

Report: E-cigarettes appealing to kids

E-cigarette companies face no federal limits on how they can advertise, market their products

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WASHINGTON (CNN) -

Redeploying a major argument from the battle over traditional cigarettes, a dozen Democratic members of Congress released a report on Monday concluding that electronic cigarettes "aggressively (promote) their products by using techniques and venues that appeal to youth" and should be strictly regulated like the non-electronic versions.

"E-cigarette manufactures don't have to play by the same rules (as traditional cigarette makers)," said Rep. Henry Waxman, D-Calif., one of the leaders behind the investigation.

"E-cigarette makers are free to sponsor youth-oriented events and produce flavors that appeal to kids. And that is exactly what's happening," Waxman told reporters on a conference call.

Currently, e-cigarette companies face no federal limits on how they can advertise or market their products. Twenty-eight states restrict the age of purchase for e-cigarettes and a few companies have self-imposed limits, but otherwise the marketplace is wide open.

With this report, the 12 Democrats involved are trying to build pressure on the Food & Drug Administration to "deem" that e-cigarettes be regulated like conventional smokes and therefore face the same strict limits on advertising and sales.

To make the case for tougher regulation, the Congressional report listed several e-cigarette marketing approaches:

Companies offer dozens of sweet flavored e-cigarettes, including tastes like "Iced Berry" and "Peachy Keen," which the lawmakers say appeal to children.

Celebrities who appeal to young people, including singer Chris Brown and actor Robert Pattinson, have been paid to be seen with the devices.

E-cigarette makers have either sponsored or given away their product at hundreds of kid-friendly events, including baseball games and one day at a Six Flags amusement park. Though, scanning the list, the majority of events cited in the report seemed to be at bars, large concerts and music festivals, which may be geared toward adults.

The evidence was enough for the lawmakers.

"(This report) makes it clear the e-cigarette companies... have made a determined effort... to lure children into this nicotine addiction," said Sen. Dick Durbin, D-Illinois, the other leading sponsor of the report.

"It's time for the FDA to step up."

Durbin also cited statistics from the Centers for Disease Control showing a rise in e-cigarette use, from 4.7 percent of all high school students in 2012 to 10 percent in 2013.

In a sign of how the landscape has changed, the e-cigarette industry partially agrees.

"We agree with a number of the report's recommendations," said David Sylvia, speaking for Altria, which owns Philip Morris and sells the MarkTen e-cigarette, "including the FDA asserting regulatory authority over these products and all other tobacco products not yet regulated by the agency."

Sylvia, who is Altria's spokesman, stresses that the company wants an age limit on e-cigarette sales and does not advertise on TV now. Those are widely-held stances in the industry.

"Electronic cigarettes and vaporizing products are not for children," wrote Phil Daman, president of the Smoke Free Alternatives Trade Association. "They should be available to consumers of legal age."

As for the flavors that opponents say mimic candy, Daman insists they are targeted to adults.

"Flavors are very common, and increasingly popular, in many adult product categories, including coffee, liqueurs, and other forms of beverage alcohol," he said.

A spokesman for R.J. Reynold's Vapor Company told CNN their corporation similarly does not want to sell e-cigarettes to children and wants sales limited by age.

But while the industry is on board with age restrictions, e-cigarette makers strongly oppose a sweeping decision to group them with traditional cigarettes in general.

"It's important that they consider e-cigarettes as e-cigarettes, not just take the regulations for convention cigarettes and put them on top of it," Sylvia said.

Much is still unknown about the effects of e-cigarettes.

Research has been limited so far. There is an open debate over whether the products help smokers move away from traditional cigarettes, which contain different combinations of chemicals, or if the electronic devices encourage nicotine addiction and are a gateway to other cigarettes.

It is not clear when the FDA will announce a decision on e-cigarette regulation.

The 12 Democrats backing Monday's report were Durbin, Waxman, Sen. Richard Blumenthal of Connecticut, Sen. Barbara Boxer of California, Sen. Sherrod Brown of Ohio, Sen. Tom Harkin of Iowa, Sen. Heidi Heitkamp of North Dakota, Sen. Ed Markey of Massachusetts, Sen. Jeff Merkley of Oregon, Rep. Frank Pallone of New Jersey, Sen. Jack Reed of Rhode Island and Sen. John Rockefeller of West Virginia.

Electronic (e-) Cigarettes and Secondhand Aerosol

"If you are around somebody who is using e-cigarettes, you are breathing an aerosol of exhaled nicotine, ultra-fine particles, volatile organic compounds, and other toxins," Dr. Stanton Glantz, Director for the Center for Tobacco Control Research and Education at the University of California, San Francisco.

Current Legislative Landscape

- As of January 2, 2014, [108 municipalities and three states include e-cigarettes](#) as products that are prohibited from use in smokefree environments.

Constituents of Secondhand Aerosol

E-cigarettes do not just emit "harmless water vapor." **Secondhand e-cigarette aerosol (incorrectly called vapor by the industry) contains nicotine, ultrafine particles and low levels of toxins that are known to cause cancer.**

- E-cigarette aerosol is made up of a high concentration of ultrafine particles, and the particle concentration is higher than in conventional tobacco cigarette smoke.¹
- Exposure to fine and ultrafine particles may exacerbate respiratory ailments like asthma, and constrict arteries which could trigger a heart attack.²
- At least 10 chemicals identified in e-cigarette aerosol are on California's Proposition 65 list of carcinogens and reproductive toxins, also known as the [Safe Drinking Water and Toxic Enforcement Act of 1986](#). The compounds that have already been identified in [mainstream \(MS\)](#) or [secondhand \(SS\)](#) e-cigarette aerosol include: **Acetaldehyde (MS), Benzene (SS), Cadmium (MS), Formaldehyde (MS,SS), Isoprene (SS), Lead (MS), Nickel (MS), Nicotine (MS, SS), N-Nitrosornicotine (MS, SS), Toluene (MS, SS).**^{3,4}
- **E-cigarettes contain and emit propylene glycol**, a chemical that is used as a base in e-cigarette solution and is one of the primary components in the aerosol emitted by e-cigarettes.
 - Short term exposure causes eye, throat, and airway irritation.⁵
 - Long term inhalation exposure can result in children developing asthma.⁶
- Even though propylene glycol is FDA approved for use in some products, the inhalation of vaporized nicotine in propylene glycol is not. Some studies show that heating propylene glycol changes its chemical composition, producing small amounts of propylene oxide, a known carcinogen.⁷
- There are **metals in e-cigarette aerosol, including chromium, nickel, and tin nanoparticles.**⁸
- FDA scientists found detectable levels of carcinogenic tobacco-specific nitrosamines in e-cigarette aerosol.⁹

- People exposed to e-cigarette aerosol absorb nicotine (measured as cotinine), with one study showing levels comparable to passive smokers.¹⁰
- **Diethylene Glycol**, a poisonous organic compound, was also detected in e-cigarette aerosol.¹¹
- **Exhaled e-cigarette aerosol contained propylene glycol, glycerol, flavorings, and nicotine, along with acetone, formaldehyde, acetaldehyde, propanal, diacetyl, and triacitine.**¹²
- Many of the elements identified in the aerosol are known to **cause respiratory distress and disease**. The aerosol contained particles >1 µm comprised of tin, silver, iron, nickel, aluminum, and silicate and nanoparticles (<100 nm) of tin, chromium and nickel. The concentrations of nine of eleven elements in e-cigarette aerosol were higher than or equal to the corresponding concentrations in conventional cigarette smoke.¹³
- E-cigarettes cause exposure to different chemicals than found in conventional cigarettes and there is a need for risk evaluation for both primary and passive exposure to the aerosol in smokers and nonsmokers.¹⁴
- Short term use of e-cigarettes has been shown to increase respiratory resistance and impair lung function, which may result in difficulty breathing.¹⁵
- Overall, e-cigarettes are a new source of **Volatile Organic Compounds (VOCs) and ultrafine/fine particles in the indoor environment**, thus resulting in "passive vaping."¹⁶

E-cigarette aerosol is a new source of pollution and toxins being emitted into the environment. We do not know the long-term health effects of e-cigarette use and although the industry marketing of the product implies that these products are harmless, the aerosol that e-cigarettes emit is not purely water vapor.

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E-Cigarettes & Smoke-free Laws

ACS CAN's Current Views

E-cigarette use should be prohibited in all workplaces, restaurants, and bars.

ACS CAN advocates for comprehensive smoke-free laws in all workplaces to protect workers and the public from the harmful effects of secondhand exposure and to create communities that support tobacco-free living. Electronic cigarettes, or e-cigarettes, including supposed non-nicotine e-cigarettes, should also be prohibited in all workplaces, restaurants, and bars to protect against secondhand exposure to nicotine and other potentially harmful chemicals, to ensure the enforcement of existing smoke-free laws are not compromised, and that the public health benefits of a smoke-free laws are not undermined.

E-cigarette aerosol can contain nicotine and other potentially harmful chemicals.

E-cigarettes are typically battery-operated products designed to deliver a heated solution, or aerosol of nicotine and other chemicals, to the user. E-cigarettes can be disposable or consist of a rechargeable, battery-operated heating element; a replaceable or refillable cartridge that may contain nicotine, flavoring agents, and other chemicals (sometimes called "e-juices"); and an atomizer that uses heat to convert the contents of the cartridge into an aerosol that is inhaled by the user.¹

A growing number of studies have examined the contents of e-cigarette aerosol. Unlike a vapor, an aerosol contains fine particles of liquid, solid, or both. Propylene glycol, nicotine, and flavorings were most commonly found in e-cigarette aerosol. Other studies have found the aerosol to contain heavy metals, volatile organic compounds and tobacco-specific nitrosamines, among other potentially harmful chemicals.^{2,3} A 2009 study done by the FDA found cancer-causing substances in several of the e-cigarette samples tested.⁴ Additionally, Food and Drug Administration (FDA) tests found nicotine in some e-cigarettes that claimed to contain no nicotine.

Firsthand exposure to the aerosol comes from personal use of an e-cigarette. Secondhand exposure occurs when the user exhales the aerosol, at which time, a nonuser can be exposed. The level of secondhand exposure to a nonuser will depend on a number of factors including the type of e-cigarette used, particle sizes in the aerosol, how the e-cigarette is used, and other environmental factors such as air flow and room size.

While the health effects of e-cigarettes are currently under study, there are still serious questions about the safety of inhaling the substances in e-cigarette aerosol. Studies have shown that the use of e-cigarettes can cause short-term lung changes and irritations, while the long-term health effects are unknown.⁵ Both exposure to and health effects of secondhand aerosol from e-cigarettes require further research, but preliminary studies indicate nonusers can be exposed to the same potentially harmful chemicals as users, including nicotine, ultrafine particles and volatile organic compounds.^{6,7} This exposure could be especially problematic for vulnerable populations such as children, pregnant women, and people with heart disease depending on the level of exposure.

Finally, it is important to establish the potential exposure and associated risks of e-cigarette aerosol to users and nonusers, in addition to comparing those risks to exposure to cigarette smoke, as several studies have done.

Chemicals identified in some e-cigarette aerosol include:

- Propylene glycol
- Nicotine
- Tobacco-specific nitrosamines
- Metals
- Volatile organic compounds
- Polycyclic aromatic hydrocarbons
- Flavorings

E-cigarette use in workplaces, restaurants, and bars can undermine the public health benefits of smoke-free laws and compromise enforcement.

Tobacco users are not the only ones who breathe its deadly smoke—all the people around them are forced to inhale it too. Recognizing that there is no safe level of secondhand smoke exposure, 24 states and more than 673 localities have comprehensive smoke-free laws.⁸ These laws not only protect nonusers from exposure to secondhand smoke, they also reduce the acceptability of smoking which reduces the number of people, especially youth, who start smoking and increases quit attempts by smokers. The increased protection and reduced acceptability have led to lower smoking rates and improved health status, including fewer heart attacks and cancers.⁹

The use of e-cigarettes in workplaces, restaurants, and bars can undermine the public health benefits that have been and continue to be achieved by smoke-free laws. E-cigarette users who continue to use cigarettes will not experience the health benefits of quitting, and nonusers can be exposed to their secondhand aerosol. Because some e-cigarettes are designed to look like cigarettes and cigars, the unacceptability of smoking in these places could be compromised which could lead to new users or a reduction in current users who quit. Additionally, from a practical standpoint, business owners can face difficulty when enforcing smoke-free laws if e-cigarette use is permitted because of their designs. These risks do not prevent some e-cigarette manufacturers from specifically marketing their products for use in places where smoking is prohibited.

E-cigarette use is on the rise and requires federal, state, and local action.

Since the introduction of e-cigarettes to the U.S. market approximately 7 years ago, the marketing and use of these products have increased.

- Youth: A study from the Centers for Disease Control and Prevention (CDC) found that e-cigarette use increased from 3.3 to 6.8 percent among middle and high school students between 2011 and 2012, resulting in an estimated 1.78 million youth who have tried e-cigarettes.¹⁰
- Adults: A study looking at data from 2010-2013 found an increase in the number of adults who have ever used e-cigarettes, from 3.3 to 8.5 percent. In 2013, 36.5 percent of current smokers had ever tried e-cigarettes, as compared to 79.8 percent of former smokers and 1.2 percent of never smokers.¹¹

While e-cigarette manufacturers may claim the ingredients are just “water vapor” or “safe,” without federal regulation there is no sure way for e-cigarette users to know what they are consuming. Nor is there any way of knowing what nonusers are exposed to and the extent of the risk to their health. Additionally, there are hundreds of types of e-cigarettes on the market today and the products vary considerably by ingredients, and quality control and assurance. Prohibiting the use of e-cigarettes in workplaces, restaurants, and bars can protect the public health by preventing nonusers from being exposed nicotine and other potentially harmful chemicals in these products.

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Commonly Asked Questions about Electronic Cigarettes

What are electronic cigarettes or e-cigarettes?

Electronic cigarettes, also known as e-cigarettes, are typically battery-operated products designed to deliver a heated solution, or vapor, of nicotine and other chemicals to the user. E-cigarettes can be disposable or consist of a rechargeable battery-operated heating element; a replaceable or refillable cartridge that may contain nicotine, flavoring agents, and other chemicals (sometimes called “e-juices”); and an atomizer that uses heat to convert the contents of the cartridge into a vapor that is inhaled by the user.ⁱ Some e-cigarettes are designed to look like cigarettes, cigars, pipes, or hookahs.

This factsheet will review:

- **What is an e-cigarette**
- **Are they safe**
- **Is nicotine safe**
- **Use (initiation & quitting)**
- **Marketing**
- **Regulation**
- **Where ACS CAN stands**

Are e-cigarettes safe, as manufacturers claim?

There are more than 250 types of e-cigarettes on the market today and the products vary considerably by ingredients, quality control and assurance, and ability to reliably deliver nicotine to users. E-cigarette manufacturers claim the ingredients are “safe,” but without federal regulation, there is no sure way for e-cigarette users to know what they are consuming and the extent of potential risk.

Currently, only a limited number of studies have examined the contents of e-cigarette vapor. Some of the studies have found the vapor to contain only propylene glycol, nicotine, and flavorings, and other studies found them to contain heavy metals, volatile organic compounds and tobacco-specific nitrosamines, among other ingredients. A 2009 study done by the FDA found cancer-causing substances in several of the e-cigarette samples tested.ⁱⁱ Additionally, Food and Drug Administration (FDA) tests found nicotine in some e-cigarettes that claimed to contain no nicotine. Propylene glycol is used for food preservation among other uses, and while generally recognized as safe by the FDA for those uses, there is no evidence to date on the safety of inhaling propylene glycol in e-cigarettes, especially in a heated solution and over a long period of time.

The health effects of e-cigarettes are scientifically uncertain, especially their long-term effects. There is general agreement among scientists in the field that, in the short run, at least, e-cigarettes are almost certainly less harmful than combusted cigarettes. But there are still serious questions about the safety of inhaling the substances in some e-cigarette vapor. E-cigarettes have not been subject to thorough, independent testing, so users cannot be sure of what they are actually inhaling. Some studies have shown that some e-cigarettes can cause short-term lung changes and irritations and the long-term health effects, as noted above, are unknown.

Additionally, the effects of secondhand vapor from e-cigarettes require further study, especially to determine differences among the many brands and types of e-cigarettes. Finally, the health impact on individuals using e-cigarettes while also using other tobacco products, such as cigarettes, is not documented in the scientific literature. This is a particularly important area of study because initial reports

of e-cigarette use indicate that e-cigarettes are used by some cigarette smokers in addition to smoking cigarettes, rather than as a replacement for cigarettes. More research is needed to determine if continuing to smoke cigarettes, even fewer, along with e-cigarette use poses a risk for premature death and disease.

Is the nicotine used in e-cigarettes safe?

Nicotine is a drug found naturally in tobacco. Its dependence-producing properties are similar to those of heroin or cocaine.ⁱⁱⁱ The risk for addiction depends on the dose of nicotine delivered, the way it is delivered, and the length of time over which it is used. Nicotine addiction can cause withdrawal symptoms when an individual tries to quit. Several nicotine replacement therapies – such as gum, patches, sprays, inhalers, or lozenges – have been approved by the FDA as safe and effective for use to help relieve withdrawal symptoms, without providing the cancer-causing chemicals found in tobacco products. However, exposure to nicotine can still have harmful consequences for some users. Scientific evidence has shown that nicotine affects maternal and fetal health during pregnancy, potentially leading to preterm delivery or stillbirth and adverse consequences to brain development of the fetus.^{iv} Additionally, scientific evidence suggests that nicotine can have long-term adverse effects on brain development among adolescents. Therefore, pregnant women and adolescents are cautioned from using any nicotine containing products, including e-cigarettes.

Who is using e-cigarettes, and how are they used?

There is very little surveillance of e-cigarette use in the United States to date. A study from the Centers for Disease Control and Prevention (CDC) found that e-cigarette experimentation increased among middle and high school students between 2011 and 2012 (from 3.3 percent to 6.8 percent), resulting in an estimated 1.78 million youth who have tried e-cigarettes.^v Current e-cigarette use increased for this population of youth from 1.1 percent to 2.1 percent. These increases were greater among high school students.

A study of 2010-11 data found the number of adults who have ever used e-cigarettes increased from 3.3 percent to 6.2 percent.^{vi} In 2011, 21.2 percent of current smokers had ever tried e-cigarettes, as compared to 7.4 percent of former smokers and 1.3 percent of never smokers, suggesting that, at the present, e-cigarette use among adults is largely confined to current and former cigarette smokers. Another study found that the majority of e-cigarette users across four countries reported using e-cigarettes to help them quit cigarettes and because they thought they were less harmful than cigarettes.^{vii}

Will e-cigarettes help people stop using tobacco products entirely?

There have been only a few randomized controlled trials of e-cigarettes as a smoking cessation aid.^{viii} Only one of these compared the effectiveness of e-cigarettes as a quitting aid to an already- tested, approved quitting medication. The study compared the use of nicotine-replacement therapy patches and e-cigarettes with the outcome of abstinence from cigarettes at 6 months. It concluded that e-cigarettes may be at least as effective as nicotine patches aiding in quitting cigarettes (7.3 percent and 5.8 percent 6 months abstinence, respectively). Other studies that have attempted to look at the potential of e-cigarettes as a cessation aid have found that, while e-cigarettes may aid in reducing the number of

cigarettes smoked, there was not a significant difference between smokers who used e-cigarettes and smokers who did not use e-cigarettes in terms of quitting cigarette use entirely.^{ix}

Therefore the question still remains whether, and to what degree, e-cigarettes are an effective smoking cessation aid, and whether reducing the number of cigarettes smoked by using both e-cigarettes and cigarettes at the same time reduces an individual's risk for premature death and disease. The answers to these questions and others must come from a wide-ranging, independent research agenda.

In the absence of FDA guidance and sufficient research evidence establishing e-cigarettes as an effective method to help smokers quit, **ACS CAN does not at this time recommend e-cigarettes for smoking cessation.** Instead, for those smokers for whom it is appropriate to use a cessation medication, ACS CAN recommends use of one FDA-approved and thoroughly tested smoking cessation medications (i.e. nicotine replacements – gum, patch, lozenge, inhaler, nasal spray - or bupropion or varenicline).

Will youth use e-cigarettes as an introduction to regular cigarettes?

The rapid increase in youth trying e-cigarettes in recent years raises questions as to whether these youth will be drawn into long-term nicotine addiction and whether they will supplement or replace e-cigarette use with cigarettes or other tobacco products. The lack of surveillance of e-cigarette use makes this question hard to answer at this time, but there are several key factors, based on past experience with tobacco industry products and marketing, that raises the concern of some in the public health and health community.

First, more than 80 percent of adult smokers report starting before the age of 18 and adolescents who use smokeless tobacco are more likely to become adult smokers than adolescents who do not use smokeless tobacco.^x This suggests that nicotine experimentation in youth can lead some youth to a lifetime of nicotine addiction and use of tobacco products. Second, the widespread, unregulated use of e-cigarettes has the potential to result in smoking once again as a socially acceptable behavior which has potentially significant implications for youth initiation and adult continuation of cigarette smoking. Third, e-cigarettes are accessible to youth since they are not covered under all state and local youth access laws and are available for purchase through the internet. Finally, many of the makers of e-cigarettes are utilizing tobacco company product and marketing tactics that have been proven effective at targeting youth, including the use of candy flavoring and celebrity endorsements. The increase in youth trying e-cigarettes is not surprising given the increased access to, promotion of, and exposure to e-cigarettes; and raises serious questions on the potential for long-term nicotine addiction and use of cigarettes and other tobacco products.

How are e-cigarettes being marketed?

E-cigarettes are widely available to nearly anyone who wishes to purchase them, since they are often not subject to the same legal restrictions as cigarettes and other tobacco products. E-cigarettes are advertised on television, radio, online, in print magazines, including those with high youth readership, and at sports and music events. Some e-cigarette manufacturers are using the same marketing practices effectively used by the tobacco companies to target youth and mislead consumers about the potential safety and health impact of their products. Such practices include celebrity endorsements, sports and musical

sponsorships, and images of e-cigarettes as rebellious, sexy and cool, as well as the use of flavorings in their products.^{xi} Some e-cigarette manufacturers claim e-cigarettes are a safe, less harmful alternative to cigarettes despite the lack of regulation to ensure their safety or health impact. Additionally, e-cigarettes are advertised as a way to “legally smoke” or “take back your freedom” where smoke-free laws exist in states and localities. As part of its request for FDA to regulate e-cigarettes, several leading members of Congress have developed a side-by-side presentation of e-cigarette and cigarette marketing practices (democrats.energycommerce.house.gov).

Why the controversy?

The potential benefits of e-cigarettes are the ability to deliver nicotine to the user without many of the other harmful chemicals in cigarettes, the absence of secondhand cigarette smoke, and the potential to aid smokers in quitting cigarettes.

There are concerns, however, that because these products are unregulated and current research provides mixed views of whether the potential benefits will be borne out in the long run, the safety claims made by manufacturers are unsubstantiated by objective scientific evidence and may be misleading the public. FDA regulation of e-cigarettes and sufficient science-based, independent research is essential in order for the public health and health community, cigarette smokers, and the public at-large to be accurately informed about e-cigarettes, including the ingredients and the potential benefits or harms of use. Research is also needed to assess whether youth can be drawn into long-term nicotine use through e-cigarettes, whether wide use of e-cigarettes can re-normalize cigarette use, and whether e-cigarette use will be a net harm or benefit for population-based public health. There is a growing scientific literature surrounding e-cigarettes and considerable research is underway. The controversy surrounding e-cigarettes and harm reduction more broadly will not go away, but as these results become available and FDA asserts its authority to regulate these products, more accurate, science-based policies and public education can be developed.

Are e-cigarettes regulated?

When e-cigarettes were first introduced on the market, the FDA tried to regulate e-cigarettes as a drug-delivery device, like other tobacco cessation aids such as nicotine gum or patches. NJOY, one e-cigarette maker, presented a legal challenge and a federal court ruled e-cigarettes can only be regulated as a drug-delivery device when a therapeutic claim is made (ex. aids in cessation); without such claim, the only way the FDA can assert its regulatory authority over e-cigarettes is to regulate them as tobacco products. Currently, however, e-cigarettes remain unregulated. FDA has stated its intent to assert the authority of the Center for Tobacco Products to regulate all tobacco products, but a rule has yet to be issued. FDA assertion would allow the agency to require e-cigarette manufacturers to register their products with the FDA, provide FDA with their ingredients, establish good manufacturing practices, address impure/untested product additions and misbranding issues, and restrict marketing and sales only to those 18 years and older, among other potential regulations.

What are ACS CAN's views on e-cigarettes?

In the absence of FDA guidance and sufficient research evidence establishing e-cigarettes as an effective method to help smokers quit, ACS CAN does not at this time recommend e-cigarettes for smoking

cessation. Instead, for those smokers for whom it is appropriate to use a cessation medication, ACS CAN recommends use of one or more of the seven FDA-approved and thoroughly tested smoking cessation medications (i.e. nicotine replacements – gum, patch, lozenge, inhaler, nasal spray - or bupropion or varenicline).

ACS CAN agrees there is a need for a wide-ranging, independent research agenda on e-cigarettes, but we recognize that even without sufficient scientific evidence of the safety or health impact of e-cigarettes, inaction on e-cigarettes is not in the best interest of protection of the public's health. Therefore, ACS CAN supports the FDA asserting its authority to regulate e-cigarettes and other tobacco products and the inclusion of e-cigarettes in state and local evidence-based tobacco prevention and control measures, including prohibiting the use of e-cigarettes wherever smoking is prohibited.

ⁱ U.S. Food and Drug Administration. E-Cigarettes: Questions and Answers. September 17, 2010. Available online at <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm225210.htm>.

ⁱⁱ U.S. Food and Drug Administration. Summary of Results: Laboratory Analysis of Electronic Cigarettes Conducted by FDA. July 22, 2009. Available online at <http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm173146.htm>.

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^{iv} U.S. Department of Health and Human Services. *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*. Atlanta, GA: 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, 2014.

^v Centers for Disease Control and Prevention. Electronic Cigarette Use Among Middle and High School Students – United States – United States, 2011-2012. *MMWR* 2013; 62(35): 729-730.

^{vi} King, BA et al. Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. *Nicotine & Tobacco Research* 2013; 15(9): 1623-1627.

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^{viii} Bullen C., et al. Electronic cigarettes for smoking cessation: a randomised controlled trial. *The Lancet*, Early Online Publication, 9 September 2013.

^{ix} Adkison S, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *American Journal of Preventive Medicine*. 2013 March; 44(3): 207-215.

^x U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: 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, 2012.

^{xi} U.S. Surgeon General. *Preventing Tobacco Use Among Youth and Young Adults*. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention; 2012



Electronic Cigarettes: Research and Policy Are Needed Now

Electronic cigarettes, or e-cigarettes, are typically battery-operated products designed to deliver a heated solution, or vapor, of nicotine and other chemicals to the user. E-cigarettes can be disposable or consist of a rechargeable, battery-operated heating element; a replaceable or refillable cartridge that may contain nicotine, flavoring agents, and other chemicals (sometimes called “e-juices”); and an atomizer that uses heat to convert the contents of the cartridge into a vapor that is inhaled by the user.ⁱ Some e-cigarettes are designed to look like cigarettes, cigars, pipes, or hookahs.

This factsheet will review:

- What is an e-cigarette
- Safety
- Use and marketing
- Research & policy needs
- Where ACS CAN stands

Currently, no U.S. federal agency regulates e-cigarettes. In 2010, a federal court ruled that e-cigarettes cannot be regulated as drugs or devices unless marketed for therapeutic purposes (ex. cessation); in the absence of a therapeutic claim, e-cigarettes can be regulated as tobacco products.ⁱⁱ The Food and Drug Administration (FDA) has stated its intent to assert the authority of the Center for Tobacco Products to regulate all tobacco products, but a rule has yet to be issued.

Safety

There are more than 250 types of e-cigarettes on the market today and products vary considerably by ingredients, quality control and assurance, and ability to reliably deliver nicotine to users. E-cigarette manufacturers claim the ingredients are “safe,” but e-cigarettes have not been subject to thorough, independent testing so users cannot be sure of what they are actually inhaling.

Currently, only a limited number of studies have examined the contents of e-cigarette vapor. Some studies have found the vapor to contain only propylene glycol, nicotine, and flavorings, and other studies found the vapor contained heavy metals, volatile organic compounds and tobacco-specific nitrosamines, among other harmful ingredients.

The health effects of e-cigarettes – especially the longer-term effects – are scientifically uncertain. There is general agreement among scientists in the field that, in the short run, most e-cigarettes are almost certainly less harmful than combusted cigarettes. But there are still serious questions about the safety of inhaling the substances in e-cigarette vapor. Without federal regulation, there is no sure way for e-cigarette users to know what they are consuming and the extent of potential risk.

Questions also exist about whether e-cigarettes are an effective cessation aid for cigarettes, or whether reducing the number of cigarettes smoked – by using a combination of both e-cigarettes and cigarettes – reduces an individual’s risk for premature death and disease. Some smokers report they have used e-cigarettes as a way to reduce the harm from or quit cigarettes, but there is a lack of evidence to date demonstrating that e-cigarettes are either a wholly safe product or an effective cessation aid.ⁱⁱⁱ There have been several randomized controlled trials of e-cigarettes as a smoking cessation aid, the most extensive of which reported that e-cigarettes were at least as effective as the nicotine patch.^{iv} Other studies that have looked at the potential of e-cigarettes as a cessation aid have found that, while e-cigarettes may aid in

reducing the number of cigarettes smoked, there was no significant difference between smokers who used e-cigarettes and smokers who did not use e-cigarettes in terms of quitting cigarettes entirely.^v

Additional research is needed on the short and long term health effects of e-cigarette use among cigarettes smokers and nonsmokers, comparison of e-cigarettes to the well-known and documented health dangers of combusted cigarette use, and e-cigarettes' effectiveness as quitting aids. This is particularly necessary in light of increased e-cigarette use among youth.

Increased Use and Marketing of E-Cigarettes

Since the introduction of e-cigarettes to the U.S. market approximately 7 years ago, the marketing and use of these products have increased. A study from the Centers for Disease Control and Prevention (CDC) found that e-cigarette use increased from 3.3 to 6.8 percent among middle and high school students between 2011 and 2012, resulting in an estimated 1.78 million youth who have tried e-cigarettes.^{vi} A study looking at data from the previous year (2010-2011) found an increase in the number of adults who have ever used e-cigarettes, from 3.3 to 6.2 percent.^{vii} In 2011, 21.2 percent of current smokers had ever tried e-cigarettes, as compared to 7.4 percent of former smokers and 1.3 percent of never smokers.

E-cigarettes are widely available and often are not subject to the legal restrictions to which cigarettes and other tobacco products are required to adhere. E-cigarettes are advertised on television, radio, online, in print magazines, including those with high youth readership, and at sports and music events. Particularly troublesome is that some e-cigarette manufacturers are using the same marketing practices effectively used by the tobacco companies to target youth and mislead consumers about the potential health impact of their products. These practices include celebrity endorsements, sports and musical sponsorships, use of images of e-cigarettes as rebellious, sexy and cool and the use of flavorings in their products.^{viii} Additionally, e-cigarettes are advertised as a way to "legally smoke" or "take back your freedom" where smoke-free laws exist in states and localities. Some e-cigarette manufacturers claim e-cigarettes are a safe, less harmful alternative to cigarettes despite the lack of regulation to ensure their safety or health impact.

Research and Public Health Policy are Needed Now

There is broad agreement in the public health and health community on the need for a wide-ranging, independent research agenda on e-cigarettes and other novel products. FDA's assertion of authority over all tobacco products, including e-cigarettes, is fundamental to the development and implementation of that agenda, but others in the scientific community must also address important research questions. Studies should assess product safety, use, marketing strategies, health impact, and reduced risk of death and disease and should ensure all potentially affected populations are adequately involved. A comprehensive research agenda should also include effectiveness of interventions to influence individuals' use of e-cigarettes, once safety and risk are determined, and surveillance measures to monitor use.

Where ACS CAN Stands

ACS CAN recognizes that even without sufficient scientific evidence of the safety or health impact of e-cigarettes, inaction is not in the best interest of protecting the public health. The lack of regulation of e-cigarettes, the increase in use by adults and youth, the aggressive claims and marketing tactics of the e-cigarette manufacturers, and the public perception of unsubstantiated claims of e-cigarettes require the public health community to proceed with actions to reduce any potential harm from e-cigarettes, unless and until the product's safety and public health benefit is supported by sound scientific evidence.

ACS CAN supports:

- **Strong Federal Regulation:** *The FDA should assert its authority over all tobacco products, including e-cigarettes, as granted by the Family Smoking Prevention and Tobacco Control Act.* FDA has stated its intent to expand the authority of its Center for Tobacco Products to regulate a broader range of tobacco products, including e-cigarettes, but a regulation has yet to be issued. FDA assertion would allow for important consumer protections including, by not limited to, requiring e-cigarette manufacturers to register their products with the FDA, provide FDA with their ingredients, establish good manufacturing practices, address impure/untested product additions and misbranding issues, and restrict marketing and sales to those 18 years and older.
- **Strengthening State and Local Tobacco Control Measures:** *Many states and localities are moving forward and enacting regulations on the sale and use of e-cigarettes. E-cigarettes should be included in evidence-based state and local tobacco control laws.*
 - E-cigarettes should be defined as tobacco products and included in definitions of smoking in order to:
 - Prohibit e-cigarette use where smoking and/or tobacco use is prohibited.
 - Prohibit the sale of e-cigarettes to minors.
 - Prohibit the sale of flavored e-cigarettes and e-juices.
 - Include e-cigarettes in tobacco sales or marketing restrictions.
 - State tobacco control programs should include e-cigarettes in their surveillance and evaluation tools, as appropriate.

Finally, in the absence of FDA guidance and sufficient research evidence establishing e-cigarettes as an effective method to help smokers quit, ACS CAN does not at this time recommend e-cigarettes for smoking cessation. Instead, for those smokers for whom it is appropriate to use a cessation medication, ACS CAN recommends use of FDA-approved and thoroughly tested smoking cessation medications (i.e. nicotine replacements – gum, patch, lozenge, inhaler, nasal spray - or bupropion or varenicline).

ⁱ U.S. Food and Drug Administration. E-Cigarettes: Questions and Answers. September 17, 2010. Available online at <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm225210.htm>.

ⁱⁱ *Sottera, Inc. v. Food and Drug Administration*, 627 F.3d 891 (D.C. Cir. 2010).

ⁱⁱⁱ Adkison S, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *American Journal of Preventive Medicine*. 2013 March; 44(3): 207-215.

^{iv} Bullen C., et al. Electronic cigarettes for smoking cessation: a randomized controlled trial. *The Lancet*, Early Online Publication, 9 September 2013.

^v Adkison S, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *American Journal of Preventive Medicine*. 2013 March; 44(3): 207-215.

^{vi} Centers for Disease Control and Prevention. Electronic Cigarette Use Among Middle and High School Students – United States – United States, 2011-2012. *MMWR* 2013; 62(35): 729-730.

^{vii} King, BA et al. Awareness and Ever Use of Electronic Cigarettes Among U.S. Adults, 2010-2011. *Nicotine & Tobacco Research* 2013; 15(9): 1623-1627.

^{viii} U.S. Surgeon General. *Preventing Tobacco Use Among Youth and Young Adults*. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention; 2012

Legislators to Consider State-Wide Public Smoking Ban, Includes E-Cig

Shannon Riddle, Weekend Digital Producer

POSTED: 12:13 PM AKDT Apr 13, 2014



Joseph Morris/Creative Commons

ANCHORAGE -

A state senator from Soldotna is one step closer to achieving a state-wide smoking ban in public places. While many large communities in Alaska have their own statutes banning smoking inside public buildings and near children's play areas, Sen. Peter Micciche (R-Soldotna) says Senate Bill 209 will provide a far-reaching measure to include all communities in the state not currently protected from second-hand smoke, including Fairbanks.

"Senate Bill 209 will protect Alaskans from the well-known health harms of secondhand smoke by amending existing state law to provide comprehensive protection for Alaskan workers and [the] public in all indoor workplaces, businesses and public places," Sen. Micciche stated in [his sponsor statement](#).

[Only 23 states and Puerto Rico have laws](#) that banning second-hand smoke while eating at restaurants, visiting bars, or just working at their place of business. Many other states have similar statutes to Alaska's that prohibit smoking in certain areas only within the boundaries of specified cities and counties, and there is no existing federal law mandating such practices.

Owners of businesses that exist outside areas with the ban around the country may choose to allow customers to smoke inside, and private residences are also exempt unless otherwise specified by landlord/tenant agreements.

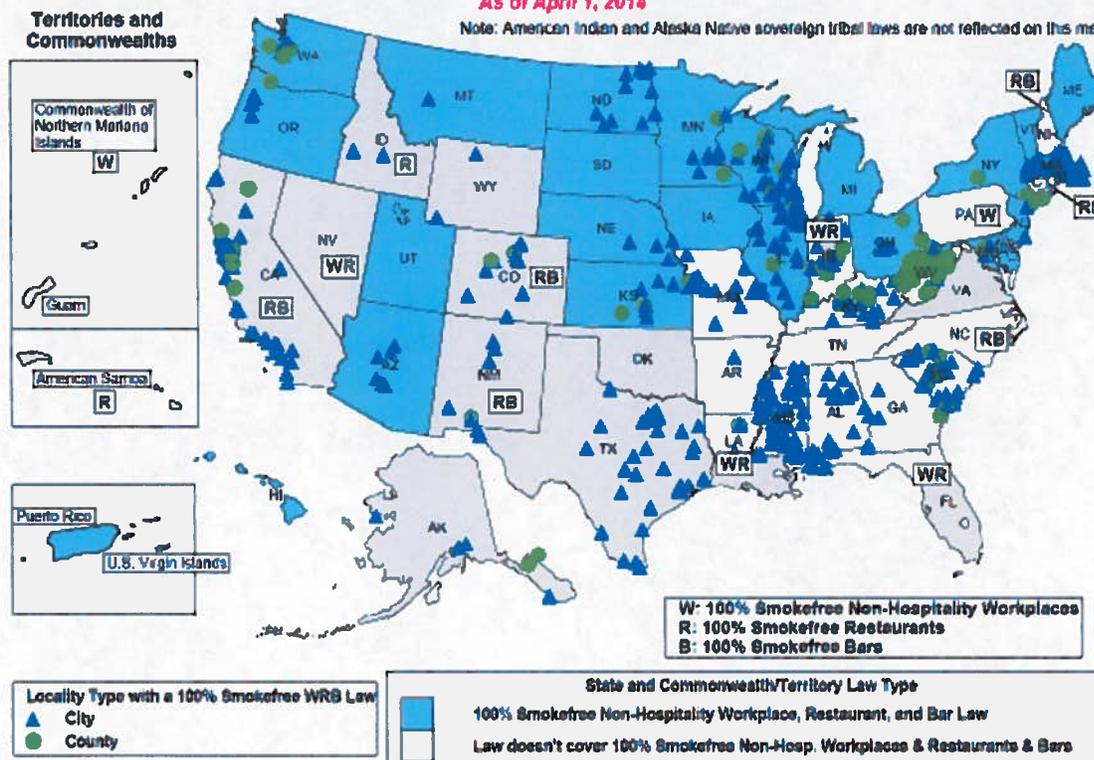
Supporters of the bill say this is a step in the right direction for Alaska's health and protecting their families from the ill-effects of second-hand smoke.

"If I eat poorly or drink a beer in a public setting, I do not endanger the health of those who are around me. That is the difference between smoking and other behaviors," said Hall Smalley, a supporter of the bill who says he lost his parents to cancer stemming from second-hand smoke inhalation. "And currently, in about 1/2 the state, if I am an employee my choice has been made for me. Clean air in Alaska has a nice ring to it."

U.S. 100% Smokefree Laws in Non-Hospitality Workplaces AND Restaurants AND Bars American Nonsmokers' Rights Foundation

As of April 1, 2014

Note: American Indian and Alaska Native sovereign tribal laws are not reflected on this map.



Opponents of the measure believe this will actually weaken local sales of tobacco products, discourage smokers from many public entertainment venues, and even deter some smokers from quitting. The bill includes the newly popular e-cigarette, which is defined as any "electronic device that...simulates smoking."

Fatboy Vapors Alaska owner Matt Waggoner cites recent research studies in a letter opposing the new measure, pointing out what he calls "overwhelming differences" between traditional smoking and "vaping".

"As the former American Lung Association president Charles Dean Connor has recently stated, electronic cigarettes are one of the most promising tools to arrive in some time to combat smoking," Waggoner stated. "They are proving to be effective tools in the battle as they replicate the patterns and feel of smoking, without the tremendously harmful byproducts of combustion."

Dr. Joel Nitzkin is inclined to agree. As the past co-chair for the Tobacco Control Task Force, Dr. Nitzkin brought his own findings before the California Assembly Governmental Organization Committee in August 2013 in opposition to SB 648, a similar bill that has yet to be passed in that state.

"The e-cigarette is one of a number of smoke-free tobacco/nicotine alternatives to the cigarette that can reduce the risk of tobacco-attributable illness and death by 98% or better, while satisfying the user's urge for nicotine," Dr. Nitzkin told the committee. "Misrepresenting e-cigarettes has the practical effect of reinforcing real tobacco cigarettes as the dominant product for nicotine consumption."

Dr. Nitzkin went on to note the absence of pharmaceutical nicotine inhalers from the ban, questioning the true intentions of the committee in their stated claims to improve public health. He stated the exclusion of the inhalers readily dissolves the feared hazard of e-cigarette vapors. The current version of SB209 excludes similar devices from Alaska's proposed state-wide ban.

Among the supporting documents for the bill are numerous letters representing healthcare providers and committees, including the Alaska Tobacco Control Alliance, represented in print by co-chairs Betty MacTavish and Jenny Olendorff.

"We are relieved that e-cigarettes are included in this discussion, as research shows that e-cigarettes do not just emit 'harmless water vapor'," the ATCA representatives stated in a formal letter of support for the bill. "National health advocates, including the Centers for Disease Control and Prevention, consider it a best practice to include e-cigarettes in all comprehensive smoke-free workplace policies."

As opinions clash over the inclusion of e-cigarettes in the bill, Sen. Micciche has stated the intended goal of the measure is to find equal ground for all involved.

"This bill does not remove the right of the smoker to choose to smoke. They remain free to choose their individual path as my father chose," Sen. Micciche said. "What the bill accomplishes is a limit to the smokers' ability to adversely affect the health of Alaska's non-smoking employees."

The bill was discussed and approved to move forward by the finance committee early Sunday, and will be scheduled for debate and voting as early as Monday.

KTUU's Lacie Grosvold and Matt Smith contributed to this story.

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The studies below and more studies are cited to at http://njgasp.org/E-Cigs_White_Paper.pdf. Please note that international jurisdictions that ban electronic smoking device (use, sale and/or importation) are listed in IV.

I. Key studies concluding health concerns with use of and exposure of third parties to electronic smoking devices:

1. University of California, San Francisco, (a WHO Collaborating Center on Tobacco Control World Health Organization) **prepared a *Background Paper on E-cigarettes*, dated December 2013, for the World Health Organization's Tobacco Free Initiative.** Executive summary states:

- **People passively exposed to e-cigarettes aerosol absorb nicotine (measured as cotinine), with one study showing levels comparable to passive smokers.**
- "In 2010, the WHO organized a global panel of experts to review the evidence and **there is no evidence to show that it can help you quit smoking,**"
http://www.njgasp.org/Phillippines_WHO_ecigs_warning_7-4-13.pdf

2. Roswell Park Cancer Institute study published this month! (Roswell Park is one of the most prestigious and respected Cancer institutes in the world; study in the journal *Nicotine and Tobacco Research*). **Found "significant amounts of nicotine" emitted in 2ndhand e-cigarette vapor smoke. Raises concerns about 2ndhand e-cig vapor smoke exposure,** especially to vulnerable populations including children, pregnant women and people with cardiovascular conditions." Researchers concludes that their study can "guide policymakers as decisions are made about the regulation of nicotine delivery devices.

3. Roswell Park Cancer Institute study published in March 2013. Found that e-cigarettes delivers 14 times as much formaldehyde, 7 times as much acetaldehyde, 6 times as much o-methylbenzene, 3 times as much cadmium and twice as much lead **as an FDA-approved nicotine inhaler**, as well as acrolein, toluene, p,m-xylene, NNN and NNK, which were not detected in the inhaler.

4. German Cancer Research Center (DKFZ) study (published in April 2013) evaluated the current state of e-cigarettes. **Concluded that e-cigarettes emit fine and ultrafine inhalable liquid particles, nicotine and cancer-causing substances into the air that can have an adverse health effect on 3rd parties exposed to the vapor, and that nonsmoker protection legislation should apply to e-cigarettes.** The e-cigarette liquids contain ingredients that on short-term use irritate airways and may lead to allergic reactions which may be harmful to health when inhaled repeatedly over a prolonged period of time.

5. The Fraunhofer Wilhelm-Klauditz-Institut of Germany, a preeminent research facility (published their July 2012 study in the journal *Indoor Air*) found in their study **that e-cigarettes are putting**

detectable levels of significant carcinogens and toxins into the air: acetic acid, acetone, isoprene, formaldehyde and acetaldehyde. They concluded that e- cigarettes marks a new source for chemical and aerosol exposure in the indoor environment.

6. Dutch Health Ministry's National Institute for Public Health issued an "E-Cigarette Factsheet" on December 3, 2103. Key finding: e-cigarette ingredients may irritate the respiratory system, and some ingredients contain carcinogenic substances like formaldehyde and tobacco- specific nitrosamines.

7. The National Center for Biotechnology Information study (published December 2011) examined the acute pulmonary effects of using an e-cigarette. The study found that there are immediate adverse physiologic effects after short-term use of electronic cigarettes that are similar to some of the effects seen with tobacco smoking.

II. E-cigarettes are NOT less harmful than regular cigarettes:

- o University of California (Riverside) study (published in March 2013) tested e-cigarette vapor for 22 elements in periodic table. Found that nickel was about 2-100 times higher in concentration in e-cigarette aerosol than in Marlboro brand cigarettes (Table 1).

III. Serious health concerns with nicotine's harmful effects on the body:

Electronic smoking devices emit "significant amounts of nicotine" into the air (as per the December 2013 Roswell Park study), resulting in exposing innocent third parties to nicotine, in public places and workplaces. Some of nicotine's harmful effects on the body:

- o Nicotine causes headaches in persons exposed to secondhand smoke. Nicotine, one of the components of tobacco, triggers blood vessels to constrict, reducing blood flow to the brain and the covering of the brain (the meninges). Decreased blood flow leads to depressed brain activity, which is a major component of migraines. Usually, by removing the stimulus (nicotine), headaches will be relieved.
http://my.clevelandclinic.org/healthy_living/smoking/hic_smoking_and_headache.aspx
- o Nicotine releases epinephrine (adrenaline), which raises blood pressure, heart rate and respiration and glucose levels.
- o Nicotine is a vasoconstrictor – harder for the heart to pump through constricted arteries.
- o Nicotine promotes blood vessel damage by promoting cellular damage in vascular smooth muscle cells, promoting plaque formation, and causing blood vessel damage.
- o Nicotine is known to affect oxidative stress and to have adverse effects on brain and lung development in children.
- o Women who use nicotine gum and patches during the early stages of pregnancy face an increased risk of having babies with birth defects, says a study that looked at about 77,000 pregnant women in Denmark. Roswell Park Cancer Institute's study raises concerns about 2ndhand vapor smoke exposure to pregnant women.
- o Nicotine and the increased cholinergic activity it causes have been shown to impede apoptosis, which is one of the methods by which the body destroys unwanted cells (programmed cell death).

IV. International jurisdictions that ban the sale, importation, and/or use of all ESD:

- Argentina - bans import, distribution, commercialization, advertising
- Singapore - bans sales, import, distribution
- Brazil - bans sale, import, advertising
- Israel - bans sale, import
- Panama - bans sale, import, distribution

- Jordan - bans importation
- Victoria, Australia - bans sale, use and advertising
- Turkey - bans sale and use
- Hong Kong bans use and sale, unless a pharmaceutical product
- Canada - bans sale, import, advertising if ecigs contain nicotine

11/27/13 – Holland's Ministry of Health calls for studies on health concerns with e-cigarettes.

11/28/13 - European Commission proposes to overturn a vote that rejected outlawing electronic smoking devices in their present form, due to the devices normalizing the action of smoking.

<http://www.telegraph.co.uk/news/worldnews/europe/eu/10481328/EU-seeks-ban-on-all-currently-available-e-cigarettes.html>

2/26/14- The European Parliament approved rules that will regulate Europe's rapidly growing electronic cigarette market. Starting in mid-2016, advertising for e-cigarettes is to be banned in all EU nations in the same manner as ads for ordinary tobacco products are banned. They also approved health warnings, childproof packaging, and the amount of nicotine will be limited to 20 milligrams per milliliter.

<http://www.nytimes.com/2014/02/27/business/european-union-approves-tough-rules-on-electronic-cigarettes.html?hpw&rref=business&r=0>

DISCLAIMER: This information is created by the Tobacco Control Policy and Legal Resource Center of New Jersey GASP, which provides educational information, educational guidance and educational technical assistance on tobacco control topics. The information presented is not intended as, nor to be construed, or used as legal advice, and should not be used to replace the advice of your legal Counsel.

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Morbidity and Mortality Weekly Report (MMWR)

Notes from the Field: Electronic Cigarette Use Among Middle and High School Students — United States, 2011–2012

Weekly

September 6, 2013 / 62(35);729-730

Electronic cigarettes, or e-cigarettes, are battery-powered devices that provide doses of nicotine and other additives to the user in an aerosol. Depending on the brand, e-cigarette cartridges typically contain nicotine, a component to produce the aerosol (e.g., propylene glycol or glycerol), and flavorings (e.g., fruit, mint, or chocolate) (1). Potentially harmful constituents also have been documented in some e-cigarette cartridges, including irritants, genotoxins, and animal carcinogens (1). E-cigarettes that are not marketed for therapeutic purposes are currently unregulated by the Food and Drug Administration, and in most states there are no restrictions on the sale of e-cigarettes to minors. Use of e-cigarettes has increased among U.S. adult current and former smokers in recent years (2); however, the extent of use among youths is uncertain.

Data from the 2011 and 2012 National Youth Tobacco Survey (NYTS), a school-based, pencil-and-paper questionnaire given to U.S. middle school (grades 6–8) and high school (grades 9–12) students, were used to estimate the prevalence of ever and current (≥ 1 day in the past 30 days) use of e-cigarettes, ever and current (≥ 1 day in the past 30 days) use of conventional cigarettes, and use of both. NYTS consists of a cross-sectional, nationally representative sample of students in grades 6–12 from all 50 states and the District of Columbia (3).

During 2011–2012, among all students in grades 6–12, ever e-cigarette use increased from 3.3% to 6.8% ($p < 0.05$) (Figure); current e-cigarette use increased from 1.1% to 2.1% ($p < 0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.8% to 1.6% ($p < 0.05$). In 2012, among ever e-cigarette users, 9.3% reported never smoking conventional cigarettes; among current e-cigarette users, 76.3% reported current conventional cigarette smoking.

Among middle school students, ever e-cigarette use increased from 1.4% to 2.7% during 2011–2012 ($p < 0.05$) (Figure); current e-cigarette use increased from 0.6% to 1.1% ($p < 0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.3% to 0.7% ($p < 0.05$). In 2012, among middle school ever e-cigarette users, 20.3% reported never smoking conventional cigarettes; among middle school current e-cigarette users, 61.1% reported current conventional cigarette smoking.

Among high school students, ever e-cigarette use increased from 4.7% to 10.0% during 2011–2012 ($p < 0.05$) (Figure); current e-cigarette use increased from 1.5% to 2.8% ($p < 0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 1.2% to 2.2% ($p < 0.05$). In 2012, among high school ever e-cigarette users, 7.2% reported never smoking

conventional cigarettes; among high school current e-cigarette users, 80.5% reported current conventional cigarette smoking.

E-cigarette experimentation and recent use doubled among U.S. middle and high school students during 2011–2012, resulting in an estimated 1.78 million students having ever used e-cigarettes as of 2012. Moreover, in 2012, an estimated 160,000 students who reported ever using e-cigarettes had never used conventional cigarettes. This is a serious concern because the overall impact of e-cigarette use on public health remains uncertain. In youths, concerns include the potential negative impact of nicotine on adolescent brain development (4), as well as the risk for nicotine addiction and initiation of the use of conventional cigarettes or other tobacco products.

CDC and the Food and Drug Administration will continue to explore ways to increase surveillance and research on e-cigarettes. Given the rapid increase in use and youths' susceptibility to social and environmental influences to use tobacco, developing strategies to prevent marketing, sales, and use of e-cigarettes among youths is critical.

Reported by

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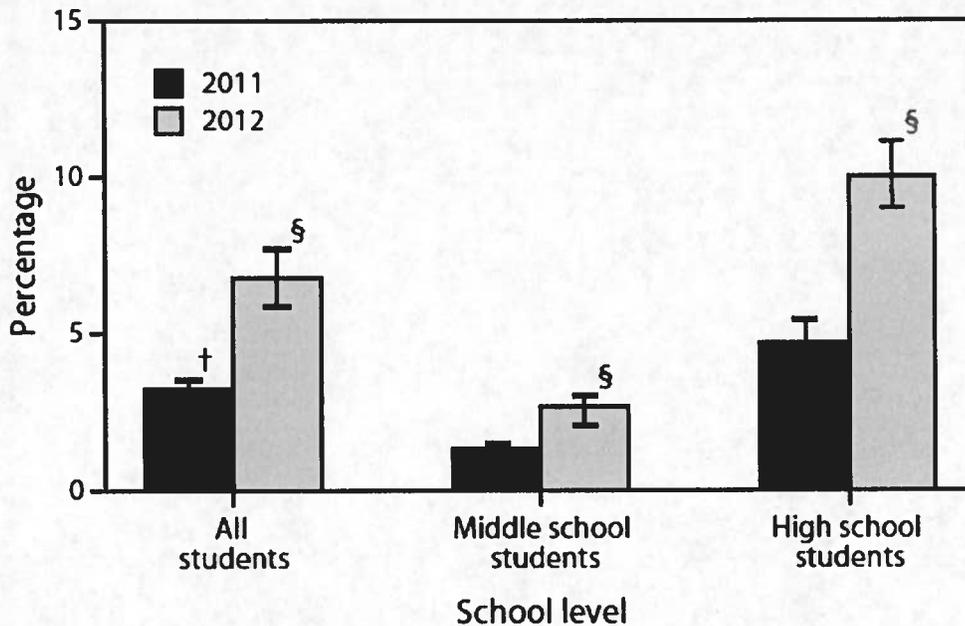
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* Ever electronic cigarette use defined as having ever used electronic cigarettes, even just one time.

† 95% confidence interval.

§ Statistically significant difference between 2011 and 2012 (chi-square, $p < 0.05$).

FIGURE. Ever electronic cigarette use* among middle and high school students, by year — National Youth Tobacco Survey, United States, 2011–2012



Alternate Text: The figure above shows ever electronic cigarette (e-cigarette) use among middle and high school students, by year, in the United States during 2011-2012. During 2011-2012, among all students in grades 6-12, ever e-cigarette use increased from 3.3% to 6.8% ($p < 0.05$); current e-cigarette use increased from 1.1% to 2.1% ($p < 0.05$), and current use of both e-cigarettes and conventional cigarettes increased from 0.8% to 1.6% ($p < 0.05$).

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U.S. State and Local Laws Regulating Use of Electronic Cigarettes

As of January 1, 2015

The following list includes states and municipalities with **laws currently in effect** that regulate where use of electronic cigarettes (e-cigarettes) is prohibited. E-cigarettes are battery-powered devices that are designed to mimic cigarettes by vaporizing a nicotine-laced liquid that is inhaled by the user. The use of e-cigarettes in workplaces and public places is a significant public health concern, not only because of their unregulated constituents and the potential health impact of the vapor on users and bystanders, but also because e-cigarette use causes public confusion as to where smoking is allowed, resulting in compliance problems with smokefree laws.

Most local and state smokefree laws were enacted before e-cigarettes were on the market, so while such laws do not explicitly mention e-cigarettes, it should not be assumed that their use is permitted. Existing smokefree laws are often interpreted to prohibit e-cigarette use in their smokefree provisions.

NOTE: In the 100% Smokefree Venues column, the following abbreviations are used: W=non-hospitality workplaces; R=restaurants; B=bars; G=gambling facilities.

For more information, please visit [ANR's e-cigarettes page](#).

State Laws Regulating Use of E-cigarettes

State Laws Restricting E-cigarette Use in 100% Smokefree Venues

Other state laws that do not explicitly address e-cigarettes might be interpreted as prohibiting the use of e-cigarettes in existing smokefree provisions.

State	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	Permitted In:
1. North Dakota	WRBG	No	
2. New Jersey	WRB	No	
3. Utah	WRB	Yes	Retailers that sell e-cigarettes, until 7/1/17.

State Laws Regulating E-cigarette Use in Other Venues

State	Prohibited In:	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
1. Arkansas	Use of e-cigarettes prohibited on school district property.	No	

State	Prohibited In:	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
2. Colorado	Definition of tobacco product for purposes of prohibition of use on school property amended to include e-cigarettes, unless approved by FDA as cessation devices.	No	
3. Delaware	Tobacco use, including use of e-cigarettes and hookahs, prohibited in all State workplaces, including all buildings, facilities, indoor and outdoor spaces and surrounding grounds, as well as parking lots and state vehicles operated on State workplace property.	No	
4. Georgia	Tobacco use, including use of e-cigarettes and hookahs, prohibited everywhere on campuses of University System of Georgia, with limited exceptions for educational purposes and research.	No	
5. Hawaii	Use of e-cigarettes prohibited on all Dept. of Health property where smoking is prohibited.	No	
6. Kansas	Tobacco use, including use of e-cigarettes, prohibited on all Dept. of Corrections property and grounds, by both employees and inmates. Per opinion of Attorney General, Indoor Clean Air Act of 2010 does not apply to e-cigarettes.	Partial	All places where smoking is prohibited per 3/12/10 law, including workplaces, restaurants, bars, gambling facilities, and public places generally.
7. Kentucky	Tobacco use, including use of e-cigarettes, prohibited on all properties of State Executive Branch, including buildings, vehicles, and land, but excluding specific outdoor areas such as parks, Kentucky Horse Park, and Kentucky State Fairgrounds. Per Governor's Office, does not apply to State colleges and universities.	No	
8. Maryland	Smoking, including use of e-cigarettes prohibited on MARC commuter rail system trains.	No	
9. New Hampshire	Use of e-cigarettes prohibited in public educational facilities and on grounds thereof.	No	

State	Prohibited In:	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
10. Oklahoma	Tobacco use, including use of e-cigarettes, prohibited in all Dept. of Corrections facilities, including vehicles and grounds.	No	
11. Oregon	State agency employees prohibited from using tobacco products, including e-cigarettes, in State agency buildings and on State agency grounds adjacent to buildings.	No	
12. South Dakota	Tobacco use, including use of e-cigarettes, prohibited in Dept. of Corrections facilities and on grounds thereof, by both employees and inmates.	No	
13. Virginia	Smoking, including use of e-cigarettes, prohibited on Virginia Railway Express trains and limited to 100 feet on north end of station platforms.	No	
14. Vermont	Smoking, including use of e-cigarettes, prohibited on school grounds and at child care facilities, both indoors and outdoors.	No	
15. Wisconsin	Smoking, including use of e-cigarettes, prohibited at indoor facilities of State Fair and at main stage area.	No	

Local Laws Regulating Use of E-cigarettes

Laws Restricting E-cigarette Use in 100% Smokefree Venues

Note: The jurisdiction(s) affected by county-level laws vary widely. Look for a plus symbol (+) next to each county with a law that includes both incorporated and unincorporated areas. A county without a symbol means that the county law covers unincorporated areas only.

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
1. AK	Juneau	RBG	No	
2. AK	Palmer	WRB	No	
3. AL	Anniston	WRBG	No	
4. AL	Bessemer	WRG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
5. AL	Clay	WRBG	No	
6. AL	Creola	WRBG	No	
7. AL	Foley	WRG	No	
8. AL	Fultondale	WRBG	No	
9. AL	Gadsden	WRBG	No	
10. AL	Midfield	WRBG	No	
11. AL	Monroeville	WRBG	No	
12. AL	Opelika	WR	No	
13. AL	Troy	WRBG	No	
14. AL	Vestavia Hills	WRBG	No	
15. AZ	Coconino County	WR	No	
16. AZ	Tempe	WRB	No	
17. CA	Arcata	WRB	No	
18. CA	Berkeley	WRBG	No	
19. CA	Beverly Hills	RBG	No	
20. CA	Campbell	RBG	No	
21. CA	Carlsbad	RBG	No	
22. CA	Contra Costa County	WRBG	No	
23. CA	Corte Madera	WRB	No	
24. CA	Davis	WRBG	No	
25. CA	Del Mar	WRB	No	
26. CA	Dublin	RBG	No	
27. CA	El Cajon	RBG	No	
28. CA	El Cerrito	WRBG	No	
29. CA	Eureka	WRBG	No	
30. CA	Fairfax	WRBG	No	
31. CA	Folsom	RBG	No	
32. CA	Foster City	RB	No	
33. CA	Fremont	WRB	No	
34. CA	Goleta	RB	No	
35. CA	Laguna Hills	WRBG	No	
36. CA	Long Beach	WRBG	No	
37. CA	Los Angeles	RBG	Partial	Retail e-cigarette stores and theatrical production sites.
38. CA	Manhattan Beach	WRBG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
39. CA	Marin County	WRB	Partial	Individual apartment units in multi-unit residences.
40. CA	Mill Valley	WRB	No	
41. CA	Morgan Hill	WRB	No	
42. CA	Mountain View	WRB	No	
43. CA	Oroville	W	No	
44. CA	Petaluma	W	No	
45. CA	Richmond	WRBG	No	
46. CA	San Bernardino	W	No	
47. CA	San Diego	WRBG	Partial	E-cigarette lounges and shops.
48. CA	San Francisco	WRB	No	
49. CA	San Mateo County	W	No	
50. CA	Santa Clara County	WRB	No	
51. CA	Santa Maria	RB	No	
52. CA	Santa Monica	WRB	Partial	Two existing e-cigarette lounges/businesses.
53. CA	Seal Beach	RBG	No	
54. CA	Sebastopol	WRBG	No	
55. CA	Solana Beach	RB	No	
56. CA	Temecula	WRBG	No	
57. CA	Tiburon	WRB	No	
58. CA	Union City	WRB	No	
59. CA	Walnut Creek	RBG	No	
60. CO	Edgewater	WRBG	No	
61. CO	Lakewood	RBG	No	
62. FL	Alachua County	WRG	No	
63. FL	Belleview	WRG	No	
64. FL	Clay County	WR	No	
65. FL	Hawthorne	WRG	No	
66. FL	High Springs	WRG	No	
67. FL	Lighthouse Point	WRG	No	
68. FL	Marion County	WRG	No	
69. FL	Newberry	WRG	No	
70. FL	Orange Park	WRG	No	
71. FL	Waldo	WRG	No	
72. GA	Chatham County	WRBG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
73. GA	DeKalb County	W	No	
74. GA	Pooler	WRBG	No	
75. GA	Savannah	WRBG	No	
76. ID	Ketchum	WRBG	No	
77. IL	Arlington Heights	WR	No	
78. IL	Chicago	WRBG	Partial	Theater performances; retail tobacco stores.
79. IL	Elk Grove Village	WRB	No	
80. IL	Evanston	WRB	No	
81. IL	Schaumburg	WRBG	No	
82. IN	Indianapolis/Marion	WRB	No	
83. KS	Overland Park	WRBG	No	
84. KY	Bardstown	WRBG	No	
85. KY	Berea	WRBG	No	
86. KY	Glasgow	RBG	No	
87. KY	Kenton County ⁺	W	No	
88. KY	Lexington/Fayette	WRBG	No	
89. KY	Madison County ⁺	WRBG	No	
90. KY	Manchester	WRBG	No	
91. KY	Richmond	WRBG	No	
92. KY	Versailles	WRB	No	
93. LA	Abbeville	WRBG	No	
94. LA	Cheneyville	WRBG	No	
95. LA	Monroe	WRBG	No	
96. LA	Ouachita Parish	WRBG	No	
97. LA	West Monroe	WRBG	No	
98. MA	Acton	WRBG	No	
99. MA	Adams	WRBG	No	
100. MA	Amherst	WRBG	No	
101. MA	Arlington	WRBG	No	
102. MA	Athol	WRBG	No	
103. MA	Auburn	WRBG	No	
104. MA	Barre	WRBG	No	
105. MA	Billerica	WRBG	No	
106. MA	Bolton	WRBG	No	
107. MA	Boston	WRB	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
108. MA	Bourne	WRB	No	
109. MA	Bridgewater	WRBG	No	
110. MA	Buckland	WRBG	No	
111. MA	Burlington	WRBG	No	
112. MA	Cohasset	WRBG	No	
113. MA	Concord	WRBG	No	
114. MA	Dartmouth	WRBG	No	
115. MA	Dedham	WRB	No	
116. MA	Deerfield	WRBG	No	
117. MA	Dighton	WRBG	No	
118. MA	Dover	RB	No	
119. MA	Dracut	WRBG	No	
120. MA	Easthampton	WRBG	No	
121. MA	Fitchburg	WRBG	No	
122. MA	Foxborough	WRBG	No	
123. MA	Franklin	WRBG	No	
124. MA	Gardner	WRBG	No	
125. MA	Gill	WRBG	No	
126. MA	Grafton	WRBG	No	
127. MA	Great Barrington	WRBG	No	
128. MA	Greenfield	WRBG	No	
129. MA	Hatfield	WRBG	Partial	Smoking bars and hotels/motels.
130. MA	Haverhill	WRBG	No	
131. MA	Hubbardston	WRBG	No	
132. MA	Hudson	WRBG	No	
133. MA	Lee	WRBG	No	
134. MA	Leicester	WRBG	No	
135. MA	Lenox	WRBG	No	
136. MA	Lynn	WRBG	No	
137. MA	Marblehead	WRBG	No	
138. MA	Mashpee	WRBG	No	
139. MA	Medway	WRBG	No	
140. MA	Montague	WRBG	No	
141. MA	Needham	WRB	No	
142. MA	New Bedford	WRBG	No	
143. MA	Newton	WRBG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
144. MA	North Attleborough	WRBG	No	
145. MA	Northampton	WRBG	No	
146. MA	Orleans	WRBG	No	
147. MA	Oxford	WRBG	No	
148. MA	Pittsfield	WRBG	No	
149. MA	Provincetown	WRBG	No	
150. MA	Salem	WRBG	No	
151. MA	Saugus	WRBG	No	
152. MA	Sharon	WRBG	No	
153. MA	Shelburne	WRB	No	
154. MA	Sherborn	WRBG	No	
155. MA	Somerset	WRBG	No	
156. MA	South Hadley	WRBG	No	
157. MA	Stockbridge	WRBG	No	
158. MA	Sunderland	WRBG	No	
159. MA	Sutton	WRBG	No	
160. MA	Swampscott	WRBG	No	
161. MA	Taunton	WRBG	No	
162. MA	Tewksbury	WRBG	No	
163. MA	Townsend	WRBG	No	
164. MA	Wendell	WRBG	No	
165. MA	Westminster	WRBG	No	
166. MA	Westport	WRBG	No	
167. MA	Westwood	WRBG	No	
168. MA	Weymouth	WRBG	No	
169. MA	Whately	WRBG	No	
170. MA	Winchendon	WRBG	No	
171. MA	Winchester	WRBG	No	
172. MD	Baltimore	W	Partial	Restaurants, bars, video lottery facilities, retail e-cigarette stores.
173. MN	Duluth	WRBG	No	
174. MN	Eden Prairie	WRBG	No	
175. MN	Edina	RBG	No	
176. MN	Ely	WRBG	No	
177. MN	Hermantown	WRB	No	
178. MN	Houston County	WRBG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
179. MN	Mankato	WRB	No	
180. MN	Sleepy Eye	WRBG	No	
181. MN	St. Anthony	WRB	No	
182. MN	Waseca	WRBG	No	
183. MO	Creve Coeur	WRB	No	
184. MO	Gainesville	RB	No	
185. MO	Jefferson City	WRBG	No	
186. MO	St. Joseph	WRBG	No	
187. MO	Washington	WRBG	No	
188. MS	Anguilla	WRBG	No	
189. MS	Arcola	WRBG	No	
190. MS	Baldwyn	WRBG	No	
191. MS	Bassfield	WRBG	No	
192. MS	Bruce	WRBG	No	
193. MS	Byram	WRBG	No	
194. MS	Calhoun City	WRBG	No	
195. MS	Centreville	WRBG	No	
196. MS	Coahoma County	WRB	No	
197. MS	Crawford	WRBG	No	
198. MS	Duncan	WRBG	No	
199. MS	Durant	WRBG	No	
200. MS	Ethel	WRBG	No	
201. MS	Farmington	WRBG	No	
202. MS	Flowood	WRG	No	
203. MS	Forest	WRBG	No	
204. MS	Friars Point	WRBG	No	
205. MS	Georgetown	WRBG	No	
206. MS	Indianola	WRBG	No	
207. MS	Itta Bena	WRBG	No	
208. MS	Louisville	WRBG	No	
209. MS	Magee	WRBG	No	
210. MS	Mendenhall	WRBG	No	
211. MS	Monticello	RBG	No	
212. MS	Moorhead	WRBG	No	
213. MS	New Augusta	WRBG	No	
214. MS	Plantersville	WRBG	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
215. MS	Prentiss	WRBG	No	
216. MS	Rolling Fork	WRBG	No	
217. MS	Sledge	WRBG	No	
218. MS	Southaven	WRB	No	
219. MS	Sumner	WRBG	No	
220. MS	Tupelo	WRB	Yes	Retail e-cigarette stores.
221. MS	Walnut	WRBG	No	
222. MS	Wesson	WRBG	No	
223. MS	Woodville	WRBG	No	
224. ND	Bismarck	WRBG	No	
225. ND	Dickinson	WRBG	No	
226. ND	Walhalla	WRBG	No	
227. ND	Williston	WRBG	No	
228. NJ	Newark	WRBG	No	
229. NM	Carlsbad	W	No	
230. NM	Santa Fe	WRB	No	
231. NY	Cattaraugus County	RBG	No	
232. NY	New York City	WRB	Partial	Retail e-cigarette stores.
233. NY	Suffolk County*	WRB	No	
234. NY	Tompkins County*	WRB	No	
235. OH	Oberlin	WRB	No	
236. OR	Benton County	WRB	No	
237. OR	Corvallis	WRB	No	
238. PA	Philadelphia	R	Partial	Specialty e-cigarette establishments; tobacco products distribution businesses.
239. SC	Denmark	WRB	No	
240. SC	Estill	WRBG	No	
241. SC	West Pelzer	WRB	No	
242. SC	Yemassee	WRB	No	
243. TX	Frisco	WRB	No	
244. TX	Harlingen	WRBG	No	
245. TX	Joshua	WR	No	
246. TX	Lufkin	WRBG	No	
247. TX	San Angelo	WRB	No	
248. TX	San Marcos	WRB	No	
249. TX	Socorro	WRB	No	

State	City/County	100% Smokefree Venues in Which Use of E-cigarettes Prohibited	Use of E-cigarettes Specifically Permitted	If Partial, Permitted In:
250. TX	Waxahachie	WRBG	No	
251. TX	Weatherford	R	No	
252. TX	Wichita Falls	WRB	No	
253. WA	King County ⁺	WRBG	No	
254. WA	Pasco	WRBG	No	
255. WI	Ashwaubenon	WRBG	No	
256. WI	Greenfield	WRBG	No	
257. WI	Onalaska	WRBG	No	
258. WV	Barbour County ⁺	WRBG	No	
259. WV	Berkeley County ⁺	WRBG	No	
260. WV	Calhoun County ⁺	WRBG	No	
261. WV	Greenbrier County ⁺	WRBG	No	
262. WV	Lewis County ⁺	WRBG	No	
263. WV	Marshall County ⁺	W	No	
264. WV	Mineral County ⁺	WRBG	No	
265. WV	Nicholas County ⁺	WRBG	No	
266. WV	Pleasants County ⁺	WRBG	No	
267. WV	Randolph County ⁺	WRBG	No	
268. WV	Ritchie County ⁺	WRBG	No	
269. WV	Roane County ⁺	WRBG	No	
270. WV	Taylor County	WRBG	No	
271. WV	Upshur County ⁺	WRB	No	
272. WV	Webster County ⁺	WR	No	
273. WV	Wirt County ⁺	WRBG	No	
274. WV	Wood County ⁺	WRBG	No	

⁺Law pertains to both incorporated and unincorporated areas of county.

Laws Currently in Effect

State Laws Restricting E-cigarette Use in 100% Smokefree Venues: 3

State Laws Restricting E-cigarette Use in Other Venues: 15

Local Laws Restricting E-cigarette Use in 100% Smokefree Venues: 274

In addition, 162 local laws restrict E-cigarette Use in Other Venues (not listed above)

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