E N D S

Electronic Nicotine Delivery Systems: Public Health & Regulatory Challenges

Jack E. Henningfield

Johns Hopkins Medical School

and Pinney Associates

I consult to GlaxoSmithKline on smoking cessation products and share a patent in a nicotine replacement product innovation ("gum") that has never been marketed.

(Maryland Health Dept. Local Tobacco Coordinators Meeting 21 January 2010 Turf Valley Resort)

“RUYAN electronic cigarettes, cigars and pipes and their associated replaceable cartridges provide the pleasures of smoking without the associated dangers.” “These products offer a new opportunity to retailers, bars, restaurants and other businesses, to take advantage of the new smoking-bans.”

Totally Wicked 36MG

- **The Totally Wicked Super Strength 36MG Nicotine Content Fluid was the first E.Smoking liquid to test the barriers.**
- **Until it hit the Market the strongest fluid available was 24Mg, The Super Strength Fluid leads the way. It is as you might expect a strong smoke, but more than this it is one of those rare examples of strength with great taste.**
- **We not only sell the 36Mg fluid but for more delicate palettes we also have our Extra high 24Mg, High 18Mg, Medium 11Mg, Low 8Mg and 0Mg strengths.**

http://www.totallywicked-eliquid.com/

The Totally Wicked Flavors

At present we have 30 flavors available ranging from the old favorites like M/boro and Regular Tobacco to more exotic flavors such as WaterMelon, Green Tea, Black tea, Rum, vanilla, strawberry and many more. We believe that there is a Totally Wicked flavor and strength for all users of any Electronic cigarette.

Each box contains a bottle of Totally Wicked fluid with a UK standard childproof cap and a separate dropper for applying the fluid to your cartridges. We are now the only Electronic Cigarette Nicotine fluid supplier with fully "CHIP" compliant packaging...Be sure to insist on this when purchasing nicotine fluids. REMEMBER NICOTINE IS A POISON IN ITS RAW FORM.

LorAnn flavorings have been specially chosen so you can freshen up old flavors or can be added together with our DIY fluid to create your own, unique flavors

Smoking Everywhere Electronic Cigarette: It Looks like a cigarette, Feels like a cigarette, Taste like a cigarette, But it is not a cigarette. It is just so much more...

http://www.smoking-everywhere.com/index.php

Smoking Everywhere Electronic Cigarette

Looks like a traditional cigarette, feels like a traditional cigarette, tastes like a traditional cigarette, but it isn't a traditional cigarette. It's just a tar-free way to enjoy smoking!

Smoking everywhere E-Cigarette

Is an electronic smoking device or an electronic cigarette which is also known as E Cigarette or E-Cig. It is a non –flammable product that uses state of the art classy micro-electronic technology which provides smokers a real "smoking" experience without the fire, flame, tobacco, tar, carbon monoxide, ash, stub or smell found in real cigarettes.

Smoking Everywhere E-Cig

Offers smokers a tar-free way to enjoy smoking and the freedom to smoke most everywhere. The smokers still get their nicotine, but don't get the side effects attributable to tar which contains real tobacco.

What are the leading reasons people use NJOY?

Most people who smoke, smoke because they enjoy the tactile, emotional and physical sensations. The leading reasons people use NJOY include:

- No first or second hand smoke
- Virtually odorless
- No tar
- Contains no tobacco
- No more embarassment or guilt
- Non-flammable, produces no smoke
- Easy to use, convenient
- “Tobacco-like” taste and flavors
- Lower cost than traditional smoking
- Won't stain teeth or damage skin.

http://www.njoyretail.com

How do the ingredients compare to those in common smoking products?

- The primary cartridge ingredient is propylene glycol, and the secondary ingredients are water, nicotine and a flavor to replicate the taste of traditional smoking. NJOY cartridges contain none of the tar or additives found in most tobacco-based products.

What is propylene glycol?

- “The Food and Drug Administration (FDA) has determined propylene glycol to be "generally recognized as safe" for use in food, cosmetics, and medicines. It is used in food coloring, and flavoring, as an additive to keep food, medicines and cosmetics moist, and in machines that simulate smoke, although usage in simulating smoking devices is not currently included in the list of uses generally recognized as safe by the FDA.”

ECigarettes...a healthier alternative to cigarettes!

At long last! You can kick the tar and nicotine that keep you addicted to real cigarettes...and keep the satisfaction of smoking!

ECigarette looks, feels and smokes just like a real cigarette, but has none of the harmful substances found in real cigarettes. It emits a virtually odorless vapor that simulates actual smoke, but dissipates quickly in the air.

http://www.ecigarettesusa.com/

ECigarettes...a healthier alternative to cigarettes!

- ECigarette does not contain the over **4000 POISONOUS** substances and harmful **CHEMICALS** found in real cigarettes that cause heart attack and cancer, such as nicotine, tar, carbon monoxide, acetone, sulfuric acid and more.
- You can **ENJOY** the ECigarette in places where regular cigarettes are **PROHIBITED**, even in bed.
- Eliminate the nasty smell, messy ashes and cigarette butts.
- Eliminate bad breath and smoke odor on your body and clothes, as well as in your home and car.

USB Passthrough!

Now available from INSTEAD; the USB Passthrough! This electronic cigarette accessory allows e-smokers who sit at their computers for any length of time to enjoy e-smoking without their e-cig battery ever going dead.

It is the perfect accessory for the computer using electronic smoker!

http://www.e-cig.org/

Next Slide Series are From: Dr. Nathan Cobb, Research Investigator, The Schroeder National Institute for Tobacco Research and Policy Studies at the American Legacy Foundation and The Johns Hopkins Bloomberg School of Public Health

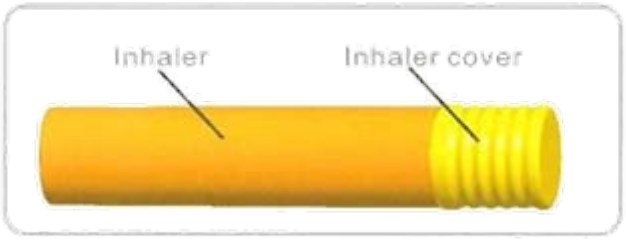
Presented at American Legacy Foundation, Warner Series Webcast September 16, 2009

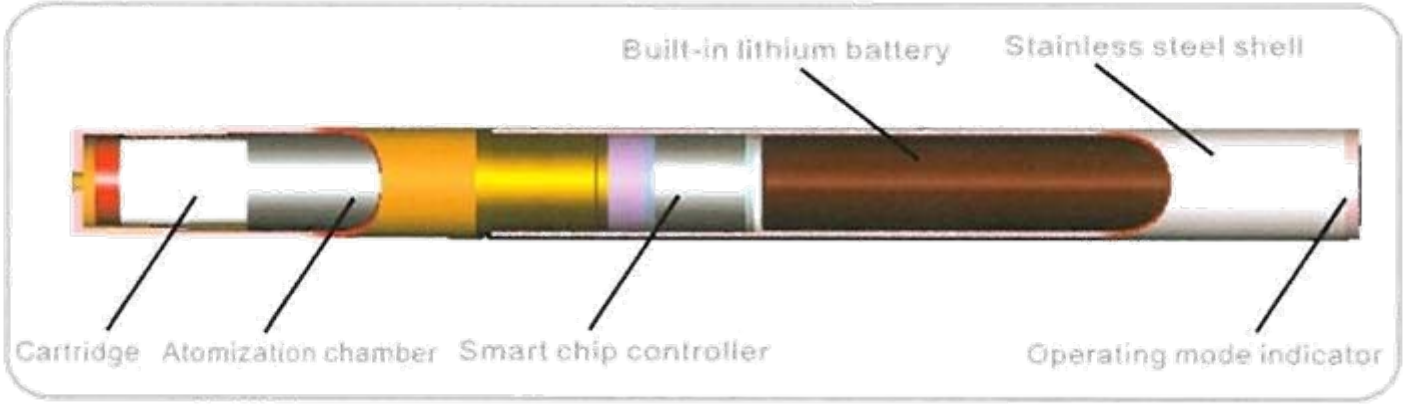
Webcast and Slides at www.AmericanLegacy.org

Sample Devices

Common Components

- Battery
- Heating element
- Absorbent with solution
  - Nicotine
  - Propylene glycol
  - Flavorings





Vaporization

- As propylene glycol (or other alcohol) is heated to 40-65C and forcibly drawn through the device, it vaporizes.
  - Theoretically, nicotine is carried along in this process.
- FDA found ~6 mg of nicotine in tested cartridges
  - Estimated 0.027 to 0.045 milligrams per puff

Refilling

- Multiple suppliers of “juice” independent of device manufacturers
- Marketed for 1-1.3ml refill per cartridge
  - Current high is 36mg/refill
  - Single bottle may contains as much as 1 gram of nicotine in the volume of a shot glass.

Refill Process

E-Liquid Smoke Juice #1

The Instead brand E-Liquid Smoke Juice is American Made, comes in a glass bottle with a child proof cap, a dropper cap, and a label with ingredients and proper warnings

E-Liquid Smoke Juice #2

E-Liquid Smoke Juice may contain propylene glycol. Those allergic to propylene glycol or those with other medical conditions should consult a physician before using. May contain TSNAs (tobacco specific nitrosamines) in relatively low levels compared to tobacco cigarettes. These substances are carcinogens and may cause cancer.

FDA Study #1 (July 2009)

- FDA's Center for Drug Evaluation purchased two samples of electronic cigarettes and components from two leading brands. These samples included 18 of the various flavored, nicotine, and no-nicotine cartridges.
- FDA analyzed the cartridges for nicotine content and other tobacco constituents, some of which are known to be harmful to humans.
- The products contained detectable levels of carcinogens and toxic chemicals.
- DPA's testing suggested that quality control was inconsistent or non-existent.

FDA Study #2 (July 2009)

- Diethylene glycol was detected in one cartridge at approximately 1%. Diethylene glycol, an ingredient used in antifreeze, is toxic to humans.
- Tobacco-specific nitrosamines detected in half the samples.
- Tobacco-specific impurities —anabasine, myosmine, and β-nicotyrine—were detected in a majority of the samples.
- Cartridges that labeled as “no nicotine” had low levels of nicotine present in all cartridges tested, except one.
- Three different cartridges with the same label were tested and each emitted a markedly different amount of nicotine with each puff. The nicotine levels per puff ranged from 26.8 to 43.2 mcg nicotine/100 mL puff.
- One high-nicotine cartridge delivered twice as much nicotine to users than that from an FDA approved smoking cessation aid

World Health Organization Tobacco Regulation Study Group (TobReg)

The study group was formed by the WHO to provide scientific guidance on tobacco issues addressed by the Framework Convention on Tobacco Control (WHO FCTC), aka, the “Tobacco Treaty”.

TobReg’s focus is on issues related to Treaty Articles, 9, 10, and 11, which address tobacco product contents, disclosures and packaging and labelling. And, with respect to ENDS, Article 8, which requires protection from exposure to tobacco smoke.

TobReg convened in November, 2008, in part to address issue posed by ENDS. A draft abbreviated advisory was released early in 2009. The Final Advisory from that meeting is forthcoming.

ENDS: WHO TobReg Conclusions #1

- The safety and extent of nicotine uptake from using ENDS products have not been established. Although ENDS may cause and sustain addiction, evidence on the potential for addiction and the frequency with which addiction occurs does not currently exist.

- Manufacturers have marketed ENDS as smoking cessation aids and these products have the potential to be effective in this use; however, scientific evidence sufficient to establish cessation efficacy and safety of use is not yet available.

ENDS: WHO TobReg Conclusions #2

- There are safety concerns that nicotine delivery to the lung may result in stronger toxicological, physiological and addictive effects, and these concerns must be addressed with scientific studies.

- Lung delivery of medications, independent of the effects of nicotine, is of global importance and must be addressed with scientific studies.

ENDS: WHO TobReg Scientific Advisory and Recommendation

- This recommendation was developed within the context of the WHO Framework Convention on Tobacco Control ("FCTC") but is similarly relevant to the United States.

- ENDS have the potential to undermine public smoking bans and undermine prevention and cessation by serving as attractive nicotine/tobacco starter products and by their claims as safe alternatives to tobacco products.

- There are at least 24 licensed companies and many more brands and model names, their marketing websites make diverse claims .....

ENDS: WHO TobReg Policy Recommendations #1

- 1. ENDS products should be regulated as combination drug/medical devices and not as tobacco products. Notwithstanding the various marketing strategies, ENDS facilitate and perpetuate nicotine addiction.
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- 2. If ENDS products are regulated under tobacco control laws, then the manufacture, sale or importation of these products should be subject to regulation of contents and labelling (Articles 9-11), prohibitions against public use that might expose others to emissions (Article 8), and restrictions on advertising, promotion and sponsorship that appeal to adolescents (Article 13).

ENDS: WHO TobReg Policy Recommendations #2

- 4. Manufacturers and retailers must provide evidence defining the appropriate uses, exposures and safety of ENDS and regulatory authorities should confirm the accuracy of this evidence prior to approval for sale and marketing.

5. Claims implying health benefits or reduced harm relative to cigarettes should be prohibited unless the safety of these devices, when used as intended, are scientifically proven to the satisfaction of regulatory authorities.

6. Claims that ENDS assist smoking cessation should be prohibited unless the efficacy of these devices, when used as intended, are scientifically proven to the satisfaction of regulatory authorities.

Basic information needed to use in Treatment

In addition to good manufacturing practice and safety assurance of design and ingredients we need:

1. Dose delivery and pharmacokinetics
2. Comprehensive assessment of risks and approaches (including labeling) for mitigation
3. Abuse liability for labeling and OTC consideration
4. Absorption site, e.g., fraction, if any, in the lung
5. Guidance for smokers and HCP's to select doses
6. Daily dosing schedule, and schedule over weeks
7. Termination, e.g., weaning, approach
8. Tested behavioral approach to support use

American Legacy Foundation (Sept. 2009) #1

- **The FDA Should Take Electronic Cigarettes Off The Market Until It Is Satisfied That They Are Safe and Effective.**
- EXCERPTS: The American Legacy Foundation shares FDA Commissioner Dr. Margaret A. Hamburg's concern "about the safety of these products and how they are marketed to the public."
- We also share the FDA's particular concern that these products could increase nicotine addiction and tobacco use among young people, noting that they are easily available on the internet and in shopping malls, contain no health warnings and are available in flavors such as chocolate, strawberry and mint.

American Legacy Foundation (Sept. 2009) #2

- We encourage the FDA and other researchers to continue this work and also to examine whether these devices actually help smokers quit or instead, delay cessation attempts by providing smokers with a way to continue their smoking behaviors when they cannot smoke a tobacco product.
- … consideration of all of the available evidence combined with important unanswered questions strongly supports our call on the FDA to prohibit the marketing and sale of e-cigarettes unless and until the FDA is satisfied that they are safe and effective.

Family Smoking Prevention and Tobacco Control Act, H.R. 1256, 111th Congress
Signed into law: June 22, 2009

Adapted from Slides by Mitch Zeller
Pinney Associates, Presented to the
2009 National Synar Workshop, June 9, 2009


2009/06/22

Sect. 904 -- Submission of Health Information

- Section 904 mandates FDA receive brand-specific information on ingredients, nicotine delivery, and any smoke constituent FDA identifies as harmful or potentially harmful.
- Companies must also provide FDA with all documents developed after the bill is enacted related to health, toxicological, behavioral, or physiologic effects of current or future products.
- Documents created prior to the enactment of the bill do not need to be provided to FDA. But section 904(b) requires the companies to provide any such pre-enactment materials that FDA asks for (e.g. health, toxicological, etc.).

Section 907 -- Product Standards

- Now as for other products, FDA will issue performance standards to prohibit or limit the allowable levels of substances in a finished product (e.g., insect parts in flour, pesticide residues, etc). Products that don't comply can't be sold.
- Nicotine can be reduced to nonaddictive levels but cannot be reduced "to zero".
- FDA could ban or limit ingredients and designs that increase addiction risk (e.g., menthol, acetaldehyde, ammonia, chocolate).

Addiction & Behavioral Considerations

TOBACCO PRODUCT STANDARDS.—The Secretary may adopt tobacco product standards…if the Secretary finds that a tobacco product standard is appropriate for the protection of the public health. This finding shall be determined with respect to the risks and benefits to the population as a whole, including users and non-users of the tobacco product, and taking into account—

(A)the increased or decreased likelihood that existing users of tobacco products will stop using such products; and

(B)the increased or decreased likelihood that those who do not use tobacco products will start using such products.

Key Language #1

- Product standards are specifically authorized:

  "for the reduction or elimination of…harmful components of the product"

- Filters are included in the definition of "component"
- Interestingly, 907 says a standard can be issued to reduce or eliminate a component if the component "is **or may be** harmful" (emphasis added)

Key Language #2

There are additional “considerations” that can be raised during the standard setting process

- Technical achievability
- The “countervailing effects” of the standard on the health of adolescent tobacco users, adult tobacco users, or non-tobacco users, “such as the creation of a significant demand for contraband or other tobacco products that do not meet the requirements of this chapter and the significance of such demand.”

“Light” and Similar Terms Banned

- The bill bans the use of terms like “light,” “low tar,” “mild,” and similar terms.
- This is accomplished by rendering such claims unapproved exposure or risk reduction claims under section 911.

Section 911 -- Mandatory Pre-Market Evaluation of All Health-Related Claims

- Section 911 of the bill requires any express or implied harm reduction claim, including an exposure reduction claim, to be evaluated by FDA prior to marketing.
- Approval for such a claim is subject to a very high standard of scientific substantiation. Some smokeless advocates have complained that the standard in this section is too high.

Health-Related Claims

- A claim can only be approved if the company demonstrates that the product, as actually used by consumers, will "significantly reduce harm" to individuals, and benefit the health of the population as a whole taking into account both users and non-users of tobacco products.
- FDA must take into account the unintended population level effects such as:
  - Decreased interest in quitting
  - Increased interest in initiating use of the product among ex-smokers and those who never used tobacco products

Product Testing Authority

- The bill does away with the FTC testing method and orders FDA to develop regulations to require testing and reporting of ingredients and smoke constituents by brand and sub-brand.
- FDA must determine how to disclose ingredient/constituent information to the public in a way that will not mislead consumers about the risk of tobacco-related disease.

FDA's 1996 Youth Access and Advertising Rules Reinstated

- The bill reinstates the comprehensive final rules promulgated by FDA in 1996 to restrict youth access to tobacco products, and the advertising and marketing to young people.
- Unfortunately the bill forbids FDA from raising the minimum age for sale of tobacco products above the age of 18. States remain free to do so.

Section 918 -- Treatment Policy

- Section 918 is hortatory in nature. It sends a strong signal to FDA that the agency needs to take a more flexible, progressive and enlightened approach to its role in the evaluation and approval of products to treat tobacco dependence (i.e., CDER work with CTP).
- FDA is encouraged to consider:
  - granting fast track status to applications from all meds
  - approving NRT for longer periods of use
  - expanding the allowable uses of NRT such as craving relief and relapse prevention

The Real Work has Only Just Begun

- A lot of heavy lifting will be needed
- All agencies with a stake in reducing tobacco use will have an important role to play in working with FDA
- Many mechanisms for input
  - Public comments
  - Via new Scientific Advisory Board
  - Research per FDA contracts AND NIH

January 14 2010 Federal Judge Rules Against FDA's Ban on ENDS Imports

WASHINGTON—A federal judge said the Food and Drug Administration doesn't have the authority to seize electronic cigarettes because the products don't qualify as devices subject to the agency's regulation.

In a 32-page opinion, U.S. District Judge Richard J. Leon sided with electronic-cigarette makers Smoking Everywhere Inc. and Njoy. He criticized what he called the FDA's "tenacious drive to maximize its regulatory power," saying he found its interpretation of the law "unreasonable and unacceptable."

Matthew L. Myers, President, Campaign for Tobacco-Free Kids #1

If upheld, Judge Leon’s decision opens a gaping loophole in the protection FDA has provided against the sale and distribution of non-tobacco products that a manufacturer laces with unregulated quantities of nicotine. For years, the FDA has stringently regulated all products containing nicotine when sold to consumers in any form other than a traditional tobacco product because of nicotine's dangerous and addictive impact.

Matthew L. Myers, President, Campaign for Tobacco-Free Kids #2

Judge Leon's decision also ignores the common sense distinction that FDA has long drawn between traditional tobacco products that contain nicotine, such as cigarettes, smokeless tobacco, cigars and pipes, and a host of non-tobacco products, ranging from toothpaste to lollipops to water, in which manufacturers have added nicotine, a highly addictive substance.

Did some one say tobacco control was going to be easy?