELECTRONIC CIGARETTES AND OTHER ELECTRONIC NICOTINE DELIVERY PRODUCTS (ENDS)

Note: This advisory was modified Jan. 17, 2017 to clarify item 13. *

The Tennessee Department of Health issued its first public health advisory on electronic cigarettes and other electronic nicotine delivery products, ENDS, in February, 2013. Since providing that precautionary messaging, new evidence affirms the need for consumers to be aware of identified and potential risks associated with the use of ENDS. Key facts for the public to know:

- The short-term and long-term health effects of using ENDS remain unclear and are concerning.
- The rate of youths initiating use of ENDS has increased dramatically.
- Because of significant concerns, the U.S. Food and Drug Administration announced May 5, 2016 that it would begin restricting sales of ENDS to minors, requiring warning labels about health risks and regulating reporting of ingredients. Additionally, in a report released December 8, 2016, the U.S. surgeon general called e-cigarettes an emerging public health threat to the nation's youth. The report warned of the dangers of e-cigarette use among youth and young adults, and the risk of creating a new generation of nicotine addicted Americans.¹

The Tennessee Department of Health continues to urge caution for consumers using or considering the use of electronic nicotine delivery systems, ENDS, including electronic cigarettes, e-cigs, e-cigars, e-pipes, e-hookahs, personal vaporizers and similar emissions-producing devices. Consumers should understand there are still significant unknowns about the short-term and long-term health impact for individuals of any age using the devices and for those exposed to second-hand emissions.

Consumers should be aware of the following:

1. Though the body of scientific knowledge is steadily increasing, there continues to be legitimate medical questions about the short- and long-term health effects of using current electronic nicotine delivery systems. This should prompt consumers to be cautious about using the devices as well as being exposed to secondhand emissions.
2. A recently published review of 38 studies, including 20 controlled studies concluded: "As currently being used, e-cigarettes are associated with significantly LESS [emphasis added] quitting among smokers...e-cigarettes should not be recommended as effective smoking cessation aids until there is evidence that, as promoted and used, they assist smoking cessation."²
3. The Centers for Disease Control and Prevention (CDC) has not endorsed electronic cigarettes or other ENDS as smoking cessation devices and science-based studies on their long-term efficacy have yet to be completed. Users should understand anecdotal statements regarding efficacy for some users do not reflect science-based research and benefits/harm from use may vary widely among individuals.
4. People should remember that the primary ingredient of ENDS devices is nicotine, an addictive drug³⁻⁶ that induces a range of effects on the body⁶⁻⁷ and can be toxic.⁴⁻⁷ According to the CDC, nicotine

dependence is the most common form of chemical dependence in the United States⁸; research suggests it is as addictive as heroin, cocaine, or alcohol.⁸

5. ENDS products are available in a variety of flavors that may be attractive to children and youth, such as bubble gum, strawberry, and birthday cake. TDH reminds parents and retailers that it is illegal to sell or distribute any electronic cigarette to another person who has not yet attained eighteen (18) years of age or to purchase an electronic cigarette on behalf of such person less than eighteen (18) years of age anywhere in Tennessee. (TCA 39-17-1504)
6. The use of e-cigarettes by adolescents has been increasing at a dramatic rate in recent years. The “current use” rate for adolescents was 1% in 2011 and rose to 16% in 2015.⁹
 - E-cigarettes can become a gateway to cigarette use according to several recent studies. Teenagers who have ever used e-cigs are two times more likely to try combustible cigarettes in the future compared to those who have never used an e-cigarette.^{10,11}
7. Best current evidence is that many adolescents who use electronic cigarettes also smoke traditional cigarettes.¹² Because many adolescents and adults are dual users of conventional and electronic cigarettes there are significant unknowns about the long term health impacts for dual users.
 - Adolescents are especially at risk for harms caused by nicotine exposure.^{13,14} In addition to potential long-term effects on brain development, the risk for addiction to other substances may be increased due to changes in the developing brain.^{15,16} These changes could affect learning, memory, attention, behavioral problems and future addictions.^{17,18}
8. Nicotine can cause poisoning. Acute nicotine poisoning is more common among children, who may accidentally chew nicotine gum or patches, swallow liquids from containers used in or to refill electronic nicotine delivery systems, or absorb liquids through the skin from these devices. Symptoms of nicotine poisoning may include: nausea, vomiting, fainting, headaches, weakness, fast heartbeat, agitation, restlessness, excitement, abdominal cramps, seizures, difficulty breathing and coma.¹⁹
 - a. In Tennessee, calls about electronic cigarettes and liquid nicotine exposures increased from six calls in 2011 to 125 calls in 2015.²⁰
 - b. Parents should not allow children to play with electronic cigarettes or similar devices. They contain batteries and liquid chemicals which, if swallowed, could cause serious health problems. From January 2012 through April 2015, the National Poison Data System received 29,141 calls for nicotine and tobacco product exposures among children younger than 6 years.²¹ The number of exposures associated with e-cigarettes increased 1,492.9 percent during the study period.²¹ The report on these exposures reveal children exposed to e-cigarettes had 5.2 time higher odds of a health care facility admission and 2.6 time higher odds of having a severe outcome than children exposed to cigarettes, and one death occurred in association with liquid nicotine exposure.²¹
 - c. Liquid nicotine, a primary ingredient in many ENDS devices, can be fatal if ingested or absorbed through the skin. According to the American Academy of Pediatrics, a teaspoon of liquid nicotine can be fatal in a one-year old child.²²
 - If an exposure to liquid nicotine occurs, either by swallowing or absorption through the skin, call 911. If possible, provide first responders with the name of the product, when it was swallowed, touched or inhaled, the victim’s age, weight and condition, and, if known, the amount swallowed or absorbed. Provide responders with the labeling from the product if possible.
9. Government regulation of the manufacturing of electronic nicotine delivery systems is not yet in place. Consequently, consumers are cautioned they may be exposed to varying levels of nicotine or other

chemicals and contaminants in these products.

- Without governmental consumer protection standards for the manufacturing process and no standards for the types, amounts or potential toxicity levels of their chemical ingredients, using ENDS devices cannot be known to be safe. A laboratory analysis conducted by the FDA resulted in findings that indicate quality control processes used to manufacture these products may be substandard.²³
 - The FDA announced May 5, 2016 finalization of rules that went into effect Aug.8, 2016 extending its authority to all tobacco products, including e-cigarettes.²⁴ The new rules will:
 - A. Not allow electronic cigarettes and similar products to be sold to persons under the age of 18 year, both in person and online.
 - B. Required age verification by photo ID.
 - C. Not allow the selling of e-cigs and other covered products in vending machines, unless in an adults-only facility.
 - D. Not allow the distribution of free samples.
 - E. Require nicotine warning statements on covered products that state nicotine is an addictive chemical.
 - F. Regulate the manufacturing of ENDS to comply with all legal requirements.
10. Emissions from ENDS products can contain other chemicals such as formaldehyde, propylene glycol, acetaldehyde, acrolein, and tobacco-specific nitrosamines²⁵ which are known to be hazardous to health.
- According to a 2015 study by the Harvard T.H. Chan School of Public Health, the flavoring chemical, diacetyl, was found in more than 75 percent of electronic cigarettes and ENDS refill liquids tested. The Occupational Safety and Health Administration has warned about the association of inhaling diacetyl with a debilitating condition known as bronchiolitis obliterans (also known as popcorn lung).²⁵
11. Pregnant women should avoid using ENDS devices. The nicotine can impact fetal development, affecting the brain, nerves and circulatory systems.²⁶⁻²⁸
- Exposure to nicotine and other chemicals during pregnancy may have negative long-term health effects, including impaired fetal brain and lung development.^{26,27} Pregnant women should not use products containing nicotine. Research on effects of exposure to second-hand emissions from electronic nicotine delivery systems is limited but indicates vulnerable populations, including pregnant women, children, and people with cardiovascular conditions, could be at increased risk for adverse effects.²⁸
12. To prevent fires and explosions, the U.S. Department of Transportation, effective Nov. 6, 2015 banned passengers and crewmembers of commercial flights from having battery powered portable electronic smoking devices in checked baggage and prohibits passengers and crew members from charging the devices on board an aircraft. A similar action was taken by the International Civil Aviation Organization, ICAO, that incorporated this restriction into the 2015-2016 Edition of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air.²⁹
13. * ENDS devices are drug delivery systems. Simply stated, they use heat to volatilize substances that are inhaled to deliver a generally unknown variety of chemicals, including drugs such as nicotine, directly to the lungs where they are rapidly absorbed. FDA-approved nicotine inhalers also use lung absorption to rapidly deliver nicotine. The difference is these FDA-approved devices must be shown to be both safe and effective, with known quantities of active ingredients and other carriers that are safe for inhalation when used as directed. Nicotine is not the only drug than can be delivered using ENDS devices. TDH is concerned about the use of cannabinoids and other potentially harmful substances delivered via END devices, in addition to the unknown impact of other chemicals that may be present in the source material or that may be changed by heating.^{30, 31}

Ending a nicotine addiction can be extremely difficult and many users have to make several attempts before achieving success. For assistance and support, contact the toll-free Tennessee Tobacco Quitline at 1-800-QUIT-NOW (1-800-784-8669). You may also visit: [www.tn quitline.org](http://www.tn.quitline.org) for free assistance.

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