# The Emergence of JUULs and Heated Tobacco Products

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# Heated tobacco products: What you need to know

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# What's the public health importance of this topic?

The landscape of tobacco products is continually changing

By being proactive and anticipating new products, we can prepare our surveillance systems to track changes in tobacco use

Understanding unique properties and health implications of each tobacco product can inform public health planning, policy, and practice

# The Evolving Tobacco Product Landscape



# What are "heat-not-burn" tobacco products?

Industry term to describe products that heat tobacco leaf to deliver an inhaled aerosol

Technology first introduced in the 1980s and 1990s – two primary formats:

- 1) Carbon-tipped tobacco sticks lit with a lighter
- 2) Electronic devices that heat tobacco sticks or capsules

Unclear whether combustion actually occurs; thus, use of the term "heated tobacco products" (HTPs)

# Analog HTPs

Carbon tip heated with a lighter

User inhales 4-5 times before the tip glows red and product is activated

Packs of 20, similar size and shape of cigarette

3 iterations have tested in U.S. (1989 Premier, 1994-2005 Eclipse, 2015 Revo)



Above: Eclipse Cigarettes

### **Electronic HTPs**

Test marketing began in 1998 in Richmond, VA, discontinued in 2006 due to "lack of commercial success"

Battery powered "smoking system." Heating blades pierce Accord cigarette. Device activated only when puffed.

Ads said Accord "produces a lot less smoke" but did not want to "disparage existing brands" in marketing







## HTPs pending FDA pre-market approval

Umbrella brand for PMI's multiple "reduced risk product" (RRP) platforms

Compressed tobacco stick inserted into device, discarded after use.

Flavors – Regular, Balanced, Mint, Menthol

14 "drags" per stick, 6 minute heat time before automatic shut-off, 1 stick per charge

"HeatSticks" are sold in packs of 20, priced comparably to cigarettes



iQOS store outlet in Tokyo









### HTPs available outside the U.S. – Part 1

JTI PloomTECH heats "capsules filled with granulated tobacco leaves"

Regular ("Balanced") and menthol ("Cool Purple") flavors

Capsules sold in packs of 5; recharge every 5 capsules

Activated by inhaling "making it possible to enjoy the experience immediately and at anytime"

Capsule can be used several occasions before disposal.









the future is plooming



## HTPs available outside the U.S. – Part 2

BAT glo heats tobacco 'NeoStiks," packs of 20

glo iFuse is a "hybrid" that heats liquid and tobacco

20 sticks per battery charge

Flavors: Bright Tobacco, Fresh Mix (mint), Zest Mix (citrus)

"NeoStiks" are priced 2x higher than cigarettes and have an approx. 45% lower tax rate in Japan because they are lighter and taxes are applied by weight.





# HTPs: Highly profitable replacement for declining cigarette business



iQOS HeatStick revenues \$1.55/pk in FY16 vs <\$1.00/pk combustible cigarettes

Major economies of scale

Sticks (for glo) can be produced on modified cigarette machinery

Lower tax rates

Source: Wells Fargo Securities LLC. iQOS in Pictures: A visual overview of the global opportunity through 2025. July 2017.

### Health implications: Key questions

#### Do they burn?

Is there smoke?

What are the contents of the smoke/aerosol?

What are the differences in constituents and use patterns between various product types?

Will they appeal to youth/young adults/non-tobacco users?

Will they be used by smokers as a complete substitute for all combusted tobacco products?

### Independent studies will provide critically needed information

Until independent studies prove that no combustion occurs or smoke is produced, products should not be assumed to be noncombustible. One study found that heating tobacco between 100-200°C releases nicotine and some cigarette smoke compounds. Emissions increased with temperature.<sup>1</sup>

Another study compared iQOS to a reference cigarette. VOCs, polycyclic aromatic hydrocarbons, and CO were present in iQOS smoke.<sup>2</sup>

<sup>1</sup> Forster M, Liu C, Duke MG, et al. An experimental method to study emissions from heated tobacco between 100–200 C. Chem Cent J 2015;9:20.

2 Auer R, Concha-Lozano N, Jacot-Sadowski I, Cornuz J, Berthet A. Heat-not-burn tobacco cigarettes: Smoke by any other name. *JAMA Int Med.* Published Online: May 22, 2017. doi:10.1001/jamainternmed.2017.1419

#### Surgeon General's Reports offer a public health framework



"The use of products containing nicotine poses dangers to youth, pregnant women, and fetuses. The use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe."

– 2016 SGR Conclusion #4

"E-cigarette **aerosol is not harmless**. It can contain harmful and potentially harmful constituents, including nicotine. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain."

- 2016 SGR Conclusion #5

"...All products containing tobacco and nicotine should be assumed to be **both harmful and addictive**..."

– 2014 SGR, Ch. 14, p. 780

"...When there is inadequate or early knowledge, **public health decisions should be made on the basis of precaution to prevent harm**, rather than on certain risk. This approach requires proof that a product is not harmful—especially for youth—rather than proof that it is harmful."

- 2016 SGR, Call to Action

HTPs should not be a distraction from combusted tobacco products Combusted tobacco is still responsible for overwhelming burden of tobacco-related disease and death in the U.S.<sup>1</sup>

Smoking and SHS exposure kill >480,000 Americans each year<sup>1</sup>

**11.2** billion cigarette packs were sold in the U.S. in 2015 – enough for 34 packs for every man, woman, and child in America<sup>2</sup>

Cigarettes account for the vast majority of tobacco company revenues and profits; only ~2% of PMI's revenue is from HTPs<sup>3</sup>

<sup>1</sup>DHHS. The Health Consequences of Smoking-Fifty Years of Progress: A Report of the Surgeon General. Atlanta: Centers for Disease Control and Prevention, 2014. <sup>2</sup>Marynak K, Gammon D, Rogers T et al. National and State Trends in Sales of Cigarettes and E-Cigarettes, U.S., 2011–2015. Am J Prev Med 2017 (e-pub ahead of print) http://dx.doi.org/10.1016/j.amepre.2017.01.016. (Data not shown). <sup>3</sup>Philip Morris International presentation to the Consumer Analyst Group of New York (CAGNY) conference, 2017.

# U.S. Status

- To our knowledge, HTPs are not widely available in the U.S.
- HTPs are subject to FDA regulatory authority and must receive premarket approval through the SE or PMTA pathway.
- Reynolds American submitted an SE application for a flameactivated HTP product in 2017.
- BAT reports plans to submit an SE application for glo in 2018 and MRTP in 2020.
- The TPSAC reviewed PMI's MRTP application Jan 24-25, 2018. FDA continues to review the MRTP and PMTA applications.
- 80% of U.S. tobacco retailers say they plan to carry the iQOS.

# Evolving landscape In the second seco



- $\checkmark\,$  Efforts to prevent youth access and use
- ✓ Protection of clean air standards and tobacco-free norms
- ✓ Elimination of combusted tobacco use and education about harms of smoking and dual use
- Education about the harms of any tobacco product use, especially for vulnerable populations, such as youth and young adults and pregnant women
- Research and surveillance to understand new products' impact on the public's health

#### Thank you! Questions? Kristy Marynak KMarynak@cdc.gov, 770.488.6196



For more information, contact CDC 1-800-CDC-INFO (232-4636) TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.





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# JUUL: Recognition, use and perceptions

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# What is JUUL?

- Not your typical e-cigarette
  - nicotine salts
  - IT product design
- "By accommodating cigarette-like nicotine levels, JUUL provides satisfaction to meet the standards of smokers looking to switch from smoking cigarettes."
- Pods with nicotine liquid available in a range of flavors.
- Every JUUL flavored pod contains nicotine.



# **JUUL – Nicotine Delivery**



# JUUL – Market Growth and Concern



Source: Nielsen Total US xAOC/Convenience Database and Wells Fargo Securities, LLC

- In April, 2018, JUUL represented 60.1% dollar share and 42.0% unit share of the e-cigarette traditional retail market.
- On April 24<sup>th</sup>, the FDA
  requested that JUUL Labs,
  Inc. submit documents
  relating to marketing
  practices and research on
  marketing, effects of
  product design, public
  health impact, and adverse
  experiences and complaints
  related to JUUL.

Purpose of Truth Initaitive JUUL studies: To learn more about JUUL awareness, use, perceptions and terminology

#### **Research letter**

# Recognition, use and perceptions of JUUL among youth and young adults

#### BACKGROUND

In recent years, use of electronic nicotine delivery systems (ENDS) has drastically increased, exceeding the prevalence of combustible tobacco use among youth in the USA.<sup>1</sup> ENDS products are heavily

salts extracted from tobacco leaves, rather than the 'freebase formulations'<sup>8</sup> of nicotine used in other ENDS, PAX Labs claims JUUL provides a nicotine concentration comparable with a traditional cigarette and delivers nicotine 1.25–2.7 times faster than competing ENDS. Since its introduction in early 2015, JUUL has experienced tremendous growth in market share. As of 24 February 2018, JUUL represented an astonishing 49.6% dollar share and 31.1% unit share of the ENDS market.<sup>9</sup> With such rapid emergence into the ENDS for those who responded affirmatively, asked what people their age call the device and how they describe the use of the device. Respondents who recognised JUUL were also asked about their ever and past 30-day use. Survey items also assessed respondents' perceptions regarding the nicotine content of JUUL. The following demographic characteristics were also measured: age, gender, race/ethnicity and perceived financial situation (live comfortably, meet needs with a little left over, just meet basic expenses don't meet basic

Published in Tobacco Control, April, 2018

#### November 2017 JUUL study findings

- 25% of <u>15-24 year olds</u> recognized JUUL
- 10% had ever used a JUUL; 8% used in past 30 days
- Use significantly higher for males, higher SES and 18-24 year olds
- 25% of those who recognized JUUL referred to use as "JUULing"
- Most were not aware that JUUL pods always contain nicotine.

# April 2018 JUUL Study

Included 12-14 year olds and expanded questions related to JUUL use.

Sample

- Source: Qualtrics panel, N=1,025
- Age: 12-17 year olds (50% 12-14, 50% 15-17)
- 50% male, 50% female
- Data collected online, 4/3/18 to 4/9/18.





# **Awareness**

Among entire sample, N=1,025 12-17 year olds



#### Seen JUUL used at school?

## **Ever and Past 30-Day Use of JUUL**

Among entire sample, N=1,025 of 12-17 year olds



<u>Ever Use</u> 12-14 = 5.2% 15-17 = 7.8% (was 7.0% in November)

<u>Past 30-Day Use</u> 12-14 = 4.6% 15-17 = 6.5% (was 6.1% in November)

# **Flavor and Substance Use**

# Which JUUL flavor pod used most recently?



Among past 30-day users



Among ever users

# **Product Perceptions**



Among those who recognized JUUL (n=394)

# Conclusions

- Pod Mod devices represent the newest generation of e-cigarette products.
- JUUL represents 60% of e-cigarette retail market share and 38% of 12-17 year olds recognized a JUUL device. Nearly 1-in-5 youth have seen JUUL used at their school.
- JUUL users largely report use of fruity and sweet flavors. Of youth who have ever used JUUL, one-in-three have used marijuana with the device.
- Youth largely obtained JUUL through physical retail outlets or social sources. Youth reported relative ease obtaining JUUL devices online.
- Nearly half of those who are aware of JUUL believe it is "a lot" or "a little" LESS harmful than cigarettes. One-in-three believe JUUL is "much" or "slightly more" addictive than cigarettes.

# Thank you

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