The Changing Landscape of Tobacco: E-Cigarettes, E-Hookahs and More

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Objectives

- Identify and discuss various electronic smoking devices (ESD).

- Identify how ESD impacts clean indoor air, social norming and cessations efforts.
Introduction of Electronic Cigarettes
Over 450 Brands and 7,000 flavor combinations of E-Liquid
Smoke without fire
Suck on an e-cigarette and it produces a cloud of nicotine-carrying vapour with none of the toxic by-products of burning tobacco

LED lights up when the smoker draws on the cigarette

Sensor detects when smoker takes a drag

Heater vaporises nicotine

MICROPROCESSOR controls heater and light

BATTERY

CARTRIDGE holds nicotine dissolved in propylene glycol
Different electronic cigarette product types

- Disposable e-cigarette
- Rechargeable e-cigarette
- Tank-style, large-sized rechargeable e-cigarette
- Pen-style, medium-sized rechargeable e-cigarette
Tank Systems
No restriction on ingredients or aerosol emissions

- Acrolein
- Acetaldehyde
- Benzene
- Xylene
- Formaldehyde
- Nickel
- Di-ethylene Glycol
- Arsenic
- Chromium
- Copper
- Tin
- Nickel
- Tin
- Lead
- Toluene
- Ethylbenzene
- Acetaldehyde
- Propylene-Glycol
- Carcinogenic compounds
- Volatile Organic Compounds

It’s Not Water Vapor.....
July 13, 2015 Company Behind Fruit Stripe Gum Suing E-Cig Company Over Vape Flavor — Chicago Tribune

Rutgers School of Public Health: https://www.trinketsandtrash.org/
Non Resistant Packaging

Federal ACT: Child Nicotine Poisoning Prevention Act of 2015
**Short-term Pulmonary Effects of Using an Electronic Cigarette**

**Impact on Respiratory Flow Resistance, Impedance, and Exhaled Nitric Oxide**

Constantine I. Vardavas, MD, MPH, PhD; Nektarios Anagnostopoulos, MD; Marios Kougiou, MD; Vassiliki Evangelopoulos, MD; Gregory N. Connolly, DMD, MPH; and Panagiotis K. Behrakis, MD, PhD, FCCP

*Conclusions:* e-Cigarettes assessed in the context of this study were found to have immediate adverse physiologic effects after short-term use that are similar to some of the effects seen with tobacco smoking; however, the long-term health effects of e-cigarette use are unknown but potentially adverse and worthy of further investigation.

**CHEST 2012; 141(6):1400-1406**
<table>
<thead>
<tr>
<th>Toxic compound</th>
<th>Conventional cigarette (µg in mainstream smoke) $^{35}$</th>
<th>Electronic cigarette (µg per 15 puffs)</th>
<th>Average ratio (conventional vs electronic cigarette)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>1.6–52</td>
<td>0.20–5.61</td>
<td>9</td>
</tr>
<tr>
<td>Acetaldehyde</td>
<td>52–140</td>
<td>0.11–1.36</td>
<td>450</td>
</tr>
<tr>
<td>Acrolein</td>
<td>2.4–62</td>
<td>0.07–4.19</td>
<td>15</td>
</tr>
<tr>
<td>Toluene</td>
<td>8.3–70</td>
<td>0.02–0.63</td>
<td>120</td>
</tr>
<tr>
<td>NNN</td>
<td>0.005–0.19</td>
<td>0.00008–0.00043</td>
<td>380</td>
</tr>
<tr>
<td>NNK</td>
<td>0.012–0.11</td>
<td>0.00011–0.00283</td>
<td>40</td>
</tr>
</tbody>
</table>

NNK, N’-nitrosornicotine (NNN) and 4-(methylnitrosoamino)-1-(3-pyridyl)-1-butanone; NNN, N’-nitrosornicotine.
Specific Nicotine Toxicity

Cancer -


Heart Disease -
Other Effects of ESDs

  - Sperm counts and sperm DNA damage

- **Immune** - Ilona Jaspers, Feb 2016.
  - Suppression of key immune genes in the nasal mucosa similar to cigarette smokers
  - Epithelial physiology and barrier function (cinnamaldehyde particularly)
Impact of maternal tobacco use on infant neurological outcomes

- Low birth weight
- Decreased brain volume
- Increased pre-term births
- Direct brain injury
Resilience and innovation keeps an industry on top

... destroy millions of lives

...utilizing methodical, innovative, and sophisticated techniques

...innovative advertising schemes

...how difficult it is to create social norm changes
We accept an interest in people’s health as a basic responsibility, paramount to every other consideration in our business. We always have and always will cooperate closely with those whose task it is to safeguard the public health.

We believe the products we make are not injurious to health.

Purpose: Develop a strategy to confront scientific reports linking cigarettes to lung cancer.

When: December 1953

In attendance: Tobacco executives, lawyers and an advertising firm.
ESDs – is it a tobacco product?

US Court of Appeals DC Circuit 2010 – Sottera v. FDA

Ruling: Products “made or derived” from tobacco can be regulated as “tobacco products” under the FD & C Act unless they are marketed for therapeutic reasons
Banned in Australia, Brazil, and Turkey
Marketing

Movies & T.V.

Give Away Items

Video Games

P.O.S.

Online
ESDs Advertising Dollars Spent in US for Materials and Accessories

http://www.nytimes.com/2013/08/30/business/media/e-cigarette-makers-ads-echo-tobaccos-heyday.html?_r=0
### Table 3. Tobacco Companies That Have Acquired or Created E-Cigarette Companies and Brands (as of January 2014)

<table>
<thead>
<tr>
<th>Tobacco Company</th>
<th>Acquired E-Cigarette Company</th>
<th>E-Cigarette Brand(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altria Inc</td>
<td>GreenSmoke</td>
<td>Mark Ten</td>
</tr>
<tr>
<td>Reynolds American Inc</td>
<td>No</td>
<td>Vuse</td>
</tr>
<tr>
<td>Lorillard</td>
<td>Blu Cigs, Inc</td>
<td>Blu</td>
</tr>
<tr>
<td>British American Tobacco</td>
<td>CN Creative</td>
<td>Vype</td>
</tr>
<tr>
<td>Imperial Tobacco</td>
<td>Dragonite Holdings Ltd</td>
<td>Ruyan</td>
</tr>
<tr>
<td>Swisher</td>
<td>No</td>
<td>E-Swisher</td>
</tr>
</tbody>
</table>

E-cigarette indicates electronic cigarette.
“A premium lifestyle brand to redefine the act of smoking.” Coapman, VP of Lorillard

- Motorsports
- Music festivals
- Events (SXSW)

- Educate
- Give-away Products
- Brand Positioning
Vaping’s Appeal Across Sub-Cultures

Source: http://tobacco.stanford.edu/tobacco_main/images
In 2013, more than a quarter million middle and high school students never smoked regular cigarettes but had used e-cigarettes...

3 times as many as 2011!
When the crew wants to go out but all you wanna do is chill and vape.
Current E-Cigarette Smoking Among High School Students

Source: National Youth Tobacco Survey and APNA 2014
Use of Electronic Cigarettes Among State Tobacco Cessation Quitline Callers

Katrina A. Vickerman PhD, Kelly M. Carpenter PhD, Tamara Altman PhD, Chelsea M. Nash BA, Susan M. Zbikowski PhD

Use of electronic cigarettes

Table 2. Respondent Characteristics, Services, and Outcomes: All Respondents and Differences Among E-cigarette User Groups

<table>
<thead>
<tr>
<th>Respondent characteristics</th>
<th>Total (N = 2,476)</th>
<th>Used e-cigarettes: 1 month or more, n = 273 (11.3%)</th>
<th>Used e-cigarettes: less than 1 month, n = 439 (18.1%)</th>
<th>Never used e-cigarettes, n = 1,711 (70.6%)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-month survey responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>30-day respondent quit rate</td>
<td>27%</td>
<td>21.7%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>16.6%&lt;sup&gt;b&lt;/sup&gt;</td>
<td>31.3%&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
### Table 2. Population Studies of the Association Between E-Cigarette Use and Cessation of Conventional Cigarette Smoking

<table>
<thead>
<tr>
<th>Study</th>
<th>Location and Study Design</th>
<th>Odds of Quitting (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Longitudinal studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adkison et al* (2013)</td>
<td>US, UK, Canada, Australia (ITC), surveyed, 1 y apart</td>
<td>0.81 (0.43–1.53)*</td>
</tr>
<tr>
<td>Vickerman et al* (2013)</td>
<td>US quit-line callers from 6 states surveyed at enrollment and 7 mo later</td>
<td>0.50 (0.40–0.63)†</td>
</tr>
<tr>
<td>Grana et al* (2014)</td>
<td>US sample drawn from a nationally representative Internet panel, 1 y apart</td>
<td>0.76 (0.36–1.60)</td>
</tr>
<tr>
<td>Choi and Forster* (2014)</td>
<td>Midwestern young adults, 1 y apart</td>
<td>0.93 (0.19–4.63)</td>
</tr>
<tr>
<td><strong>Cross-sectional study</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Popova and Ling* (2013)</td>
<td>US sample drawn from a nationally represented Internet panel</td>
<td>0.69 (0.52–0.94) *</td>
</tr>
<tr>
<td><strong>All studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pooled†</td>
<td></td>
<td>0.61 (0.50–0.75)</td>
</tr>
</tbody>
</table>

CI indicates confidence interval; E-cigarette, electronic cigarette; and ITC, International Tobacco Control.

*Odds ratios obtained by contacting authors.
†Computed by authors of this report on the basis of the numbers reported.
‡Estimated with a random-effects meta-analysis using Stata 12.1 metan. There was no evidence of heterogeneity (P=0.28) or evidence of publication bias with the use of a funnel plot.
Act 1451
Prohibits sales to minors

Act 1099
Prohibits use on school grounds and at school functions

Act 1235
Enforcement of sales to minors law, Child–resistant packaging, Regulation and licensing of vape shops, Prohibits ESDs use on any school, childcare or healthcare facility

Act 1722
Prohibits use on college campuses –

Multiple businesses, county and city properties now prohibit ESD use.
Poison is Poison

CALL 1-800-QUIT-NOW