

**SB**

**15**

<TARGET><BILL>SB 15</BILL><SUBJECT>SB  
15</SUBJECT><COMM>HL&C30</COMM></TARGET>

# ALASKA STATE LEGISLATURE

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Senator Gary Stevens

## MEMORANDUM

DATE: March 09, 2018

TO: Representative Sam Kito III, Chair  
House Labor & Commerce Committee

FROM: Senator Gary Stevens, Chair  
Senate Education Committee

RE: Hearing Request for SB 15 - Restricting Youth Access to E-Cigarettes

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I respectfully request Senate Bill 15, restricting youth access to E-Cigarettes, be scheduled for a hearing before the House Labor & Commerce Committee.

Enclosed you will find the bill text, as well as the sponsor statement, a current sectional analysis, current fiscal notes, slides of product samples, and a few articles. I would be happy to provide more background information when the time comes to vote on the the bill.

My efforts to restrict youth access to these dangerous products has been delayed for too long. The more time that goes by, the more young Alaskans will become addicted to smoking or nicotine, the more the industry will continue to market and profit by establishing such unhealthy habits, and the longer we will be seeming to give tacit approval that these products are "safe and harmless," which is far from the truth. All of this is precisely what the industry is pleased to see maintained.

I urge you to schedule SB 15 before the Senate and allow this important policy to move forward.

Please contact Mr. Tim Lamkin in my office by calling 465-2705 or writing to: [tim.lamkin@akleg.gov](mailto:tim.lamkin@akleg.gov) if you have any questions.

Thank you for your consideration.

Senator.Gary.Stevens@akleg.gov

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***SPONSOR STATEMENT***

**SENATE BILL 15**

***Prohibiting the Sale of Electronic Smoking Products to Minors***

Senate Bill 15 would prohibit possession, sale, and exchange of electronic smoking devices, including their component liquid or vapor products, to individuals under 19 years of age, whether or not those products contain tobacco or nicotine.

Possession or sale of products containing tobacco or nicotine is already prohibited for individuals under 19. This bill would extend that prohibition to include electronic smoking devices and related products that may or may not include nicotine.

Within the past few years a quickly growing fad has emerged commonly known as "vaping," and typically includes an electronic smoking device used to aerosolize a chemical substance, which is then inhaled. The electronic devices themselves often resemble a traditional cigarette or stylish smoking pipe. The chemical substances aerosolized by the device are replacing traditional tobacco cigarettes and are expected to become the vice of the future. There has been an explosion of several hundreds of electronic smoking device components and chemical vapor products flooding the market to meet the demand of young consumers wanting to be "cool."

These products are often marketed as a means to reduce traditional tobacco consumption, or otherwise provide a safer alternative to the dangers of tobacco use. However, the market is so young and so quickly developing that research and evidence on long-term health impacts of vaping is as yet inconclusive. What we do know is these products usually, but not always, contain nicotine, and are offered in a wide range of concentrations and flavors. They are not regulated on many fronts, including manufacturing, marketing, and distribution. They are largely not tested for their contents, and thus the question stands as to whether these products are a health risk. It boils down to the notion that these inhalants, whatever they may be, cannot possibly be good for our bodies.

It is also intuitive that vaping, like cigarette smoking, is inherently habit-forming. By continuing to not take action against this new trend, we send the message to our youth that these products are safe and appropriate to use. There is research suggesting, and as should not be a surprise, that youth who smoke e-cigarettes eventually move on to conventional cigarettes, and/or more potent substances.

By passing SB 15, Alaska will join other states in an effort to protect our youth from forming bad habits by restricting easy access to these products in the first place.

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**CS Senate Bill 15 (FIN)**

***Prohibiting the Sale & Possession of Electronic Smoking Products to Minors***

**Sectional – Version T**  
**February 28, 2018**

- Section 1:** AS 11.76.105(a) Adds to existing law that, as with prohibiting minors from possessing cigarettes or tobacco, to also prohibit possession of electronic cigarettes and any component thereof.
- Section 2:** AS 11.76.105(c) Extends an existing exception for possession by minor of a tobacco product, to include E-cigarettes possession, provided the minor is using an e-cigarette for an approved medical purpose, such as smoking cessation, and is provided by a parent or prescribed by a doctor.
- Section 3:** AS 11.76.106(a) Adds to existing law that, as with controlling access to and sale of tobacco products to minors (that is, “behind the counter”), that E-Cigarettes access also be controlled and restricted in a like manner. A new exception is provided for internet sales of E-cigarette products to adults at least 19 years of age.
- Section 4:** AS 11.76.106(b) Extends an existing exception to clerk-controlled access to tobacco or E-Cigarette products sold through a vending machine, which are covered in the next section.
- Section 5:** AS 11.76.107(a) Adds to existing law that, as with tobacco product vending machines, vending machines dispensing electronic cigarette or nicotine products must also be supervised.

Section 6: AS 11.76.109(a) Adds to existing law prohibiting the sale of nicotine products and electronic cigarettes, or any related component thereof, to a minor under 19 years old.

Section 7: AS 11.76.109(b) Extends an existing exception for minor possession of a nicotine product, to include E-cigarettes possession, provided the minor is using an e-cigarette for an approved medical purpose, such as smoking cessation, and is provided by a parent or prescribed by a doctor.

Section 8: AS 11.76.109(e) Extends the existing fine of at least \$300 for selling nicotine products to minors, to include selling E-cigarette products.

Section 9: AS 11.76.109(f) adds a new subsection that is consistent with existing law regarding placement of vending machines dispensing tobacco products; that the same requirements are applied to vending machines dispensing E-cigarette or nicotine products.

Section 10: AS 11.81.900(b) Establishes a definition for “electronic smoking product,” summarized as follows:

- (i) any product containing or delivering nicotine or any other substance intended for human consumption that can be used by a person through inhalation of vapor or aerosol from the product, of any size or shape, whether the product is manufactured, distributed marketed, or sold as an e-cigarette, e-cigar, e-pipe, e-hookah, vape pen, or any other product name or descriptor; or
- (ii) a component, solution, alternative tobacco product, e-liquid, e-juice, vapor product, flavoring, or other related product of an electronic cigarette, electronic cigar, electronic cigarillo, electronic pipe, or other similar device of any size or shape used for, or to assist with, aerosolizing and inhaling chemical substances that may cause an adverse effect on human health;

(B) does not include marijuana as defined in AS 11.71.900

Section 11: AS 43.50.070(a) Adds enforcement provision for the state to suspend, revoke, or refuse to renew a business for violating provisions relating to selling E-cigarette products to minors.

Section 12: AS 43.50.105(b) is amended for conformity and consolidation, changing “tobacco” endorsement to “business license” endorsement, for purposes of shipping or transport of cigarettes. It also sets up conformity for the following Section 8 of the bill, relating to a

required business license endorsement for selling E-cigarette or nicotine products. The effect is that existing tobacco license endorsement holders may also sell E-Cigarette products, and eliminates a need for the state to establish a separate database for vendors only selling only E-Cigarette products (and not tobacco), thus reducing fiscal costs of implementation.

Section 13: AS 43.70.075(a) amends existing law requiring a special business license endorsement in order to lawfully sell tobacco products for each location the products are sold, by including the same license endorsement requirements for lawfully selling E-cigarette or nicotine products, an endorsement for each location.

Section 14: AS 43.70.075(d) amends existing law relating to selling tobacco to minors, by adding the same penalty provisions, including graduated fines, for selling E-cigarette or nicotine products to minors. Following repeated convictions within a 2-year period, civil fines are structured as follows:

1<sup>st</sup> offense: a civil penalty of \$500 (from \$300)

2<sup>nd</sup> offense: a civil penalty of \$2,000 (from \$500)

3<sup>rd</sup> offense: a civil penalty of \$4,000 (from \$1,000)

After 3 convictions (4<sup>th</sup> offense): suspend license for 1-year, and a civil penalty of \$10,000 (from \$2,500)

Section 15: AS 43.70.075(f) amends existing law requiring signage when selling tobacco products, to also require signage for selling E-cigarette or nicotine products. The signage must read "The sale of electronic smoking products or products containing nicotine to a person under the age of 19 without a prescription is illegal." Signage must be 8.5-inches by 11-inches, which is a change to make sign design and printing more efficient for both the state and vendors.

Section 16: AS 43.70.075(i) amends existing enforcement provisions that, as with tobacco sales, to allow the State to seize and destroy a vendor's inventory of E-cigarette or nicotine products in the event violating the law prohibiting sales of those products to minors.

Section 17: AS 43.70.075(l) is amended for conformity that, as with tobacco sales, to allow one business license endorsement to serve as an umbrella if a vendor has multiple locations they are selling E-cigarette or nicotine products, and to shut down only the offending vending machine or outlet location in the event of a violation.

Sections 18-23: AS 43.70.075(m), (r), (t), (v), (w), and (x) are amended for conformity that, as with tobacco sales, to allow an evidentiary and administrative hearing, appeal process, and penalties in the event of violations of these statutes, involving the sale of E-cigarette or nicotine products to minors.

Section 24: AS 43.70.105(b) is amended for conformity that, as with tobacco products, a vendor must have the appropriate business license endorsement in order to lawfully sell E-cigarette or nicotine products.

Section 25: AS 43.70.110 is added for conformity, linking the definitions of “electronic smoking products,” and distinguishing between traditional cigarette (tobacco) products and other modern nicotine alternatives.

Section 26: AS 44.29.092 is amended for conformity that, as with tobacco sales, providing the Dept. of Health and Social Services the authority to issue citations for violating state law regarding minors buying, selling or possessing E-cigarette or nicotine products.

Section 27: Is the applicability and effective date, applying to offenses committed only after the effective date of the bill, which would be 90 days after the bill is enacted.

# Statement of Zero Fiscal Impact

State of Alaska  
2018 Legislative Session

Bill Version:	CSSB 15(FIN)
Fiscal Note Number:	6
(S) Publish Date:	2/28/2018

Bill: SB 15  
Title: E-CIGS: SALE TO AND POSSESSION BY MINOR  
Sponsor: STEVENS

**The following agencies request no funding for this legislation for FY2019 through FY2024; they anticipate absorbing any increases in workload (using existing staff and resources) without fiscal impact. This includes capital and supplemental appropriations. Additionally, no impact to state revenue is projected and the bill will not result in regulation changes.**

## Department of Health and Social Services

Behavioral Health

Alcohol Safety Action Program (ASAP) (OMB Comp Num 305)

Approved by: Shawnda O'Brien, Acting Asst. Commissioner - 01/24/17  
Health and Social Services

## Department of Law

Criminal Division

Criminal Justice Litigation (OMB Comp Num 2202)

Approved by: Jahna Lindemuth, Attorney General - 02/10/17  
Department of Law

## Department of Public Safety

Alaska State Troopers

Alaska State Trooper Detachments (OMB Comp Num 2325)

Approved by: Walt Monegan - 02/10/17  
Public Safety

Prepared By:	Elizabeth Bolling	Phone:	(907)465-4021
Division:	Assistant Legislative Director	Date:	02/08/2018
Approved By:	Caroline Schultz	Date:	02/08/2018
Agency:	Policy Analyst, Office of Management and Budget		

**REPORTED OUT OF  
SFC 02/28/2018**

# Fiscal Note

State of Alaska  
2018 Legislative Session

Bill Version:	CSSB 15(FIN)
Fiscal Note Number:	7
(S) Publish Date:	2/28/2018

Identifier: SB015CS(JUD)-DCCED-CBPL-02-09-18  
 Title: E-CIGS: SALE TO AND POSSESSION BY MINOR  
 Sponsor: STEVENS  
 Requester: (S) Finance

Department: Department of Commerce, Community and  
Economic Development  
 Appropriation: Corporations, Business and Professional  
Licensing  
 Allocation: Corporations, Business and Professional  
Licensing  
 OMB Component Number: 2360

**Expenditures/Revenues**

Note: Amounts do not include inflation unless otherwise noted below. (Thousands of Dollars)

	FY2019 Appropriation Requested	Included in Governor's FY2019 Request	Out-Year Cost Estimates					
			FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>OPERATING EXPENDITURES</b>								
Personal Services								
Travel								
Services	5.6							
Commodities								
Capital Outlay								
Grants & Benefits								
Miscellaneous								
<b>Total Operating</b>	<b>5.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

**Fund Source (Operating Only)**

1005 GF/Prgm (DGF)	5.6							
<b>Total</b>	<b>5.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

**Positions**

Full-time								
Part-time								
Temporary								

**Change in Revenues**

None								
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

**Estimated SUPPLEMENTAL (FY2018) cost:** 0.0 (separate supplemental appropriation required)  
 (discuss reasons and fund source(s) in analysis section)

**Estimated CAPITAL (FY2019) cost:** 0.0 (separate capital appropriation required)  
 (discuss reasons and fund source(s) in analysis section)

**ASSOCIATED REGULATIONS**

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? Yes  
 If yes, by what date are the regulations to be adopted, amended or repealed? 07/01/19

**Why this fiscal note differs from previous version/comments:**

Updated to the 2018 fiscal note form.

Prepared By:	Janey McCullough, Director	Phone:	(907)465-2538
Division:	Corporations, Business and Professional Licensing	Date:	02/09/2018 12:00 PM
Approved By:	Catherine Reardon, Director	Date:	02/09/18
Agency:	Division of Administrative Services, DCCED		

REPORTED OUT OF  
SFC 02/28/2018

## FISCAL NOTE ANALYSIS

STATE OF ALASKA  
2018 LEGISLATIVE SESSION

## Analysis

CSSB 15 will make selling to a minor or possession by a minor of "electronic smoking products, or products containing nicotine" a criminal offense. This bill adds requirements for a business license endorsement for retailers of "electronic smoking products, or products containing nicotine" and adds "electronic smoking products, or products containing nicotine" to the existing business license endorsement for retailers of tobacco products.

This legislation adds civil fines for violations of business licensing endorsement for "electronic smoking products, or products containing nicotine". This bill will add "electronic smoking products, or products containing nicotine" into existing language for a business license endorsement (AS 11.76.109). This will require the court to notify the department upon a conviction of an endorsement holder. This will increase the issuance of pertinent civil penalties, suspension of business licensing endorsements, responses to requests for hearings, and will also be required to appropriately secure and store seized items until they are released or appropriately destroyed based on the type of product.

CSSB 15 will increase the civil fines for violations of business licensing endorsements within a 24 month period for the first offense from \$0.3 to \$1.0, the second offense from \$0.5 to \$2.0, and the third offense from \$1.0 to \$4.0. In addition, it will allow for the indefinite suspension of a business license endorsement if convicted three or more times of business license endorsement violations within a 24 month time period, and will increase that civil penalty from \$2.5 to \$10.0.

This legislation requires changes the warning signage the department must make available to a person who holds a business license endorsement. It also requires a change to the CBPL database, warning signs, forms, online filing, websites, investigations, and a regulation change. This committee substitute changes the required notice from two separate signs to one combined sign, and changes the required minimum dimensions of those signs.

If the bill passes the following expenses will be incurred:

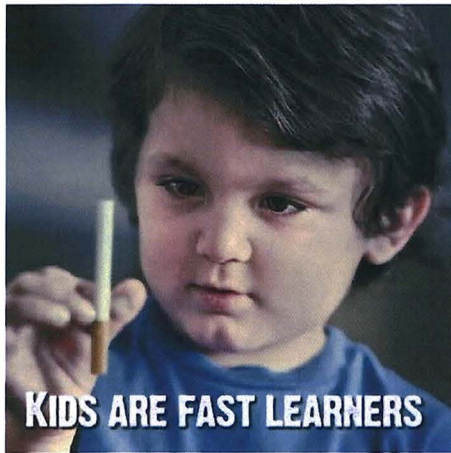
Services:       \$3.0 (legal costs to amend regulations, printing, and postage in the first year)  
                  \$1.0 ( IT services for system change)  
                  \$1.6 (printing and postage to mail new signage)

There will be legal and hearing service expense in out years, but costs are unknown.

Business licensing at CBPL is funded by General Fund/Program Receipts fund source 1005 GF/Prgm (DGF). Business licensing fees are set per AS 43.70, revenue in excess of authorized budgeted expenses reverts to the State of Alaska general fund.

# E-Cigarettes

## Slideshow



### Section 1: Common Components

#### How an electronic cigarette works

The electronic cigarette contains a battery that activates a heating device, atomizing liquid nicotine inside a cartridge and producing a vapor that is inhaled.



Source: allhookah.net

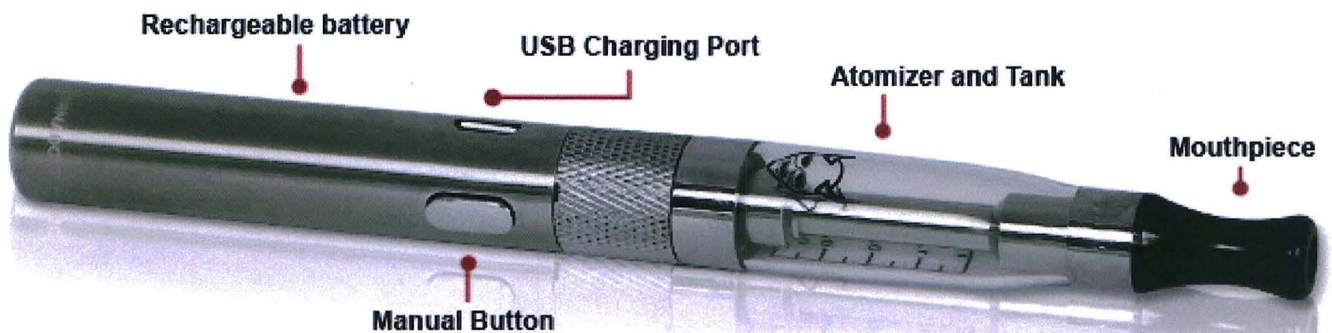
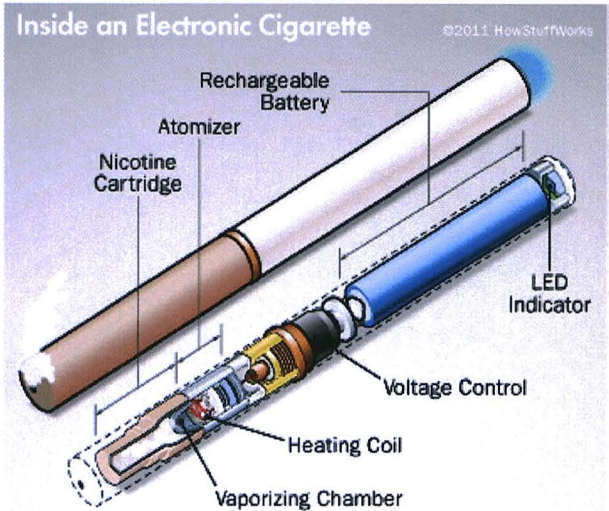
Tim Summers / The Detroit News

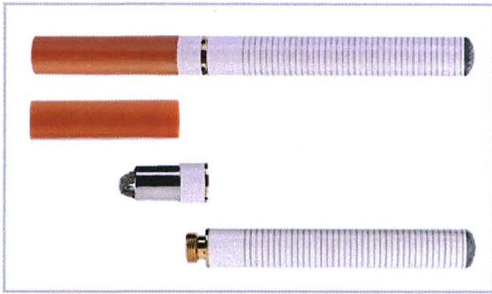
To smoke, user pushes a button to activate an electronic controller (in other models, such as disposable e-cigarettes, this is activated when user inhales).

User inhales vapor through the mouthpiece and exhales a cloud that appears smoky, thanks to glycerol or propylene glycol.



Heating element, called an atomizer, vaporizes e-liquid, an aqueous solution of glycerol or propylene glycol, flavoring, and optional nicotine. This reusable e-cigarette has a refillable cartridge with an atomizer, wicks, and e-liquid known as clearomizer or cartomizer.

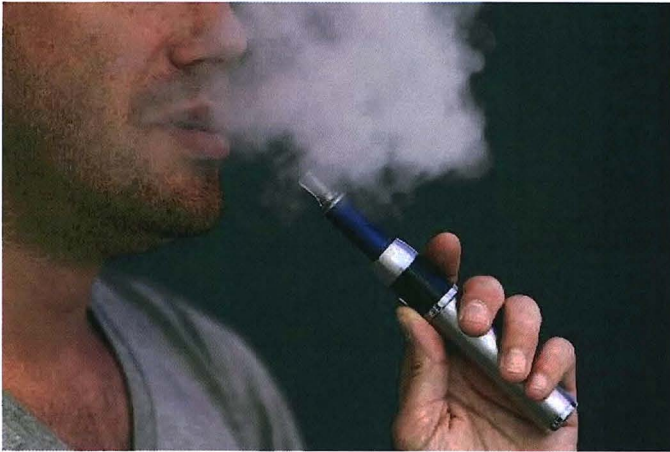




## Section 2: "smoke"



Some produce "smoke"  
Others are smokeless & odorless



## Section 3: Styles, Brands, & Accessories



### Section 3: Styles, Brands, & Accessories (cont.)



Compiled By the Office of Senator Gary Stevens

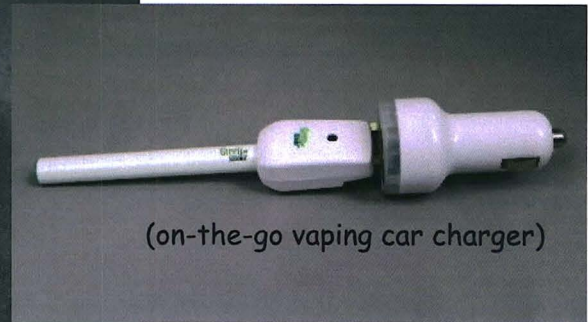


[Page 3 of 10]

Electronic Cigarettes - Slideshow



### Section 3: Styles, Brands, & Accessories (cont.)



(on-the-go vaping car charger)

### Section 4: Product Variety & Flavored "Juice"



Section 4: Product Variety  
& Flavored "Juice" (cont.)



"Anabolic Nation"



"Cuttwood"



"Krave"



"Lost Art"



"Uncle Junk"

## Section 4: Product Variety & Flavored "Juice" (cont.)

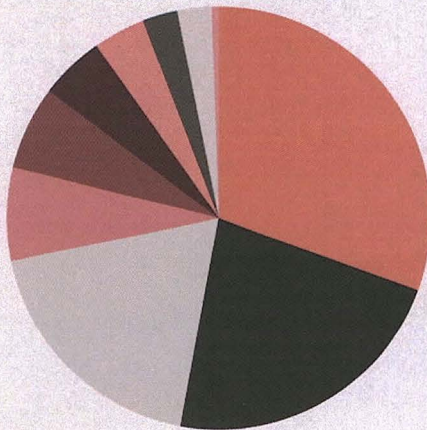
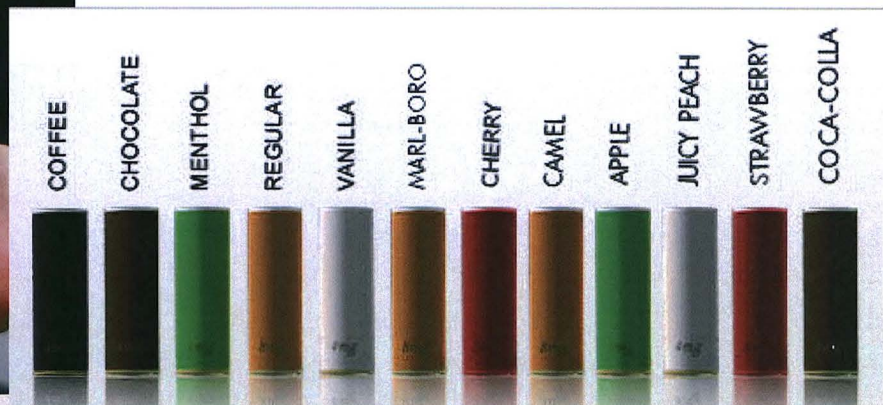


Manufactured in the UK, using pharmaceutical grade nicotine.

**V-LIQUID**  
**NOW ONLY**  
**£2.99!**

MADE IN THE UK

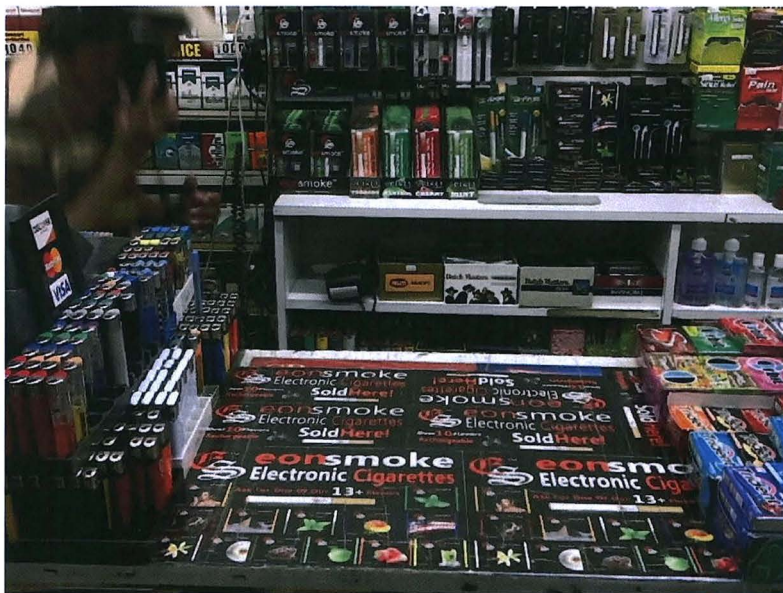
Shop Now



### WHAT FLAVOR DO YOU USE MOST

- 30.55% Fruit
- 22.3% Tobacco
- 18.86% Bakery/Dessert
- 7.10% Other (inc. Flavorless & DIY)
- 6.50% Menthol (Menthol/Mint/Peppermint etc...)
- 4.91% Savoury/Spice
- 3.98% Candy
- 2.66% Menthol Tobacco
- 2.61% Beverage flavors
- 0.55% Whole Tobacco Alkaloid

## Section 5: Retail Marketing & Display Advertising



# WHY QUIT? SWITCH TO BLU

blu is the smart choice for smokers wanting a change. Take back your freedom to smoke when and where you want without ash or smell. blu is everything you enjoy about smoking and nothing else.

Nobody likes a quitter, so make the switch today.

Visit [blucigs.com](http://blucigs.com)



**PREMIUM ELECTRONIC CIGARETTE**  
18+ only. CALIFORNIA PROPOSITION 65 - Warning: This product contains nicotine, a chemical known to the state of California to cause birth defects or other reproductive harm.

"Cessation"

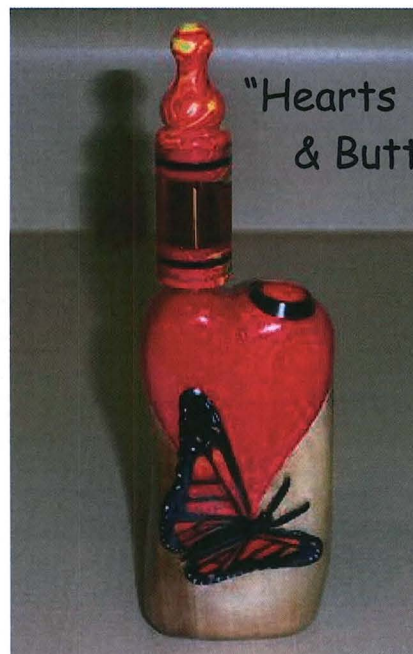
## Section 5: Retail Marketing & Display Advertising (cont.)



"Sparkly, Bling Wand"



"Lava Lamp"



"Hearts & Butterflies"

Section 5: Retail Marketing  
& Display Advertising (cont.)



"Fun & Playful!"





# **E-Cigarette Use Among Youth and Young Adults**

A Report of the Surgeon General



U.S. Department of Health and Human Services

EXCERPTED  
PAGES 237-249

## The Call to Action on E-Cigarette Use Among Youth and Young Adults

The Surgeon General issues this Call to Action on e-cigarettes, specifically focusing on youth and young adults, to accelerate policies and programs that can reduce e-cigarette use among young people. This Call to Action comes amid the dramatic increase in e-cigarette use among our nation's youth and young adults. It highlights the need to implement proven strategies that will prevent potentially harmful effects of e-cigarette use among young people. The previous chapters explained what we know and do not know about e-cigarettes and reviewed policy options. Gaps in scientific evidence still exist, and this Call to Action is being issued while these products and their patterns of use are changing quickly. However, policies and strategies are available that can clearly reduce the public health threat posed by e-cigarette use among young people.

Use of e-cigarettes is increasing rapidly among young people, even among those who have never smoked cigarettes.

This Call to Action presents six goals and related strategies that should guide efforts to reduce e-cigarette use among youth and young adults. To achieve these goals, we must work together, which means working with individuals and families; civic and community leaders; public health and health care professionals; e-cigarette manufacturers and retailers; voluntary health agencies; researchers; and other stakeholders.

### Stakeholders Who Can Take Action

- Individuals, parents, and families
- Teachers, coaches, and other youth influencers
- Civic and community leaders
- Public health and health care professionals
- Researchers
- Federal government
- State, local, tribal, and territorial governments
- E-cigarette manufacturers, distributors, and retailers
- Voluntary health agencies, non-governmental organizations, and other community- and faith-based organizations

### Goal 1. First, Do No Harm

Since 1964, reports from the U.S. Surgeon General have led the way in identifying the harms of tobacco use and detailing the most effective ways to reduce the dangerous effects of tobacco use. For example, reports from 1994 and 2012 outlined proven strategies to prevent and reduce tobacco use among youth and young adults (U.S. Department of Health and Human Services [USDHHS] 1994, 2012). Building on these and other past reports, this Call to Action considers the harms of e-cigarette use among youth and young adults and stresses the importance of strategies that will protect young people from the adverse consequences of these new products.



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### Strategy 1A.

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Implement a comprehensive strategy to address e-cigarettes that will avoid adverse consequences and give careful consideration to the risks for youth and young adults. This can be done by including e-cigarettes in policies and programs related to conventional cigarette smoking at the national, state, local, tribal, and territorial levels.

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We have many effective strategies to prevent tobacco use among youth and young adults (USDHHS 2012), and many of these strategies can also be applied to e-cigarettes. A strategy to address e-cigarette use among young people should be precautionary. A precautionary approach urges action to prevent harm when there is scientific uncertainty. That is, when there is inadequate or early knowledge, public health decisions should be made on the basis of precaution to prevent harm, rather than on certain risk. This approach requires proof that a product is not harmful—especially for youth—rather than proof that it is harmful. The burden of proof regarding product safety should be placed on those who wish to market and sell such tobacco products, rather than the public health community charged with protecting the public's health. The harms of nicotine exposure in youth and young adults are well-documented in this report and warrant this Call to Action (see Chapter 3). We must protect the health of our nation's young people by assuring that there will be no harm to youth from e-cigarettes. The stakeholders identified on the previous page should work together to prevent and reduce the use of all forms of tobacco products, including e-cigarettes, among our nation's youth and young adults. A comprehensive strategy includes:



- Implementing the U.S. Food and Drug Administration's (FDA's) authority to regulate tobacco products in order to provide oversight of the manufacturing, distribution, and marketing of e-cigarettes, particularly as they relate to youth and young adults;
- Funding comprehensive statewide tobacco control programs at levels recommended by the Centers for Disease Control and Prevention (CDC);
- Implementing comprehensive clean indoor air policies that protect people from exposure to second-hand tobacco smoke and the aerosol emitted from e-cigarettes;
- Raising and strongly enforcing minimum age-of-sale laws for all tobacco products, including e-cigarettes, to prevent initiation at young ages;

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Use of e-cigarettes can expose young people to nicotine. Nicotine can be highly addictive and can harm brain development. Nicotine use may also lead to the use of other tobacco or nicotine-containing products.

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- Setting price policies for e-cigarettes, which could include taxation policies;
- Restricting advertising and marketing that encourages youth and young adults to use e-cigarettes;
- Sponsoring high-impact media campaigns to educate the public using evidence-based information about the consequences of e-cigarette use among youth and young adults, including the harms of nicotine on the developing brain; and
- Expanding tobacco control and prevention research efforts to increase our understanding of the evolving landscape of e-cigarettes.

These components make up an evidence-based strategy. However, the e-cigarette marketplace is diverse and continues to evolve. Thus, ongoing efforts should rapidly and effectively track and adapt to such changes, thereby protecting our nation's young people from the consequences of e-cigarette use and exposure to second-hand aerosol.

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### Strategy 1B.

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Provide consistent and evidence-based messages about the health risks of e-cigarette use and exposure to secondhand aerosol from e-cigarettes.

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Research on e-cigarettes is ongoing, and the e-cigarette marketplace continues to evolve. Even so, a sufficient body of evidence justifies actions taken now to prevent and reduce the use of e-cigarettes and exposure to secondhand aerosol from e-cigarettes, particularly among youth and young adults. Most important, many health risks are already known, and sufficient information exists to take action to minimize potential harms. The evidence is most compelling for nicotine. As part of comprehensive reviews, previous Surgeon General's reports have provided causal findings on the development of addiction and other health consequences of exposure to nicotine (USDHHS

1988, 2014). Beyond addiction, intake of nicotine by young people can harm brain development (Chapter 3).

Additionally, aerosol from e-cigarettes contains toxins that can harm the body, and the flavorings used in these products cannot be considered safe for inhalation, either firsthand or secondhand (Chapter 3). For example, some flavorings have been known to be associated with pulmonary toxicity (Allen et al. 2016).

Messaging about the potential role of e-cigarettes in reducing the burden of tobacco-related diseases should note that e-cigarette products that deliver nicotine are not considered safe, particularly for youth and young adults, even before researchers fully characterize and quantify all of their health risks, including possible permanent changes to the adolescent brain and lungs.

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The use of any tobacco product, including e-cigarettes, among young people is unsafe.

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## Goal 2. Provide Information About the Dangers of E-Cigarette Use Among Youth and Young Adults

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Once youth and young adults start using products that contain nicotine, including e-cigarettes, they can become addicted. Such addiction has the potential to lead to long-term use of products that contain nicotine, such as cigarettes. Most adolescents who use tobacco already use more than one nicotine-containing product and are not just using e-cigarettes alone (Chapter 2). The majority of tobacco users start before they are 18 years of age, and almost no one starts after age 25 (USDHHS 2012). Therefore, the best way to protect young people from the harms of tobacco use, including e-cigarettes, is to prevent the use of these products altogether. Prevention should start with robust public policies that make it easy for youth not to use tobacco and harder for them to use any tobacco products. Parents, teachers, health professionals, and other influencers of youth should be educated about the risks of e-cigarette use. They can then help educate their own children as well as other young people about the harms of e-cigarettes and the risk of a potential lifetime of nicotine addiction.

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Use of e-cigarettes and exposure to nicotine is particularly dangerous for pregnant women. Nicotine is toxic to the fetus and impairs fetal brain and lung development.

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### Strategy 2A.

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Educate parents, teachers, coaches, and other influencers of youth about the risks of e-cigarette use among youth and young adults.

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Parents, guardians, teachers, coaches, health professionals, faith leaders, and other persons whose advice and behavior influence youth play critical roles in protecting youth and young adults from the harms of e-cigarette use and exposure to the secondhand aerosol emitted from these devices. Most adults are familiar with some of the dangers of using tobacco products, especially conventional cigarettes, and of exposure to secondhand tobacco smoke. Because of these dangers, many adults have taken steps to keep children safe. However, most adults are not aware of the potential risks of using e-cigarettes and exposure to secondhand aerosol, and e-cigarette marketing often promotes these products as safe alternatives to smoking conventional cigarettes. But messaging about the dangers is essential. For example, the use of these products can lead to nicotine addiction, harm brain development, and lead to continued tobacco use.



Parents, teachers, coaches, and others can protect their children and other young people by educating them about e-cigarettes:

- Talk openly about the harms of nicotine and tobacco use.
- Express firmly the idea that young people should not use any tobacco products, including e-cigarettes.
- Do not let any individuals use e-cigarettes or other tobacco products around children.
- Ask health care providers, adults, and parents to discuss with children the health risks of using e-cigarettes, such as nicotine addiction.
- Patronize restaurants and other places that do not allow the use of e-cigarettes indoors, and let business owners that allow e-cigarette use indoors know that it is not as safe as clean air or even legal in many places.
- Make sure children's day care centers, schools, and universities are completely tobacco-free, including being free of e-cigarettes. A comprehensive tobacco-free campus policy prohibits any tobacco use, including e-cigarettes, on school property by anyone at any time. These policies should be expanded to include school events that are held off campus.
- Prohibit tobacco and e-cigarette company sponsorship of teams or events, promotional activities, and offers of educational materials for preventing tobacco use among youth.

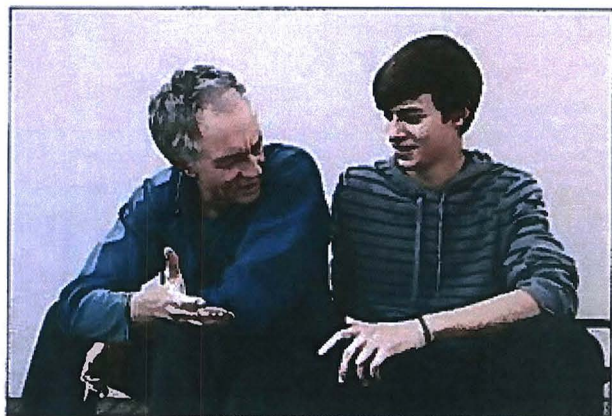
- Make homes and cars completely tobacco-free, including the use of e-cigarettes. This means no use by family members, friends, or guests. Opening a window does not fully protect against exposure to secondhand cigarette smoke or from the secondhand aerosol from e-cigarettes. For youth and young adults to be fully protected from indoor exposure, all indoor environments must be 100% free from tobacco smoke and e-cigarette aerosol.
- Set an example by being tobacco-free.
- Provide positive support and encouragement to anyone who is trying to quit tobacco.

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E-cigarettes are now the most common form of tobacco used by young people. High school students use e-cigarettes more than adults.

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Research suggests that youth and young adults are not as aware of the health consequences of e-cigarette use as they are with the consequences of cigarette smoking (Chapter 2) (Pearson et al. 2012; Richardson et al. 2014; Tan and Bigman 2014). FDA has the authority to require health warnings on tobacco products and tobacco advertising. In addition, FDA and other federal entities, along with state and local organizations, can carry out educational campaigns to better inform the public, especially parents, and increase their understanding of the harms of e-cigarette use.



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**Strategy 2B.**


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Educate health professionals about the risks of e-cigarette use among youth and young adults.

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The health care setting is an ideal place to educate people of all ages on the potential risks of e-cigarette use and exposure to secondhand aerosol from e-cigarettes. Because e-cigarettes are a relatively new product, health care professionals frequently face a lot of questions about them. These often include questions related to the risks of using e-cigarettes and whether these products can help people to quit smoking. No e-cigarettes have been approved as safe and effective cessation aids.

For youth, in particular, sufficient evidence shows that the use of nicotine is not safe regardless of the delivery device: combustible, non-combustible, or electronic (USDHHS 2014; see also Chapter 3). Thus, health

care professionals should warn youth and youth influencers, such as parents, about the health risks of using any product that contains nicotine, including e-cigarettes. They should also warn youth about the dangers of using other substances, such as marijuana, in e-cigarette devices (American Academy of Pediatrics 2015).



## Goal 3. Continue to Regulate E-Cigarettes at the Federal Level to Protect Public Health

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In 2009, the Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) provided FDA with authority to regulate tobacco products in a manner that is “appropriate for the protection of public health” (e.g., §§ 906(d)(1), 907(a)(3)(A) & (a)(4)(A), and § 910(c)(2)(A) of the Federal Food, Drug, and Cosmetic Act, as amended by the Tobacco Control Act) (Family Smoking Prevention and Tobacco Control Act 2009, p. 1786). The Tobacco Control Act also requires FDA to consider in regulatory actions the health effects at the individual and population levels, including the impacts on the initiation of measures taken to quit tobacco use as well as effects on relapse among former tobacco users. But FDA is not the only federal agency that can address certain aspects of e-cigarettes (see Chapter 5, Table 5.1).




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**Strategy 3A.**


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Implement FDA regulatory authority over the manufacturing, marketing, and distribution of e-cigarettes.

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A federal appellate court decision titled *Sottera, Inc. v. Food & Drug Administration* (2010) determined that FDA can regulate e-cigarettes and other products made or derived from tobacco under the Tobacco Control Act, and that these products are not drugs or devices under the Food, Drug, and Cosmetic Act unless marketed as therapeutic or smoking cessation products. In May 2016, FDA finalized a rule deeming most products meeting the definition of a tobacco product, including e-cigarettes, subject to regulation under the Tobacco Control Act. The regulation went into effect on August 8, 2016 (but is under litigation) (FDA 2016).

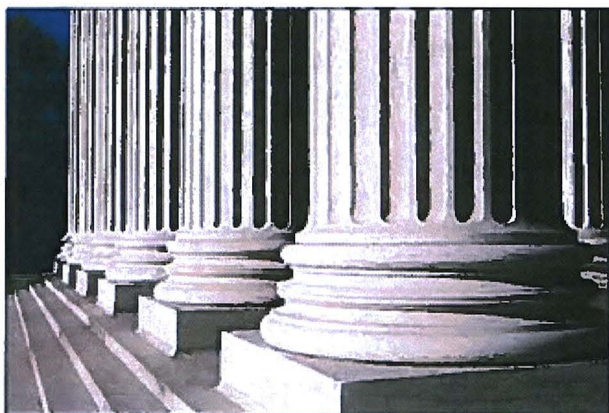
FDA's rule for e-cigarettes includes several provisions that can help protect youth and young adults from the harms of e-cigarettes, such as the following:

- Prohibiting the sale of e-cigarettes to youth who are under 18 years of age (both in person and online);
- Requiring proof of age at the point of purchase;

- Prohibiting vending machine sales in all facilities where children are allowed to enter;
- Prohibiting the distribution of free samples;
- Requiring health warnings about nicotine on packaging and in advertisements;
- Requiring manufacturers to register their e-cigarette products with FDA and disclose the ingredients and levels of harmful and potentially harmful constituents in those products to that agency;
- Requiring premarket review of new or changed tobacco products and authorization by FDA before they can be introduced into the marketplace; and
- Requiring manufacturers that intend to market e-cigarettes for use to reduce harm or risk of tobacco-related disease to receive authorization from FDA based on scientific evidence that the product is less harmful or presents less risk to the public.

This authority allows FDA to undertake future regulatory actions, if determined appropriate for the protection of public health, including:

- Within constitutional limitations, restricting promotion, marketing, and advertising of e-cigarettes;
- Restricting Internet sales and requiring age verification on websites and upon delivery;
- Prohibiting characterizing flavors;
- Promulgating product standards to reduce the toxicity, addictiveness, or appeal of tobacco products;



- Regulating packaging, including requiring minimum package sizes, mandating child-resistant packaging, and requiring health warnings; and
- Prohibiting self-service displays.

Despite gaining this broad authority, FDA does not have specific authority for certain regulatory actions. For example, FDA generally does not restrict tobacco use in public places, levy taxes on tobacco products, or restrict sales to only certain types of retailers (e.g., pharmacies); and FDA cannot completely eliminate nicotine in tobacco products, require prescriptions for tobacco products, or raise the minimum age for sale of tobacco products above 18.

Other complementary comprehensive tobacco control strategies at the state, local, tribal, and territorial levels include:

- Implementing comprehensive clean indoor air laws;
- Prohibiting sales to those under 21 years of age;
- Increasing prices of tobacco products; and
- Developing high-impact countermarketing campaigns.

Effective action at the state and local levels is critical to fully protecting young people from the harms of e-cigarettes.

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### Strategy 3B.

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Reinforce other federal agencies as they implement programs and policies to address e-cigarettes.

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Of the other federal agencies that play a role in implementing strategies to address e-cigarettes (see Chapter 5, Table 5.2), some target specific populations (e.g., the U.S. Department of Defense and the U.S. Department of Veterans Affairs); others cover specific areas (e.g., the

General Services Administration, National Park Service); and some focus on certain aspects of e-cigarettes (e.g., the Federal Trade Commission, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency). Specific strategies to address e-cigarettes could include those that protect employees, customers, and visitors from exposure to secondhand aerosol, support and encourage tobacco cessation, and curb youth-targeted or false advertising. For example, the National Park Service (2015) implemented a policy to protect employees and visitors from exposure to secondhand aerosol from e-cigarettes.

## Goal 4. Programs and Policies to Prevent E-Cigarette Use Among Youth and Young Adults

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Subject to certain exceptions, the Tobacco Control Act does not limit the authority of state, local, tribal, and territorial governments to enact any tobacco-related policies related to the sale, distribution, or possession of tobacco products; exposure to these products; or access to them. This broad preservation of authority enables states and localities to adopt many comprehensive tobacco control strategies that have been proven to prevent and reduce tobacco use among youth and young adults. That means that state, local, tribal, and territorial governments could act first in developing regulations, policies, and programs that minimize any individual- and population-level harms of e-cigarettes. The strongest, most innovative tobacco control policies typically have originated at the local level before eventually being adopted at the state level. However, it is important that these strategies are developed with evaluators and epidemiologists that can collect robust data to inform the implementation and sustainment of such strategies.

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### Strategy 4A.

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State, local, tribal, and territorial governments should implement population-level strategies to reduce e-cigarette use among youth and young adults, such as including e-cigarettes in smokefree indoor air policies, restricting youth access to e-cigarettes in retail settings, licensing retailers, and establishing specific package requirements.

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Over 50 years of research offers a strong body of evidence on the effectiveness of certain tobacco prevention and control measures. Much of this evidence can also



be applied to e-cigarettes. And from this evidence, state, local, tribal, and territorial entities can take a variety of actions to address e-cigarettes, such as:

- Including e-cigarettes in smokefree indoor air policies;
- Restricting youth access to e-cigarettes in retail settings;
- Licensing retailers; and
- Establishing specific package requirements.

### Including E-Cigarettes in Smokefree Indoor Air Policies

Most smokefree indoor air policies were put in place before the great rise in e-cigarette use. Because of that, these policies may not cover e-cigarettes or exposure to

the aerosol they produce. Aerosol from e-cigarettes is not harmless (CDC 2014). Smokefree indoor air policies should be updated to prohibit the use of both conventional cigarettes and e-cigarettes, thereby preserving standards for clean indoor air. Efforts to include e-cigarettes in smokefree laws should also uphold or strengthen, not weaken, existing protections against exposure to secondhand smoke.

Including e-cigarettes in smokefree indoor air policies can:

- Eliminate health risks from exposure to secondhand aerosol from e-cigarettes;
- Discourage people from using both combustible and electronic tobacco products (dual use);
- Simplify compliance with and enforcement of existing smokefree laws;
- Help to reduce the use of e-cigarettes among youth and young adults; and
- Maintain tobacco-free norms.

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Aerosol from e-cigarettes is not harmless.

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To date, several states and several hundred communities include e-cigarettes in comprehensive smoke-free laws that prohibit smoking in all indoor areas of public places, including worksites, restaurants, bars, and gambling facilities (Americans for Nonsmokers' Rights Foundation 2015; CDC n.d.).



## Restricting Youth Access to E-Cigarettes

When laws prohibiting tobacco sales to youth are strong and actively enforced with the education of retailers, they successfully reduce tobacco use among youth (Task Force on Community Preventive Services 2001; Zaza et al. 2005). To date, all 50 states and the District of Columbia restrict the sale of tobacco products to minors (CDC n.d.). Extending such laws to include e-cigarettes can further protect youth from exposure to nicotine, which nearly all states have done. Specific strategies can be implemented to deter the access of youth to e-cigarettes and their use in this population:

- Restricting the sale of e-cigarettes to minors;
- Placing restrictions on Internet sales of all tobacco products and e-cigarettes, including requirements for verifying age and providing identification at the time of purchase and upon delivery;
- Requiring age verification at the point of purchase;
- Displaying clear signage in retail locations about required age for sale;
- Prohibiting the sale of e-cigarettes from vending machines;
- Eliminating self-service displays of e-cigarettes; and
- Enforcing laws on the retail sale of e-cigarettes to minors.

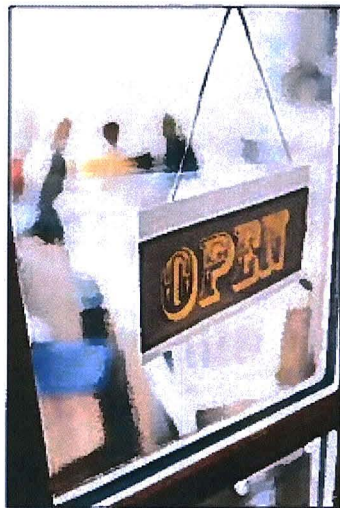
Nearly all states prohibit the sale of e-cigarettes to youth under 18 years of age. Some states have a higher minimum age for purchase (e.g., 19 or 21 years of age) (CDC 2014). Some e-cigarette manufacturers have supported state legislation to prevent minors from purchasing e-cigarettes (Healy 2014). Their actions may, to some extent, be responsible for why these age-of-sale laws have been adopted more quickly than laws that prohibit e-cigarette use in public indoor spaces. However, industry-supported, youth-access bills have contained provisions that undermine prevention efforts for youth, including preemption of stricter local policies and weak requirements for enforcement (USDHHS 2012). Additionally, laws prohibiting sales to minors are likely

to have limited effectiveness as a prevention strategy if they are not aggressively enforced and are not coupled with proven interventions, such as comprehensive smoke-free laws, pricing strategies, or public health campaigns (USDHHS 2012, 2014). Ensuring that e-cigarettes are regulated at the state and local levels can facilitate the application of additional tobacco control policies regarding e-cigarettes.

Many actions can help to protect young people from the harms of e-cigarettes, such as including e-cigarettes in smokefree indoor air policies, restricting youth access to e-cigarettes in retail settings, licensing retailers, and setting specific package requirements.

### Licensing Retailers

Licensing is another strategy to control access to e-cigarettes among youth and young adults. A tobacco-related license can authorize a business to manufacture, distribute, or sell tobacco products (McLaughlin 2010). Licensing requirements help to prevent sales to minors, prevent evasion of tobacco excise taxes, ensure that licensees comply with tobacco-related laws, and promote safe manufacturing practices (ChangeLab Solutions 2012). Businesses that repeatedly violate these laws can have their right to engage in commercial activity suspended or their licenses permanently removed. The possibility of these outcomes provides a strong incentive to comply with license requirements. Licensing may also be used to restrict the sale of flavored products or to address consumer and worker safety issues involved with the mixing of liquids for e-cigarette products (e-liquids).



### Establishing Specific Packaging Requirements

Federal, state, local, tribal, and territorial governments are actively considering the potential harms of e-liquids. Exposure to these liquids may lead to nicotine and other types of poisoning. Calls to poison control centers about e-cigarettes and e-liquids have been on the rise, and about half of these calls are for incidents involving young children (American Association of Poison Control Centers 2015). The most common adverse health effects of poisoning are vomiting, nausea, and eye irritation, but some deaths have occurred as well. Developing strategies to monitor and prevent future poisonings is critical.

Calls to poison control centers about e-cigarettes are on the rise. A large portion of these calls are for incidents involving young children.

Enacting laws that require e-liquids to be labeled and sold in childproof packaging is one way to reduce the incidence of poisonings, particularly among children. To date, in addition to the federal Child Nicotine Poisoning Prevention Act of 2015 (2016) enacted in January 2016, more than a dozen states have enacted laws requiring childproof packaging for e-liquids (Tobacco Control Legal Consortium n.d.). Health care providers, the public health community, e-cigarette manufacturers and retailers, and the public should be aware that e-liquids pose a serious public health concern, particularly among young children.

#### Strategy 4B.

Coordinate, evaluate, and share best practices from state and local entities that have implemented programs and policies to address e-cigarette use among youth and young adults.

Many governments at the national, state, local, tribal, and territorial levels are involved in the regulation of e-cigarettes. To have the biggest impact on reducing the use and exposure of e-cigarettes among youth and young adults, it is integral for these governments to share best practices and coordinate and evaluate efforts as part of a comprehensive tobacco prevention and control strategy. FDA has asserted regulatory authority over e-cigarettes, and other agencies and governments, as discussed previously and in Chapter 4, also have relevant authorities.

## Goal 5. Curb Advertising and Marketing that Encourages Youth and Young Adults to Use E-Cigarettes

Unconstrained marketing of e-cigarettes drives consumer demand for these products. E-cigarette manufacturers are using tactics similar to those used to market conventional cigarettes to youth, including offering candy-flavored products; employing youth-minded themes, such as rebellion, glamour, and sex; getting celebrity endorsements; and obtaining sports and music sponsorships (Chapter 4). Some groups have called for extending to e-cigarettes the same marketing restrictions that already apply to conventional cigarettes and other tobacco products (Association of State and Territorial Health Officials 2014; Partnership for Prevention 2014). But regulating commercial speech is typically met with significant barriers and complex legal issues (Laird-Metke 2010), and partial advertising bans and voluntary agreements generally have not been fully effective at reducing consumption because the tobacco industry adapts by shifting to other types of advertising that are not regulated (National Cancer Institute 2008). Despite these obstacles, public health organizations and state and local governments must take action to control the marketing of e-cigarettes to youth and young adults, including (a) seeking legally feasible interventions that are proven to curb youth-oriented tobacco marketing, including removing advertising from television; and (b) continuing to help build an evidence base that informs future potential restrictions on e-cigarette marketing.

### Strategy 5A.

Curb e-cigarette advertising and marketing that are likely to attract youth and young adults.

In the absence or delayed implementation of government restrictions on the marketing of e-cigarettes, media outlets, the management staff of special event and sports venues, and retailers can voluntarily refuse to air or place youth- and young adult-oriented e-cigarette advertising; avoid sponsorships; and not offer free samples of these products at fairs, festivals, and other events.

E-cigarettes are aggressively marketed using tactics similar to those proven to lead to cigarette smoking among youth.

Finally, state and local public health agencies can stimulate enforcement of and compliance with existing

rules that limit marketing. For example, they can monitor advertising and notify their state's attorney general or the Federal Trade Commission about improper claims or marketing that is not clearly identified as advertising (Federal Register 1972; FTC 1984; Center for Public Health and Tobacco Policy 2013).

### Strategy 5B.

Urge the e-cigarette companies to stop advertising and marketing that encourages and glamorizes e-cigarette use among youth and young adults.

E-cigarette advertising has increased considerably over the years in multiple venues (Legacy for Health 2014; Ganz et al. 2015; see also Chapter 4), while the advertising for conventional cigarettes on television has been prohibited in the United States since 1971. But e-cigarettes are now marketed on television and other mainstream media channels, such as radio and magazines, which are main sources of information for youth and young adults. Emerging research suggests that exposure to television advertisements for e-cigarettes increases the likelihood that young people will use e-cigarettes in the future and will believe that e-cigarettes can be used in places where conventional cigarette smoking is not allowed (Farrelly et al. 2015). This is not surprising because e-cigarette marketing has previously included unproven claims about safety and smoking cessation, as well as statements that e-cigarettes are exempt from clean air policies that restrict smoking (USDHHS 2014). Visual depictions of e-cigarette use in advertisements may also serve as smoking cues to both current and former smokers, increasing their urges to smoke and undermining their efforts to quit (Maloney and Cappella 2015). Advertising for e-cigarettes that encourages and glamorizes the use of e-cigarettes among youth and young adults can harm public health by undermining:

- Clean indoor air standards;
- Enforcement of smokefree policies;
- Tobacco-free social norms; and
- Marketing restrictions that prohibit the advertising of cigarettes and smokeless tobacco on television and radio.

Discontinuing advertising and marketing by e-cigarette companies that intentionally or unintentionally encourages or glamorizes e-cigarette use among youth and young adults is essential. Responsible advertising by the e-cigarette companies is needed, including advertising that focuses directly on established adult smokers

and features adults (not young adults), does not depict active use of e-cigarettes, does not use themes proven to appeal to youth and young adults, avoids media channels with high youth access, and does not undermine cessation efforts involving traditional tobacco products.

## Goal 6. Expand Surveillance, Research, and Evaluation Related to E-Cigarettes

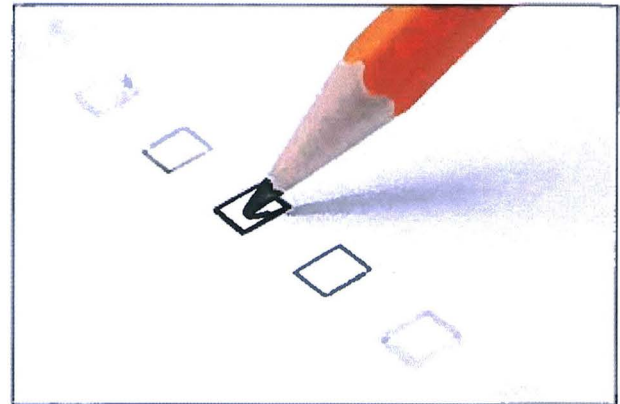
Tobacco control research focused on e-cigarettes has grown considerably in the past few years. Certainly, more detailed information is needed to better understand the use of e-cigarettes and its relationship to the use of other types of tobacco products. A comprehensive and evolving approach to research, surveillance, and evaluation is needed.

### Strategy 6A.

Improve the quality, timeliness, and scope of e-cigarette surveillance, research, and evaluation.

Present surveillance systems show that e-cigarette use is increasing rapidly and that most regular e-cigarette users also use conventional tobacco products (see Chapter 2). Thus, further study can inform strategies that minimize harms and maximize the potential health benefits of these products at the individual and population levels. Data should be timely and focus on the patterns of e-cigarette initiation and use among the general public—including youth, young adults, and former smokers. Strategic and comprehensive research and evaluation must further characterize the health risks of e-cigarette use. A comprehensive package of surveillance, research, and evaluation should:

- Track patterns of e-cigarette use through cross-sectional surveys and through panels that follow the same people, including youth and young adults, over time;
- Monitor trends in the e-cigarette retail market by type of product;
- Examine the channels and messaging in the e-cigarette marketplace to inform proactive countermarketing strategies;



- Assess the short- and medium-term health effects of e-cigarette use by youth and young adults and track long-term consequences;
- Examine the risk factors and other risk behaviors that may be associated with using e-cigarettes; and
- Create a model to develop and track the public health impact of e-cigarettes.

The rapidly changing nature of the e-cigarette landscape calls for a comprehensive and evolving approach to research, surveillance, and evaluation.

For such a package, researchers, the public health community, and other key stakeholders must work together to address and overcome many challenges:

- The rapidly changing e-cigarette landscape and terminology;
- Limited resources for collecting timely information;

- The cross-sectional nature of existing surveys and their limited space for questions;
- The different populations that need to be studied;
- A lack of validated questions; and
- Different measures and definitions across surveys.

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### Strategy 6B.

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Address surveillance, research, and evaluation gaps related to e-cigarettes.

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Patterns of e-cigarette use are rapidly changing among youth and young adults, as well as among other groups in the population. Longitudinal data are not yet available to address some of the most critical issues related to e-cigarettes. The e-cigarette marketplace is changing so fast that surveillance data and research on the harms of e-cigarette use and the impact of these changes on traditional tobacco products are lagging behind. As they look to fill in gaps in scientific research, it is important for researchers to continue to seek more current and complete answers to many critical questions, such as:

- What are the risks of progressing to traditional tobacco use among youth and young adults who have used e-cigarettes?
- What are the health risks posed by e-cigarettes?
- Are e-cigarettes safer and more effective than current products at helping smokers with smoking cessation?
- What are the health consequences for youth and young adults of initiation of e-cigarettes and of dual use (conventional cigarettes plus e-cigarettes) compared with the health benefits of completely quitting smoking (or not starting at all)?
- What are the health risks to former smokers who are exposed to nicotine from e-cigarette use? Will these persons be more likely to resume smoking?

Additionally, surveillance of e-cigarette marketing and the advertising messages and strategies used is critical, as is the carrying out of more studies assessing the link between exposure to e-cigarette marketing and use of these products. With traditional tobacco products, state and local public health agencies have monitored

retail settings, assessed outdoor advertising, and identified sponsorships of events by tobacco companies. These efforts should be adapted to e-cigarettes.

The health care setting has always been an important venue for exchanging information about evidence-based approaches to smoking cessation and for protecting susceptible groups from exposure to secondhand smoke. More research is needed on the role of e-cigarettes in facilitating or hindering cessation of conventional cigarettes and the potential hazards of exposure to secondhand aerosol from e-cigarettes so that e-cigarettes can also be a part of this exchange. But even without this research, there is sufficient evidence about the dangers that nicotine-containing cigarettes pose for youth and young adults that health care providers and professionals can act now to prevent the use of such products among their young patients.

Finally, existing research and surveillance efforts should include more detailed measures than just general use of e-cigarettes, including:

- Frequency and patterns of e-cigarette use;
- Type of e-cigarette and/or other tobacco product used;
- The natural history of e-cigarette use, including initiation, co-use with other tobacco products, and flavoring;
- Ingredients, such as nicotine and flavors;
- Brand;
- Reasons for using and quitting e-cigarettes;
- Exposure to e-cigarette advertising;
- Methods of obtaining e-cigarettes; and
- Exposure to secondhand aerosol from e-cigarettes.

Additionally, evaluation is critical to further assess the impact of policies on e-cigarette initiation, use, and other patterns of tobacco use.

## Conclusions

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E-cigarette use, particularly among youth and young adults, has become a public health concern that warrants immediate and coordinated action. The increase in e-cigarette use among youth and young adults in the past few years is cause for great concern. Many questions remain about e-cigarettes and their long-term impact, even as evidence on patterns of use and risks to health continue to emerge. But we know enough about these health risks to take action now to protect the health of our nation's young people. We cannot wait. Strategies to prevent and control the harms of e-cigarettes among youth and young adults need to be precautionary. Therefore,

we must take a precautionary approach by implementing these strategies and protecting the health of our nation's young people.

We know what works to effectively prevent tobacco use among young people. Now we must apply these strategies to e-cigarettes—and continue to apply them to other tobacco products. To achieve success, we must work together, aligning and coordinating efforts across a wide range of stakeholders. We must protect our nation's young people from a lifetime of nicotine addiction and associated problems by immediately addressing e-cigarettes as an urgent public health problem. Now is the time to take action.



## **E-Cig Use Increases Risk Of Beginning Tobacco Cigarette Use In Young Adults**

**Date:** December 11, 2017

**Source:** University of Pittsburgh Schools of the Health Sciences

### **Summary:**

Young adults who use electronic cigarettes are more than four times as likely to begin smoking tobacco cigarettes within 18 months as their peers who do not vape, according to new research. The findings demonstrate that e-cigarettes are serving as a gateway to traditional smoking, contrary to their purported value as a smoking cessation tool. The study is the first nationally representative survey that followed for more than a year people 18 to 30 years old who were initially nonsmokers.

### **FULL STORY**

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Young adults who use electronic cigarettes are more than four times as likely to begin smoking tobacco cigarettes within 18 months as their peers who do not vape, according to new University of Pittsburgh research. The findings demonstrate that e-cigarettes are serving as a gateway to traditional smoking, contrary to their purported value as a smoking cessation tool.

Published in the *American Journal of Medicine*, the study is the first nationally representative survey that followed for more than a year people 18 to 30 years old who were initially nonsmokers.

"Early evidence on the potential value of e-cigarettes for cessation or reduction of cigarette smoking has been mixed," said lead author Brian A. Primack, M.D., Ph.D., director of Pitt's Center for Research on Media, Technology and Health, and dean of Pitt's Honors College. "Our study finds that in nonsmokers, e-cigarettes make people more likely to start smoking. This supports policy and educational interventions designed to decrease the use of e-cigarettes among nonsmokers."

The team analyzed a survey of U.S. adults who were randomly selected in March 2013 to complete a questionnaire about their tobacco use. Eighteen months later, in October 2014, 915 participants who said they had never smoked cigarettes completed a follow-up survey.

The team then applied "weights" to the survey results by over- and under-emphasizing the answers of the survey participants in order to arrive at findings that would be more representative of the true make-up of the U.S. population. For example, only 14.2 percent of those surveyed were Hispanic, so the team over-emphasized their answers so that the weighted sample and final results were 19.7 percent Hispanic.

The final, weighted survey results showed that 11.2 percent of participants -- none of whom had ever smoked when they completed the initial questionnaire -- had started smoking tobacco cigarettes. Of participants who said they vaped e-cigarettes in the first questionnaire,

47.7 percent had started smoking cigarettes 18 months later, compared to 10.2 percent of those who did not use e-cigarettes. Without the survey weights to make the sample representative of the U.S. population, 37.5 percent of e-cigarette users had started smoking cigarettes 18 months later, compared to 9 percent of those who didn't use e-cigarettes.

More research will be needed to determine why e-cigarettes increase the risk of someone transitioning to tobacco cigarettes, but Primack noted that several factors are likely at play, including that using e-cigarettes mimics the behavior of smoking traditional cigarettes, the sweet vape is a gentle introduction to smoking harsher tobacco and the build-up of nicotine addiction could lead e-cigarette users to seek out more nicotine-packed tobacco cigarettes.

"Young adulthood is an important time when people establish whether they use tobacco or not," said Primack, also a professor of medicine, pediatrics, and clinical and translational science at Pitt's School of Medicine. "Our findings suggest that clinicians who treat e-cigarette users should counsel them both about their potential for harm and about the high risk of transitioning to tobacco cigarettes among initial nonsmokers."

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#### Story Source:

[Materials](#) provided by [University of Pittsburgh Schools of the Health Sciences](#). *Note: Content may be edited for style and length.*

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#### Journal Reference:

1. Brian A. Primack, Ariel Shensa, Jaime E. Sidani, Beth L. Hoffman, Samir Soneji, James D. Sargent, Robert Hoffman, Michael J. Fine. **Initiation of Traditional Cigarette Smoking after Electronic Cigarette Use among Tobacco-Naïve U.S. Young Adults.** *The American Journal of Medicine*, 2017; DOI: [10.1016/j.amjmed.2017.11.005](https://doi.org/10.1016/j.amjmed.2017.11.005)

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University of Pittsburgh Schools of the Health Sciences. "E-cig use increases risk of beginning tobacco cigarette use in young adults." ScienceDaily. ScienceDaily, 11 December 2017. <[www.sciencedaily.com/releases/2017/12/171211090733.htm](http://www.sciencedaily.com/releases/2017/12/171211090733.htm)>.

Jan. 23, 2018

FOR IMMEDIATE RELEASE

## New Report One of the Most Comprehensive Studies on Health Effects of E-Cigarettes; Finds That Using E-Cigarettes May Lead Youth to Start Smoking, Adults to Stop Smoking

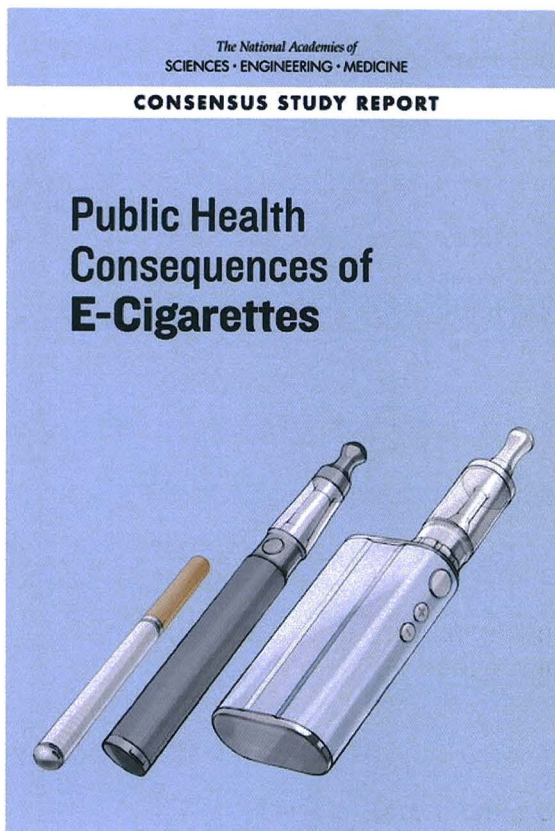
WASHINGTON – A new congressionally mandated [report](#) from the National Academies of Sciences, Engineering, and Medicine takes a comprehensive look at evidence on the human health effects of e-cigarettes. Although the research base is limited given the relatively short time e-cigarettes have been used, the committee that conducted the study identified and examined over 800 peer-reviewed scientific studies, reaching dozens of conclusions about a range of health impacts.

Evidence suggests that while e-cigarettes are not without health risks, they are likely to be far less harmful than conventional cigarettes, the report says. They contain fewer numbers and lower levels of toxic substances than conventional cigarettes, and using e-cigarettes may help adults who smoke conventional cigarettes quit smoking. However, their long-term health effects are not yet clear. Among youth -- who use e-cigarettes at higher rates than adults do -- there is substantial evidence that e-cigarette use increases the risk of transitioning to smoking conventional cigarettes.

E-cigarettes are a diverse group of products containing a heating element that produces an aerosol from a liquid that users can inhale via a mouthpiece, and include a range of devices such as “cig-a-likes,” vape tank systems, and vape mods. Millions of Americans use e-cigarettes, and e-cigarette use is generally greatest among young adults and decreases with age. Use varies substantially across demographic groups, including age, gender, race, and ethnicity. For example, among youth and adults, use is typically greater among males than females.

Whether e-cigarettes have an overall positive or negative impact on public health is currently unknown, the report says. More and better research on e-cigarettes’ short- and long-term effects on health and on their relationship to conventional smoking is needed to answer that question with clarity.

“E-cigarettes cannot be simply categorized as either beneficial or harmful,” said David Eaton, chair of the committee that wrote the report, and dean and vice provost of the Graduate School of the University of Washington, Seattle. “In some circumstances, such as their use by non-smoking adolescents and young adults, their adverse effects clearly warrant concern. In other cases, such as when adult smokers use them to quit smoking, they offer an opportunity to reduce smoking-related illness.”



The report offers conclusions about e-cigarette use and a range of health impacts, including the following, and it notes the strength of the evidence for each conclusion.

### **Exposure to nicotine**

- There is conclusive evidence that exposure to nicotine from e-cigarettes is highly variable and depends on the characteristics of the device and the e-liquid, as well as on how the device is operated.
- There is substantial evidence that nicotine intake from e-cigarettes among experienced adult e-cigarette users can be comparable to that from conventional cigarettes.

### **Exposure to toxic substances**

- There is conclusive evidence that in addition to nicotine, most e-cigarettes contain and emit numerous potentially toxic substances.
- There is substantial evidence that except for nicotine, exposure to potentially toxic substances from e-cigarettes (under typical conditions of use) is significantly lower compared with conventional cigarettes.

### **Dependence and abuse liability**

- There is substantial evidence that e-cigarette use results in symptoms of dependence on e-cigarettes.
- There is moderate evidence that risk and severity of dependence is lower for e-cigarettes than for conventional cigarettes.
- There is moderate evidence that variability in the characteristics of e-cigarette products (nicotine concentration, flavoring, device type, and brand) is an important determinant of the risk and severity of dependence on e-cigarettes.

### **Harm reduction**

- There is conclusive evidence that completely substituting e-cigarettes for conventional cigarettes reduces users' exposure to many toxicants and carcinogens present in conventional cigarettes.
- There is substantial evidence that completely switching from regular use of conventional cigarettes to e-cigarettes results in reduced short-term adverse health outcomes in several organ systems.

### **Use by youth and young adults**

- There is substantial evidence that e-cigarette use by youth and young adults increases their risk of ever using conventional cigarettes.

## **Secondhand exposure**

- There is conclusive evidence that e-cigarette use increases airborne concentrations of particulate matter and nicotine in indoor environments compared with background levels.
- There is moderate evidence that second-hand exposure to nicotine and particulates is lower from e-cigarettes compared with conventional cigarettes.

## **Cancer**

- There is no available evidence whether or not e-cigarette use is associated with intermediate cancer endpoints in humans. (An intermediate cancer endpoint is a precursor to the possible development of cancer; for example, polyps are lesions that are intermediate cancer endpoints for colon cancer.)
- There is limited evidence from animal studies using intermediate biomarkers of cancer to support the hypothesis that long-term e-cigarette use could increase the risk of cancer.

## **Respiratory effects**

- There is no available evidence whether or not e-cigarettes cause respiratory diseases in humans.
- There is moderate evidence for increased cough and wheeze in adolescents who use e-cigarettes, and an increase in asthma exacerbations.

## **Injuries and poisonings**

- There is conclusive evidence that e-cigarettes can explode and cause burns and projectile injuries. Such risk is significantly increased when batteries are of poor quality, stored improperly, or are being modified by users.
- There is conclusive evidence that intentional or accidental exposure to e-liquids (from drinking, eye contact, or skin contact) can result in adverse health effects such as seizures, anoxic brain injury, vomiting, and lactic acidosis.
- There is conclusive evidence that intentionally or accidentally drinking or injecting e-liquids can be fatal.

## **Reproductive and developmental effects**

- There is no available evidence whether or not e-cigarettes affect pregnancy outcomes.
- There is insufficient evidence whether or not maternal e-cigarette use affects fetal development.

Until more definite scientific data are available, population modeling can help estimate the balance of potential benefits and harms. Under the assumption that e-cigarette use increases the rate at which adults quit conventional smoking, modeling projects that use of e-cigarettes will generate a net public health benefit, at least in the short run. The harms caused by the higher rate of conventional cigarette smoking among youth who had used e-cigarettes will take decades to appear. For long-range projections, the net public health benefit is substantially less, and under some scenarios the net impact is harmful.

Maximizing the potential health benefits associated with e-cigarettes, the report says, will require determining with more precision whether and under what conditions e-cigarettes help people quit

smoking; discouraging e-cigarette use among youth through education and access restrictions; and increasing the devices' safety through data-driven engineering and design.

The study was sponsored by the U.S. Food and Drug Administration. The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine. They operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln. For more information, visit [nationalacademies.org](http://nationalacademies.org). A committee roster follows.

**Resources:**

Download the report at [www.nationalacademies.org/eCigHealthEffects](http://www.nationalacademies.org/eCigHealthEffects)

[Report Highlights](#)

[Recommendations](#)

[Conclusions by Level of Evidence](#)

[Conclusions by Outcome](#)

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**THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE**

**Health and Medicine Division**

**Board on Population Health and Public Health Practice**

## Committee on the Review of the Health Effects of Electronic Nicotine Delivery Systems

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Staff Officer-----

\*Member, National Academy of Medicine

## Calendar Year 2016 Sell Rates of Tobacco & Nicotine Products to Minors\*

Investigation Disposition	PILOT Electronic Nicotine Delivery Systems (ENDS) Investigations				Federally Required Synar Investigations	
	Vaping Fluid		Electronic Cigarettes		Requested Product : Cigarettes, Chew, Small Cigars/Cigarillos	
	<i>Requested Product:</i> 6mg or 8mg apple or watermelon flavored vaping fluid		<i>Requested Product :</i> BLU disposable single e-cigarette pack			
	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL
NO Sale to Minor	17	73.9%	30	90.9%	401	94.6%
Sale to Minor	6	<b>26.1%</b>	3	<b>9.1%</b>	23	<b>5.4%</b>
<b>Vendor TOTAL</b>	<b>23</b>	<b>100.0%</b>	<b>33</b>	<b>100.0%</b>	<b>424</b>	<b>100.0%</b>

\*Investigation period: June - September 2016.

### Anchorage Only

## Calendar Year 2016 Sell Rates of Tobacco & Nicotine Products to Minors\*

Investigation Disposition	PILOT Electronic Nicotine Delivery Systems (ENDS) Investigations				Federally Required Synar Investigations	
	Vaping Fluid		Electronic Cigarettes		Requested Product: Cigarettes, Chew, Small Cigars/Cigarillos	
	<i>Requested Product:</i> 6mg or 8mg apple or watermelon flavored vaping fluid		<i>Requested Product:</i> BLU disposable single e-cigarette pack			
	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL
NO Sale to Minor	6	50.0%	16	94.1%	128	97.7%
Sale to Minor	6	<b>50.0%</b>	1	<b>5.9%</b>	3	<b>2.3%</b>
<b>Vendor TOTAL</b>	<b>12</b>	<b>100.0%</b>	<b>17</b>	<b>100.0%</b>	<b>131</b>	<b>100.0%</b>

## Alaska - Statewide

### Calendar Year 2017 Sell Rates of Tobacco & Nicotine Products to Minors\*

Investigation Disposition	PILOT Electronic Nicotine Delivery Systems (ENDS) Investigations				Federally Required Synar Investigations	
	Vaping Fluid		Electronic Cigarettes			
	<i>Requested Product:</i> 4mg or 8mg strawberry or watermelon flavored vaping fluid		<i>Requested Product:</i> BLU disposable single e-cigarette pack		<i>Requested Product:</i> Cigarettes, Chew, Small Cigars/Cigarillos	
	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL	Vendor Count	% of Vendor TOTAL
NO Sale to Minor	9	64.3%	19	95.0%	384	95.3%
Sale to Minor	5	<b>35.7%</b>	1	<b>5.0%</b>	19	<b>4.7%</b>
<b>Vendor TOTAL</b>	<b>14</b>	<b>100.0%</b>	<b>20</b>	<b>100.0%</b>	<b>403</b>	<b>100.0%</b>

\* Investigation period: June - September 2017.

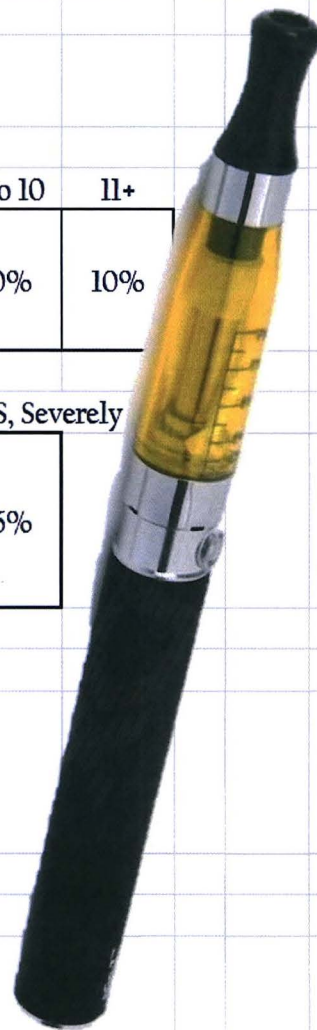
Sell rate for federally required Synar investigations is preliminary as of 12/13/2017 and subject to federal review and approval.

Because the pilot ENDS investigation sample size was relatively small, it may be difficult to extrapolate investigation results for a larger population of ENDS vendors.

## E-CIGARETTE SURVEY SMOKING IN SCHOOLS

In March 2017, an informal survey (“survey monkey”) was issued to principals of Alaska's public middle and high schools across the state. To date there are 32 respondents, representing a broad group of both urban and rural, large and small schools.

	YES	NO			
<b>Are you observing student use of E-Cigarette (“Vaping”) products in your school?</b>	50%	50%			
	0	1 to 5	6 to 10	11+	
<b>About how many instances have you seen, or are you aware of it having occurred, in your school in the past year or so?</b>	42%	38%	10%	10%	
	NO	YES	YES, Severely		
<b>There are reports of students discretely smoking E-Cigarette (“Vaping”) products in classrooms, bathrooms, in the hallways, and on the bus. Do you agree this is happening?</b>	50%	34%	16%		
	NO	YES			
<b>The E-Cigarette industry and “Vaping” community often claims their products as only containing “water vapor and flavoring.” Do you believe that?</b>	97%	3%			
	YES				
<b>Do you believe E-Cigarette (“Vaping”) inhalation to be harmful?</b>	100%				
	YES	NO	UNSURE		
<b>Do you believe E-Cigarette (“Vaping”) 2nd-hand smoke to be harmful?</b>	75%	6%	19%		
	YES	NO	No worse so than marijuana or alcohol		UNSURE
<b>Do you believe there is a current or foreseeable problem with youth access to or use of E-Cigarette (“Vaping”) products?</b>	78%	6%	12%	4%	





# ALASKA PUBLIC HEALTH ASSOCIATION

Committed To Advancing Alaska's Public Health Since 1978

## ALPHA

March 28, 2018

The Honorable Gary Stevens  
State Senate  
State Capitol, Room  
Juneau, AK 99801

Dear Senator Stevens:

The Alaska Public Health Association is pleased to write this letter in support of SB 15, "an Act relating to possession of an electronic smoking product or a product containing nicotine by a minor and to selling or giving a product containing nicotine or an electronic smoking product to a minor; relating to business license endorsements to sell cigarettes, cigars, tobacco, products containing tobacco, electronic smoking products, or products containing nicotine; and relating to citations for certain offenses concerning tobacco, products containing nicotine, or electronic smoking products."

The Alaska Public Health Association (ALPHA) is a regional affiliate of the American Public Health Association. It is a statewide membership organization of health professionals, advocates, students and community members that are dedicated to improving the health of all Alaskans.

The Alaska Public Health Association recommends that the State of Alaska raise the minimum legal sales age for tobacco products, including electronic smoking devices, to 21. Attached, for your information, is ALPHA's Resolution "Supporting a Minimum Legal Sales Age of 21 for Tobacco Products", adopted in January of 2018.

According to the 2017 Alaska Youth Risk Behavior Survey, 39.9% of high school students have ever used an electronic vapor product and 15.7% currently used an electronic vapor product (at least once in the past 30 days).

A 2015 Institute of Medicine report concludes that raising the minimum legal sales age for tobacco products to 21 nationwide would, over time, lead to a 12 percent decrease in smoking prevalence; and also predicts that raising the minimum legal sales age for tobacco products to 21 nationwide would additionally result in many fewer deaths from lung cancer, and millions fewer years of life lost for those born between 2000 and 2019.

Sincerely,

Patty Owen  
Policy Committee Co-Chair



### Supporting a Minimum Legal Sales Age of 21 for Tobacco Products<sup>1</sup>

**WHEREAS**, tobacco use is the foremost preventable cause of premature death and disease in the United States, and is responsible for approximately 480,000 deaths per year;<sup>1</sup>

**WHEREAS**, the annual economic impact of smoking in the U.S. is more than \$300 billion in health care and lost worker productivity costs;<sup>2</sup>

**WHEREAS**, national data show that 95 percent of adult smokers begin smoking before they turn 21, and that the ages of 18 to 21 are a critical period when many smokers move from experimental smoking to daily use;<sup>3</sup>

**WHEREAS**, the developing brains of young people are particularly susceptible to the addictive properties of nicotine,<sup>4</sup> and as a result, approximately three out of four teen smokers end up smoking into adulthood;<sup>5</sup>

**WHEREAS**, electronic smoking device use among minors increased dramatically between 2011 and 2015;<sup>6</sup>

**WHEREAS**, a 2015 Institute of Medicine report concludes that raising the minimum legal sales age for tobacco products to 21 nationwide would, over time, lead to a 12 percent decrease in smoking prevalence;<sup>7</sup>

**WHEREAS**, the Institute of Medicine also predicts that raising the minimum legal sales age for tobacco products to 21 nationwide would additionally result in many fewer deaths from lung cancer, and millions fewer years of life lost for those born between 2000 and 2019, and that it would result in near immediate reductions in preterm birth, low birth weight, and sudden infant death syndrome;<sup>8</sup>

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<sup>1</sup> US Department of Health and Human Services, Centers for Disease Control and Prevention (2014). *The health consequences of smoking—50 years of progress: a report of the Surgeon General*, p. 659. Atlanta, GA. <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>.

<sup>2</sup> US Department of Health and Human Services, *supra* note 1, at 679.

<sup>3</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. Center for Behavioral Health Statistics and Quality. *National Survey on Drug Use and Health, 2014*. <http://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf>. See also Institute of Medicine (2015). *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products*. Washington, DC: The National Academies Press. <http://iom.nationalacademies.org/Reports/2015/TobaccoMinimumAgeReport.aspx>.

<sup>4</sup> US Department of Health and Human Services (2014). *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*. U.S. Department of Health and Human Services (2012). *Preventing Tobacco Use among Youth and Young Adults: A Report of the Surgeon General*.

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health (2010). *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*.

<sup>5</sup> US Department of Health and Human Services (2012). *A Report of the Surgeon General: Preventing Tobacco Use among Youth and Young Adults*. <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use>.

<sup>6</sup> U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health (2016). *E-Cigarette Use among Youth and Young Adults. A Report of the Surgeon General*. Atlanta, GA.

<sup>7</sup> Institute of Medicine (2015). *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products*. <http://iom.nationalacademies.org/Reports/2015/TobaccoMinimumAgeReport.aspx>.



**WHEREAS**, five states—Hawaii, California, Oregon, New Jersey, and Maine—and at least 280 localities, including New York City, Chicago, and Boston, have enacted laws to raise the minimum legal sales age for tobacco products to 21;<sup>8</sup>

**WHEREAS**, three-quarters of U.S. adults favor raising the minimum legal sales age for tobacco products to 21, including seven in ten smokers;<sup>9</sup>

**WHEREAS**, the retail impact of ordinances mandating a minimum legal sales age of 21 for tobacco products is minimal, with an estimated decrease of only 2%;<sup>10</sup>

**WHEREAS**, raising the legal drinking age to 21 led to reduced alcohol use and dependence among youth, and contributed to a decline in drunk driving fatalities;<sup>11</sup> and

**WHEREAS**, tobacco use kills nearly 600 Alaskans every year, and costs Alaska, in 2012 dollars, \$538 million in direct medical expenditures and additional \$231 million in lost productivity due to tobacco-related deaths;<sup>12</sup>

**THEREFORE BE IT RESOLVED** that the Alaska Public Health Association recommends that the State of Alaska raise the minimum legal sales age for tobacco products, including electronic smoking devices, to 21;

**BE IT FURTHER RESOLVED** that the Alaska Public Health Association will inform its members of its endorsement and promote support for this initiative to the general public whenever possible.

*Adopted January 16, 2018*

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- <sup>8</sup> Campaign for Tobacco Free Kids (2017). *States and Localities that have Raised the Minimum Legal Sale Age for Tobacco Products to 21*. [https://www.tobaccofreekids.org/assets/content/what we do/state local issues/sales 21/states localities MLSA 21.pdf](https://www.tobaccofreekids.org/assets/content/what_we_do/state_local_issues/sales_21/states_localities_MLSA_21.pdf).
- <sup>9</sup> King, BA et al. (2015). Attitudes Toward Raising the Minimum Age of Sale for Tobacco Among U.S. Adults, 49 (4) *Am J Prev Med*. 583.
- <sup>10</sup> Winickoff, JP et al. (2014). Retail Impact of Raising Tobacco Sales Age to Twenty-One. 104 *Am J Public Health*, 18.
- <sup>11</sup> DeJong, W and Blanchette, J (2014). Case Closed: Research Evidence on the Positive Public Health Impact of the Age 21 Minimum Legal Drinking Age in the United States, *J Stud Alcohol Drugs* 108 (Supp. 17 2014).
- <sup>12</sup> Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion, Tobacco Prevention and Control Program (2016). *Alaska Tobacco Facts, 2016 Update*. [http://dhss.alaska.gov/dph/Chronic/Documents/Tobacco/PDF/2016\\_AKTobaccoFacts.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Tobacco/PDF/2016_AKTobaccoFacts.pdf).



## Teens using e-cigarettes show evidence of same toxic chemicals as smokers: Study

By ABC News, March 5, 2018

iStock/Thinkstock (NEW YORK) — Using e-cigarettes has been promoted as a way to help adult smokers cut back or quit smoking, or at least to minimize the health damage that smoking causes. Teens, even middle schoolers, have taken up e-cigarettes as well. But as researchers continue to study their safety, a new report in *Pediatrics* shows vaping could lead to the presence of concerning levels of toxic chemicals.

Almost 100 teens from the San Francisco Bay area were examined in the University of California-San Francisco study: 67 teens used e-cigarettes only, 16 used both e-cigarettes and conventional cigarettes and 20 didn't smoke or vape at all.

Urine and salivary gland testing looked for breakdown products of toxic chemicals that have been associated with cancer — and found them in both smokers and vapers — but not those who didn't smoke at all.

Those who smoked cigarettes and used e-cigarettes had urine samples that indicated a higher presence of benzene, ethylene oxide, acrylonitrile, acrolein and acrylamide (all associated with higher risks of cancer). Levels were three times as high as those who used just e-cigarettes.

In turn, the “e-cigarette only” group had three times more evidence of the presence of acrylonitrile, acrolein, propylene oxide, acrylamide, and crotonaldehyde as non-users. Those chemicals, as well, are associated with a higher cancer risk.

The researchers write, “The presence of harmful ingredients in e-cigarette vapor has been established; we can now say that these chemicals are found in the body of human adolescents who use these products.”

Apparently, the “flavor” of the e-cigarette cartridge matters. Among e-cigarette-users, the levels of acrylonitrile were higher in those who preferred fruit flavors — compared to candy, tobacco or menthol flavors.

This is significant because 55 percent of e-cigarette users — and 67 percent of those who smoked and used e-cigs — preferred fruit flavors.

The study did not go on to see if any of these teens developed cancer.

This is the first study to assess the chemicals in e-cigarettes among adolescent use, highlighting the need to warn teenagers that there is not much known about the possible negative health risks associated with e-cigarettes.

This article was written by Dr. Najibah Rehman, a third-year resident in preventative medicine at the University of Michigan. Dr. Rehman works in the ABC News Medical Unit. Copyright © 2018, ABC Radio. All rights reserved.

**From:** Alyssa Keill  
**To:** House Labor and Commerce  
**Subject:** Support for SB15  
**Date:** Friday, March 30, 2018 8:43:36 AM

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Hello,

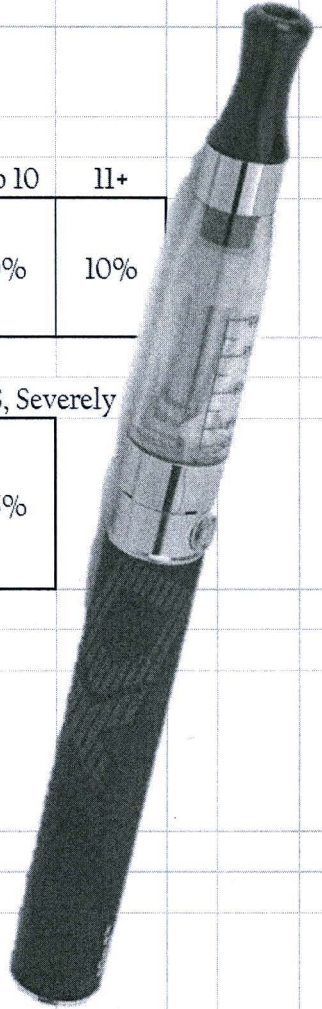
I live in Fairbanks and I would like to voice my support for SB15. I coach a local swim team in the evenings, my training group is age 10-14, and I often work with the high school kids, too. Last week my swimmers participated in Kick Butts Day activities, where they signed a poster to pledge to #BeTheFirst tobacco-free generation.  
([http://www.newsminer.com/news/kris\\_capps/students-at-fairbanks-schools-vow-not-a-replacement-smoker/article\\_079ce458-300f-11e8-a8ae-0b2c2442f319.html](http://www.newsminer.com/news/kris_capps/students-at-fairbanks-schools-vow-not-a-replacement-smoker/article_079ce458-300f-11e8-a8ae-0b2c2442f319.html)) In our preparation to sign this poster we chatted about tobacco facts and many of my middle-school age swimmers expressed a lot of curiosity about e-cigarettes and the risks of vaping. Many of them cannot see how vaping is harmful, and informed me they had seen students vaping on the bus, or had heard of other students asking for vape pens for gifts for their birthdays. This is shocking to me! The risk for young people is real, their lungs and brains are still developing. I don't think this is something that should be compromised because of curiosity and easy e-cig attainment. I feel e-cigs need to be included in age restrictions ASAP, as their inclusion shows that these items truly are not for children.  
Please support SB15 and continue to move it through to the end.

Alyssa Keill

## E-CIGARETTE SURVEY SMOKING IN SCHOOLS

In March 2017, an informal survey (“survey monkey”) was issued to principals of Alaska's public middle and high schools across the state. To date there are 32 respondents, representing a broad group of both urban and rural, large and small schools.

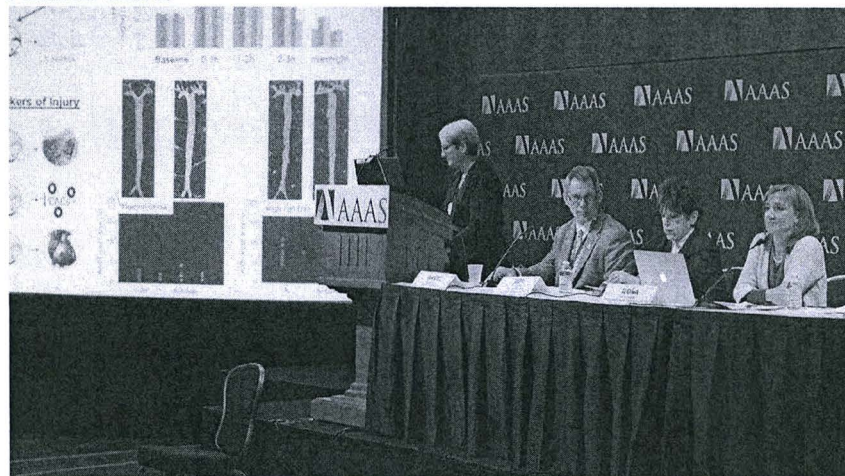
	YES	NO		
Are you observing student use of E-Cigarette (“Vaping”) products in your school?	50%	50%		
	0	1 to 5	6 to 10	11+
About how many instances have you seen, or are you aware of it having occurred, in your school in the past year or so?	42%	38%	10%	10%
	NO	YES	YES, Severely	
There are reports of students discretely smoking E-Cigarette (“Vaping”) products in classrooms, bathrooms, in the hallways, and on the bus. Do you agree this is happening?	50%	34%	16%	
	NO	YES		
The E-Cigarette industry and “Vaping” community often claims their products as only containing “water vapor and flavoring.” Do you believe that?	97%	3%		
	YES			
Do you believe E-Cigarette (“Vaping”) inhalation to be harmful?	100%			
	YES	NO	UNSURE	
Do you believe E-Cigarette (“Vaping”) 2nd-hand smoke to be harmful?	75%	6%	19%	
	YES	NO	No worse so than marijuana or alcohol	
Do you believe there is a current or foreseeable problem with youth access to or use of E-Cigarette (“Vaping”) products?	78%	6%	12%	4%



# Alternative Tobacco Products May Be Just As Dangerous As Cigarettes

12 February 2016

Andrea Korte



Lynne Friedmann (left) moderates a panel of researchers, Daniel Conklin, Judith Zelikoff, and Ilona Jaspers, who revealed new data on the health effects of alternative tobacco products. | Ashley Gilleland/AAAS

E-cigarettes may not be safer than traditional tobacco cigarettes, according to new results presented by a trio of researchers at an 11 February press briefing at the 2016 AAAS Annual Meeting.

The researchers announced results from human and animal studies that found biomarkers of harmful cardiac, pulmonary, and reproductive effects from exposure to alternative tobacco products—a growing market of constantly evolving products including electronic cigarettes, hookah, and smokeless tobacco like snuff and gutkha.

Research has already shown that immune response provided by nasal mucous membranes is compromised in cigarette smokers, which causes them to be more susceptible to the outcomes of a viral infection, said Ilona Jaspers, deputy director of the Center for Environmental Medicine Asthma and Lung Biology at the University of North Carolina at Chapel Hill, but her new research revealed even more immune suppression effects in e-cigarette users than in smokers of traditional cigarettes.

Her analysis of nasal samples from cigarette smokers, e-cigarette users, and non-smokers for a panel of 600 different genes related to immune response found 53 genes suppressed in cigarette smokers. Those same genes were suppressed in e-cigarette users, along with 305 other suppressed genes, Jaspers said.

Animal studies also found that alternative tobacco products without nicotine produced similar or stronger effects than products that include nicotine.

Judith Zelikoff of NYU Langone Medical Center studied pre- and post-natal exposure to mice of commercially available e-cigarette vapors and aerosols with and without nicotine, finding changes to frontal cortex gene expression associated with mental health and activity issues, some of which are associated with schizophrenia, she said. While nicotine and non-nicotine products both produced changes, e-cigarette products without nicotine resulted in even more gene expression changes than products with nicotine, Zelikoff said.

The use of alternative tobacco products, regardless of nicotine content, may pose a risk to developing fetuses, Zelikoff said.

“Because of the concept that e-cigarettes are safer than commonly used cigarettes, you may have pregnant women—and the data show this—taking e-cigarettes during pregnancy so as not to smoke, because the risk factors and the dangers of smoking cigarettes while pregnant are well-known,” Zelikoff said.

“That’s a frightening possibility, given the findings that are emerging,” she added.

Zelikoff’s studies found mice exposed in utero to gutkha had a larger number of cardiovascular risk factors. Adult offspring exposed in utero had increased liver fibrosis and inflammation, with both male and female mice affected.

The third researcher, Daniel Conklin of the University of Louisville, tracked biomarkers of exposure to new and emerging tobacco products as well as biomarkers of cardiovascular harm and injury.

While cigarette smoke contains more than 8,000 chemicals, current and published research in humans and in animals suggests that the molecule acrolein likely contributes significantly to the cardiovascular toxicity of traditional tobacco cigarette smoke, Conklin said. E-cigarette aerosols contain many of the same toxic aldehydes—acid aldehyde, formaldehyde, and acrolein—that are present in tobacco smoke, he said.

“We conclude that toxic aldehydes present in electronic cigarette aerosols are potentially a cause for concern and could adverse impact the cardiovascular health of users,” Conklin said.

Conklin cited a range of supporting research, which has found that exposure to e-cigarette aerosols or tobacco smoke increases the levels of toxic aldehyde metabolites found in the urine in mice. Conklin also said that chronic exposures to smokeless tobacco extracts, mainstream cigarette smoke, acrolein, or e-cigarette aerosol enhanced atherosclerotic lesion formation in a mouse model of atherosclerosis.

Additives to alternative tobacco products—like flavoring agents—also showed effects in studies.

Jaspers followed up her nasal sample analysis with lab studies of immune cells commonly present in nasal mucosa. The cells, which were exposed to different flavors of liquids added to e-cigarettes, repeatedly showed the most significant immune suppressive effects came from strongly cinnamon-flavored liquids.

Jaspers clarified that while U.S. Food and Drug Administration may classify flavoring agents as “generally recognized as safe” for oral consumption, the agents may not show the same results when the products are inhaled.

While research abounds on the negative health effects of traditional tobacco cigarettes, the researchers called for further toxicology research on the effects of popular alternative tobacco products, particularly considering the constant evolution of existing products and the emergence of new products.

“Of course more studies need to be done in this area, because research especially in toxicology of e-cigarettes and their potential toxicity, the science is lagging behind the product manufacture, and we need to catch up in that area,” Zelikoff said.

## **E-Cig Use Increases Risk Of Beginning Tobacco Cigarette Use In Young Adults**

**Date:** December 11, 2017

**Source:** University of Pittsburgh Schools of the Health Sciences

### **Summary:**

Young adults who use electronic cigarettes are more than four times as likely to begin smoking tobacco cigarettes within 18 months as their peers who do not vape, according to new research. The findings demonstrate that e-cigarettes are serving as a gateway to traditional smoking, contrary to their purported value as a smoking cessation tool. The study is the first nationally representative survey that followed for more than a year people 18 to 30 years old who were initially nonsmokers.

### **FULL STORY**

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Young adults who use electronic cigarettes are more than four times as likely to begin smoking tobacco cigarettes within 18 months as their peers who do not vape, according to new University of Pittsburgh research. The findings demonstrate that e-cigarettes are serving as a gateway to traditional smoking, contrary to their purported value as a smoking cessation tool.

Published in the *American Journal of Medicine*, the study is the first nationally representative survey that followed for more than a year people 18 to 30 years old who were initially nonsmokers.

"Early evidence on the potential value of e-cigarettes for cessation or reduction of cigarette smoking has been mixed," said lead author Brian A. Primack, M.D., Ph.D., director of Pitt's Center for Research on Media, Technology and Health, and dean of Pitt's Honors College. "Our study finds that in nonsmokers, e-cigarettes make people more likely to start smoking. This supports policy and educational interventions designed to decrease the use of e-cigarettes among nonsmokers."

The team analyzed a survey of U.S. adults who were randomly selected in March 2013 to complete a questionnaire about their tobacco use. Eighteen months later, in October 2014, 915 participants who said they had never smoked cigarettes completed a follow-up survey.

The team then applied "weights" to the survey results by over- and under-emphasizing the answers of the survey participants in order to arrive at findings that would be more representative of the true make-up of the U.S. population. For example, only 14.2 percent of those surveyed were Hispanic, so the team over-emphasized their answers so that the weighted sample and final results were 19.7 percent Hispanic.

The final, weighted survey results showed that 11.2 percent of participants -- none of whom had ever smoked when they completed the initial questionnaire -- had started smoking tobacco cigarettes. Of participants who said they vaped e-cigarettes in the first questionnaire,

47.7 percent had started smoking cigarettes 18 months later, compared to 10.2 percent of those who did not use e-cigarettes. Without the survey weights to make the sample representative of the U.S. population, 37.5 percent of e-cigarette users had started smoking cigarettes 18 months later, compared to 9 percent of those who didn't use e-cigarettes.

More research will be needed to determine why e-cigarettes increase the risk of someone transitioning to tobacco cigarettes, but Primack noted that several factors are likely at play, including that using e-cigarettes mimics the behavior of smoking traditional cigarettes, the sweet vape is a gentle introduction to smoking harsher tobacco and the build-up of nicotine addiction could lead e-cigarette users to seek out more nicotine-packed tobacco cigarettes.

"Young adulthood is an important time when people establish whether they use tobacco or not," said Primack, also a professor of medicine, pediatrics, and clinical and translational science at Pitt's School of Medicine. "Our findings suggest that clinicians who treat e-cigarette users should counsel them both about their potential for harm and about the high risk of transitioning to tobacco cigarettes among initial nonsmokers."

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### Story Source:

Materials provided by [University of Pittsburgh Schools of the Health Sciences](#). Note: Content may be edited for style and length.

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### Journal Reference:

1. Brian A. Primack, Ariel Shensa, Jaime E. Sidani, Beth L. Hoffman, Samir Soneji, James D. Sargent, Robert Hoffman, Michael J. Fine. **Initiation of Traditional Cigarette Smoking after Electronic Cigarette Use among Tobacco-Naïve U.S. Young Adults.** *The American Journal of Medicine*, 2017; DOI: [10.1016/j.amjmed.2017.11.005](https://doi.org/10.1016/j.amjmed.2017.11.005)

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# E-cigarettes 'poison the airways and weaken the immune system'

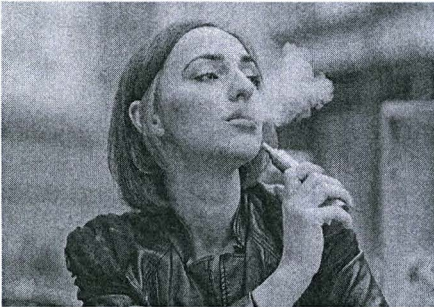
Written by Yvette Brazier

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<http://www.medicalnewstoday.com>

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Electronic cigarettes expose the lungs to toxicity, reduce the effectiveness of the immune system and encourage bacterial activity, potentially making superbugs more deadly, according to research published in the *Journal of Molecular Medicine*.



*E-cigarettes are shown to promote bacterial virulence and inflammation in the latest study.*

In the US, the use of e-cigarettes tripled from 4.5% in 2013 to 13.4% in 2014 among high school students, and from 1.1% in 2013 to 3.9% in 2014 among middle school students, surpassing rates of youth cigarette smoking. In the 25-44-year age group, 20% of Americans smoke e-cigarettes.

While teens smoke them because they are trendy, older smokers are turning to them in an attempt to give up smoking. Interestingly, many teens who smoke e-cigarettes then move on to conventional cigarettes just 1 year later, as reported recently by *Medical News Today*.

In using the device, smokers are risking their airways and immune systems. They are also enhancing the conditions for colonizing bacteria, including some deadly strains.

Researchers at the University of California-San Diego (UCSD) carried out mouse studies to examine the effects of e-liquids from seven different manufacturers.

## Superbug MRSA more deadly after smoking e-cigarettes

The scientists exposed mice to e-cigarette vapors for 1 hour a day, 5 days a week over 4 weeks.

Results showed that inflammatory markers in the airways and blood of mice after inhaling e-vapors were 10% higher than those in unexposed mice. Bacteria that had been exposed to e-cigarette vapor were more virulent in mice infected with pneumonia.

**When mice were infected with normal methicillin-resistant *Staphylococcus aureus* (MRSA), an antibiotic-resistant "superbug," they survived; but 25% of mice that were infected with MRSA after being exposed to e-cigarette vapor died. In other words, *S. aureus* becomes more virulent when exposed to e-cigarette vapor.**

The researchers observed that exposing bacterial pathogens to e-cigarette vapor caused them to thrive. The vapor helped *S. aureus* bacteria to form biofilms, to adhere to and invade airway cells and to resist the defenses of the human immune system.

Some of the changes observed in mice are common to those seen in the airways and blood of conventional cigarette smokers. Others are characteristic of human cancers or inflammatory lung disease.

The results were the same regardless of the brand of vapor used.

Dr. Laura E. Crotty Alexander, of the UCSD School of Medicine, says:

"This study shows that e-cigarette vapor is not benign; at high doses, it can directly kill lung cells, which is frightening. We already knew that inhaling heated chemicals, including the e-liquid ingredients nicotine and propylene glycol, couldn't possibly be good for you. This work confirms that inhalation of e-cigarette vapor daily leads to changes in the inflammatory milieu inside the airways."

Dr. Crotty Alexander says it is not yet clear which lung and systemic diseases will be caused by inhaling e-cigarette vapor, but data suggest that acute toxicities will result from the inflammatory changes involved.

The team recently reported that MRSA bacteria exposed to conventional cigarette smoke are less likely to be killed by the immune system than unexposed bacteria.

Meanwhile, a news outlet recently revealed that a 20-year-old German man's teeth were blown out when an e-cigarette that he was trying in a store exploded in his mouth. He suffered severe facial injuries.

Findings reported in *MNT* also associate e-cigarettes with the development of cancer cells.

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References:

Electronic cigarette inhalation alters innate immunity and airway cytokines while increasing the virulence of colonizing bacteria, John H. Hwang et al., *Journal of Molecular Medicine*, doi:10. 1007/ s00109-016-1378-3, published online 25 January 2016, abstract.

UC San Diego news release, accessed 29 January 2016 via EurekAlert.

Additional source: American Lung Association, E-cigarettes and lung health, accessed 29 January 2016.

Additional source: *The Local*, Cologne man's teeth blown out while smoking e-cigarette, accessed 29 January 2016.

Jan. 23, 2018

FOR IMMEDIATE RELEASE

## New Report One of the Most Comprehensive Studies on Health Effects of E-Cigarettes; Finds That Using E-Cigarettes May Lead Youth to Start Smoking, Adults to Stop Smoking

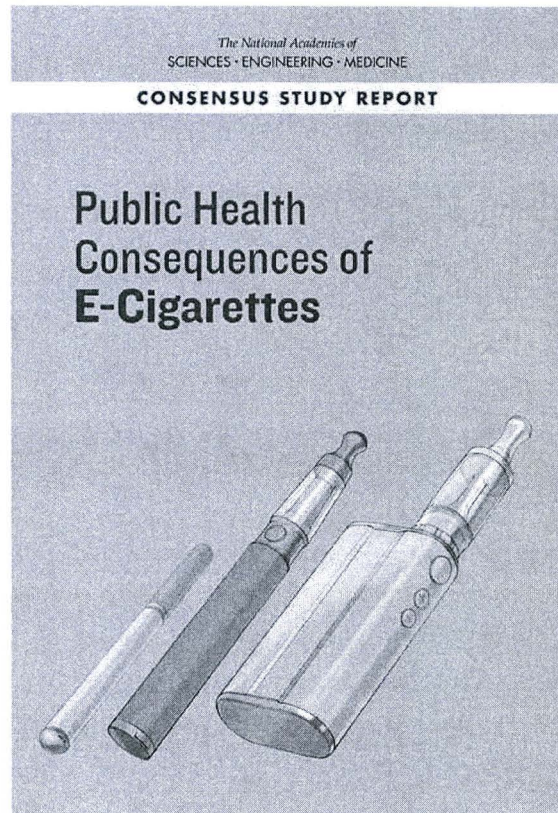
WASHINGTON – A new congressionally mandated report from the National Academies of Sciences, Engineering, and Medicine takes a comprehensive look at evidence on the human health effects of e-cigarettes. Although the research base is limited given the relatively short time e-cigarettes have been used, the committee that conducted the study identified and examined over 800 peer-reviewed scientific studies, reaching dozens of conclusions about a range of health impacts.

Evidence suggests that while e-cigarettes are not without health risks, they are likely to be far less harmful than conventional cigarettes, the report says. They contain fewer numbers and lower levels of toxic substances than conventional cigarettes, and using e-cigarettes may help adults who smoke conventional cigarettes quit smoking. However, their long-term health effects are not yet clear. Among youth -- who use e-cigarettes at higher rates than adults do -- there is substantial evidence that e-cigarette use increases the risk of transitioning to smoking conventional cigarettes.

E-cigarettes are a diverse group of products containing a heating element that produces an aerosol from a liquid that users can inhale via a mouthpiece, and include a range of devices such as “cig-a-likes,” vape tank systems, and vape mods. Millions of Americans use e-cigarettes, and e-cigarette use is generally greatest among young adults and decreases with age. Use varies substantially across demographic groups, including age, gender, race, and ethnicity. For example, among youth and adults, use is typically greater among males than females.

Whether e-cigarettes have an overall positive or negative impact on public health is currently unknown, the report says. More and better research on e-cigarettes’ short- and long-term effects on health and on their relationship to conventional smoking is needed to answer that question with clarity.

“E-cigarettes cannot be simply categorized as either beneficial or harmful,” said David Eaton, chair of the committee that wrote the report, and dean and vice provost of the Graduate School of the University of Washington, Seattle. “In some circumstances, such as their use by non-smoking adolescents and young adults, their adverse effects clearly warrant concern. In other cases, such as when adult smokers use them to quit smoking, they offer an opportunity to reduce smoking-related illness.”



The report offers conclusions about e-cigarette use and a range of health impacts, including the following, and it notes the strength of the evidence for each conclusion.

### **Exposure to nicotine**

- There is conclusive evidence that exposure to nicotine from e-cigarettes is highly variable and depends on the characteristics of the device and the e-liquid, as well as on how the device is operated.
- There is substantial evidence that nicotine intake from e-cigarettes among experienced adult e-cigarette users can be comparable to that from conventional cigarettes.

### **Exposure to toxic substances**

- There is conclusive evidence that in addition to nicotine, most e-cigarettes contain and emit numerous potentially toxic substances.
- There is substantial evidence that except for nicotine, exposure to potentially toxic substances from e-cigarettes (under typical conditions of use) is significantly lower compared with conventional cigarettes.

### **Dependence and abuse liability**

- There is substantial evidence that e-cigarette use results in symptoms of dependence on e-cigarettes.
- There is moderate evidence that risk and severity of dependence is lower for e-cigarettes than for conventional cigarettes.
- There is moderate evidence that variability in the characteristics of e-cigarette products (nicotine concentration, flavoring, device type, and brand) is an important determinant of the risk and severity of dependence on e-cigarettes.

### **Harm reduction**

- There is conclusive evidence that completely substituting e-cigarettes for conventional cigarettes reduces users' exposure to many toxicants and carcinogens present in conventional cigarettes.
- There is substantial evidence that completely switching from regular use of conventional cigarettes to e-cigarettes results in reduced short-term adverse health outcomes in several organ systems.

### **Use by youth and young adults**

- There is substantial evidence that e-cigarette use by youth and young adults increases their risk of ever using conventional cigarettes.

## **Secondhand exposure**

- There is conclusive evidence that e-cigarette use increases airborne concentrations of particulate matter and nicotine in indoor environments compared with background levels.
- There is moderate evidence that second-hand exposure to nicotine and particulates is lower from e-cigarettes compared with conventional cigarettes.

## **Cancer**

- There is no available evidence whether or not e-cigarette use is associated with intermediate cancer endpoints in humans. (An intermediate cancer endpoint is a precursor to the possible development of cancer; for example, polyps are lesions that are intermediate cancer endpoints for colon cancer.)
- There is limited evidence from animal studies using intermediate biomarkers of cancer to support the hypothesis that long-term e-cigarette use could increase the risk of cancer.

## **Respiratory effects**

- There is no available evidence whether or not e-cigarettes cause respiratory diseases in humans.
- There is moderate evidence for increased cough and wheeze in adolescents who use e-cigarettes, and an increase in asthma exacerbations.

## **Injuries and poisonings**

- There is conclusive evidence that e-cigarettes can explode and cause burns and projectile injuries. Such risk is significantly increased when batteries are of poor quality, stored improperly, or are being modified by users.
- There is conclusive evidence that intentional or accidental exposure to e-liquids (from drinking, eye contact, or skin contact) can result in adverse health effects such as seizures, anoxic brain injury, vomiting, and lactic acidosis.
- There is conclusive evidence that intentionally or accidentally drinking or injecting e-liquids can be fatal.

## **Reproductive and developmental effects**

- There is no available evidence whether or not e-cigarettes affect pregnancy outcomes.
- There is insufficient evidence whether or not maternal e-cigarette use affects fetal development.

Until more definite scientific data are available, population modeling can help estimate the balance of potential benefits and harms. Under the assumption that e-cigarette use increases the rate at which adults quit conventional smoking, modeling projects that use of e-cigarettes will generate a net public health benefit, at least in the short run. The harms caused by the higher rate of conventional cigarette smoking among youth who had used e-cigarettes will take decades to appear. For long-range projections, the net public health benefit is substantially less, and under some scenarios the net impact is harmful.

Maximizing the potential health benefits associated with e-cigarettes, the report says, will require determining with more precision whether and under what conditions e-cigarettes help people quit

smoking; discouraging e-cigarette use among youth through education and access restrictions; and increasing the devices' safety through data-driven engineering and design.

The study was sponsored by the U.S. Food and Drug Administration. The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide independent, objective analysis and advice to the nation to solve complex problems and inform public policy decisions related to science, technology, and medicine. They operate under an 1863 congressional charter to the National Academy of Sciences, signed by President Lincoln. For more information, visit [nationalacademies.org](http://nationalacademies.org). A committee roster follows.

Resources:

Download the report at [www.nationalacademies.org/eCigHealthEffects](http://www.nationalacademies.org/eCigHealthEffects)

[Report Highlights](#)

[Recommendations](#)

[Conclusions by Level of Evidence](#)

[Conclusions by Outcome](#)

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