

Synopsis of Electronic Nicotine Delivery Systems (ENDS) Information Found in 2012 and 2014 Surgeon General's Reports on Tobacco Use

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Overview

Electronic nicotine delivery systems (ENDS) are battery-powered devices that provide doses of nicotine and other additives to the user in an aerosol. There are currently multiple types of ENDS on the U.S. market, including e-cigarettes, e-hookahs, hookah pens, vape pens, e-cigars, and others.

The 2014 Surgeon General's Report (SGR), *The Health Consequences of Smoking—Fifty Years of Progress*, provides essential information on ENDS, including:

- Rapid elimination of combusted tobacco product use
- Nicotine and youth
- Marketing targeting youth
- Public use
- Dual use of combusted tobacco (cigarettes, cigars, pipes, hookahs) and ENDS

The following is a synopsis of relevant information from the 2014 Surgeon General's Report and the 2012 Surgeon General's Report, *Preventing Tobacco Use Among Youth and Young Adults*, that could be used to inform state and local discussions regarding ENDS policy approaches. This document uses the Surgeon General's Report information as a foundation to inform potential state and local policy approaches.

The Food and Drug Administration has proposed a rule to potentially extend its authority to regulate additional products meeting the legal definition of a tobacco product, including ENDS. Some state and local policy approaches described below would also be required by Federal law if the proposed rule is finalized, for example: minimum age requirements, vending machine restrictions, and prohibitions on free samples. Regardless of the status of FDA regulation, states and localities can implement parallel provisions and/or additional provisions that relate to the sale, distribution, possession, information reporting to the State, exposure to, access to the advertising and promotion of, or use of, tobacco products by individuals of any age, or relating to fire safety standards for tobacco products. As with any tobacco product, a comprehensive approach to protect public health combines FDA regulation with complementary local, state, and federal policy.

Note that policies states pursue should allow for flexibility to adapt in response to new scientific understanding and changes in patterns of ENDS awareness and use. Given the current understanding, it is important that ENDS policy efforts (e.g. excise taxes) take into account the proportionally greater toxicity of combustible tobacco products.

Elimination of combustible tobacco use

Cigarettes and other combusted tobacco products overwhelmingly cause tobacco-related death and disease in the U.S. (SGR 2014 Major Conclusion 9, p. 7)

The 2014 Surgeon General's Report concludes that the impact of ENDS on population health is more likely to be beneficial only in an environment where the appeal, accessibility, promotion and use of cigarettes and other combusted tobacco products are being rapidly reduced (SGR 2014 p. 874), and that evidence-based tobacco control interventions that are effective continue to be underutilized. (SGR 2014 p. 858)

ENDS – in combination with rigorous surveillance and aggressive strategies to end combusted tobacco use – could help complement “end game” strategies by allowing *complete* nicotine substitution among cigarette smokers. (SGR 2014 p. 856)

Potential State and Local policy approaches:

- Acceleration of evidence-based tobacco control policies and practices, including: (See CDC’s *Best Practices for Comprehensive Tobacco Control—2014*)
 - Full funding of comprehensive statewide tobacco control programs at CDC-recommended levels.
 - Tobacco product excise tax increases—the Surgeon General notes that a retail price of at least \$10 per pack of cigarettes is most effective (see SGR 2014 Ch. 16).
 - Comprehensive clean indoor air policies for workplaces, bars, and restaurants.
 - Hard-hitting mass media campaigns on the adverse health impacts of smoking.
 - Barrier-free access to proven treatments and services to help smokers quit.
- Additional restrictions on sales, including state or local bans on entire categories of tobacco products, including cigarettes (see SGR 2014 Ch. 15).
- Effective public health education to inform smokers that cessation of all tobacco products is the only way to reduce harm entirely. If ENDS are used in place of conventional cigarettes by established adult smokers, these individuals must completely switch away from all combusted tobacco use in order to realize health benefits.

Nicotine and Youth/Adolescents

According to the 2014 SGR, the evidence is sufficient to caution children and adolescents, pregnant women, and women of reproductive age about ENDS use because of the potential for fetal and adolescent nicotine exposure to have long-term consequences for brain development (SGR 2014, p. 126).

While more information is needed, there may be consequences of long-term exposure to nicotine [from ENDS], including the consequences for reproductive health and adolescent cognitive development, compared with cigarette smoking, and no tobacco products use at all (SGR 2014, p. 126).

Data from the National Youth Tobacco Survey (NYTS) suggested a doubling of e-cigarette¹ use among U.S. middle and high school students from 2011 to 2012. Among all students in grades 6-12, ever use [experimentation] increased from 3.3% to 6.8%; and current use [1 or more times in the past 30 days] increased from 1.1% to 2.1% (SGR 2014 p. 742).

Potential State and Local Policy Approaches:

- Prevention of youth access to and use of ENDS, for instance:
 - Prohibit ENDS sales to minors, and ensure enforcement, including through licensing requirements and penalties for violations (a number of states and localities have provisions/laws in place)
 - Accompany sales restrictions with prohibitions on minor purchase, use or possession of ENDS (a number of states and localities have provisions/laws in place)
 - Restrict vending machine, Internet or other self-service sales of ENDS (a number of states and localities have provisions/laws in place)
 - Integrate, as applicable, ENDS into existing laws about access for cigarettes, rather than create separate laws
- Taxation and pricing policies to discourage youth ENDS use, for instance:

¹ To date, surveillance questions on the use of ENDS have focused solely on e-cigarettes.

- Prohibit sampling of ENDS (a number of states and localities have provisions/laws in place)
- Prohibit use of coupons for ENDS
- Apply an excise tax to ENDS, as appropriate, to discourage youth uptake. (Note that consideration should be given to whether such a tax should be equivalent to cigarette tax, or less due to lower toxicant levels. CDC is reviewing evidence and alternative approaches with experts.)
- Integrate ENDS into existing or new smokefree/clean indoor air policies, legislation and ordinances. (a number of states and localities have provisions/laws in place)
- Effective public health education about tobacco product risks, health effects of nicotine (especially for pregnant women and adolescents), and effective smoking cessation treatments and services.

Marketing Targeting Youth

The 2012 Surgeon General’s Report, *Preventing Tobacco Use Among Youth and Young Adults*, found that tobacco industry practices that appeal to youth include, but are not limited to the following:

- Marketing that makes health claims and/or invokes youth-resonant themes (rebellion, sex, glamour)
- Products that make it easier to use (less harsh)
- Easy access without licensing or sales restrictions
- Low prices
- Products with candy and fruit flavors

In the current context, cigarettes and burned tobacco products remain ubiquitous, cheap, unreasonably dangerous, addictive by design, and appealing to young people.

The 2014 SGR notes that current industry practices in making and marketing new tobacco products—especially in the current context with widespread use and availability of combustible tobacco—raise the concerns outlined in the 2012 Report (SGR 2014 pp. 873-4).

Potential State and Local Policy Approaches:

- Prevention of ENDS marketing targeting youth, for instance:
 - Ban sale of ENDS with characterizing flavors or integrate ENDS into existing bans of characterizing flavors on cigarettes
 - School zone advertising restrictions
- Prevention of youth access to and use of ENDS.

Public use

Adolescents are particularly vulnerable to visual cues to smoke and to social norms (SGR 2012).

Many changes in tobacco product form and marketing have been documented as efforts by the tobacco industry to perpetuate addiction through the use of alternate products, when smoking is not allowed or is socially unacceptable (SGR 2014 p. 784). Marketing claims [for ENDS] have included statements that ENDS are exempt from clean air policies that otherwise restrict smoking (SGR 2014 p. 780).

ENDS aerosol is not ‘water vapor’; it contains nicotine, as well as additional toxins.^{2,3}

² Goniewicz, M. L., Kuma, T., Gawron, M., Knysak, J., & Kosmider, L. (2013). Nicotine levels in electronic cigarettes. *Nicotine Tob Res*, 15(1), 158-166. doi: 10.1093/ntr/nts103

While more information is needed, there may be consequences of long-term exposure to nicotine [from ENDS], including the consequences for reproductive health and adolescent cognitive development, compared with cigarette smoking, and no tobacco products use at all (SGR 2014, p. 126).

Potential State and Local Policy Approaches:

- Integrate ENDS into existing or new smokefree/clean indoor air policies, legislation and ordinances (a number of states and localities have provisions/laws in place). This will:
 - Protect children and adolescents, pregnant women, and non-smokers from involuntary exposure to aerosolized nicotine and potentially to other psychoactive substances.
 - Support enforcement of clean indoor air policies.
 - Prevent renormalization of tobacco use.

Long-term Dual Use of Combustible Tobacco (Cigarettes, Cigars, Pipes, Hookahs) and ENDS

ENDS will cause harm if they delay smokers from quitting completely such as by facilitating long-term “dual use” with combustible products, or promote nicotine initiation or recidivism. (SGR 2014, Ch. 15)

The 2014 Surgeon General’s Report observes that patterns of dual use are occurring among youth and adults (SGR 2014 Ch. 13), and that some ENDS marketing includes unproven safety claims and statements that ENDS are exempt from clean air policies (SGR 2014 p. 780).

Potential State and Local Policy Approaches:

- Effective public health education emphasizing that if ENDS are used in place of combusted cigarettes by established adult smokers, smokers must completely switch away from all combusted tobacco product use in order to realize health benefits.
- Promotion and integration of proven effective cessation treatments and services into health systems and services.

³ Goniewicz, M. L., Knysak, J., Gawron, M., Kosmider, L., Sobczak, A., Kurek, J., [...] Benowitz, N. (2013). Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tob Control*. doi: 10.1136/tobaccocontrol-2012-050859